Hydrology Analysis
Vesting Tentative Tract Map 17845
Rancho La Habra

Prepared for

CalAtlantic Homes






March 2017

Hunsaker & Associates

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PRELIMINARY HYDROLOGY ANALYSIS
FOR RANCHO LA HABRA
VESTING TENTATIVE TRACT MAP 17845

CITY OF LA HABRA, CALIFORNIA

PREPARED FOR

CALATLANTIC HOMES℠

15360 BARRANCA PARKWAY
IRVINE, CA, 92618
PHONE NUMBER: (949) 789-1600
CONTACT: MICHAEL BATTAGLIA

PREPARED BY:

HUNSAKER & ASSOCIATES
IRVINE, INC.
PLANNING ▪ ENGINEERING ▪ SURVEYING

2900 ADAMS STREET; SUITE A-15
RIVERSIDE CA, 92504
PHONE NUMBER: (951) 352-7200



PREPARED UNDER THE SUPERVISION OF BRIAN R. LOWELL, R.C.E. 74550

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SECTION 1 - Project Description

Project Description

The proposed project known as "Rancho La Habra" consists of 150.8 acres, and proposes the construction of 277 single family homes, 145 multi-family units, a 2.7-acre commercial site (An additional 49 multi-family units may be constructed as an option to the proposed commercial site), approximately 38.9 acres of open space, paved streets, un-paved trails and access roads, and general improvements related to a residential development. The site is part of the 'La Habra Hills Specific Plan'. The proposed project site is located within the San Gabriel sub-watershed portion of the Santa Ana River Basin, in the City of La Habra, County of Orange, California. The project site is bounded by Beach Boulevard to the west, La Habra Hills Drive to the north, Idaho Street to the east, Tracts 15030 and 15031 to the south and Hillsboro Drive to the south (see included vicinity map).

The limits of this study were expanded to include all offsite areas with potential to generate run-on as well as taking into consideration the existing storm drain system that flows through the site from the developments to the south. The study area breakdown is as follows:

- On-site proposed development area = 115.47 acres
- On-site undeveloped area = 35.46 acres
- Offsite area tributary to drainage area 'C' = 47.00 acres

Total study area = 197.93 acres

- Tract 15030 Line 'I' Peak effluent 25 year Q equals 254.1 cfs
- Tract 15030 Line 'M' Peak effluent 25 year Q equals 48.6 cfs

Pre-Development Conditions

Historically the site was vacant consisting of natural rolling hills. In 1999, the site was graded and a golf course was constructed. Currently, the site remains a fully functioning golf course with irrigated fairways, sand traps and water features. The existing topography of the site divides the project into seven distinct drainage areas, 'A', 'B', 'C', 'D', 'E', 'F' and 'G' with Coyote Creek flowing from northeast to southwest behind the existing commercial/industrial and residential properties located west of Beach Boulevard. During storms, surface run-off drains towards a series of area drains that outlet into the various water features along the golf course. The water features are connected to the public storm drain system, and ultimately outlet into Coyote Creek, which is located approximately 400 feet to the west of the site. Water is then conveyed along the natural drainage course of San Gabriel sub-watershed towards the Pacific Ocean.

Additionally, along the southerly project boundary, two residential tracts (tract 15030 and tract 15031) were developed and the off-site storm drain system was integrated into the golf course design. A portion of the runoff from both of these tracts co-mingles with the water features along the fairways. The water features were intended to act as retarding basins, ultimately mitigating the increase in storm water run-off associated with the development of both the residential tracts and golf course. Maintenance was the responsibility of the golf course.

Currently, the 48-inch diameter portion of Line 'A' of Tract 15030 as it crosses Beach Boulevard, is undersized and incapable of carrying the additional flows from Lines 'M' and 'N' of Tract 15030. The layout of Line 'A' yields a maximum capacity of 101.6 cfs as it crosses Beach Blvd. However, the velocity head of the 17% slope pipe immediately upstream, increases the capacity to 254 cfs. The addition of Line 'M' and 'N' over load the system and create a substantial hydraulic jump, back water the system and ultimately cause flooding within the golf course (please refer to the Analysis of Area 'C' for design proposal and analysis).

Post-Development Conditions

As required by the Santa Ana Regional Water Quality Control Board, and the MS4 Permit (Municipal Separate Storm Sewer System), the proposed grading of this site has been designed to be consistent with the existing drainage patterns (MS4 Permit, Section XII.A.1). The topography of the site divides the project into seven distinct drainage management areas (DMA), 'A', 'B', 'C', 'D', 'E', 'F' and 'G' (see DMA map included in 'Section 5'). DMA 'A' consists of the eastern quarter of the site and generally drains northeasterly into a proposed water quality and detention basin. DMA 'B' consists of the western half of the eastern half of the site and generally drains northerly into a proposed water quality and detention basin. DMA 'C' consists of the western half of the site and generally drains northerly into a proposed water quality and detention basin. DMA 'D' consists of the southern center portion of the site that will remain open space and generally drains northerly towards and into an existing water feature that will remain and directly connect to a realigned storm drain system. DMA 'E' consists of La Habra Hills Drive, and generally drains northerly towards and into existing catch basins which will remain. DMA 'F' consists of the existing clubhouse along La Habra Hills Drive, which drains towards the existing water feature within DMA 'D'. DMA 'G' consists of the slopes along the north easterly boundary of the site and drain off-site in the existing and proposed conditions. There are no improvements proposed in association with DMA 'G' and was therefore not analyzed. The development of this project will decrease the perviousness of the site through the addition of pavement, sidewalks, houses and other impervious structures. Reduction in pervious area reduces the ability for rain water to be captured and infiltrated. Accordingly, increased imperviousness will increase the total storm water run-off volumes and increase the peak flow rates. The proposed on-site water quality and detention basins are being designed to meet water quality requirements and mitigate for any increase in run-off volume and flow rates associated with the development, flow rates will be reduced to be equal to or less than the existing flow rates.

Redevelopment poses a series of unique hydrologic challenges, the foremost being how to accommodate additional run-off without increasing the 'Q' or over loading the downstream storm drain system. These concerns will be addressed by designing the proposed water quality basins to mitigate any increase in run-off volume as well as restricting the effluent 'Q' to be equal to or less than the existing 'Q'. Existing peak 'Q's' were determined from the as-built storm drain improvement plans for tracts 15030, 15031, 8339, 9590, 9591 and La Habra Hills Drive Improvement Plans, provided by the City of La Habra, and are as follows:

Area A – Tract 9590 maximum pipe capacity equals 47.12 cfs

Area C, Line 'M' – Tract 15030 Peak effluent 25 year Q equals 48.6 cfs

Additionally, the existing storm drain system that conveys storm run-off from tracts 15030 and 15031 will have to be realigned and incorporated into the proposed project design. The realignment will provide dedicated storm drain facilities to allow the off-site run-on to flow through the proposed development without co-mingling with the on-site run-off. The realignment of Line 'A' will maintain a 16.82% slope east of Beach Blvd. to maintain the existing velocity head and capacity of Line 'A'.

Analysis

We have analyzed the proposed project site based on the pre and post development conditions for the 2-year, 5-year, 25-year and 100-year storm events. Orange County Flood Division rational methods and unit hydrograph methodologies were utilized to determine existing and proposed development storm volumes. Any anticipated increase in storm volume or peak Q's associated with the proposed development will have to be retained on site and routed to reduce the peak flow rates to be equal to or less than the existing conditions. The results of this analysis are summarized in the following tables. (There are no improvements proposed in association with DMA 'G' and was therefore not analyzed.)

UNIT HYDROGRAPH – STORM VOLUME (ac.ft.)				
	2 YEAR 24 HOUR	5 YEAR 24 HOUR	25 YEAR 24 HOUR	100 YEAR 24 HOUR
EXISTING CONDITION – AREA 'A'	0.8	1.8	5.8	11.0
PROPOSED CONDITION – AREA 'A'	2.2	3.6	7.1	11.0
INCREASE IN RUNOFF – AREA 'A'	**1.4**	**1.8**	**1.3**	**0.0**
EXISTING CONDITION – AREA 'B'	0.6	1.5	4.5	8.1
PROPOSED CONDITION – AREA 'B'	1.8	2.9	5.4	8.0
INCREASE IN RUNOFF – AREA 'B'	**1.2**	**1.4**	**0.9**	**-0.1**
EXISTING CONDITION – AREA 'C'	3.5	8.3	26.4	49.1
PROPOSED CONDITION – AREA 'C'	7.1	12.9	29.1	48.9
INCREASE IN RUNOFF – AREA 'C'	**3.6**	**4.6**	**2.7**	**-0.2**
EXISTING CONDITION – AREA 'D'	0.7	1.7	4.9	8.7
PROPOSED CONDITION – AREA 'D'	0.8	1.7	5.0	8.7
INCREASE IN RUNOFF – AREA 'D'	**0.1**	**0.0**	**0.1**	**0.0**
EXISTING CONDITION – AREA 'E'	0.8	1.3	2.0	2.6
PROPOSED CONDITION – AREA 'E'	0.8	1.2	2.0	2.6
INCREASE IN RUNOFF – AREA 'E'	**0.0**	**-0.1**	**0.0**	**0.0**
EXISTING CONDITION – AREA 'F'	0.2	0.4	0.6	0.8
PROPOSED CONDITION – AREA 'F'	0.2	0.4	0.6	0.8
INCREASE IN RUNOFF – AREA 'F'	**0.0**	**0.0**	**0.0**	**0.0**

DMA 'A' - Basin 'A'

Drainage Management Area 'A' consists of 27.4 acres which are tributary to Basin 'A' and produce a peak flow of 69.8 cfs during the 100-year storm and a peak flow of 54.3 cfs during the 25-year storm. The existing 30-inch diameter RCP storm drain pipe (constructed per City of La Habra, Tract 9590 off-site storm drain plans) has a maximum capacity of 47.12 cfs. The outlet structure for Basin 'A' will be designed to reduce the peak flows to a maximum of 47.12 cfs, thus mitigating for any increase. Additionally, water quality will be addressed by installing a 'modular wetlands' system (or approved equivalent) on the outlet pipe, that will be sized to treat the entire BMP volume. Installation of the BMP device will be in such a way as to not restrict or prevent larger storm volumes from safely passing through the basin while still addressing water quality requirements. BMP sizing calculations are provided in the project specific WQMP.

BASIN 'A' - UNIT HYDROGRAPH - PEAK FLOW RATE (cfs)								
	2 YEAR		5 YEAR		25 YEAR		100 YEAR	
	EX.	PR.	EX.	PR.	EX.	PR.	EX.	PR.
3 HOUR	13.3	27.0	32.1	35.0	52.5	54.3	69.8	69.8
6 HOUR								
12 HOUR								
24 HOUR								

The proposed development will increase the volume of storm water run-off, the largest increase is during the 5 year 24 hour storm event, where the anticipated run-off is increased by 1.8 acre feet from the existing condition. This increase is being mitigated by the proposed water quality / detention basin located on the north easterly most portion of the site. The preliminary basin sizing, which is shown on the Vesting Tentative Tract Map, will accommodate the combined water quality volume and mitigated volume requirements. Retention of the mitigated volume will also allow time to reduce the developed peak Q down to be equal to or less than the pipe capacity design Q of 47.12 cfs.

BASIN 'A' - UNIT HYDROGRAPH - STORM VOLUME (Ac. Ft.)								
	2 YEAR		5 YEAR		25 YEAR		100 YEAR	
	EX.	PR.	EX.	PR.	EX.	PR.	EX.	PR.
3 HOUR	0.7	1.2	1.4	2.0	2.9	3.5	4.8	4.9
6 HOUR	0.7	1.5	1.5	2.5	3.8	4.6	6.6	6.7
12 HOUR	0.7	1.8	1.6	3.0	4.7	5.6	8.5	8.5
24 HOUR	0.8	2.2	1.8	3.6	5.8	7.1	11.0	11.0

DMA 'B' - Basin 'B'

Drainage Management Area 'B' consists of 19.7 acres which are tributary to underground storage basin 'B' and produce a peak flow of 58.2 cfs during the 100-year storm and a peak flow of 45.2 cfs during the 25-year storm. Every storm that was modeled, resulted in negligible or no increase in the peak storm flow rate. Any increase will be mitigated by the proposed underground storage vault. The vault will be sized to store anticipated storm volume increase and release it at a rater equal to or less than the existing peak flow rates.

BASIN 'B' - UNIT HYDROGRAPH - PEAK FLOW RATE (cfs)								
	2 YEAR		5 YEAR		25 YEAR		100 YEAR	
	EX.	PR.	EX.	PR.	EX.	PR.	EX.	PR.
3 HOUR	18.5	19.3	28.6	29.3	45.6	45.2	60.1	58.2
6 HOUR								
12 HOUR								
24 HOUR								

The proposed development will increase the volume of storm water run-off, the largest increase is during the 5 year 24 hour storm event, where the anticipated run-off is increased by 1.4 acre feet from the existing condition. This increase is being mitigated by the proposed 1.4 ac-ft underground storage vault located on the northerly most portion of the site, adjacent to La Habra Hills Drive. The preliminary vault sizing, which is shown on the Vesting Tentative Tract Map, will accommodate the combined water quality volume and mitigated volume requirements.

BASIN 'B' - UNIT HYDROGRAPH - STORM VOLUME (Ac. Ft.)								
	2 YEAR		5 YEAR		25 YEAR		100 YEAR	
	EX.	PR.	EX.	PR.	EX.	PR.	EX.	PR.
3 HOUR	0.5	0.9	1.1	1.6	2.2	2.6	3.6	3.6
6 HOUR	0.6	1.2	1.2	2.0	2.9	3.4	4.9	4.9
12 HOUR	0.6	1.4	1.3	2.4	3.6	4.3	6.3	6.2
24 HOUR	0.6	1.8	1.5	2.9	4.5	5.4	8.1	8.0

DMA 'C' - Basin 'C'

Drainage Management Area 'C' consists of 121.0 acres that are tributary to Basin 'C', including 47.0 tributary off-site acres. The entire drainage management area produces a peak flow of 360.1 cfs during the 100-year storm and a peak flow of 271.0 cfs during the 25-year storm. Every storm that was modeled experienced an increased peak flow rate in the developed condition as compared to the existing condition. The largest increase was experienced during the 100 year storm, which saw an increased peak storm run-off of 32.6 cfs. This increase is being mitigated by the proposed water quality / detention basin located on the westerly most portion of the site, adjacent to Beach Boulevard. (See Basin C routing analysis on the following page)

BASIN 'C' - UNIT HYDROGRAPH - PEAK FLOW RATE (cfs)								
	2 YEAR		5 YEAR		25 YEAR		100 YEAR	
	EX.	PR.	EX.	PR.	EX.	PR.	EX.	PR.
3 HOUR	86.5	104.1	140.4	165.9	239.6	271.0	327.5	360.1
6 HOUR								
12 HOUR								
24 HOUR								

The proposed development will increase the volume of storm water run-off, the largest increase is during the 5 year 24 hour storm event, where the anticipated run-off is increased by 4.6 acre feet from the existing condition. This increase is being mitigated by the proposed water quality / detention basin located on the westerly most portion of the site. The preliminary basin sizing, which is shown on the Vesting Tentative Tract Map, will accommodate the combined water quality volume and mitigated volume requirements.

BASIN 'C' - UNIT HYDROGRAPH - STORM VOLUME (Ac. Ft.)								
	2 YEAR		5 YEAR		25 YEAR		100 YEAR	
	EX.	PR.	EX.	PR.	EX.	PR.	EX.	PR.
3 HOUR	3.0	4.3	6.2	7.8	13.2	14.4	21.5	21.5
6 HOUR	3.1	5.1	6.8	9.3	17.2	18.8	29.5	29.5
12 HOUR	3.3	6.0	7.5	10.8	21.2	23.3	38.1	37.9
24 HOUR	3.5	7.1	8.3	12.9	26.4	29.1	49.1	48.9

Basin 'C' has a storage capacity of 18.94 acre feet with a depth of 8.9 feet plus 1.1 feet of freeboard. The storage capacity includes the use of an underground 1.84 ac-ft concrete vault. The largest volume being mitigated is 5.7 acre feet which is approximately one-third of the basin's capacity. The balance of the basins storage capacity will be utilized to mitigate the increased peak run-off velocities.

Basin 'C' Routing

BASIN 'C' - UNIT HYDROGRAPH – ROUTED – PEAK (cfs)								
	2 YEAR		5 YEAR		25 YEAR		100 YEAR	
	ROUTED FLOW	EX. PEAK DECREASE	ROUTED FLOW	EX. PEAK DECREASE	ROUTED FLOW	EX. PEAK DECREASE	ROUTED FLOW	EX. PEAK DECREASE
3 HOUR	5.3	**-81.2**	15.3	**-125.1**	40.7	**-198.9**	56.2	**-271.3**
6 HOUR	5.1	**-81.4**	18.8	**-121.6**	46.5	**-193.1**	69.2	**-258.3**
12 HOUR	6.5	**-80.0**	21.8	**-118.6**	49.5	**-190.1**	77.4	**-250.1**
24 HOUR	6.9	**-79.6**	24.1	**-116.3**	50.8	**-188.8**	79.7	**-247.8**

In all of the modeled storm events the peak flow rate was drastically reduced to below the pre-developed condition. The 100 year 3-hour storm experienced the largest decreased peak flow rate, a reduction of 271.3 cfs from 360.1 cfs to 56.2 cfs.

Run-off during the existing condition was directed towards a manmade lake, within the golf course fairway, which acted as a detention basin, reducing the peak 25 year 24 hour storm flow rate within the effluent pipe (Line 'M' – Tract 15030 Storm Drain Improvements) to 48.6 cfs. Line 'M' – Tract 15030, is a dedicated storm drain pipe serving as the outlet for the afore mentioned lake within the golf course. The proposed development will mimic the existing condition by restricting the outlet flowrates to a maximum of 49 cfs for all storms except the 100 year storms where the maximum flow rate will be 79.7 cfs. The proposed detention basin has 18.94 ac-ft of storage capacity and can route all of the storm events that we analyzed through the basin without utilizing the emergency spillway.

The existing 48-inch storm drain pipe crossing Beach Boulevard (Tract 15030 Line 'A') is undersized and cannot accommodate the existing design Q as shown on the improvement plans for Tract 15030. The proposed development will remove the connection of Line 'M' and Line 'N' from Line 'A', reducing the volume of water flowing through Line 'A' to 254 cfs which the existing system can accommodate. Lines 'M' and 'N' will be rerouted through the proposed basin where it will comingle with the onsite flows and subsequently routed. The peak effluent flow routed through Basin 'C' will be 79.7 cfs, and will be directed through a new parallel pipe crossing Beach Boulevard and reconnect Line 'A' west of Beach Boulevard. The proposed new point of connection to Line 'A' will be at the junction structure where Line 'A' transitions from a 48-inch pipe to a 60-inch pipe. All downstream facilities from the new point of connection have adequate capacity and can accommodate the addition of 79.7 cfs. Furthermore, all downstream facilities are engineered, hardened and or stabilized and not subject to hydraulic conditions of concern.

Area 'D'

Drainage Management Area 'D' consists of 20.5 acres and is generally being left un-developed, with the exception of some minor remedial grading. The existing water feature along the northerly boundary of area 'D' will act as a detention facility and mitigate the anticipated run-off from this area. Area 'D' is slightly shrinking in size as a portion of the area is being added to areas 'A' and 'E'. Due to this realignment of a minor portion of this drainage area, a negligible increase in volume (less than 0.1 ac-ft) and velocity (0.9 cfs) was experienced. Area 'D' produced a peak flow of 59.4 cfs during the 100-year storm and a peak flow of 44.2 cfs during the 25-year storm. The existing lakes outlet structure reduces the peak flow rate down to 19.3 cfs. The proposed realignment of the lake and storm drain system will mimic the existing conditions and reduce the proposed flow rate down to 19.3 cfs, thus mitigating any increased flow rate.

AREA 'D' - UNIT HYDROGRAPH - PEAK FLOW RATE (cfs)								
	2 YEAR		5 YEAR		25 YEAR		100 YEAR	
	EX.	PR.	EX.	PR.	EX.	PR.	EX.	PR.
3 HOUR	16.0	16.3	26.1	26.5	43.3	44.2	58.7	59.4
6 HOUR								
12 HOUR								
24 HOUR								

The proposed development will have a minimal effect on the volume of storm water run-off from this area. The largest increase experienced across all storms was less than 0.1 ac-ft, and will be mitigated for within the existing pond. The preliminary basin sizing, which is shown on the Vesting Tentative Tract Map, will accommodate the mitigated volume requirements.

AREA 'D' - UNIT HYDROGRAPH - STORM VOLUME (Ac. Ft.)								
	2 YEAR		5 YEAR		25 YEAR		100 YEAR	
	EX.	PR.	EX.	PR.	EX.	PR.	EX.	PR.
3 HOUR	0.6	0.6	1.2	1.2	2.4	2.4	3.8	3.8
6 HOUR	0.6	0.6	1.3	1.3	3.1	3.2	5.2	5.2
12 HOUR	0.7	0.7	1.5	1.5	3.9	4.0	6.7	6.8
24 HOUR	0.7	0.8	1.7	1.7	4.9	5.0	8.7	8.7

Area 'E'

Drainage Management Area 'E' comprises of realigning La Habra Hills Drive and the club house parking lot. The proposed condition is substantially similar to the existing condition, with negligible differences in imperviousness. Area E comprises of 5.8 acres, tributary to two existing catch basins along La Habra Hills Drive. These 5.8 acres produce a peak flow of 24.0 cfs during the 100-year storm and a peak flow of 18.5 cfs during the 25-year storm. Every storm that was modeled experienced an increased peak flow rate in the developed condition as compared to the existing condition. The largest increase was experienced during the 100 year storm, which saw an increased peak storm run-off of 3.7 cfs. The existing 42-inch storm drain has a capacity of 171 cfs with a 25-year design flow rate of 147 cfs. The addition on 3.7 cfs is a minor increase is considered negligible, therefore no mitigation measures are required.

AREA 'E' - UNIT HYDROGRAPH - PEAK FLOW RATE (cfs)								
	2 YEAR		5 YEAR		25 YEAR		100 YEAR	
	EX.	PR.	EX.	PR.	EX.	PR.	EX.	PR.
3 HOUR	6.8	8.4	10.0	12.0	15.6	18.5	20.3	24.0
6 HOUR								
12 HOUR								
24 HOUR								

The proposed development did not experience a measurable increase in storm water run-off volume, and is therefore considered negligible and no mitigation is proposed.

AREA 'E' - UNIT HYDROGRAPH - STORM VOLUME (Ac. Ft.)								
	2 YEAR		5 YEAR		25 YEAR		100 YEAR	
	EX.	PR.	EX.	PR.	EX.	PR.	EX.	PR.
3 HOUR	0.4	0.4	0.6	0.6	0.9	0.9	1.1	1.1
6 HOUR	0.5	0.5	0.8	0.8	1.2	1.2	1.5	1.5
12 HOUR	0.6	0.6	1.0	1.0	1.5	1.5	2.0	2.0
24 HOUR	0.8	0.8	1.3	1.2	2.0	2.0	2.6	2.6

Area 'F'

Drainage Management Area 'F' consists of 1.7 acres and produce a peak flow of 7.1 cfs during the 100-year storm and a peak flow of 5.5 cfs during the 25-year storm. Every storm modeled showed no increase in peak storm flow rates.

AREA 'F' - UNIT HYDROGRAPH - PEAK FLOW RATE (cfs)								
	2 YEAR		5 YEAR		25 YEAR		100 YEAR	
	EX.	PR.	EX.	PR.	EX.	PR.	EX.	PR.
3 HOUR	2.6	2.6	3.6	3.6	5.5	5.5	7.1	7.1
6 HOUR								
12 HOUR								
24 HOUR								

The proposed development produces a maximum storm volume of 0.8 ac-ft on the 100 year 24 hour storm, and 0.6 ac-ft in the 25 year 24 hour storm. Every storm that was modeled, resulted in negligible or no increase in the anticipated storm volume generation.

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AREA 'F' - UNIT HYDROGRAPH - STORM VOLUME (Ac. Ft.)								
	2 YEAR		5 YEAR		25 YEAR		100 YEAR	
	EX.	PR.	EX.	PR.	EX.	PR.	EX.	PR.
3 HOUR	0.1	0.1	0.2	0.2	0.3	0.3	0.3	0.3
6 HOUR	0.2	0.2	0.2	0.2	0.4	0.4	0.5	0.5
12 HOUR	0.2	0.2	0.3	0.3	0.5	0.5	0.6	0.6
24 HOUR	0.2	0.2	0.4	0.4	0.6	0.6	0.8	0.8

Conclusion

The development of this project does not propose a significant change over the existing conditions as illustrated in the previous tables. Peak flow rates however, did increase as would be expected with the addition of impervious area. This increase in flow rate and any increase in run-off volume will be mitigated by proposed water quality basins 'A', 'B' and 'C'. Areas 'D' and 'E' propose a negligible increase in run-off and peak Q. The existing 42-inch storm drain line that services areas D and E has additional capacity available, and can accommodate the addition of 3.7 cfs. The downstream receiving waters is an engineered and maintained channel that is not susceptible to hydraulic conditions of concern (HCOC). The minimal anticipated increase in peak Q and storm volume is considered negligible, and therefore, no mitigation measures are required. The proposed increase in run-off for Area 'F' will be mitigated on site through the implementation of LID and BMPs as proposed in the WQMP. Area 'G' drains off-site during the existing and proposed conditions, no improvements are proposed and no mitigation is required.

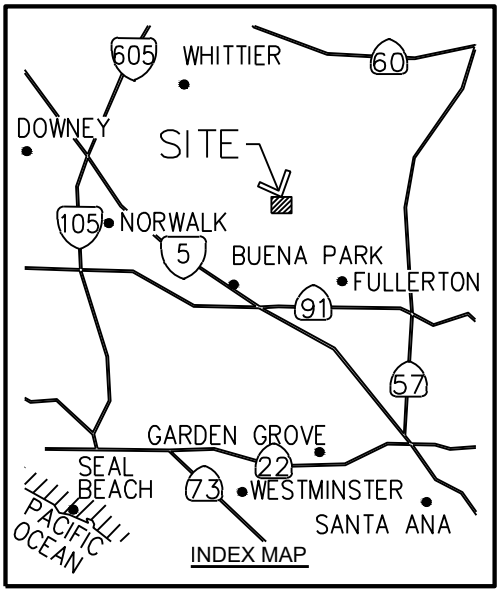
Based upon the results of this report, it is concluded that drainage facilities discussed above will adequately protect the site area from flood damage associated with the 100-year storm event. The proposed facilities, with ultimate development and adequate maintenance, will convey flows safely through the site area in accordance with Orange County requirements.

A Storm Drain Hydraulic Analysis will be prepared in a separate report during the final design. At that time all flows will be routed through the basins and the outlet structures will be sized. Additionally, the preliminary sizing of the outlet structures and basins as shown on the Vesting Tentative Tract Map will be updated based on the final design calculations.

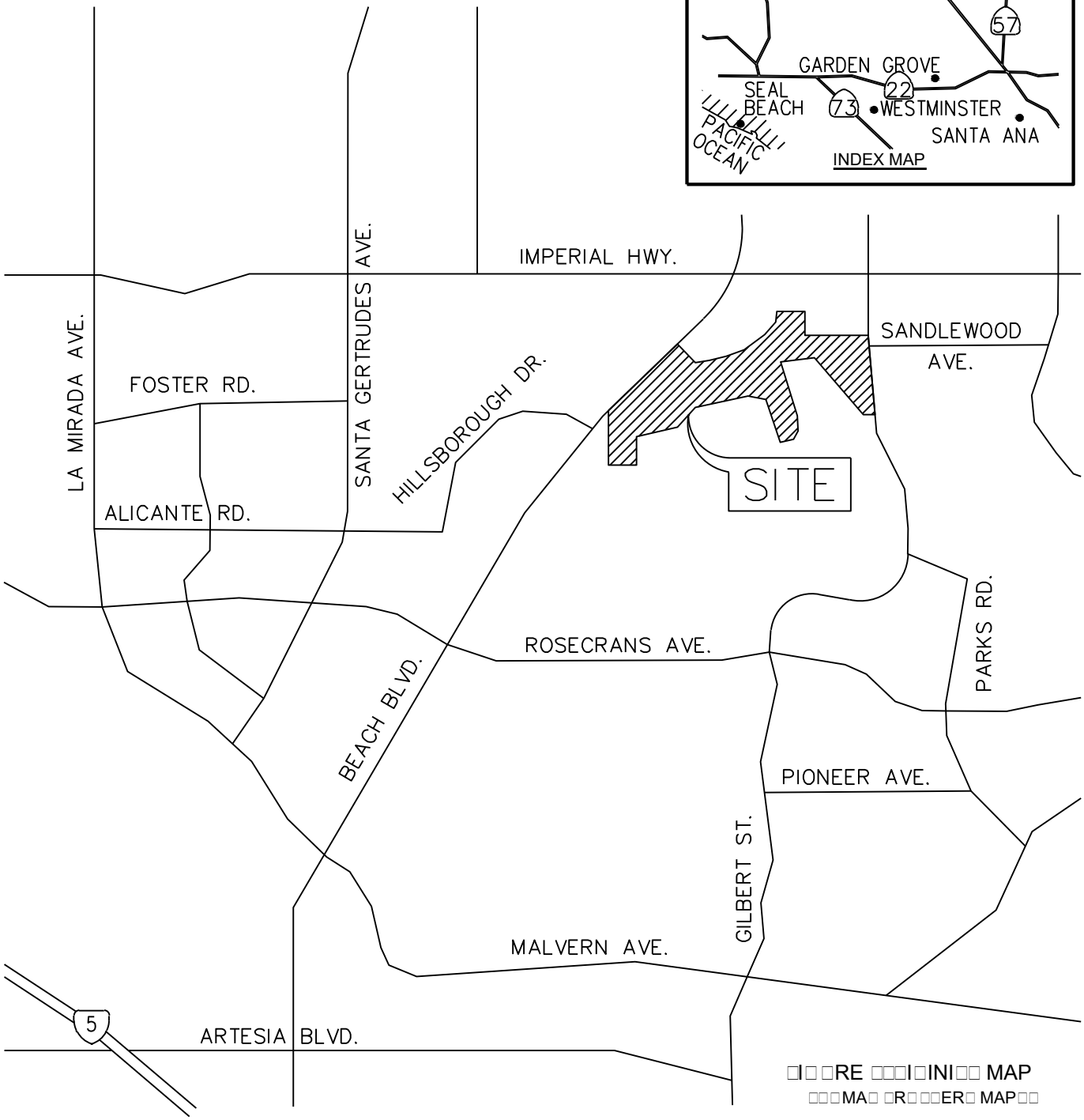
□□N□A□ER □ A□□□□IA□E□
IR□INE□IN□
IN□AND EMPIRE RE□I□N
2900 ADAMS STREET, SUITE A-15
RIVERSIDE CA 92504 (951)352-7200
PLANNING/ENGINEERING/SURVEYING/GOVERNMENT RELATIONS

N
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S

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INDEX MAP



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HUNSAKER & ASSOCIATES
IRVINE, INC
INLAND EMPIRE REGION
2900 ADAMS STREET, SUITE A-15
RIVERSIDE CA 92504 (951)352-7200
PLANNING/ENGINEERING/SURVEYING/GOVERNMENT RELATIONS

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FIGURE 2: AERIAL PHOTOGRAPH

SECTION 2 - Orange County Flood Control Data

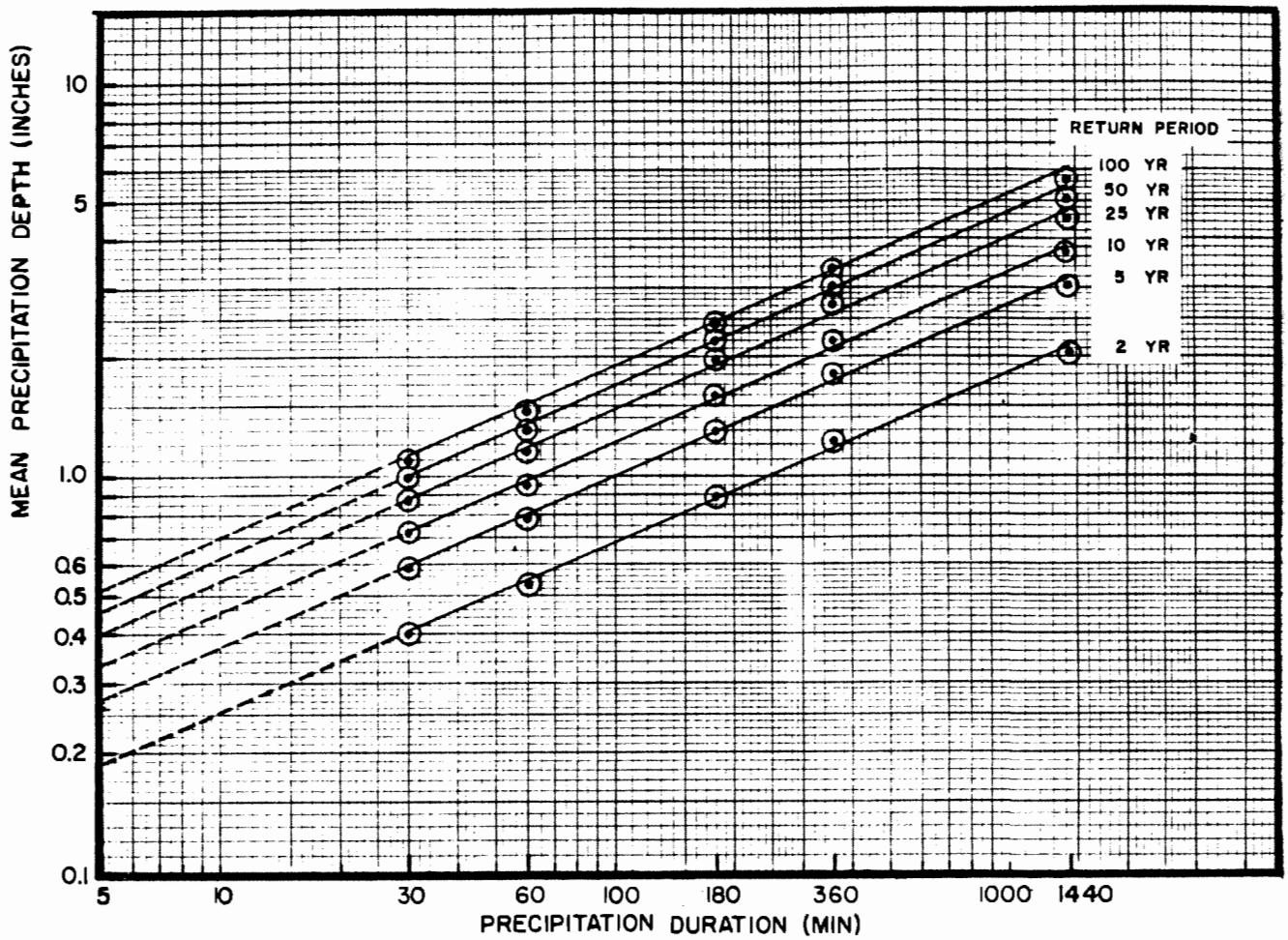
Hydrologic Soils Group Map

Precipitation Intensity Data

Regression Equations: $D(t) = at^b$

(D= Depth in inches, t= duration in minutes)

Return Frequency (years)	a	b
2	0.095	0.426
5	0.131	0.438
10	0.170	0.427
25	0.200	0.434
50	0.225	0.434
100	0.259	0.427



ORANGE COUNTY

HYDROLOGY MANUAL

MEAN PRECIPITATION DEPTHS FOR NONMOUNTAINOUS AREAS

Figure B-1

TABLE B.1.

MAXIMUM PRECIPITATION FOR INDICATED DURATION D-DAYS (INCHES)

BELOW 2000' ELEVATION

Return Period In Yrs.	1D	2D	3D	4D	5D	6D	8D	10D	15D	20D	30D	60D	365D
2	2.05	2.76	3.08	3.21	3.36	3.61	3.94	4.24	4.73	5.21	6.20	8.44	13.60
5	3.03	4.24	4.79	5.01	5.23	5.59	6.05	6.47	7.20	7.83	9.18	12.69	19.13
10	3.68	5.23	5.92	6.22	6.50	6.94	7.44	7.94	8.79	9.49	11.07	15.48	22.56
20	4.31	6.17	6.99	7.38	7.71	8.22	8.74	9.31	10.26	11.02	12.80	18.08	25.69
25	4.49	6.46	7.33	7.75	8.09	8.63	9.15	9.74	10.72	11.49	13.34	18.90	26.66
40	4.89	7.06	8.03	8.50	8.88	9.47	9.98	10.62	10.95	12.46	14.44	20.58	28.63
50	5.07	7.35	8.35	8.86	9.25	9.86	10.38	11.03	12.11	12.91	14.95	21.37	29.55
100	5.63	8.22	9.35	9.95	10.38	11.07	11.57	12.29	13.45	14.28	16.51	23.77	32.32

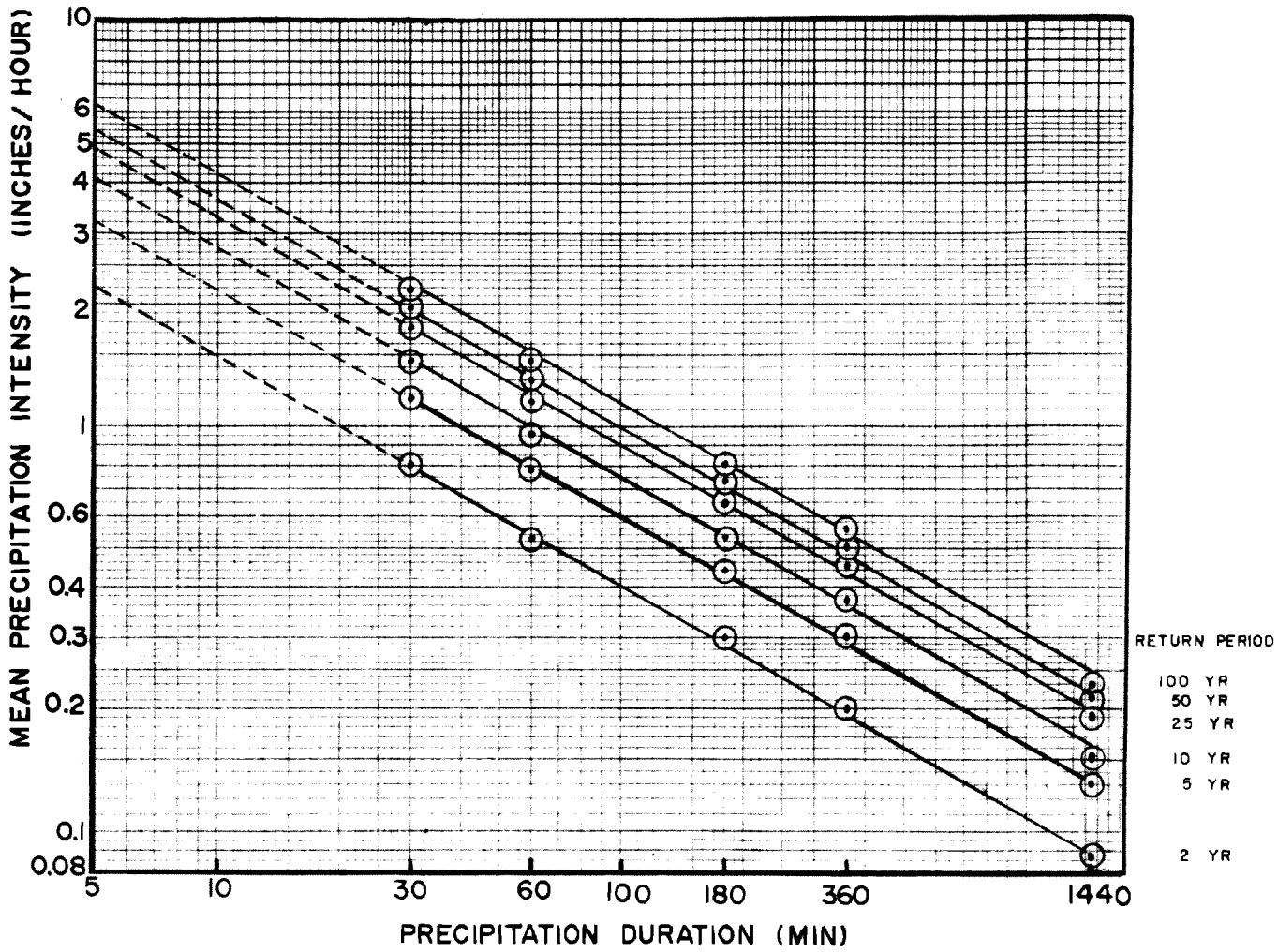
ABOVE 2000' ELEVATION

Return Period In Yrs.	1D	2D	3D	4D	5D	6D	8D	10D	15D	20D	30D	60D	365D
2	3.81	5.33	5.89	6.22	6.66	7.17	7.88	8.38	8.97	9.62	11.29	15.91	26.05
5	5.71	8.25	9.23	9.75	10.40	11.12	12.17	12.81	13.72	14.51	16.73	23.74	36.88
10	7.05	10.26	11.58	12.23	12.98	13.80	15.02	15.71	16.83	17.66	20.17	28.69	43.86
20	8.36	12.20	13.85	14.63	15.45	16.35	17.72	18.42	19.74	20.59	23.33	33.25	50.33
25	8.76	12.81	14.58	15.40	16.24	17.16	18.57	19.27	20.65	21.50	24.31	34.66	52.35
40	9.62	14.08	16.08	16.99	17.87	18.82	20.32	21.02	22.53	21.95	26.32	37.56	53.33
50	10.02	14.68	16.79	17.74	18.63	19.61	21.14	21.84	23.41	24.25	27.25	38.91	58.43
100	11.27	16.52	18.98	20.05	20.99	22.01	23.65	24.33	26.09	26.91	30.09	42.99	64.30

Regression Equations: $I(t) = at^b$

(I= Intensity in inches/hour, t= duration in minutes)

Return Frequency (years)	a	b
2	5.702	-0.574
5	7.870	-0.562
10	10.209	-0.573
25	11.995	-0.566
50	13.521	-0.566
100	15.560	-0.573



ORANGE COUNTY
HYDROLOGY MANUAL

MEAN PRECIPITATION INTENSITIES FOR NONMOUNTAINOUS AREAS

Figure B-3

B.4. UNIT HYDROGRAPH METHOD DESIGN STORM

The Orange County desgin storm shall be used for all unit hydrograph method calculations (Figures B-5a, b, c).

The point precipitation depths in Table B.2 shall be used for the single-day design storm.

For watersheds with detention basins, a multi-day storm shall be used as shown in Sections B.5 and B.6.

Due to the variations in point precipitation values between mountainous and nonmountainous areas, area averaging of rainfall is required when catchments include areas both above and below the 2,000-foot elevation.

TABLE B.2.

ORANGE COUNTY POINT PRECIPITATION DATA (inches)

	DURATION					
T-YR.	5M	30M	1H	3H	6H	24H
100	0.52(.78)	1.09(1.34)	1.45(1.94)	2.43(3.96)	3.36(6.19)	5.63(11.27)
50	0.45(.71)	0.98(1.19)	1.30(1.73)	2.19(3.52)	3.02(5.51)	5.07(10.02)
25	0.40(.63)	0.87(1.04)	1.15(1.51)	1.94(3.08)	2.71(4.81)	4.49(8.76)
10	0.34(.50)	0.72(.84)	0.95(1.22)	1.59(2.48)	2.20(3.87)	3.68(7.05)
5	0.26(.40)	0.59(.68)	0.78(.99)	1.31(2.01)	1.81(3.14)	3.03(5.71)
2	0.19(.26)	0.40(.45)	0.53(.66)	0.89(1.34)	1.22(2.09)	2.05(3.81)

NOTES:

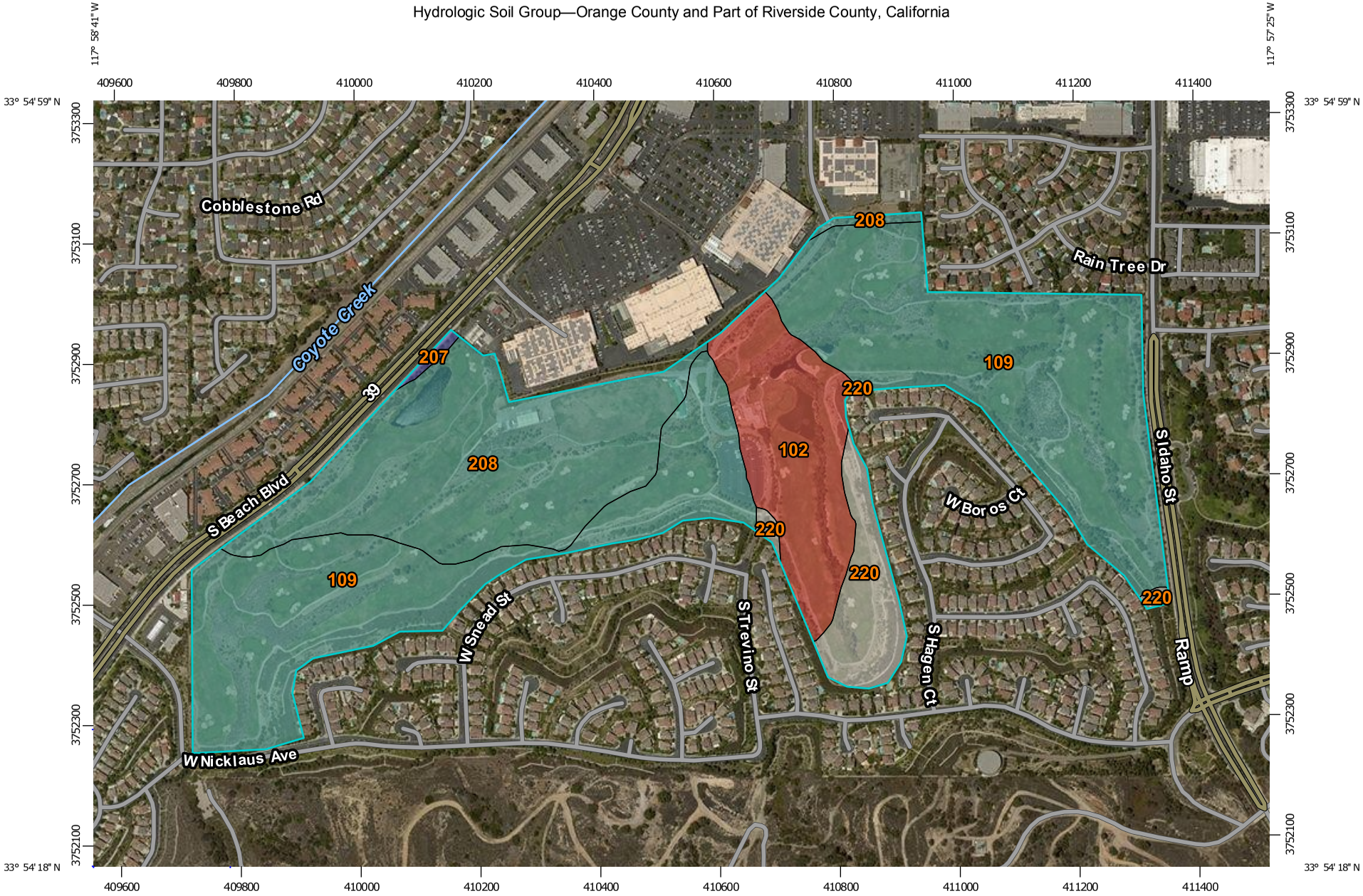
(1.) Numbers in ( ) are from the Santiago Peak gage station #156, DWR depth-duration-frequency table (1983). Use in areas above 2,000 feet in elevation.

(2.) Precipitation data for nonmountainous areas taken from an average of 25 rain gages (see ref. 7). Use in areas below 2,000 feet in elevation.

(3.) All 5M values are extrapolations (see ref. 7).

(4.) M = minutes; H = hours.

Hydrologic Soil Group—Orange County and Part of Riverside County, California



Map Scale: 1:8,980 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 100 200 400 600

Feet: 0 400 800 1600 2400

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Lines

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Points

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Orange County and Part of Riverside County, California
Survey Area Data: Version 8, Sep 19, 2014

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 1, 2014—Jul 9, 2014

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Hydrologic Soil Group— Summary by Map Unit — Orange County and Part of Riverside County, California (CA678)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
102	Alo clay, 30 to 50 percent slopes	D	18.8	12.8%
109	Anaheim clay loam, 30 to 50 percent slopes	C	80.3	54.8%
207	Sorrento loam, 2 to 9 percent slopes	B	0.5	0.3%
208	Sorrento clay loam, 0 to 2 percent slopes	C	38.4	26.2%
220	Xerorthents loamy, cut and fill areas, 15 to 30 percent slopes		8.6	5.8%
Totals for Area of Interest			**146.6**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

SECTION 3 - Hydrology Calculations

Area 'A' Calculations
- 2, 5 & 100 Year Pre-Development Rational Method
- 2, 5 & 100 Year Post-Development Rational Method
- 2, 5, 25 & 100 Year Pre-Development Unit Hydrographs
- 2, 5, 25 & 100 Year Post-Development Unit Hydrographs

Area 'B' Calculations
- 2, 5 & 100 Year Pre-Development Rational Method
- 2, 5 & 100 Year Post-Development Rational Method
- 2, 5, 25 & 100 Year Pre-Development Unit Hydrographs
- 2, 5, 25 & 100 Year Post-Development Unit Hydrographs

Area 'C' Calculations
- 2, 5 & 100 Year Pre-Development Rational Method
- 2, 5 & 100 Year Post-Development Rational Method
- 2, 5, 25 & 100 Year Pre-Development Unit Hydrographs
- 2, 5, 25 & 100 Year Post-Development Unit Hydrographs

Area 'D' Calculations
- 2, 5 & 100 Year Pre-Development Rational Method
- 2, 5 & 100 Year Post-Development Rational Method
- 2, 5, 25 & 100 Year Pre-Development Unit Hydrographs
- 2, 5, 25 & 100 Year Post-Development Unit Hydrographs

Area 'E' Calculations
- 2, 5 & 100 Year Pre-Development Rational Method
- 2, 5 & 100 Year Post-Development Rational Method
- 2, 5, 25 & 100 Year Pre-Development Unit Hydrographs
- 2, 5, 25 & 100 Year Post-Development Unit Hydrographs

Area 'F' Calculations
- 2, 5 & 100 Year Pre-Development Rational Method
- 2, 5 & 100 Year Post-Development Rational Method
- 2, 5, 25 & 100 Year Pre-Development Unit Hydrographs
- 2, 5, 25 & 100 Year Post-Development Unit Hydrographs

Area 'A' Calculations

- 2 Year Pre-Development Rational Method – Area 'A'

```
                  Orange County Rational Hydrology Program

               (Hydrology Manual Date(s) October 1986 & November 1996)

 CIVILCADD/CIVILDESIGN  Engineering Software, (c) 1989-2012 Version 8.2
       Rational Hydrology Study, Date: 09/29/16  File Name: EXA002.roc
--------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION RATIONAL METHOD - AREA 'A' - 2 YEAR STORM
HUNSAKER & ASSOCIATES, OCTOBER 1, 2016
BY: BRIAN LOWELL, PE
--------------------------------------------------------------------------


Program License Serial Number 4094

--------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

--------------------------------------------------------------------------

Rational hydrology study storm event year is     2.0

Decimal fraction of study above 2000 ft., 600M  =     0.0000
English Units Used for input data


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      100.000 to Point/Station      101.000
**** INITIAL AREA EVALUATION ****
__________________________________________________________________________
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   462.000(Ft.)
Bottom (of initial area) elevation =   443.000(Ft.)
Difference in elevation =    19.000(Ft.)
Slope =    0.06333  s(%)=       6.33
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   12.004 min.
Rainfall intensity =      1.369(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.736
Subarea runoff =      0.262(CFS)
Total initial stream area =        0.260(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      101.000 to Point/Station      102.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
__________________________________________________________________________
Estimated mean flow rate at midpoint of channel =      3.309(CFS)
Depth of flow =   0.143(Ft.), Average velocity =   3.252(Ft/s)
       ******* Irregular Channel Data ***********
--------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2             50.00              0.00
       3            100.00              1.00
Manning's 'N' friction factor =   0.030
--------------------------------------------------------------------
Sub-Channel flow  =      3.309(CFS)
```

```
  '     '       flow top width =     14.267(Ft.)
  '     '    velocity=    3.252(Ft/s)
  '     '       area =      1.018(Sq.Ft)
  '     '       Froude number =     2.146

Upstream point elevation =   443.000(Ft.)
Downstream point elevation =   341.000(Ft.)
Flow length =   700.000(Ft.)
Travel time  =    3.59 min.
Time of concentration =   15.59 min.
Depth of flow =   0.143(Ft.)
Average velocity =   3.252(Ft/s)
Total irregular channel flow =     3.309(CFS)
Irregular channel normal depth above invert elev. =   0.143(Ft.)
Average velocity of channel(s) =   3.252(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Rainfall intensity =      1.178(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.709
Subarea runoff =      6.005(CFS) for    7.240(Ac.)
Total runoff =      6.267(CFS)       Total area =        7.50(Ac.)
Area averaged Fm value =    0.250(In/Hr)
Depth of flow =   0.181(Ft.), Average velocity =   3.815(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      102.000 to Point/Station      103.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =     12.069(CFS)
Depth of flow =   0.277(Ft.), Average velocity =   3.140(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2             50.00              0.00
       3            100.00              1.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =     12.069(CFS)
  '     '       flow top width =     27.726(Ft.)
  '     '    velocity=    3.140(Ft/s)
  '     '       area =      3.844(Sq.Ft)
  '     '       Froude number =     1.486

Upstream point elevation =   341.000(Ft.)
Downstream point elevation =   275.000(Ft.)
Flow length =  1178.000(Ft.)
Travel time  =    6.25 min.
Time of concentration =   21.84 min.
Depth of flow =   0.277(Ft.)
Average velocity =   3.140(Ft/s)
Total irregular channel flow =    12.069(CFS)
Irregular channel normal depth above invert elev. =   0.277(Ft.)
Average velocity of channel(s) =   3.140(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
```

```
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Rainfall intensity =      0.971(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.668
Subarea runoff =     11.508(CFS) for   19.890(Ac.)
Total runoff =     17.775(CFS)       Total area =       27.39(Ac.)
Area averaged Fm value =    0.250(In/Hr)
Depth of flow =   0.321(Ft.), Average velocity =   3.459(Ft/s)
End of computations, total study area =           27.39 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged SCS curve number (AMC 2) =  79.0
```

- 5 Year Pre-Development Rational Method – Area 'A'

```
                  Orange County Rational Hydrology Program

               (Hydrology Manual Date(s) October 1986 & November 1996)

 CIVILCADD/CIVILDESIGN  Engineering Software, (c) 1989-2012 Version 8.2
       Rational Hydrology Study, Date: 09/29/16  File Name: EXA005.roc
------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION RATIONAL METHOD - AREA 'A' - 5 YEAR STORM
HUNSAKER & ASSOCIATES, OCTOBER 1, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------


Program License Serial Number 4094

------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

------------------------------------------------------------------------

Rational hydrology study storm event year is     5.0

Decimal fraction of study above 2000 ft., 600M  =     0.0000
English Units Used for input data


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      100.000 to Point/Station      101.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   462.000(Ft.)
Bottom (of initial area) elevation =   443.000(Ft.)
Difference in elevation =    19.000(Ft.)
Slope =    0.06333  s(%)=       6.33
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   12.004 min.
Rainfall intensity =      1.947(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.784
Subarea runoff =      0.397(CFS)
Total initial stream area =        0.260(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      101.000 to Point/Station      102.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =      5.135(CFS)
Depth of flow =   0.168(Ft.), Average velocity =   3.629(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1             0.00              1.00
       2            50.00              0.00
       3           100.00              1.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
```

```
Sub-Channel flow  =      5.135(CFS)
  '     '       flow top width =     16.822(Ft.)
  '     '    velocity=    3.629(Ft/s)
  '     '       area =      1.415(Sq.Ft)
  '     '       Froude number =     2.205

Upstream point elevation =   443.000(Ft.)
Downstream point elevation =   341.000(Ft.)
Flow length =   700.000(Ft.)
Travel time  =    3.21 min.
Time of concentration =   15.22 min.
Depth of flow =   0.168(Ft.)
Average velocity =   3.629(Ft/s)
Total irregular channel flow =     5.135(CFS)
Irregular channel normal depth above invert elev. =   0.168(Ft.)
Average velocity of channel(s) =   3.629(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Rainfall intensity =      1.704(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.768
Subarea runoff =      9.418(CFS) for    7.240(Ac.)
Total runoff =      9.815(CFS)       Total area =        7.50(Ac.)
Area averaged Fm value =    0.250(In/Hr)
Depth of flow =   0.214(Ft.), Average velocity =   4.267(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      102.000 to Point/Station      103.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =     19.496(CFS)
Depth of flow =   0.332(Ft.), Average velocity =   3.540(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1             0.00              1.00
       2            50.00              0.00
       3           100.00              1.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =     19.496(CFS)
  '     '       flow top width =     33.188(Ft.)
  '     '    velocity=    3.540(Ft/s)
  '     '       area =      5.507(Sq.Ft)
  '     '       Froude number =     1.531

Upstream point elevation =   341.000(Ft.)
Downstream point elevation =   275.000(Ft.)
Flow length =  1178.000(Ft.)
Travel time  =    5.55 min.
Time of concentration =   20.76 min.
Depth of flow =   0.332(Ft.)
Average velocity =   3.540(Ft/s)
Total irregular channel flow =    19.496(CFS)
Irregular channel normal depth above invert elev. =   0.332(Ft.)
Average velocity of channel(s) =   3.540(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
```

```
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Rainfall intensity =      1.431(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.743
Subarea runoff =     19.298(CFS) for   19.890(Ac.)
Total runoff =     29.113(CFS)       Total area =       27.39(Ac.)
Area averaged Fm value =    0.250(In/Hr)
Depth of flow =   0.386(Ft.), Average velocity =   3.913(Ft/s)
End of computations, total study area =           27.39 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged SCS curve number (AMC 2) =  79.0
```

- 25 Year Pre-Development Rational Method – Area 'A'

```
                  Orange County Rational Hydrology Program

               (Hydrology Manual Date(s) October 1986 & November 1996)

 CIVILCADD/CIVILDESIGN  Engineering Software, (c) 1989-2012 Version 8.2
       Rational Hydrology Study, Date: 09/29/16  File Name: EXA025.roc
------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION RATIONAL METHOD - AREA 'A' - 25 YEAR STORM
HUNSAKER & ASSOCIATES, OCTOBER 1, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------


Program License Serial Number 4094

------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

------------------------------------------------------------------------

Rational hydrology study storm event year is    25.0

Decimal fraction of study above 2000 ft., 600M  =     0.0000
English Units Used for input data


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      100.000 to Point/Station      101.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   462.000(Ft.)
Bottom (of initial area) elevation =   443.000(Ft.)
Difference in elevation =    19.000(Ft.)
Slope =    0.06333  s(%)=       6.33
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   12.004 min.
Rainfall intensity =      2.938(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.823
Subarea runoff =      0.629(CFS)
Total initial stream area =        0.260(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      101.000 to Point/Station      102.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =      8.300(CFS)
Depth of flow =   0.201(Ft.), Average velocity =   4.092(Ft/s)
       ******* Irregular Channel Data **********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2             50.00              0.00
       3            100.00              1.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =      8.300(CFS)
  '     '       flow top width =     20.141(Ft.)
```

```
  '     '    velocity=    4.092(Ft/s)
  '     '       area =      2.028(Sq.Ft)
  '     '       Froude number =     2.273

Upstream point elevation =   443.000(Ft.)
Downstream point elevation =   341.000(Ft.)
Flow length =   700.000(Ft.)
Travel time  =    2.85 min.
Time of concentration =   14.85 min.
Depth of flow =   0.201(Ft.)
Average velocity =   4.092(Ft/s)
Total irregular channel flow =     8.300(CFS)
Irregular channel normal depth above invert elev. =   0.201(Ft.)
Average velocity of channel(s) =   4.092(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Rainfall intensity =      2.604(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.814
Subarea runoff =     15.264(CFS) for    7.240(Ac.)
Total runoff =     15.893(CFS)       Total area =        7.50(Ac.)
Area averaged Fm value =    0.250(In/Hr)
Depth of flow =   0.257(Ft.), Average velocity =   4.814(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      102.000 to Point/Station      103.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =     32.235(CFS)
Depth of flow =   0.401(Ft.), Average velocity =   4.014(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2             50.00              0.00
       3            100.00              1.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =     32.235(CFS)
  '     '       flow top width =     40.075(Ft.)
  '     '    velocity=    4.014(Ft/s)
  '     '       area =      8.030(Sq.Ft)
  '     '       Froude number =     1.580

Upstream point elevation =   341.000(Ft.)
Downstream point elevation =   275.000(Ft.)
Flow length =  1178.000(Ft.)
Travel time  =    4.89 min.
Time of concentration =   19.75 min.
Depth of flow =   0.401(Ft.)
Average velocity =   4.014(Ft/s)
Total irregular channel flow =    32.235(CFS)
Irregular channel normal depth above invert elev. =   0.401(Ft.)
Average velocity of channel(s) =   4.014(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
```

```
Max Catchment Loss (Fm) =     0.250(In/Hr)
Rainfall intensity =      2.217(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.799
Subarea runoff =     32.595(CFS) for   19.890(Ac.)
Total runoff =     48.488(CFS)       Total area =       27.39(Ac.)
Area averaged Fm value =    0.250(In/Hr)
Depth of flow =   0.467(Ft.), Average velocity =   4.446(Ft/s)
End of computations, total study area =           27.39 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged SCS curve number (AMC 2) =  79.0
```

- 100 Year Pre-Development Rational Method – Area 'A'

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                  Orange County Rational Hydrology Program

               (Hydrology Manual Date(s) October 1986 & November 1996)

 CIVILCADD/CIVILDESIGN  Engineering Software, (c) 1989-2012 Version 8.2
       Rational Hydrology Study, Date: 09/29/16  File Name: EXA100.roc
--------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION RATIONAL METHOD - AREA 'A' - 100 YEAR STORM
HUNSAKER & ASSOCIATES, OCTOBER 1, 2016
BY: BRIAN LOWELL, PE
--------------------------------------------------------------------------


Program License Serial Number 4094

--------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

--------------------------------------------------------------------------

Rational hydrology study storm event year is   100.0

Decimal fraction of study above 2000 ft., 600M  =     0.0000
English Units Used for input data


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      100.000 to Point/Station      101.000
**** INITIAL AREA EVALUATION ****
__________________________________________________________________________
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   462.000(Ft.)
Bottom (of initial area) elevation =   443.000(Ft.)
Difference in elevation =    19.000(Ft.)
Slope =    0.06333  s(%)=       6.33
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   12.004 min.
Rainfall intensity =      3.746(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.840
Subarea runoff =      0.818(CFS)
Total initial stream area =        0.260(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      101.000 to Point/Station      102.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
__________________________________________________________________________
Estimated mean flow rate at midpoint of channel =     10.883(CFS)
Depth of flow =   0.223(Ft.), Average velocity =   4.379(Ft/s)
       ******* Irregular Channel Data **********
--------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2             50.00              0.00
       3            100.00              1.00
Manning's 'N' friction factor =   0.030
--------------------------------------------------------------------
Sub-Channel flow  =     10.884(CFS)
  '     '       flow top width =     22.295(Ft.)
```

```
  '     '    velocity=    4.379(Ft/s)
  '     '       area =      2.485(Sq.Ft)
  '     '       Froude number =     2.311

Upstream point elevation =   443.000(Ft.)
Downstream point elevation =   341.000(Ft.)
Flow length =   700.000(Ft.)
Travel time  =    2.66 min.
Time of concentration =   14.67 min.
Depth of flow =   0.223(Ft.)
Average velocity =   4.379(Ft/s)
Total irregular channel flow =    10.883(CFS)
Irregular channel normal depth above invert elev. =   0.223(Ft.)
Average velocity of channel(s) =   4.379(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Rainfall intensity =      3.339(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.833
Subarea runoff =     20.036(CFS) for    7.240(Ac.)
Total runoff =     20.854(CFS)       Total area =        7.50(Ac.)
Area averaged Fm value =    0.250(In/Hr)
Depth of flow =   0.285(Ft.), Average velocity =   5.152(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      102.000 to Point/Station      103.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =     42.619(CFS)
Depth of flow =   0.445(Ft.), Average velocity =   4.304(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2             50.00              0.00
       3            100.00              1.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =     42.619(CFS)
  '     '       flow top width =     44.500(Ft.)
  '     '    velocity=    4.305(Ft/s)
  '     '       area =      9.901(Sq.Ft)
  '     '       Froude number =     1.608

Upstream point elevation =   341.000(Ft.)
Downstream point elevation =   275.000(Ft.)
Flow length =  1178.000(Ft.)
Travel time  =    4.56 min.
Time of concentration =   19.23 min.
Depth of flow =   0.445(Ft.)
Average velocity =   4.304(Ft/s)
Total irregular channel flow =    42.619(CFS)
Irregular channel normal depth above invert elev. =   0.445(Ft.)
Average velocity of channel(s) =   4.304(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
```

```
Max Catchment Loss (Fm) =     0.250(In/Hr)
Rainfall intensity =      2.860(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.821
Subarea runoff =     43.474(CFS) for   19.890(Ac.)
Total runoff =     64.328(CFS)       Total area =       27.39(Ac.)
Area averaged Fm value =    0.250(In/Hr)
Depth of flow =   0.519(Ft.), Average velocity =   4.771(Ft/s)
End of computations, total study area =           27.39 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged SCS curve number (AMC 2) =  79.0
```

- 2 Year Post-Development Rational Method – Area 'A'

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                  Orange County Rational Hydrology Program

               (Hydrology Manual Date(s) October 1986 & November 1996)

 CIVILCADD/CIVILDESIGN  Engineering Software, (c) 1989-2012 Version 8.2
       Rational Hydrology Study, Date: 10/03/16  File Name: pra002.roc
--------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION RATIONAL METHOD - AREA 'A' - 2 YEAR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
--------------------------------------------------------------------------


Program License Serial Number 4094

--------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

--------------------------------------------------------------------------

Rational hydrology study storm event year is     2.0

Decimal fraction of study above 2000 ft., 600M  =     0.0000
English Units Used for input data


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      100.000 to Point/Station      101.000
**** INITIAL AREA EVALUATION ****
__________________________________________________________________________
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   470.500(Ft.)
Bottom (of initial area) elevation =   443.000(Ft.)
Difference in elevation =    27.500(Ft.)
Slope =    0.09167  s(%)=       9.17
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   11.148 min.
Rainfall intensity =      1.429(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.743
Subarea runoff =      0.276(CFS)
Total initial stream area =        0.260(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      101.000 to Point/Station      102.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
__________________________________________________________________________
Estimated mean flow rate at midpoint of channel =      1.933(CFS)
Depth of flow =   0.107(Ft.), Average velocity =   3.362(Ft/s)
       ******* Irregular Channel Data ***********
--------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2             50.00              0.00
       3            100.00              1.00
Manning's 'N' friction factor =   0.030
--------------------------------------------------------------------
Sub-Channel flow  =      1.934(CFS)
  '     '       flow top width =     10.724(Ft.)
```

```
   '     '    velocity=    3.362(Ft/s)
   '     '       area =      0.575(Sq.Ft)
   '     '       Froude number =     2.559

Upstream point elevation =   443.000(Ft.)
Downstream point elevation =   365.500(Ft.)
Flow length =   340.000(Ft.)
Travel time  =    1.69 min.
Time of concentration =   12.83 min.
Depth of flow =   0.107(Ft.)
Average velocity =   3.362(Ft/s)
Total irregular channel flow =     1.933(CFS)
Irregular channel normal depth above invert elev. =   0.107(Ft.)
Average velocity of channel(s) =   3.362(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Rainfall intensity =      1.318(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.729
Subarea runoff =      3.222(CFS) for    3.380(Ac.)
Total runoff =      3.498(CFS)       Total area =        3.64(Ac.)
Area averaged Fm value =    0.250(In/Hr)
Depth of flow =   0.134(Ft.), Average velocity =   3.899(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      102.000 to Point/Station      103.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of street segment elevation =   365.500(Ft.)
End of street segment elevation =   355.000(Ft.)
Length of street segment  =   614.000(Ft.)
Height of curb above gutter flowline  =    4.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =   6.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  1.500(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      5.021(CFS)
Depth of flow =   0.327(Ft.), Average velocity =   3.234(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  12.114(Ft.)
Flow velocity =   3.23(Ft/s)
Travel time =    3.16 min.     TC =   16.00  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      1.161(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.755
Subarea runoff =      2.965(CFS) for    3.730(Ac.)
```

```
Total runoff =      6.463(CFS)        Total area =        7.37(Ac.)
Area averaged Fm value =    0.187(In/Hr)
Street flow at end of street =      6.463(CFS)
Half street flow at end of street =      6.463(CFS)
Depth of flow =   0.357(Ft.), Average velocity =   3.306(Ft/s)
Warning: depth of flow exceeds top of curb
Distance that curb overflow reaches into property =    1.21(Ft.)
Flow width (from curb towards crown)=  13.622(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      103.000 to Point/Station      104.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   349.000(Ft.)
Downstream point/station elevation =   337.000(Ft.)
Pipe length  =   254.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     6.463(CFS)
Given pipe size =     24.00(In.)
Calculated individual pipe flow  =     6.463(CFS)
Normal flow depth in pipe =    5.88(In.)
Flow top width inside pipe =   20.64(In.)
Critical Depth =   10.81(In.)
Pipe flow velocity =     10.84(Ft/s)
Travel time through pipe =    0.39 min.
Time of concentration (TC) =    16.39 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      103.000 to Point/Station      104.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      7.370(Ac.)
Runoff from this stream =      6.463(CFS)
Time of concentration =   16.39 min.
Rainfall intensity =     1.145(In/Hr)
Area averaged loss rate (Fm) =    0.1867(In/Hr)
Area averaged Pervious ratio (Ap) = 0.7469


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      105.000 to Point/Station      106.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   365.000(Ft.)
Bottom (of initial area) elevation =   362.500(Ft.)
Difference in elevation =     2.500(Ft.)
Slope =    0.00833  s(%)=       0.83
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.923 min.
Rainfall intensity =      1.527(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.826
Subarea runoff =      1.010(CFS)
Total initial stream area =        0.800(Ac.)


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Process from Point/Station      106.000 to Point/Station      107.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
______________________________________________________________________________
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Top of street segment elevation =   362.500(Ft.)
End of street segment elevation =   344.000(Ft.)
Length of street segment  =   554.000(Ft.)
Height of curb above gutter flowline  =    4.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =   6.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  1.500(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      1.629(CFS)
Depth of flow =   0.215(Ft.), Average velocity =   3.229(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =   6.476(Ft.)
Flow velocity =   3.23(Ft/s)
Travel time =    2.86 min.     TC =   12.78  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      1.321(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.815
Subarea runoff =      1.143(CFS) for    1.200(Ac.)
Total runoff =      2.152(CFS)       Total area =        2.00(Ac.)
Area averaged Fm value =    0.125(In/Hr)
Street flow at end of street =      2.152(CFS)
Half street flow at end of street =      2.152(CFS)
Depth of flow =   0.232(Ft.), Average velocity =   3.431(Ft/s)
Flow width (from curb towards crown)=   7.364(Ft.)


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Process from Point/Station      107.000 to Point/Station      104.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
________________________________________________________________________
Upstream point/station elevation =   337.500(Ft.)
Downstream point/station elevation =   337.000(Ft.)
Pipe length  =    16.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     2.152(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =     2.152(CFS)
Normal flow depth in pipe =    4.14(In.)
Flow top width inside pipe =   15.15(In.)
Critical Depth =    6.64(In.)
Pipe flow velocity =      7.01(Ft/s)
Travel time through pipe =    0.04 min.
Time of concentration (TC) =    12.82 min.


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Process from Point/Station      107.000 to Point/Station      104.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      2.000(Ac.)
Runoff from this stream =      2.152(CFS)
Time of concentration =   12.82 min.
Rainfall intensity =     1.319(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
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Area averaged Pervious ratio (Ap) = 0.5000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1      7.37     6.463     16.39    0.187      1.145
2      2.00     2.152     12.82    0.125      1.319
Qmax(1) =
          1.000 *    1.000 *     6.463) +
          0.855 *    1.000 *     2.152) + =       8.303
Qmax(2) =
          1.181 *    0.782 *     6.463) +
          1.000 *    1.000 *     2.152) + =       8.123

Total of 2 streams to confluence:
Flow rates before confluence point:
       6.463       2.152
Maximum flow rates at confluence using above data:
        8.303        8.123
Area of streams before confluence:
        7.370        2.000
Effective area values after confluence:
        9.370        7.765
Results of confluence:
Total flow rate =      8.303(CFS)
Time of concentration =    16.389 min.
Effective stream area after confluence =      9.370(Ac.)
Study area average Pervious fraction(Ap) =  0.694
Study area average soil loss rate(Fm) =    0.174(In/Hr)
Study area total (this main stream) =       9.37(Ac.)


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Process from Point/Station      104.000 to Point/Station      108.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
________________________________________________________________________
Upstream point/station elevation =   337.000(Ft.)
Downstream point/station elevation =   327.000(Ft.)
Pipe length  =   281.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     8.303(CFS)
Given pipe size =     24.00(In.)
Calculated individual pipe flow  =     8.303(CFS)
Normal flow depth in pipe =    7.18(In.)
Flow top width inside pipe =   21.98(In.)
Critical Depth =   12.32(In.)
Pipe flow velocity =     10.52(Ft/s)
Travel time through pipe =    0.45 min.
Time of concentration (TC) =    16.83 min.


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Process from Point/Station      104.000 to Point/Station      108.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      9.370(Ac.)
Runoff from this stream =      8.303(CFS)
Time of concentration =   16.83 min.
Rainfall intensity =     1.128(In/Hr)
Area averaged loss rate (Fm) =    0.1736(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6942


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      103.000 to Point/Station      109.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
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Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   531.000(Ft.)
Top (of initial area) elevation =   355.000(Ft.)
Bottom (of initial area) elevation =   334.000(Ft.)
Difference in elevation =    21.000(Ft.)
Slope =    0.03955  s(%)=       3.95
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.132 min.
NOTE: Distance EXCEEDS recommended maximum value of   328.084(Ft.)
for this Development Type
Rainfall intensity =      1.602(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.830
Subarea runoff =      4.719(CFS)
Total initial stream area =        3.550(Ac.)


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Process from Point/Station      109.000 to Point/Station      108.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
________________________________________________________________________
Upstream point/station elevation =   328.000(Ft.)
Downstream point/station elevation =   327.000(Ft.)
Pipe length  =    59.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     4.719(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =     4.719(CFS)
Normal flow depth in pipe =    7.29(In.)
Flow top width inside pipe =   17.67(In.)
Critical Depth =   10.01(In.)
Pipe flow velocity =      7.03(Ft/s)
Travel time through pipe =    0.14 min.
Time of concentration (TC) =     9.27 min.


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Process from Point/Station      109.000 to Point/Station      108.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      3.550(Ac.)
Runoff from this stream =      4.719(CFS)
Time of concentration =    9.27 min.
Rainfall intensity =     1.588(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1      9.37     8.303     16.83    0.174      1.128
2      3.55     4.719      9.27    0.125      1.588
Qmax(1) =
          1.000 *    1.000 *     8.303) +
          0.685 *    1.000 *     4.719) + =      11.537
Qmax(2) =
          1.482 *    0.551 *     8.303) +
          1.000 *    1.000 *     4.719) + =      11.499

Total of 2 streams to confluence:
Flow rates before confluence point:
       8.303       4.719
Maximum flow rates at confluence using above data:
       11.537       11.499
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Area of streams before confluence:
        9.370        3.550
Effective area values after confluence:
       12.920        8.711
Results of confluence:
Total flow rate =     11.537(CFS)
Time of concentration =    16.834 min.
Effective stream area after confluence =     12.920(Ac.)
Study area average Pervious fraction(Ap) =  0.641
Study area average soil loss rate(Fm) =    0.160(In/Hr)
Study area total (this main stream) =      12.92(Ac.)


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Process from Point/Station      108.000 to Point/Station      110.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   327.000(Ft.)
Downstream point/station elevation =   310.000(Ft.)
Pipe length  =   212.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    11.537(CFS)
Given pipe size =     24.00(In.)
Calculated individual pipe flow  =    11.537(CFS)
Normal flow depth in pipe =    6.90(In.)
Flow top width inside pipe =   21.72(In.)
Critical Depth =   14.64(In.)
Pipe flow velocity =     15.45(Ft/s)
Travel time through pipe =    0.23 min.
Time of concentration (TC) =    17.06 min.


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Process from Point/Station      108.000 to Point/Station      110.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =     12.920(Ac.)
Runoff from this stream =     11.537(CFS)
Time of concentration =   17.06 min.
Rainfall intensity =     1.119(In/Hr)
Area averaged loss rate (Fm) =    0.1602(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6409


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Process from Point/Station      113.000 to Point/Station      114.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   434.000(Ft.)
Top (of initial area) elevation =   356.000(Ft.)
Bottom (of initial area) elevation =   316.500(Ft.)
Difference in elevation =    39.500(Ft.)
Slope =    0.09101  s(%)=       9.10
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    7.131 min.
NOTE: Distance EXCEEDS recommended maximum value of   328.084(Ft.)
for this Development Type
Rainfall intensity =      1.846(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.839
Subarea runoff =      1.177(CFS)
Total initial stream area =        0.760(Ac.)
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Process from Point/Station      114.000 to Point/Station      110.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =   310.500(Ft.)
Downstream point/station elevation =   310.000(Ft.)
Pipe length  =    28.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.177(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =     1.177(CFS)
Normal flow depth in pipe =    3.52(In.)
Flow top width inside pipe =   14.29(In.)
Critical Depth =    4.87(In.)
Pipe flow velocity =      4.82(Ft/s)
Travel time through pipe =    0.10 min.
Time of concentration (TC) =     7.23 min.


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Process from Point/Station      114.000 to Point/Station      110.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.760(Ac.)
Runoff from this stream =      1.177(CFS)
Time of concentration =    7.23 min.
Rainfall intensity =     1.832(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000


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Process from Point/Station      111.000 to Point/Station      112.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   408.000(Ft.)
Top (of initial area) elevation =   336.000(Ft.)
Bottom (of initial area) elevation =   316.500(Ft.)
Difference in elevation =    19.500(Ft.)
Slope =    0.04779  s(%)=       4.78
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    7.913 min.
NOTE: Distance EXCEEDS recommended maximum value of   328.084(Ft.)
for this Development Type
Rainfall intensity =      1.739(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.835
Subarea runoff =      1.090(CFS)
Total initial stream area =        0.750(Ac.)


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Process from Point/Station      112.000 to Point/Station      110.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =   310.500(Ft.)
Downstream point/station elevation =   310.000(Ft.)
Pipe length  =    14.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.090(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =     1.090(CFS)
Normal flow depth in pipe =    2.86(In.)
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Flow top width inside pipe =   13.17(In.)
Critical Depth =    4.67(In.)
Pipe flow velocity =      6.02(Ft/s)
Travel time through pipe =    0.04 min.
Time of concentration (TC) =     7.95 min.


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Process from Point/Station      112.000 to Point/Station      110.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 3
Stream flow area =      0.750(Ac.)
Runoff from this stream =      1.090(CFS)
Time of concentration =    7.95 min.
Rainfall intensity =     1.734(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1     12.92    11.537     17.06    0.160      1.119
2      0.76     1.177      7.23    0.125      1.832
3      0.75     1.090      7.95    0.125      1.734
Qmax(1) =
          1.000 *    1.000 *    11.537) +
          0.582 *    1.000 *     1.177) +
          0.618 *    1.000 *     1.090) + =      12.896
Qmax(2) =
          1.744 *    0.424 *    11.537) +
          1.000 *    1.000 *     1.177) +
          1.061 *    0.909 *     1.090) + =      10.750
Qmax(3) =
          1.642 *    0.466 *    11.537) +
          0.943 *    1.000 *     1.177) +
          1.000 *    1.000 *     1.090) + =      11.028

Total of 3 streams to confluence:
Flow rates before confluence point:
      11.537       1.177       1.090
Maximum flow rates at confluence using above data:
       12.896       10.750       11.028
Area of streams before confluence:
       12.920        0.760        0.750
Effective area values after confluence:
       14.430        6.914        7.531
Results of confluence:
Total flow rate =     12.896(CFS)
Time of concentration =    17.062 min.
Effective stream area after confluence =     14.430(Ac.)
Study area average Pervious fraction(Ap) =  0.626
Study area average soil loss rate(Fm) =    0.157(In/Hr)
Study area total (this main stream) =      14.43(Ac.)


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Process from Point/Station      110.000 to Point/Station      115.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   310.000(Ft.)
Downstream point/station elevation =   309.000(Ft.)
Pipe length  =   396.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    12.896(CFS)
Given pipe size =     36.00(In.)
Calculated individual pipe flow  =    12.896(CFS)
Normal flow depth in pipe =   15.49(In.)
Flow top width inside pipe =   35.65(In.)
Critical Depth =   13.70(In.)
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Pipe flow velocity =      4.43(Ft/s)
Travel time through pipe =    1.49 min.
Time of concentration (TC) =    18.55 min.


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Process from Point/Station      110.000 to Point/Station      115.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     14.430(Ac.)
Runoff from this stream =     12.896(CFS)
Time of concentration =   18.55 min.
Rainfall intensity =     1.067(In/Hr)
Area averaged loss rate (Fm) =    0.1565(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6261
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      116.000 to Point/Station      117.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   320.000(Ft.)
Bottom (of initial area) elevation =   318.000(Ft.)
Difference in elevation =     2.000(Ft.)
Slope =    0.00667  s(%)=       0.67
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   10.376 min.
Rainfall intensity =      1.489(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.824
Subarea runoff =      2.774(CFS)
Total initial stream area =        2.260(Ac.)


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Process from Point/Station      117.000 to Point/Station      115.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
______________________________________________________________________________
Top of street segment elevation =   318.000(Ft.)
End of street segment elevation =   309.000(Ft.)
Length of street segment  =   659.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [2] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      4.600(CFS)
Depth of flow =   0.305(Ft.), Average velocity =   2.493(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =   8.922(Ft.)
Flow velocity =   2.49(Ft/s)
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Travel time =    4.41 min.     TC =   14.78  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      1.215(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.807
Subarea runoff =      3.544(CFS) for    4.180(Ac.)
Total runoff =      6.318(CFS)       Total area =        6.44(Ac.)
Area averaged Fm value =    0.125(In/Hr)
Street flow at end of street =      6.318(CFS)
Half street flow at end of street =      3.159(CFS)
Depth of flow =   0.332(Ft.), Average velocity =   2.678(Ft/s)
Flow width (from curb towards crown)=  10.261(Ft.)


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Process from Point/Station      117.000 to Point/Station      115.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      6.440(Ac.)
Runoff from this stream =      6.318(CFS)
Time of concentration =   14.78 min.
Rainfall intensity =     1.215(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000
Program is now starting with Main Stream No. 3


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Process from Point/Station      118.000 to Point/Station      119.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   349.500(Ft.)
Bottom (of initial area) elevation =   343.000(Ft.)
Difference in elevation =     6.500(Ft.)
Slope =    0.02167  s(%)=       2.17
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.197 min.
Rainfall intensity =      1.705(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.834
Subarea runoff =      3.028(CFS)
Total initial stream area =        2.130(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      119.000 to Point/Station      120.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------------
Top of street segment elevation =   343.000(Ft.)
End of street segment elevation =   317.000(Ft.)
Length of street segment  =   597.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
```

```
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [2] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      4.735(CFS)
Depth of flow =   0.264(Ft.), Average velocity =   3.959(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =   6.866(Ft.)
Flow velocity =   3.96(Ft/s)
Travel time =    2.51 min.     TC =   10.71  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      1.462(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.823
Subarea runoff =      3.265(CFS) for    3.100(Ac.)
Total runoff =      6.293(CFS)       Total area =        5.23(Ac.)
Area averaged Fm value =    0.125(In/Hr)
Street flow at end of street =      6.293(CFS)
Half street flow at end of street =      3.146(CFS)
Depth of flow =   0.284(Ft.), Average velocity =   4.200(Ft/s)
Flow width (from curb towards crown)=   7.890(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      120.000 to Point/Station      121.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
________________________________________________________________________
Upstream point/station elevation =   311.000(Ft.)
Downstream point/station elevation =   310.000(Ft.)
Pipe length  =    79.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     6.293(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =     6.293(CFS)
Normal flow depth in pipe =    9.34(In.)
Flow top width inside pipe =   17.99(In.)
Critical Depth =   11.63(In.)
Pipe flow velocity =      6.79(Ft/s)
Travel time through pipe =    0.19 min.
Time of concentration (TC) =    10.90 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      120.000 to Point/Station      121.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 3 in normal stream number 1
Stream flow area =      5.230(Ac.)
Runoff from this stream =      6.293(CFS)
Time of concentration =   10.90 min.
Rainfall intensity =     1.447(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000


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Process from Point/Station      111.000 to Point/Station      121.000
**** INITIAL AREA EVALUATION ****
----------------------------------------------------------------------
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   491.000(Ft.)
Top (of initial area) elevation =   336.000(Ft.)
Bottom (of initial area) elevation =   316.500(Ft.)
Difference in elevation =    19.500(Ft.)
Slope =    0.03971  s(%)=       3.97
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.843 min.
NOTE: Distance EXCEEDS recommended maximum value of   328.084(Ft.)
for this Development Type
Rainfall intensity =      1.632(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.831
Subarea runoff =      0.692(CFS)
Total initial stream area =        0.510(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      111.000 to Point/Station      121.000
**** CONFLUENCE OF MINOR STREAMS ****
----------------------------------------------------------------------
Along Main Stream number: 3 in normal stream number 2
Stream flow area =      0.510(Ac.)
Runoff from this stream =      0.692(CFS)
Time of concentration =    8.84 min.
Rainfall intensity =     1.632(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1      5.23     6.293     10.90    0.125      1.447
2      0.51     0.692      8.84    0.125      1.632
Qmax(1) =
          1.000 *    1.000 *     6.293) +
          0.877 *    1.000 *     0.692) + =       6.900
Qmax(2) =
          1.140 *    0.811 *     6.293) +
          1.000 *    1.000 *     0.692) + =       6.509

Total of 2 streams to confluence:
Flow rates before confluence point:
       6.293       0.692
Maximum flow rates at confluence using above data:
        6.900        6.509
Area of streams before confluence:
        5.230        0.510
Effective area values after confluence:
        5.740        4.751
Results of confluence:
Total flow rate =      6.900(CFS)
Time of concentration =    10.904 min.
Effective stream area after confluence =      5.740(Ac.)
Study area average Pervious fraction(Ap) =  0.500
Study area average soil loss rate(Fm) =    0.125(In/Hr)
Study area total (this main stream) =       5.74(Ac.)
```

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++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      121.000 to Point/Station      115.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   310.000(Ft.)
Downstream point/station elevation =   309.000(Ft.)
Pipe length  =    44.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     6.900(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =     6.900(CFS)
Normal flow depth in pipe =    8.31(In.)
Flow top width inside pipe =   17.95(In.)
Critical Depth =   12.19(In.)
Pipe flow velocity =      8.65(Ft/s)
Travel time through pipe =    0.08 min.
Time of concentration (TC) =    10.99 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      121.000 to Point/Station      115.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 3
Stream flow area =      5.740(Ac.)
Runoff from this stream =      6.900(CFS)
Time of concentration =   10.99 min.
Rainfall intensity =     1.441(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1     14.43    12.896     18.55    0.157      1.067
2      6.44     6.318     14.78    0.125      1.215
3      5.74     6.900     10.99    0.125      1.441
Qmax(1) =
          1.000 *    1.000 *    12.896) +
          0.864 *    1.000 *     6.318) +
          0.716 *    1.000 *     6.900) + =      23.291
Qmax(2) =
          1.163 *    0.797 *    12.896) +
          1.000 *    1.000 *     6.318) +
          0.829 *    1.000 *     6.900) + =      23.988
Qmax(3) =
          1.411 *    0.592 *    12.896) +
          1.207 *    0.743 *     6.318) +
          1.000 *    1.000 *     6.900) + =      23.346

Total of 3 main streams to confluence:
Flow rates before confluence point:
      13.896       7.318       7.900
Maximum flow rates at confluence using above data:
       23.291       23.988       23.346
Area of streams before confluence:
       14.430        6.440        5.740
Effective area values after confluence:
       26.610       23.678       19.075


Results of confluence:
Total flow rate =     23.988(CFS)
Time of concentration =    14.782 min.
Effective stream area after confluence  =     23.678(Ac.)
Study area average Pervious fraction(Ap) =  0.568
Study area average soil loss rate(Fm) =    0.142(In/Hr)
Study area total =      26.61(Ac.)
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++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      121.000 to Point/Station      115.000
**** SUBAREA FLOW ADDITION ****
________________________________________________________________________
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
The area added to the existing stream with this TC
does not add flow per Para 6b, Page D-15 of the OCHM,
therefore the upstream flow rate of Q =     23.988(CFS) is being used
Time of concentration =    14.78 min.
Rainfall intensity =      1.215(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.792
Subarea runoff =      0.000(CFS) for    0.790(Ac.)
Total runoff =     23.988(CFS)       Total area =       24.47(Ac.)
Area averaged Fm value =    0.146(In/Hr)
End of computations, total study area =           27.40 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.581
Area averaged SCS curve number (AMC 2) =  70.6
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- 5 Year Post-Development Rational Method – Area 'A'

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                  Orange County Rational Hydrology Program

               (Hydrology Manual Date(s) October 1986 & November 1996)

 CIVILCADD/CIVILDESIGN  Engineering Software, (c) 1989-2012 Version 8.2
       Rational Hydrology Study, Date: 10/03/16  File Name: pra005.roc
---------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION RATIONAL METHOD - AREA 'A' - 5 YEAR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
---------------------------------------------------------------------------


Program License Serial Number 4094

---------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

---------------------------------------------------------------------------

Rational hydrology study storm event year is     5.0

Decimal fraction of study above 2000 ft., 600M  =     0.0000
English Units Used for input data


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Process from Point/Station      100.000 to Point/Station      101.000
**** INITIAL AREA EVALUATION ****
___________________________________________________________________________
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   470.500(Ft.)
Bottom (of initial area) elevation =   443.000(Ft.)
Difference in elevation =    27.500(Ft.)
Slope =    0.09167  s(%)=       9.17
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   11.148 min.
Rainfall intensity =      2.030(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.789
Subarea runoff =      0.416(CFS)
Total initial stream area =        0.260(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      101.000 to Point/Station      102.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
___________________________________________________________________________
Estimated mean flow rate at midpoint of channel =      2.923(CFS)
Depth of flow =   0.125(Ft.), Average velocity =   3.728(Ft/s)
       ******* Irregular Channel Data ***********
---------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2             50.00              0.00
       3            100.00              1.00
Manning's 'N' friction factor =   0.030
---------------------------------------------------------------
Sub-Channel flow  =      2.923(CFS)
  '     '       flow top width =     12.522(Ft.)
```

```
   '     '    velocity=    3.728(Ft/s)
   '     '       area =      0.784(Sq.Ft)
   '     '       Froude number =     2.626

Upstream point elevation =   443.000(Ft.)
Downstream point elevation =   365.500(Ft.)
Flow length =   340.000(Ft.)
Travel time  =    1.52 min.
Time of concentration =   12.67 min.
Depth of flow =   0.125(Ft.)
Average velocity =   3.728(Ft/s)
Total irregular channel flow =     2.923(CFS)
Irregular channel normal depth above invert elev. =   0.125(Ft.)
Average velocity of channel(s) =   3.728(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Rainfall intensity =      1.889(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.781
Subarea runoff =      4.953(CFS) for    3.380(Ac.)
Total runoff =      5.370(CFS)       Total area =        3.64(Ac.)
Area averaged Fm value =    0.250(In/Hr)
Depth of flow =   0.157(Ft.), Average velocity =   4.340(Ft/s)


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Process from Point/Station      102.000 to Point/Station      103.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of street segment elevation =   365.500(Ft.)
End of street segment elevation =   355.000(Ft.)
Length of street segment  =   614.000(Ft.)
Height of curb above gutter flowline  =    4.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =   6.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  1.500(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      7.649(CFS)
Depth of flow =   0.378(Ft.), Average velocity =   3.364(Ft/s)
Warning: depth of flow exceeds top of curb
Distance that curb overflow reaches into property =    2.21(Ft.)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  14.628(Ft.)
Flow velocity =   3.36(Ft/s)
Travel time =    3.04 min.     TC =   15.71  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      1.674(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area,(total area with modified
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rational method)(Q=KCIA) is C = 0.800
Subarea runoff =      4.495(CFS) for    3.730(Ac.)
Total runoff =      9.864(CFS)       Total area =        7.37(Ac.)
Area averaged Fm value =    0.187(In/Hr)
Street flow at end of street =      9.864(CFS)
Half street flow at end of street =      9.864(CFS)
Depth of flow =   0.408(Ft.), Average velocity =   3.492(Ft/s)
Warning: depth of flow exceeds top of curb
Distance that curb overflow reaches into property =    3.71(Ft.)
Flow width (from curb towards crown)=  16.130(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      103.000 to Point/Station      104.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   349.000(Ft.)
Downstream point/station elevation =   337.000(Ft.)
Pipe length  =   254.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     9.864(CFS)
Given pipe size =     24.00(In.)
Calculated individual pipe flow  =     9.864(CFS)
Normal flow depth in pipe =    7.29(In.)
Flow top width inside pipe =   22.07(In.)
Critical Depth =   13.48(In.)
Pipe flow velocity =     12.23(Ft/s)
Travel time through pipe =    0.35 min.
Time of concentration (TC) =    16.06 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      103.000 to Point/Station      104.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      7.370(Ac.)
Runoff from this stream =      9.864(CFS)
Time of concentration =   16.06 min.
Rainfall intensity =     1.654(In/Hr)
Area averaged loss rate (Fm) =    0.1867(In/Hr)
Area averaged Pervious ratio (Ap) = 0.7469


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Process from Point/Station      105.000 to Point/Station      106.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   365.000(Ft.)
Bottom (of initial area) elevation =   362.500(Ft.)
Difference in elevation =     2.500(Ft.)
Slope =    0.00833  s(%)=       0.83
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.923 min.
Rainfall intensity =      2.167(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.848
Subarea runoff =      1.470(CFS)
Total initial stream area =        0.800(Ac.)


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Process from Point/Station      106.000 to Point/Station      107.000
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**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------
Top of street segment elevation =   362.500(Ft.)
End of street segment elevation =   344.000(Ft.)
Length of street segment  =   554.000(Ft.)
Height of curb above gutter flowline  =    4.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =   6.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  1.500(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      2.363(CFS)
Depth of flow =   0.239(Ft.), Average velocity =   3.504(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =   7.677(Ft.)
Flow velocity =   3.50(Ft/s)
Travel time =    2.64 min.     TC =   12.56  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      1.898(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.841
Subarea runoff =      1.722(CFS) for    1.200(Ac.)
Total runoff =      3.192(CFS)       Total area =        2.00(Ac.)
Area averaged Fm value =    0.125(In/Hr)
Street flow at end of street =      3.192(CFS)
Half street flow at end of street =      3.192(CFS)
Depth of flow =   0.260(Ft.), Average velocity =   3.752(Ft/s)
Flow width (from curb towards crown)=   8.750(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      107.000 to Point/Station      104.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
------------------------------------------------------------------------
Upstream point/station elevation =   337.500(Ft.)
Downstream point/station elevation =   337.000(Ft.)
Pipe length  =    16.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     3.192(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =     3.192(CFS)
Normal flow depth in pipe =    5.05(In.)
Flow top width inside pipe =   16.17(In.)
Critical Depth =    8.16(In.)
Pipe flow velocity =      7.86(Ft/s)
Travel time through pipe =    0.03 min.
Time of concentration (TC) =    12.59 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      107.000 to Point/Station      104.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      2.000(Ac.)
Runoff from this stream =      3.192(CFS)
Time of concentration =   12.59 min.
```

```
Rainfall intensity =     1.895(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1      7.37     9.864     16.06    0.187      1.654
2      2.00     3.192     12.59    0.125      1.895
Qmax(1) =
          1.000 *    1.000 *     9.864) +
          0.863 *    1.000 *     3.192) + =      12.620
Qmax(2) =
          1.165 *    0.784 *     9.864) +
          1.000 *    1.000 *     3.192) + =      12.204

Total of 2 streams to confluence:
Flow rates before confluence point:
       9.864       3.192
Maximum flow rates at confluence using above data:
       12.620       12.204
Area of streams before confluence:
        7.370        2.000
Effective area values after confluence:
        9.370        7.780
Results of confluence:
Total flow rate =     12.620(CFS)
Time of concentration =    16.056 min.
Effective stream area after confluence =      9.370(Ac.)
Study area average Pervious fraction(Ap) =  0.694
Study area average soil loss rate(Fm) =    0.174(In/Hr)
Study area total (this main stream) =       9.37(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      104.000 to Point/Station      108.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   337.000(Ft.)
Downstream point/station elevation =   327.000(Ft.)
Pipe length  =   281.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    12.620(CFS)
Given pipe size =     24.00(In.)
Calculated individual pipe flow  =    12.620(CFS)
Normal flow depth in pipe =    8.94(In.)
Flow top width inside pipe =   23.21(In.)
Critical Depth =   15.32(In.)
Pipe flow velocity =     11.83(Ft/s)
Travel time through pipe =    0.40 min.
Time of concentration (TC) =    16.45 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      104.000 to Point/Station      108.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      9.370(Ac.)
Runoff from this stream =     12.620(CFS)
Time of concentration =   16.45 min.
Rainfall intensity =     1.631(In/Hr)
Area averaged loss rate (Fm) =    0.1736(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6942


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Process from Point/Station      103.000 to Point/Station      109.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
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RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   531.000(Ft.)
Top (of initial area) elevation =   355.000(Ft.)
Bottom (of initial area) elevation =   334.000(Ft.)
Difference in elevation =    21.000(Ft.)
Slope =    0.03955  s(%)=       3.95
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.132 min.
NOTE: Distance EXCEEDS recommended maximum value of   328.084(Ft.)
for this Development Type
Rainfall intensity =      2.271(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.850
Subarea runoff =      6.855(CFS)
Total initial stream area =        3.550(Ac.)


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Process from Point/Station      109.000 to Point/Station      108.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
________________________________________________________________________
Upstream point/station elevation =   328.000(Ft.)
Downstream point/station elevation =   327.000(Ft.)
Pipe length  =    59.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     6.855(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =     6.855(CFS)
Normal flow depth in pipe =    9.01(In.)
Flow top width inside pipe =   18.00(In.)
Critical Depth =   12.16(In.)
Pipe flow velocity =      7.74(Ft/s)
Travel time through pipe =    0.13 min.
Time of concentration (TC) =     9.26 min.


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Process from Point/Station      109.000 to Point/Station      108.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      3.550(Ac.)
Runoff from this stream =      6.855(CFS)
Time of concentration =    9.26 min.
Rainfall intensity =     2.253(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1      9.37    12.620     16.45    0.174      1.631
2      3.55     6.855      9.26    0.125      2.253
Qmax(1) =
          1.000 *    1.000 *    12.620) +
          0.708 *    1.000 *     6.855) + =      17.471
Qmax(2) =
          1.427 *    0.563 *    12.620) +
          1.000 *    1.000 *     6.855) + =      16.989

Total of 2 streams to confluence:
Flow rates before confluence point:
      12.620       6.855
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Maximum flow rates at confluence using above data:
       17.471       16.989
Area of streams before confluence:
        9.370        3.550
Effective area values after confluence:
       12.920        8.823
Results of confluence:
Total flow rate =     17.471(CFS)
Time of concentration =    16.452 min.
Effective stream area after confluence =     12.920(Ac.)
Study area average Pervious fraction(Ap) =  0.641
Study area average soil loss rate(Fm) =    0.160(In/Hr)
Study area total (this main stream) =      12.92(Ac.)


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Process from Point/Station      108.000 to Point/Station      110.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   327.000(Ft.)
Downstream point/station elevation =   310.000(Ft.)
Pipe length  =   212.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    17.471(CFS)
Given pipe size =     24.00(In.)
Calculated individual pipe flow  =    17.471(CFS)
Normal flow depth in pipe =    8.56(In.)
Flow top width inside pipe =   23.00(In.)
Critical Depth =   18.08(In.)
Pipe flow velocity =     17.36(Ft/s)
Travel time through pipe =    0.20 min.
Time of concentration (TC) =    16.66 min.


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Process from Point/Station      108.000 to Point/Station      110.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =     12.920(Ac.)
Runoff from this stream =     17.471(CFS)
Time of concentration =   16.66 min.
Rainfall intensity =     1.620(In/Hr)
Area averaged loss rate (Fm) =    0.1602(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6409


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      113.000 to Point/Station      114.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   434.000(Ft.)
Top (of initial area) elevation =   356.000(Ft.)
Bottom (of initial area) elevation =   316.500(Ft.)
Difference in elevation =    39.500(Ft.)
Slope =    0.09101  s(%)=       9.10
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    7.131 min.
NOTE: Distance EXCEEDS recommended maximum value of   328.084(Ft.)
for this Development Type
Rainfall intensity =      2.609(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.857
Subarea runoff =      1.699(CFS)
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Total initial stream area =        0.760(Ac.)


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Process from Point/Station      114.000 to Point/Station      110.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   310.500(Ft.)
Downstream point/station elevation =   310.000(Ft.)
Pipe length  =    28.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.699(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =     1.699(CFS)
Normal flow depth in pipe =    4.23(In.)
Flow top width inside pipe =   15.26(In.)
Critical Depth =    5.88(In.)
Pipe flow velocity =      5.37(Ft/s)
Travel time through pipe =    0.09 min.
Time of concentration (TC) =     7.22 min.


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Process from Point/Station      114.000 to Point/Station      110.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.760(Ac.)
Runoff from this stream =      1.699(CFS)
Time of concentration =    7.22 min.
Rainfall intensity =     2.592(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000


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Process from Point/Station      111.000 to Point/Station      112.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   408.000(Ft.)
Top (of initial area) elevation =   336.000(Ft.)
Bottom (of initial area) elevation =   316.500(Ft.)
Difference in elevation =    19.500(Ft.)
Slope =    0.04779  s(%)=       4.78
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    7.913 min.
NOTE: Distance EXCEEDS recommended maximum value of   328.084(Ft.)
for this Development Type
Rainfall intensity =      2.461(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.854
Subarea runoff =      1.577(CFS)
Total initial stream area =        0.750(Ac.)


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Process from Point/Station      112.000 to Point/Station      110.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   310.500(Ft.)
Downstream point/station elevation =   310.000(Ft.)
Pipe length  =    14.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.577(CFS)
Given pipe size =     18.00(In.)
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Calculated individual pipe flow  =     1.577(CFS)
Normal flow depth in pipe =    3.43(In.)
Flow top width inside pipe =   14.14(In.)
Critical Depth =    5.65(In.)
Pipe flow velocity =      6.71(Ft/s)
Travel time through pipe =    0.03 min.
Time of concentration (TC) =     7.95 min.


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Process from Point/Station      112.000 to Point/Station      110.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 3
Stream flow area =      0.750(Ac.)
Runoff from this stream =      1.577(CFS)
Time of concentration =    7.95 min.
Rainfall intensity =     2.455(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1     12.92    17.471     16.66    0.160      1.620
2      0.76     1.699      7.22    0.125      2.592
3      0.75     1.577      7.95    0.125      2.455
Qmax(1) =
          1.000 *    1.000 *    17.471) +
          0.606 *    1.000 *     1.699) +
          0.642 *    1.000 *     1.577) + =      19.513
Qmax(2) =
          1.666 *    0.433 *    17.471) +
          1.000 *    1.000 *     1.699) +
          1.059 *    0.908 *     1.577) + =      15.827
Qmax(3) =
          1.572 *    0.477 *    17.471) +
          0.945 *    1.000 *     1.699) +
          1.000 *    1.000 *     1.577) + =      16.289

Total of 3 streams to confluence:
Flow rates before confluence point:
      17.471       1.699       1.577
Maximum flow rates at confluence using above data:
       19.513       15.827       16.289
Area of streams before confluence:
       12.920        0.760        0.750
Effective area values after confluence:
       14.430        7.040        7.675
Results of confluence:
Total flow rate =     19.513(CFS)
Time of concentration =    16.655 min.
Effective stream area after confluence =     14.430(Ac.)
Study area average Pervious fraction(Ap) =  0.626
Study area average soil loss rate(Fm) =    0.157(In/Hr)
Study area total (this main stream) =      14.43(Ac.)


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Process from Point/Station      110.000 to Point/Station      115.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
________________________________________________________________________
Upstream point/station elevation =   310.000(Ft.)
Downstream point/station elevation =   309.000(Ft.)
Pipe length  =   396.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    19.513(CFS)
Given pipe size =     36.00(In.)
Calculated individual pipe flow  =    19.513(CFS)
Normal flow depth in pipe =   19.73(In.)
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Flow top width inside pipe =   35.83(In.)
Critical Depth =   17.00(In.)
Pipe flow velocity =      4.92(Ft/s)
Travel time through pipe =    1.34 min.
Time of concentration (TC) =    18.00 min.


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Process from Point/Station      110.000 to Point/Station      115.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     14.430(Ac.)
Runoff from this stream =     19.513(CFS)
Time of concentration =   18.00 min.
Rainfall intensity =     1.551(In/Hr)
Area averaged loss rate (Fm) =    0.1565(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6261
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      116.000 to Point/Station      117.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   320.000(Ft.)
Bottom (of initial area) elevation =   318.000(Ft.)
Difference in elevation =     2.000(Ft.)
Slope =    0.00667  s(%)=       0.67
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   10.376 min.
Rainfall intensity =      2.113(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.847
Subarea runoff =      4.044(CFS)
Total initial stream area =        2.260(Ac.)


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Process from Point/Station      117.000 to Point/Station      115.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------------
Top of street segment elevation =   318.000(Ft.)
End of street segment elevation =   309.000(Ft.)
Length of street segment  =   659.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [2] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      6.823(CFS)
Depth of flow =   0.339(Ft.), Average velocity =   2.726(Ft/s)
Streetflow hydraulics at midpoint of street travel:
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Halfstreet flow width =  10.606(Ft.)
Flow velocity =   2.73(Ft/s)
Travel time =    4.03 min.     TC =   14.40  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      1.757(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.836
Subarea runoff =      5.418(CFS) for    4.180(Ac.)
Total runoff =      9.462(CFS)       Total area =        6.44(Ac.)
Area averaged Fm value =    0.125(In/Hr)
Street flow at end of street =      9.462(CFS)
Half street flow at end of street =      4.731(CFS)
Depth of flow =   0.370(Ft.), Average velocity =   2.942(Ft/s)
Flow width (from curb towards crown)=  12.171(Ft.)


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Process from Point/Station      117.000 to Point/Station      115.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      6.440(Ac.)
Runoff from this stream =      9.462(CFS)
Time of concentration =   14.40 min.
Rainfall intensity =     1.757(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000
Program is now starting with Main Stream No. 3


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      118.000 to Point/Station      119.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   349.500(Ft.)
Bottom (of initial area) elevation =   343.000(Ft.)
Difference in elevation =     6.500(Ft.)
Slope =    0.02167  s(%)=       2.17
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.197 min.
Rainfall intensity =      2.413(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.853
Subarea runoff =      4.386(CFS)
Total initial stream area =        2.130(Ac.)


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Process from Point/Station      119.000 to Point/Station      120.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------------
Top of street segment elevation =   343.000(Ft.)
End of street segment elevation =   317.000(Ft.)
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Length of street segment  =   597.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [2] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      6.931(CFS)
Depth of flow =   0.292(Ft.), Average velocity =   4.288(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =   8.255(Ft.)
Flow velocity =   4.29(Ft/s)
Travel time =    2.32 min.     TC =   10.52  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      2.097(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.846
Subarea runoff =      4.898(CFS) for    3.100(Ac.)
Total runoff =      9.284(CFS)       Total area =        5.23(Ac.)
Area averaged Fm value =    0.125(In/Hr)
Street flow at end of street =      9.284(CFS)
Half street flow at end of street =      4.642(CFS)
Depth of flow =   0.315(Ft.), Average velocity =   4.575(Ft/s)
Flow width (from curb towards crown)=   9.423(Ft.)


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Process from Point/Station      120.000 to Point/Station      121.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
________________________________________________________________________
Upstream point/station elevation =   311.000(Ft.)
Downstream point/station elevation =   310.000(Ft.)
Pipe length  =    79.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     9.284(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =     9.284(CFS)
Normal flow depth in pipe =   12.02(In.)
Flow top width inside pipe =   16.96(In.)
Critical Depth =   14.13(In.)
Pipe flow velocity =      7.41(Ft/s)
Travel time through pipe =    0.18 min.
Time of concentration (TC) =    10.69 min.


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Process from Point/Station      120.000 to Point/Station      121.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 3 in normal stream number 1
Stream flow area =      5.230(Ac.)
Runoff from this stream =      9.284(CFS)
Time of concentration =   10.69 min.
Rainfall intensity =     2.078(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000
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Process from Point/Station      111.000 to Point/Station      121.000
**** INITIAL AREA EVALUATION ****
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RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   491.000(Ft.)
Top (of initial area) elevation =   336.000(Ft.)
Bottom (of initial area) elevation =   316.500(Ft.)
Difference in elevation =    19.500(Ft.)
Slope =    0.03971  s(%)=       3.97
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.843 min.
NOTE: Distance EXCEEDS recommended maximum value of   328.084(Ft.)
for this Development Type
Rainfall intensity =      2.312(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.851
Subarea runoff =      1.004(CFS)
Total initial stream area =        0.510(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      111.000 to Point/Station      121.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------
Along Main Stream number: 3 in normal stream number 2
Stream flow area =      0.510(Ac.)
Runoff from this stream =      1.004(CFS)
Time of concentration =    8.84 min.
Rainfall intensity =     2.312(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1      5.23     9.284     10.69    0.125      2.078
2      0.51     1.004      8.84    0.125      2.312
Qmax(1) =
          1.000 *    1.000 *     9.284) +
          0.893 *    1.000 *     1.004) + =      10.180
Qmax(2) =
          1.120 *    0.827 *     9.284) +
          1.000 *    1.000 *     1.004) + =       9.601

Total of 2 streams to confluence:
Flow rates before confluence point:
       9.284       1.004
Maximum flow rates at confluence using above data:
       10.180        9.601
Area of streams before confluence:
        5.230        0.510
Effective area values after confluence:
        5.740        4.834
Results of confluence:
Total flow rate =     10.180(CFS)
Time of concentration =    10.695 min.
Effective stream area after confluence =      5.740(Ac.)
Study area average Pervious fraction(Ap) =  0.500
Study area average soil loss rate(Fm) =    0.125(In/Hr)
Study area total (this main stream) =       5.74(Ac.)
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      121.000 to Point/Station      115.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   310.000(Ft.)
Downstream point/station elevation =   309.000(Ft.)
Pipe length  =    44.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    10.180(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =    10.180(CFS)
Normal flow depth in pipe =   10.50(In.)
Flow top width inside pipe =   17.75(In.)
Critical Depth =   14.75(In.)
Pipe flow velocity =      9.52(Ft/s)
Travel time through pipe =    0.08 min.
Time of concentration (TC) =    10.77 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      121.000 to Point/Station      115.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 3
Stream flow area =      5.740(Ac.)
Runoff from this stream =     10.180(CFS)
Time of concentration =   10.77 min.
Rainfall intensity =     2.069(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1     14.43    19.513     18.00    0.157      1.551
2      6.44     9.462     14.40    0.125      1.757
3      5.74    10.180     10.77    0.125      2.069
Qmax(1) =
          1.000 *    1.000 *    19.513) +
          0.873 *    1.000 *     9.462) +
          0.733 *    1.000 *    10.180) + =      35.242
Qmax(2) =
          1.148 *    0.800 *    19.513) +
          1.000 *    1.000 *     9.462) +
          0.840 *    1.000 *    10.180) + =      35.943
Qmax(3) =
          1.372 *    0.599 *    19.513) +
          1.191 *    0.748 *     9.462) +
          1.000 *    1.000 *    10.180) + =      34.630

Total of 3 main streams to confluence:
Flow rates before confluence point:
      20.513      10.462      11.180
Maximum flow rates at confluence using above data:
       35.242       35.943       34.630
Area of streams before confluence:
       14.430        6.440        5.740
Effective area values after confluence:
       26.610       23.730       19.193


Results of confluence:
Total flow rate =     35.943(CFS)
Time of concentration =    14.405 min.
Effective stream area after confluence  =     23.730(Ac.)
Study area average Pervious fraction(Ap) =  0.568
Study area average soil loss rate(Fm) =    0.142(In/Hr)
```

```
Study area total =      26.61(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      121.000 to Point/Station      115.000
**** SUBAREA FLOW ADDITION ****
________________________________________________________________________
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
The area added to the existing stream with this TC
does not add flow per Para 6b, Page D-15 of the OCHM,
therefore the upstream flow rate of Q =     35.943(CFS) is being used
Time of concentration =    14.40 min.
Rainfall intensity =      1.757(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.825
Subarea runoff =      0.000(CFS) for    0.790(Ac.)
Total runoff =     35.943(CFS)       Total area =       24.52(Ac.)
Area averaged Fm value =    0.146(In/Hr)
End of computations, total study area =           27.40 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.581
Area averaged SCS curve number (AMC 2) =  70.6
```

- 25 Year Post-Development Rational Method – Area 'A'

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                  Orange County Rational Hydrology Program

               (Hydrology Manual Date(s) October 1986 & November 1996)

 CIVILCADD/CIVILDESIGN  Engineering Software, (c) 1989-2012 Version 8.2
       Rational Hydrology Study, Date: 10/03/16  File Name: pra025.roc
------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION RATIONAL METHOD - AREA 'A' - 25 YEAR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------


Program License Serial Number 4094

------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

------------------------------------------------------------------------

Rational hydrology study storm event year is    25.0

Decimal fraction of study above 2000 ft., 600M  =     0.0000
English Units Used for input data


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      100.000 to Point/Station      101.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   470.500(Ft.)
Bottom (of initial area) elevation =   443.000(Ft.)
Difference in elevation =    27.500(Ft.)
Slope =    0.09167  s(%)=       9.17
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   11.148 min.
Rainfall intensity =      3.064(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.827
Subarea runoff =      0.658(CFS)
Total initial stream area =        0.260(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      101.000 to Point/Station      102.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =      4.664(CFS)
Depth of flow =   0.149(Ft.), Average velocity =   4.190(Ft/s)
       ******* Irregular Channel Data **********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2             50.00              0.00
       3            100.00              1.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =      4.664(CFS)
  '     '       flow top width =     14.920(Ft.)
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```
   '     '    velocity=    4.190(Ft/s)
   '     '       area =      1.113(Sq.Ft)
   '     '       Froude number =     2.704

Upstream point elevation =   443.000(Ft.)
Downstream point elevation =   365.500(Ft.)
Flow length =   340.000(Ft.)
Travel time  =    1.35 min.
Time of concentration =   12.50 min.
Depth of flow =   0.149(Ft.)
Average velocity =   4.190(Ft/s)
Total irregular channel flow =     4.664(CFS)
Irregular channel normal depth above invert elev. =   0.149(Ft.)
Average velocity of channel(s) =   4.190(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Rainfall intensity =      2.872(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.822
Subarea runoff =      7.930(CFS) for    3.380(Ac.)
Total runoff =      8.589(CFS)       Total area =        3.64(Ac.)
Area averaged Fm value =    0.250(In/Hr)
Depth of flow =   0.188(Ft.), Average velocity =   4.881(Ft/s)


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Process from Point/Station      102.000 to Point/Station      103.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of street segment elevation =   365.500(Ft.)
End of street segment elevation =   355.000(Ft.)
Length of street segment  =   614.000(Ft.)
Height of curb above gutter flowline  =    4.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =   6.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  1.500(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =     12.189(CFS)
Depth of flow =   0.433(Ft.), Average velocity =   3.624(Ft/s)
Warning: depth of flow exceeds top of curb
Distance that curb overflow reaches into property =    4.99(Ft.)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  17.406(Ft.)
Flow velocity =   3.62(Ft/s)
Travel time =    2.82 min.     TC =   15.32  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      2.559(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area,(total area with modified
```

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rational method)(Q=KCIA) is C = 0.834
Subarea runoff =      7.147(CFS) for    3.730(Ac.)
Total runoff =     15.735(CFS)       Total area =        7.37(Ac.)
Area averaged Fm value =    0.187(In/Hr)
Street flow at end of street =     15.735(CFS)
Half street flow at end of street =     15.735(CFS)
Depth of flow =   0.461(Ft.), Average velocity =   3.905(Ft/s)
Warning: depth of flow exceeds top of curb
Note:  depth of flow exceeds top of street crown.
Distance that curb overflow reaches into property =    6.40(Ft.)
Flow width (from curb towards crown)=  18.000(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      103.000 to Point/Station      104.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   349.000(Ft.)
Downstream point/station elevation =   337.000(Ft.)
Pipe length  =   254.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    15.735(CFS)
Given pipe size =     24.00(In.)
Calculated individual pipe flow  =    15.735(CFS)
Normal flow depth in pipe =    9.33(In.)
Flow top width inside pipe =   23.40(In.)
Critical Depth =   17.16(In.)
Pipe flow velocity =     13.92(Ft/s)
Travel time through pipe =    0.30 min.
Time of concentration (TC) =    15.63 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      103.000 to Point/Station      104.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      7.370(Ac.)
Runoff from this stream =     15.735(CFS)
Time of concentration =   15.63 min.
Rainfall intensity =     2.531(In/Hr)
Area averaged loss rate (Fm) =    0.1867(In/Hr)
Area averaged Pervious ratio (Ap) = 0.7469


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      105.000 to Point/Station      106.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   365.000(Ft.)
Bottom (of initial area) elevation =   362.500(Ft.)
Difference in elevation =     2.500(Ft.)
Slope =    0.00833  s(%)=       0.83
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.923 min.
Rainfall intensity =      3.273(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.866
Subarea runoff =      2.266(CFS)
Total initial stream area =        0.800(Ac.)


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Process from Point/Station      106.000 to Point/Station      107.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------
Top of street segment elevation =   362.500(Ft.)
End of street segment elevation =   344.000(Ft.)
Length of street segment  =   554.000(Ft.)
Height of curb above gutter flowline  =    4.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =   6.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  1.500(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      3.672(CFS)
Depth of flow =   0.271(Ft.), Average velocity =   3.876(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =   9.286(Ft.)
Flow velocity =   3.88(Ft/s)
Travel time =    2.38 min.     TC =   12.30  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      2.897(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.861
Subarea runoff =      2.724(CFS) for    1.200(Ac.)
Total runoff =      4.990(CFS)       Total area =        2.00(Ac.)
Area averaged Fm value =    0.125(In/Hr)
Street flow at end of street =      4.990(CFS)
Half street flow at end of street =      4.990(CFS)
Depth of flow =   0.296(Ft.), Average velocity =   4.166(Ft/s)
Flow width (from curb towards crown)=  10.549(Ft.)


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Process from Point/Station      107.000 to Point/Station      104.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
------------------------------------------------------------------------
Upstream point/station elevation =   337.500(Ft.)
Downstream point/station elevation =   337.000(Ft.)
Pipe length  =    16.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     4.990(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =     4.990(CFS)
Normal flow depth in pipe =    6.37(In.)
Flow top width inside pipe =   17.22(In.)
Critical Depth =   10.31(In.)
Pipe flow velocity =      8.91(Ft/s)
Travel time through pipe =    0.03 min.
Time of concentration (TC) =    12.33 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      107.000 to Point/Station      104.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      2.000(Ac.)
Runoff from this stream =      4.990(CFS)
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```
Time of concentration =   12.33 min.
Rainfall intensity =     2.893(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1      7.37    15.735     15.63    0.187      2.531
2      2.00     4.990     12.33    0.125      2.893
Qmax(1) =
          1.000 *    1.000 *    15.735) +
          0.869 *    1.000 *     4.990) + =      20.072
Qmax(2) =
          1.155 *    0.789 *    15.735) +
          1.000 *    1.000 *     4.990) + =      19.331

Total of 2 streams to confluence:
Flow rates before confluence point:
      15.735       4.990
Maximum flow rates at confluence using above data:
       20.072       19.331
Area of streams before confluence:
        7.370        2.000
Effective area values after confluence:
        9.370        7.817
Results of confluence:
Total flow rate =     20.072(CFS)
Time of concentration =    15.629 min.
Effective stream area after confluence =      9.370(Ac.)
Study area average Pervious fraction(Ap) =  0.694
Study area average soil loss rate(Fm) =    0.174(In/Hr)
Study area total (this main stream) =       9.37(Ac.)


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Process from Point/Station      104.000 to Point/Station      108.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   337.000(Ft.)
Downstream point/station elevation =   327.000(Ft.)
Pipe length  =   281.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    20.072(CFS)
Given pipe size =     24.00(In.)
Calculated individual pipe flow  =    20.072(CFS)
Normal flow depth in pipe =   11.58(In.)
Flow top width inside pipe =   23.99(In.)
Critical Depth =   19.29(In.)
Pipe flow velocity =     13.38(Ft/s)
Travel time through pipe =    0.35 min.
Time of concentration (TC) =    15.98 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      104.000 to Point/Station      108.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      9.370(Ac.)
Runoff from this stream =     20.072(CFS)
Time of concentration =   15.98 min.
Rainfall intensity =     2.499(In/Hr)
Area averaged loss rate (Fm) =    0.1736(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6942


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Process from Point/Station      103.000 to Point/Station      109.000
**** INITIAL AREA EVALUATION ****
```

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------------------------------------------------------------------------
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   531.000(Ft.)
Top (of initial area) elevation =   355.000(Ft.)
Bottom (of initial area) elevation =   334.000(Ft.)
Difference in elevation =    21.000(Ft.)
Slope =    0.03955  s(%)=       3.95
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.132 min.
NOTE: Distance EXCEEDS recommended maximum value of   328.084(Ft.)
for this Development Type
Rainfall intensity =      3.430(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.867
Subarea runoff =     10.560(CFS)
Total initial stream area =        3.550(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      109.000 to Point/Station      108.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
------------------------------------------------------------------------
Upstream point/station elevation =   328.000(Ft.)
Downstream point/station elevation =   327.000(Ft.)
Pipe length  =    59.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    10.560(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =    10.560(CFS)
Normal flow depth in pipe =   11.87(In.)
Flow top width inside pipe =   17.06(In.)
Critical Depth =   14.98(In.)
Pipe flow velocity =      8.54(Ft/s)
Travel time through pipe =    0.12 min.
Time of concentration (TC) =     9.25 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      109.000 to Point/Station      108.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      3.550(Ac.)
Runoff from this stream =     10.560(CFS)
Time of concentration =    9.25 min.
Rainfall intensity =     3.406(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1      9.37    20.072     15.98    0.174      2.499
2      3.55    10.560      9.25    0.125      3.406
Qmax(1) =
          1.000 *    1.000 *    20.072) +
          0.724 *    1.000 *    10.560) + =      27.713
Qmax(2) =
          1.390 *    0.579 *    20.072) +
          1.000 *    1.000 *    10.560) + =      26.705

Total of 2 streams to confluence:
Flow rates before confluence point:
```

```
      20.072      10.560
Maximum flow rates at confluence using above data:
       27.713       26.705
Area of streams before confluence:
        9.370        3.550
Effective area values after confluence:
       12.920        8.972
Results of confluence:
Total flow rate =     27.713(CFS)
Time of concentration =    15.979 min.
Effective stream area after confluence =     12.920(Ac.)
Study area average Pervious fraction(Ap) =  0.641
Study area average soil loss rate(Fm) =    0.160(In/Hr)
Study area total (this main stream) =      12.92(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      108.000 to Point/Station      110.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   327.000(Ft.)
Downstream point/station elevation =   310.000(Ft.)
Pipe length  =   212.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    27.713(CFS)
Given pipe size =     24.00(In.)
Calculated individual pipe flow  =    27.713(CFS)
Normal flow depth in pipe =   11.03(In.)
Flow top width inside pipe =   23.92(In.)
Critical Depth =   21.88(In.)
Pipe flow velocity =     19.65(Ft/s)
Travel time through pipe =    0.18 min.
Time of concentration (TC) =    16.16 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      108.000 to Point/Station      110.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =     12.920(Ac.)
Runoff from this stream =     27.713(CFS)
Time of concentration =   16.16 min.
Rainfall intensity =     2.483(In/Hr)
Area averaged loss rate (Fm) =    0.1602(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6409


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      113.000 to Point/Station      114.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   434.000(Ft.)
Top (of initial area) elevation =   356.000(Ft.)
Bottom (of initial area) elevation =   316.500(Ft.)
Difference in elevation =    39.500(Ft.)
Slope =    0.09101  s(%)=       9.10
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    7.131 min.
NOTE: Distance EXCEEDS recommended maximum value of   328.084(Ft.)
for this Development Type
Rainfall intensity =      3.946(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.871
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Subarea runoff =      2.613(CFS)
Total initial stream area =        0.760(Ac.)


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Process from Point/Station      114.000 to Point/Station      110.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   310.500(Ft.)
Downstream point/station elevation =   310.000(Ft.)
Pipe length  =    28.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     2.613(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =     2.613(CFS)
Normal flow depth in pipe =    5.26(In.)
Flow top width inside pipe =   16.37(In.)
Critical Depth =    7.35(In.)
Pipe flow velocity =      6.08(Ft/s)
Travel time through pipe =    0.08 min.
Time of concentration (TC) =     7.21 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      114.000 to Point/Station      110.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.760(Ac.)
Runoff from this stream =      2.613(CFS)
Time of concentration =    7.21 min.
Rainfall intensity =     3.922(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      111.000 to Point/Station      112.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   408.000(Ft.)
Top (of initial area) elevation =   336.000(Ft.)
Bottom (of initial area) elevation =   316.500(Ft.)
Difference in elevation =    19.500(Ft.)
Slope =    0.04779  s(%)=       4.78
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    7.913 min.
NOTE: Distance EXCEEDS recommended maximum value of   328.084(Ft.)
for this Development Type
Rainfall intensity =      3.720(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.870
Subarea runoff =      2.427(CFS)
Total initial stream area =        0.750(Ac.)


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Process from Point/Station      112.000 to Point/Station      110.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   310.500(Ft.)
Downstream point/station elevation =   310.000(Ft.)
Pipe length  =    14.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     2.427(CFS)
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Given pipe size =     18.00(In.)
Calculated individual pipe flow  =     2.427(CFS)
Normal flow depth in pipe =    4.25(In.)
Flow top width inside pipe =   15.29(In.)
Critical Depth =    7.07(In.)
Pipe flow velocity =      7.62(Ft/s)
Travel time through pipe =    0.03 min.
Time of concentration (TC) =     7.94 min.


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Process from Point/Station      112.000 to Point/Station      110.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 3
Stream flow area =      0.750(Ac.)
Runoff from this stream =      2.427(CFS)
Time of concentration =    7.94 min.
Rainfall intensity =     3.712(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1     12.92    27.713     16.16    0.160      2.483
2      0.76     2.613      7.21    0.125      3.922
3      0.75     2.427      7.94    0.125      3.712
Qmax(1) =
          1.000 *    1.000 *    27.713) +
          0.621 *    1.000 *     2.613) +
          0.658 *    1.000 *     2.427) + =      30.932
Qmax(2) =
          1.619 *    0.446 *    27.713) +
          1.000 *    1.000 *     2.613) +
          1.059 *    0.907 *     2.427) + =      24.959
Qmax(3) =
          1.529 *    0.492 *    27.713) +
          0.945 *    1.000 *     2.613) +
          1.000 *    1.000 *     2.427) + =      25.723

Total of 3 streams to confluence:
Flow rates before confluence point:
      27.713       2.613       2.427
Maximum flow rates at confluence using above data:
       30.932       24.959       25.723
Area of streams before confluence:
       12.920        0.760        0.750
Effective area values after confluence:
       14.430        7.203        7.862
Results of confluence:
Total flow rate =     30.932(CFS)
Time of concentration =    16.159 min.
Effective stream area after confluence =     14.430(Ac.)
Study area average Pervious fraction(Ap) =  0.626
Study area average soil loss rate(Fm) =    0.157(In/Hr)
Study area total (this main stream) =      14.43(Ac.)


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Process from Point/Station      110.000 to Point/Station      115.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
________________________________________________________________________
Upstream point/station elevation =   310.000(Ft.)
Downstream point/station elevation =   309.000(Ft.)
Pipe length  =   396.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    30.932(CFS)
Given pipe size =     36.00(In.)
Calculated individual pipe flow  =    30.932(CFS)
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Normal flow depth in pipe =   27.28(In.)
Flow top width inside pipe =   30.84(In.)
Critical Depth =   21.63(In.)
Pipe flow velocity =      5.38(Ft/s)
Travel time through pipe =    1.23 min.
Time of concentration (TC) =    17.38 min.


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Process from Point/Station      110.000 to Point/Station      115.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     14.430(Ac.)
Runoff from this stream =     30.932(CFS)
Time of concentration =   17.38 min.
Rainfall intensity =     2.383(In/Hr)
Area averaged loss rate (Fm) =    0.1565(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6261
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      116.000 to Point/Station      117.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   320.000(Ft.)
Bottom (of initial area) elevation =   318.000(Ft.)
Difference in elevation =     2.000(Ft.)
Slope =    0.00667  s(%)=       0.67
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   10.376 min.
Rainfall intensity =      3.191(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.865
Subarea runoff =      6.236(CFS)
Total initial stream area =        2.260(Ac.)


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Process from Point/Station      117.000 to Point/Station      115.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
______________________________________________________________________________
Top of street segment elevation =   318.000(Ft.)
End of street segment elevation =   309.000(Ft.)
Length of street segment  =   659.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [2] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =     10.657(CFS)
Depth of flow =   0.382(Ft.), Average velocity =   3.026(Ft/s)
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Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  12.783(Ft.)
Flow velocity =   3.03(Ft/s)
Travel time =    3.63 min.     TC =   14.01  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      2.693(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.858
Subarea runoff =      8.647(CFS) for    4.180(Ac.)
Total runoff =     14.883(CFS)       Total area =        6.44(Ac.)
Area averaged Fm value =    0.125(In/Hr)
Street flow at end of street =     14.883(CFS)
Half street flow at end of street =      7.441(CFS)
Depth of flow =   0.419(Ft.), Average velocity =   3.278(Ft/s)
Flow width (from curb towards crown)=  14.641(Ft.)


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Process from Point/Station      117.000 to Point/Station      115.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      6.440(Ac.)
Runoff from this stream =     14.883(CFS)
Time of concentration =   14.01 min.
Rainfall intensity =     2.693(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000
Program is now starting with Main Stream No. 3


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      118.000 to Point/Station      119.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   349.500(Ft.)
Bottom (of initial area) elevation =   343.000(Ft.)
Difference in elevation =     6.500(Ft.)
Slope =    0.02167  s(%)=       2.17
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.197 min.
Rainfall intensity =      3.647(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.869
Subarea runoff =      6.751(CFS)
Total initial stream area =        2.130(Ac.)


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Process from Point/Station      119.000 to Point/Station      120.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------------
Top of street segment elevation =   343.000(Ft.)
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End of street segment elevation =   317.000(Ft.)
Length of street segment  =   597.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [2] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =     10.690(CFS)
Depth of flow =   0.327(Ft.), Average velocity =   4.724(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  10.024(Ft.)
Flow velocity =   4.72(Ft/s)
Travel time =    2.11 min.     TC =   10.30  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      3.204(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.865
Subarea runoff =      7.741(CFS) for    3.100(Ac.)
Total runoff =     14.492(CFS)        Total area =        5.23(Ac.)
Area averaged Fm value =    0.125(In/Hr)
Street flow at end of street =     14.492(CFS)
Half street flow at end of street =      7.246(CFS)
Depth of flow =   0.355(Ft.), Average velocity =   5.068(Ft/s)
Flow width (from curb towards crown)=  11.415(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      120.000 to Point/Station      121.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
____________________________________________________________________________
Upstream point/station elevation =   311.000(Ft.)
Downstream point/station elevation =   310.000(Ft.)
Pipe length  =    79.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    14.492(CFS)
Given pipe size =     18.00(In.)
NOTE: Normal flow is pressure flow in user selected pipe size.
The approximate hydraulic grade line above the pipe invert is
     2.070(Ft.)  at the headworks or inlet of the pipe(s)
 Pipe friction loss =      1.503(Ft.)
 Minor friction loss =      1.566(Ft.)       K-factor =   1.50
Pipe flow velocity =      8.20(Ft/s)
Travel time through pipe =    0.16 min.
Time of concentration (TC) =    10.46 min.


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Process from Point/Station      120.000 to Point/Station      121.000
**** CONFLUENCE OF MINOR STREAMS ****
____________________________________________________________________________
Along Main Stream number: 3 in normal stream number 1
Stream flow area =      5.230(Ac.)
Runoff from this stream =     14.492(CFS)
Time of concentration =   10.46 min.
Rainfall intensity =     3.176(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
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Area averaged Pervious ratio (Ap) = 0.5000


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Process from Point/Station      111.000 to Point/Station      121.000
**** INITIAL AREA EVALUATION ****
----------------------------------------------------------------------
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   491.000(Ft.)
Top (of initial area) elevation =   336.000(Ft.)
Bottom (of initial area) elevation =   316.500(Ft.)
Difference in elevation =    19.500(Ft.)
Slope =    0.03971  s(%)=       3.97
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.843 min.
NOTE: Distance EXCEEDS recommended maximum value of   328.084(Ft.)
for this Development Type
Rainfall intensity =      3.493(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.868
Subarea runoff =      1.546(CFS)
Total initial stream area =        0.510(Ac.)


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Process from Point/Station      111.000 to Point/Station      121.000
**** CONFLUENCE OF MINOR STREAMS ****
----------------------------------------------------------------------
Along Main Stream number: 3 in normal stream number 2
Stream flow area =      0.510(Ac.)
Runoff from this stream =      1.546(CFS)
Time of concentration =    8.84 min.
Rainfall intensity =     3.493(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1      5.23    14.492     10.46    0.125      3.176
2      0.51     1.546      8.84    0.125      3.493
Qmax(1) =
          1.000 *    1.000 *    14.492) +
          0.906 *    1.000 *     1.546) + =      15.892
Qmax(2) =
          1.104 *    0.845 *    14.492) +
          1.000 *    1.000 *     1.546) + =      15.067

Total of 2 streams to confluence:
Flow rates before confluence point:
      14.492       1.546
Maximum flow rates at confluence using above data:
       15.892       15.067
Area of streams before confluence:
        5.230        0.510
Effective area values after confluence:
        5.740        4.930
Results of confluence:
Total flow rate =     15.892(CFS)
Time of concentration =    10.464 min.
Effective stream area after confluence =      5.740(Ac.)
Study area average Pervious fraction(Ap) =  0.500
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Study area average soil loss rate(Fm) =    0.125(In/Hr)
Study area total (this main stream) =       5.74(Ac.)


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Process from Point/Station      121.000 to Point/Station      115.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
------------------------------------------------------------------------
Upstream point/station elevation =   310.000(Ft.)
Downstream point/station elevation =   309.000(Ft.)
Pipe length  =    44.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    15.892(CFS)
Given pipe size =     18.00(In.)
NOTE: Normal flow is pressure flow in user selected pipe size.
The approximate hydraulic grade line above the pipe invert is
     1.891(Ft.)  at the headworks or inlet of the pipe(s)
 Pipe friction loss =      1.007(Ft.)
 Minor friction loss =      1.884(Ft.)       K-factor =   1.50
Pipe flow velocity =      8.99(Ft/s)
Travel time through pipe =    0.08 min.
Time of concentration (TC) =    10.55 min.


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Process from Point/Station      121.000 to Point/Station      115.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 3
Stream flow area =      5.740(Ac.)
Runoff from this stream =     15.892(CFS)
Time of concentration =   10.55 min.
Rainfall intensity =     3.162(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1     14.43    30.932     17.38    0.157      2.383
2      6.44    14.883     14.01    0.125      2.693
3      5.74    15.892     10.55    0.125      3.162
Qmax(1) =
          1.000 *    1.000 *    30.932) +
          0.879 *    1.000 *    14.883) +
          0.743 *    1.000 *    15.892) + =      55.832
Qmax(2) =
          1.139 *    0.806 *    30.932) +
          1.000 *    1.000 *    14.883) +
          0.846 *    1.000 *    15.892) + =      56.710
Qmax(3) =
          1.350 *    0.607 *    30.932) +
          1.183 *    0.753 *    14.883) +
          1.000 *    1.000 *    15.892) + =      54.476

Total of 3 main streams to confluence:
Flow rates before confluence point:
      31.932      15.883      16.892
Maximum flow rates at confluence using above data:
       55.832       56.710       54.476
Area of streams before confluence:
       14.430        6.440        5.740
Effective area values after confluence:
       26.610       23.805       19.342


Results of confluence:
Total flow rate =     56.710(CFS)
Time of concentration =    14.005 min.
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Effective stream area after confluence  =     23.805(Ac.)
Study area average Pervious fraction(Ap) =  0.568
Study area average soil loss rate(Fm) =    0.142(In/Hr)
Study area total =      26.61(Ac.)


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Process from Point/Station      121.000 to Point/Station      115.000
**** SUBAREA FLOW ADDITION ****
________________________________________________________________________
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
The area added to the existing stream with this TC
does not add flow per Para 6b, Page D-15 of the OCHM,
therefore the upstream flow rate of Q =     56.710(CFS) is being used
Time of concentration =    14.01 min.
Rainfall intensity =      2.693(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.851
Subarea runoff =      0.000(CFS) for    0.790(Ac.)
Total runoff =     56.710(CFS)       Total area =       24.59(Ac.)
Area averaged Fm value =    0.146(In/Hr)
End of computations, total study area =           27.40 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.581
Area averaged SCS curve number (AMC 2) =  70.6
```

- 100 Year Post-Development Rational Method – Area 'A'

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                  Orange County Rational Hydrology Program

               (Hydrology Manual Date(s) October 1986 & November 1996)

 CIVILCADD/CIVILDESIGN  Engineering Software, (c) 1989-2012 Version 8.2
       Rational Hydrology Study, Date: 10/03/16  File Name: pra100.roc
------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION RATIONAL METHOD - AREA 'A' - 100 YEAR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------


Program License Serial Number 4094

------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

------------------------------------------------------------------------

Rational hydrology study storm event year is   100.0

Decimal fraction of study above 2000 ft., 600M  =     0.0000
English Units Used for input data


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      100.000 to Point/Station      101.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   470.500(Ft.)
Bottom (of initial area) elevation =   443.000(Ft.)
Difference in elevation =    27.500(Ft.)
Slope =    0.09167  s(%)=       9.17
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   11.148 min.
Rainfall intensity =      3.908(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.842
Subarea runoff =      0.856(CFS)
Total initial stream area =        0.260(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      101.000 to Point/Station      102.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =      6.087(CFS)
Depth of flow =   0.165(Ft.), Average velocity =   4.479(Ft/s)
       ******* Irregular Channel Data **********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2             50.00              0.00
       3            100.00              1.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =      6.087(CFS)
  '     '       flow top width =     16.487(Ft.)
```

```
   '     '    velocity=    4.479(Ft/s)
   '     '       area =      1.359(Sq.Ft)
   '     '       Froude number =     2.749

Upstream point elevation =   443.000(Ft.)
Downstream point elevation =   365.500(Ft.)
Flow length =   340.000(Ft.)
Travel time  =    1.27 min.
Time of concentration =   12.41 min.
Depth of flow =   0.165(Ft.)
Average velocity =   4.479(Ft/s)
Total irregular channel flow =     6.087(CFS)
Irregular channel normal depth above invert elev. =   0.165(Ft.)
Average velocity of channel(s) =   4.479(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Rainfall intensity =      3.675(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.839
Subarea runoff =     10.363(CFS) for    3.380(Ac.)
Total runoff =     11.219(CFS)       Total area =        3.64(Ac.)
Area averaged Fm value =    0.250(In/Hr)
Depth of flow =   0.207(Ft.), Average velocity =   5.218(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      102.000 to Point/Station      103.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of street segment elevation =   365.500(Ft.)
End of street segment elevation =   355.000(Ft.)
Length of street segment  =   614.000(Ft.)
Height of curb above gutter flowline  =    4.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =   6.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  1.500(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =     15.953(CFS)
Depth of flow =   0.463(Ft.), Average velocity =   3.927(Ft/s)
Warning: depth of flow exceeds top of curb
Note:  depth of flow exceeds top of street crown.
Distance that curb overflow reaches into property =    6.47(Ft.)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  18.000(Ft.)
Flow velocity =   3.93(Ft/s)
Travel time =    2.61 min.     TC =   15.02  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      3.294(In/Hr) for a   100.0 year storm
```

```
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.849
Subarea runoff =      9.395(CFS) for    3.730(Ac.)
Total runoff =     20.614(CFS)       Total area =        7.37(Ac.)
Area averaged Fm value =    0.187(In/Hr)
Street flow at end of street =     20.614(CFS)
Half street flow at end of street =     20.614(CFS)
Depth of flow =   0.491(Ft.), Average velocity =   4.351(Ft/s)
Warning: depth of flow exceeds top of curb
Note:  depth of flow exceeds top of street crown.
Distance that curb overflow reaches into property =    7.88(Ft.)
Flow width (from curb towards crown)=  18.000(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      103.000 to Point/Station      104.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
____________________________________________________________________________
Upstream point/station elevation =   349.000(Ft.)
Downstream point/station elevation =   337.000(Ft.)
Pipe length  =   254.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    20.614(CFS)
Given pipe size =     24.00(In.)
Calculated individual pipe flow  =    20.614(CFS)
Normal flow depth in pipe =   10.84(In.)
Flow top width inside pipe =   23.89(In.)
Critical Depth =   19.54(In.)
Pipe flow velocity =     14.96(Ft/s)
Travel time through pipe =    0.28 min.
Time of concentration (TC) =    15.30 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      103.000 to Point/Station      104.000
**** CONFLUENCE OF MINOR STREAMS ****
____________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      7.370(Ac.)
Runoff from this stream =     20.614(CFS)
Time of concentration =   15.30 min.
Rainfall intensity =     3.259(In/Hr)
Area averaged loss rate (Fm) =    0.1867(In/Hr)
Area averaged Pervious ratio (Ap) = 0.7469


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      105.000 to Point/Station      106.000
**** INITIAL AREA EVALUATION ****
____________________________________________________________________________
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   365.000(Ft.)
Bottom (of initial area) elevation =   362.500(Ft.)
Difference in elevation =     2.500(Ft.)
Slope =    0.00833  s(%)=       0.83
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.923 min.
Rainfall intensity =      4.178(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.873
Subarea runoff =      2.918(CFS)
Total initial stream area =        0.800(Ac.)
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Process from Point/Station      106.000 to Point/Station      107.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
______________________________________________________________________________
Top of street segment elevation =   362.500(Ft.)
End of street segment elevation =   344.000(Ft.)
Length of street segment  =   554.000(Ft.)
Height of curb above gutter flowline  =    4.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =   6.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  1.500(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      4.719(CFS)
Depth of flow =   0.291(Ft.), Average velocity =   4.111(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  10.309(Ft.)
Flow velocity =   4.11(Ft/s)
Travel time =    2.25 min.     TC =   12.17  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      3.717(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.870
Subarea runoff =      3.547(CFS) for    1.200(Ac.)
Total runoff =      6.465(CFS)       Total area =        2.00(Ac.)
Area averaged Fm value =    0.125(In/Hr)
Street flow at end of street =      6.465(CFS)
Half street flow at end of street =      6.465(CFS)
Depth of flow =   0.319(Ft.), Average velocity =   4.431(Ft/s)
Flow width (from curb towards crown)=  11.722(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      107.000 to Point/Station      104.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   337.500(Ft.)
Downstream point/station elevation =   337.000(Ft.)
Pipe length  =    16.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     6.465(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =     6.465(CFS)
Normal flow depth in pipe =    7.33(In.)
Flow top width inside pipe =   17.69(In.)
Critical Depth =   11.80(In.)
Pipe flow velocity =      9.56(Ft/s)
Travel time through pipe =    0.03 min.
Time of concentration (TC) =    12.20 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      107.000 to Point/Station      104.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      2.000(Ac.)
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Runoff from this stream =      6.465(CFS)
Time of concentration =   12.20 min.
Rainfall intensity =     3.712(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1      7.37    20.614     15.30    0.187      3.259
2      2.00     6.465     12.20    0.125      3.712
Qmax(1) =
          1.000 *    1.000 *    20.614) +
          0.874 *    1.000 *     6.465) + =      26.263
Qmax(2) =
          1.147 *    0.797 *    20.614) +
          1.000 *    1.000 *     6.465) + =      25.314

Total of 2 streams to confluence:
Flow rates before confluence point:
      20.614       6.465
Maximum flow rates at confluence using above data:
       26.263       25.314
Area of streams before confluence:
        7.370        2.000
Effective area values after confluence:
        9.370        7.874
Results of confluence:
Total flow rate =     26.263(CFS)
Time of concentration =    15.302 min.
Effective stream area after confluence =      9.370(Ac.)
Study area average Pervious fraction(Ap) =  0.694
Study area average soil loss rate(Fm) =    0.174(In/Hr)
Study area total (this main stream) =       9.37(Ac.)


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Process from Point/Station      104.000 to Point/Station      108.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
____________________________________________________________________________
Upstream point/station elevation =   337.000(Ft.)
Downstream point/station elevation =   327.000(Ft.)
Pipe length  =   281.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    26.263(CFS)
Given pipe size =     24.00(In.)
Calculated individual pipe flow  =    26.263(CFS)
Normal flow depth in pipe =   13.61(In.)
Flow top width inside pipe =   23.78(In.)
Critical Depth =   21.51(In.)
Pipe flow velocity =     14.28(Ft/s)
Travel time through pipe =    0.33 min.
Time of concentration (TC) =    15.63 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      104.000 to Point/Station      108.000
**** CONFLUENCE OF MINOR STREAMS ****
____________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      9.370(Ac.)
Runoff from this stream =     26.263(CFS)
Time of concentration =   15.63 min.
Rainfall intensity =     3.220(In/Hr)
Area averaged loss rate (Fm) =    0.1736(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6942


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      103.000 to Point/Station      109.000
```

```
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   531.000(Ft.)
Top (of initial area) elevation =   355.000(Ft.)
Bottom (of initial area) elevation =   334.000(Ft.)
Difference in elevation =    21.000(Ft.)
Slope =    0.03955  s(%)=       3.95
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.132 min.
NOTE: Distance EXCEEDS recommended maximum value of   328.084(Ft.)
for this Development Type
Rainfall intensity =      4.381(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.874
Subarea runoff =     13.599(CFS)
Total initial stream area =        3.550(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      109.000 to Point/Station      108.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
------------------------------------------------------------------------
Upstream point/station elevation =   328.000(Ft.)
Downstream point/station elevation =   327.000(Ft.)
Pipe length  =    59.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    13.599(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =    13.599(CFS)
Normal flow depth in pipe =   14.66(In.)
Flow top width inside pipe =   13.99(In.)
Critical Depth =   16.44(In.)
Pipe flow velocity =      8.82(Ft/s)
Travel time through pipe =    0.11 min.
Time of concentration (TC) =     9.24 min.


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Process from Point/Station      109.000 to Point/Station      108.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      3.550(Ac.)
Runoff from this stream =     13.599(CFS)
Time of concentration =    9.24 min.
Rainfall intensity =     4.351(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1      9.37    26.263     15.63    0.174      3.220
2      3.55    13.599      9.24    0.125      4.351
Qmax(1) =
          1.000 *    1.000 *    26.263) +
          0.732 *    1.000 *    13.599) + =      36.223
Qmax(2) =
          1.371 *    0.591 *    26.263) +
          1.000 *    1.000 *    13.599) + =      34.896

Total of 2 streams to confluence:
```

```
Flow rates before confluence point:
      26.263      13.599
Maximum flow rates at confluence using above data:
       36.223       34.896
Area of streams before confluence:
        9.370        3.550
Effective area values after confluence:
       12.920        9.091
Results of confluence:
Total flow rate =     36.223(CFS)
Time of concentration =    15.630 min.
Effective stream area after confluence =     12.920(Ac.)
Study area average Pervious fraction(Ap) =  0.641
Study area average soil loss rate(Fm) =    0.160(In/Hr)
Study area total (this main stream) =      12.92(Ac.)


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Process from Point/Station      108.000 to Point/Station      110.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   327.000(Ft.)
Downstream point/station elevation =   310.000(Ft.)
Pipe length  =   212.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    36.223(CFS)
Given pipe size =     24.00(In.)
Calculated individual pipe flow  =    36.223(CFS)
Normal flow depth in pipe =   12.92(In.)
Flow top width inside pipe =   23.93(In.)
Critical depth could not be calculated.
Pipe flow velocity =     21.02(Ft/s)
Travel time through pipe =    0.17 min.
Time of concentration (TC) =    15.80 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      108.000 to Point/Station      110.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =     12.920(Ac.)
Runoff from this stream =     36.223(CFS)
Time of concentration =   15.80 min.
Rainfall intensity =     3.200(In/Hr)
Area averaged loss rate (Fm) =    0.1602(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6409


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Process from Point/Station      113.000 to Point/Station      114.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   434.000(Ft.)
Top (of initial area) elevation =   356.000(Ft.)
Bottom (of initial area) elevation =   316.500(Ft.)
Difference in elevation =    39.500(Ft.)
Slope =    0.09101  s(%)=       9.10
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    7.131 min.
NOTE: Distance EXCEEDS recommended maximum value of   328.084(Ft.)
for this Development Type
Rainfall intensity =      5.049(In/Hr) for a   100.0 year storm
```

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Effective runoff coefficient used for area (Q=KCIA) is C = 0.878
Subarea runoff =      3.368(CFS)
Total initial stream area =        0.760(Ac.)


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Process from Point/Station      114.000 to Point/Station      110.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =   310.500(Ft.)
Downstream point/station elevation =   310.000(Ft.)
Pipe length  =    28.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     3.368(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =     3.368(CFS)
Normal flow depth in pipe =    6.00(In.)
Flow top width inside pipe =   16.97(In.)
Critical Depth =    8.40(In.)
Pipe flow velocity =      6.53(Ft/s)
Travel time through pipe =    0.07 min.
Time of concentration (TC) =     7.20 min.


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Process from Point/Station      114.000 to Point/Station      110.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.760(Ac.)
Runoff from this stream =      3.368(CFS)
Time of concentration =    7.20 min.
Rainfall intensity =     5.020(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      111.000 to Point/Station      112.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   408.000(Ft.)
Top (of initial area) elevation =   336.000(Ft.)
Bottom (of initial area) elevation =   316.500(Ft.)
Difference in elevation =    19.500(Ft.)
Slope =    0.04779  s(%)=       4.78
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    7.913 min.
NOTE: Distance EXCEEDS recommended maximum value of   328.084(Ft.)
for this Development Type
Rainfall intensity =      4.756(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.876
Subarea runoff =      3.126(CFS)
Total initial stream area =        0.750(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      112.000 to Point/Station      110.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =   310.500(Ft.)
Downstream point/station elevation =   310.000(Ft.)
Pipe length  =    14.00(Ft.)   Manning's N = 0.013
```

```
No. of pipes = 1  Required pipe flow  =     3.126(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =     3.126(CFS)
Normal flow depth in pipe =    4.83(In.)
Flow top width inside pipe =   15.95(In.)
Critical Depth =    8.07(In.)
Pipe flow velocity =      8.19(Ft/s)
Travel time through pipe =    0.03 min.
Time of concentration (TC) =     7.94 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      112.000 to Point/Station      110.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 3
Stream flow area =      0.750(Ac.)
Runoff from this stream =      3.126(CFS)
Time of concentration =    7.94 min.
Rainfall intensity =     4.746(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1     12.92    36.223     15.80    0.160      3.200
2      0.76     3.368      7.20    0.125      5.020
3      0.75     3.126      7.94    0.125      4.746
Qmax(1) =
          1.000 *    1.000 *    36.223) +
          0.628 *    1.000 *     3.368) +
          0.665 *    1.000 *     3.126) + =      40.419
Qmax(2) =
          1.598 *    0.456 *    36.223) +
          1.000 *    1.000 *     3.368) +
          1.059 *    0.907 *     3.126) + =      32.766
Qmax(3) =
          1.509 *    0.503 *    36.223) +
          0.944 *    1.000 *     3.368) +
          1.000 *    1.000 *     3.126) + =      33.774

Total of 3 streams to confluence:
Flow rates before confluence point:
      36.223       3.368       3.126
Maximum flow rates at confluence using above data:
       40.419       32.766       33.774
Area of streams before confluence:
       12.920        0.760        0.750
Effective area values after confluence:
       14.430        7.330        8.004
Results of confluence:
Total flow rate =     40.419(CFS)
Time of concentration =    15.799 min.
Effective stream area after confluence =     14.430(Ac.)
Study area average Pervious fraction(Ap) =  0.626
Study area average soil loss rate(Fm) =    0.157(In/Hr)
Study area total (this main stream) =      14.43(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      110.000 to Point/Station      115.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   310.000(Ft.)
Downstream point/station elevation =   309.000(Ft.)
Pipe length  =   396.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    40.419(CFS)
Given pipe size =     36.00(In.)
```

```
NOTE: Normal flow is pressure flow in user selected pipe size.
The approximate hydraulic grade line above the pipe invert is
     1.215(Ft.)  at the headworks or inlet of the pipe(s)
 Pipe friction loss =      1.454(Ft.)
 Minor friction loss =      0.762(Ft.)       K-factor =   1.50
Pipe flow velocity =      5.72(Ft/s)
Travel time through pipe =    1.15 min.
Time of concentration (TC) =    16.95 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      110.000 to Point/Station      115.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     14.430(Ac.)
Runoff from this stream =     40.419(CFS)
Time of concentration =   16.95 min.
Rainfall intensity =     3.074(In/Hr)
Area averaged loss rate (Fm) =    0.1565(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6261
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      116.000 to Point/Station      117.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   320.000(Ft.)
Bottom (of initial area) elevation =   318.000(Ft.)
Difference in elevation =     2.000(Ft.)
Slope =    0.00667  s(%)=       0.67
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   10.376 min.
Rainfall intensity =      4.072(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.872
Subarea runoff =      8.029(CFS)
Total initial stream area =        2.260(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      117.000 to Point/Station      115.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
______________________________________________________________________________
Top of street segment elevation =   318.000(Ft.)
End of street segment elevation =   309.000(Ft.)
Length of street segment  =   659.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [2] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
```

```
Estimated mean flow rate at midpoint of street =     13.739(CFS)
Depth of flow =   0.410(Ft.), Average velocity =   3.215(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  14.176(Ft.)
Flow velocity =   3.22(Ft/s)
Travel time =    3.42 min.     TC =   13.79  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      3.459(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.867
Subarea runoff =     11.298(CFS) for    4.180(Ac.)
Total runoff =     19.327(CFS)        Total area =        6.44(Ac.)
Area averaged Fm value =    0.125(In/Hr)
Street flow at end of street =     19.327(CFS)
Half street flow at end of street =      9.663(CFS)
Depth of flow =   0.452(Ft.), Average velocity =   3.491(Ft/s)
Flow width (from curb towards crown)=  16.252(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      117.000 to Point/Station      115.000
**** CONFLUENCE OF MAIN STREAMS ****
____________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      6.440(Ac.)
Runoff from this stream =     19.327(CFS)
Time of concentration =   13.79 min.
Rainfall intensity =     3.459(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000
Program is now starting with Main Stream No. 3


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      118.000 to Point/Station      119.000
**** INITIAL AREA EVALUATION ****
____________________________________________________________________________
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   349.500(Ft.)
Bottom (of initial area) elevation =   343.000(Ft.)
Difference in elevation =     6.500(Ft.)
Slope =    0.02167  s(%)=       2.17
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.197 min.
Rainfall intensity =      4.661(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.876
Subarea runoff =      8.696(CFS)
Total initial stream area =        2.130(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      119.000 to Point/Station      120.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
```

```
------------------------------------------------------------------------
Top of street segment elevation =   343.000(Ft.)
End of street segment elevation =   317.000(Ft.)
Length of street segment  =   597.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [2] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =     13.827(CFS)
Depth of flow =   0.350(Ft.), Average velocity =   5.013(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  11.191(Ft.)
Flow velocity =   5.01(Ft/s)
Travel time =    1.98 min.     TC =   10.18  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      4.117(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.873
Subarea runoff =     10.092(CFS) for    3.100(Ac.)
Total runoff =     18.788(CFS)       Total area =        5.23(Ac.)
Area averaged Fm value =    0.125(In/Hr)
Street flow at end of street =     18.788(CFS)
Half street flow at end of street =      9.394(CFS)
Depth of flow =   0.381(Ft.), Average velocity =   5.388(Ft/s)
Flow width (from curb towards crown)=  12.716(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      120.000 to Point/Station      121.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
------------------------------------------------------------------------
Upstream point/station elevation =   311.000(Ft.)
Downstream point/station elevation =   310.000(Ft.)
Pipe length  =    79.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    18.788(CFS)
Given pipe size =     18.00(In.)
NOTE: Normal flow is pressure flow in user selected pipe size.
The approximate hydraulic grade line above the pipe invert is
     4.159(Ft.)  at the headworks or inlet of the pipe(s)
 Pipe friction loss =      2.526(Ft.)
 Minor friction loss =      2.633(Ft.)       K-factor =   1.50
Pipe flow velocity =     10.63(Ft/s)
Travel time through pipe =    0.12 min.
Time of concentration (TC) =    10.31 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      120.000 to Point/Station      121.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------
Along Main Stream number: 3 in normal stream number 1
Stream flow area =      5.230(Ac.)
Runoff from this stream =     18.788(CFS)
Time of concentration =   10.31 min.
```

```
Rainfall intensity =     4.088(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      111.000 to Point/Station      121.000
**** INITIAL AREA EVALUATION ****
----------------------------------------------------------------------------
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   491.000(Ft.)
Top (of initial area) elevation =   336.000(Ft.)
Bottom (of initial area) elevation =   316.500(Ft.)
Difference in elevation =    19.500(Ft.)
Slope =    0.03971  s(%)=       3.97
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.843 min.
NOTE: Distance EXCEEDS recommended maximum value of   328.084(Ft.)
for this Development Type
Rainfall intensity =      4.463(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.875
Subarea runoff =      1.991(CFS)
Total initial stream area =        0.510(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      111.000 to Point/Station      121.000
**** CONFLUENCE OF MINOR STREAMS ****
----------------------------------------------------------------------------
Along Main Stream number: 3 in normal stream number 2
Stream flow area =      0.510(Ac.)
Runoff from this stream =      1.991(CFS)
Time of concentration =    8.84 min.
Rainfall intensity =     4.463(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1      5.23    18.788     10.31    0.125      4.088
2      0.51     1.991      8.84    0.125      4.463
Qmax(1) =
          1.000 *    1.000 *    18.788) +
          0.914 *    1.000 *     1.991) + =      20.607
Qmax(2) =
          1.095 *    0.858 *    18.788) +
          1.000 *    1.000 *     1.991) + =      19.637

Total of 2 streams to confluence:
Flow rates before confluence point:
      18.788       1.991
Maximum flow rates at confluence using above data:
       20.607       19.637
Area of streams before confluence:
        5.230        0.510
Effective area values after confluence:
        5.740        4.998
Results of confluence:
Total flow rate =     20.607(CFS)
Time of concentration =    10.305 min.
```

```
Effective stream area after confluence =      5.740(Ac.)
Study area average Pervious fraction(Ap) =  0.500
Study area average soil loss rate(Fm) =    0.125(In/Hr)
Study area total (this main stream) =       5.74(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      121.000 to Point/Station      115.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
------------------------------------------------------------------------
Upstream point/station elevation =   310.000(Ft.)
Downstream point/station elevation =   309.000(Ft.)
Pipe length  =    44.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    20.607(CFS)
Given pipe size =     18.00(In.)
NOTE: Normal flow is pressure flow in user selected pipe size.
The approximate hydraulic grade line above the pipe invert is
     3.860(Ft.)  at the headworks or inlet of the pipe(s)
 Pipe friction loss =      1.693(Ft.)
 Minor friction loss =      3.167(Ft.)       K-factor =   1.50
Pipe flow velocity =     11.66(Ft/s)
Travel time through pipe =    0.06 min.
Time of concentration (TC) =    10.37 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      121.000 to Point/Station      115.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 3
Stream flow area =      5.740(Ac.)
Runoff from this stream =     20.607(CFS)
Time of concentration =   10.37 min.
Rainfall intensity =     4.074(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1     14.43    40.419     16.95    0.157      3.074
2      6.44    19.327     13.79    0.125      3.459
3      5.74    20.607     10.37    0.125      4.074
Qmax(1) =
          1.000 *    1.000 *    40.419) +
          0.884 *    1.000 *    19.327) +
          0.747 *    1.000 *    20.607) + =      72.897
Qmax(2) =
          1.132 *    0.814 *    40.419) +
          1.000 *    1.000 *    19.327) +
          0.844 *    1.000 *    20.607) + =      73.959
Qmax(3) =
          1.343 *    0.612 *    40.419) +
          1.184 *    0.752 *    19.327) +
          1.000 *    1.000 *    20.607) + =      71.011

Total of 3 main streams to confluence:
Flow rates before confluence point:
      41.419      20.327      21.607
Maximum flow rates at confluence using above data:
       72.897       73.959       71.011
Area of streams before confluence:
       14.430        6.440        5.740
Effective area values after confluence:
       26.610       23.919       19.407


Results of confluence:
```

```
Total flow rate =     73.959(CFS)
Time of concentration =    13.792 min.
Effective stream area after confluence  =     23.919(Ac.)
Study area average Pervious fraction(Ap) =  0.568
Study area average soil loss rate(Fm) =    0.142(In/Hr)
Study area total =      26.61(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      121.000 to Point/Station      115.000
**** SUBAREA FLOW ADDITION ****
______________________________________________________________________________
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
The area added to the existing stream with this TC
does not add flow per Para 6b, Page D-15 of the OCHM,
therefore the upstream flow rate of Q =     73.959(CFS) is being used
Time of concentration =    13.79 min.
Rainfall intensity =      3.459(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.862
Subarea runoff =      0.000(CFS) for    0.790(Ac.)
Total runoff =     73.959(CFS)       Total area =       24.71(Ac.)
Area averaged Fm value =    0.146(In/Hr)
End of computations, total study area =           27.40 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.581
Area averaged SCS curve number (AMC 2) =  70.6
```

- 2 Year 3 Hour Pre-Development Unit Hydrograph – Area 'A'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/13/16   File Name exa00203.out


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------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'A' - 2 YEAR 3 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 2

       Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 77.0      27.4          1.00     C     0.250     1.000    0.250

Area-averaged adjusted loss rate Fm (In/Hr) =  0.250

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
    27.39   1.000         77.0      59.4       6.84     0.030

Area-averaged catchment yield fraction, Y =  0.030
Area-averaged low loss fraction, Yb =  0.970
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.634 (hours)
Watershed area =      27.39(Ac.)
Catchment Lag time =   0.507 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 16.4301
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.250(In/Hr)
Average low loss rate fraction (Yb) = 0.970 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.190(In)
Computed peak 30-minute rainfall =  0.400(In)
Specified peak 1-hour rainfall =  0.530(In)
Computed peak 3-hour rainfall =  0.890(In)
Specified peak 6-hour rainfall =  1.220(In)
Specified peak 24-hour rainfall =  2.050(In)


Rainfall depth area reduction factors:
Using a total area of      27.39(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.190(In)
30-minute factor = 0.999    Adjusted rainfall =  0.399(In)
```

1-hour factor = 0.999 Adjusted rainfall = 0.529(In)
3-hour factor = 1.000 Adjusted rainfall = 0.890(In)
6-hour factor = 1.000 Adjusted rainfall = 1.220(In)
24-hour factor = 1.000 Adjusted rainfall = 2.050(In)

U n i t H y d r o g r a p h

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 331.25 (CFS))	
1	1.045	3.460
2	3.789	9.091
3	7.751	13.124
4	13.221	18.120
5	21.491	27.393
6	36.217	48.781
7	54.473	60.474
8	62.841	27.717
9	68.774	19.653
10	73.329	15.088
11	77.162	12.697
12	80.366	10.614
13	83.164	9.269
14	85.522	7.809
15	87.588	6.846
16	89.439	6.129
17	91.016	5.225
18	92.402	4.591
19	93.644	4.115
20	94.698	3.491
21	95.567	2.878
22	96.324	2.506
23	96.984	2.187
24	97.511	1.746
25	97.915	1.337
26	98.128	0.705
27	98.325	0.653
28	98.516	0.633
29	98.683	0.552
30	98.847	0.544
31	99.001	0.509
32	99.105	0.347
33	99.204	0.327
34	99.307	0.342
35	99.435	0.423
36	99.566	0.435
37	99.690	0.410
38	99.765	0.247
39	99.830	0.218
40	99.893	0.207
41	99.931	0.126
42	99.964	0.109
43	100.000	0.054

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.1898	0.1898
2	0.2531	0.0633
3	0.2995	0.0464
4	0.3376	0.0380
5	0.3703	0.0328
6	0.3995	0.0291
7	0.4253	0.0258
8	0.4490	0.0237
9	0.4710	0.0220
10	0.4916	0.0206
11	0.5109	0.0194
12	0.5293	0.0184

13	0.5497	0.0204
14	0.5693	0.0196
15	0.5882	0.0189
16	0.6064	0.0182
17	0.6241	0.0176
18	0.6412	0.0171
19	0.6578	0.0166
20	0.6739	0.0161
21	0.6897	0.0157
22	0.7050	0.0153
23	0.7200	0.0150
24	0.7346	0.0146
25	0.7489	0.0143
26	0.7629	0.0140
27	0.7767	0.0137
28	0.7902	0.0135
29	0.8034	0.0132
30	0.8164	0.0130
31	0.8291	0.0128
32	0.8417	0.0125
33	0.8540	0.0123
34	0.8661	0.0121
35	0.8781	0.0120
36	0.8899	0.0118

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0118	0.0114	0.0004
2	0.0120	0.0116	0.0004
3	0.0123	0.0120	0.0004
4	0.0125	0.0122	0.0004
5	0.0130	0.0126	0.0004
6	0.0132	0.0128	0.0004
7	0.0137	0.0133	0.0004
8	0.0140	0.0136	0.0004
9	0.0146	0.0142	0.0004
10	0.0150	0.0145	0.0005
11	0.0157	0.0153	0.0005
12	0.0161	0.0157	0.0005
13	0.0171	0.0166	0.0005
14	0.0176	0.0171	0.0005
15	0.0189	0.0183	0.0006
16	0.0196	0.0190	0.0006
17	0.0184	0.0178	0.0006
18	0.0194	0.0188	0.0006
19	0.0220	0.0208	0.0012
20	0.0237	0.0208	0.0029
21	0.0291	0.0208	0.0083
22	0.0328	0.0208	0.0120
23	0.0464	0.0208	0.0256
24	0.0633	0.0208	0.0425
25	0.1898	0.0208	0.1689
26	0.0380	0.0208	0.0172
27	0.0258	0.0208	0.0050
28	0.0206	0.0200	0.0006
29	0.0204	0.0198	0.0006
30	0.0182	0.0177	0.0006
31	0.0166	0.0161	0.0005
32	0.0153	0.0149	0.0005
33	0.0143	0.0139	0.0004
34	0.0135	0.0131	0.0004
35	0.0128	0.0124	0.0004
36	0.0121	0.0118	0.0004

Total soil rain loss = 0.59(In)
Total effective rainfall = 0.30(In)
Peak flow rate in flood hydrograph = 13.25(CFS)

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                        3 - H O U R    S T O R M
                     R u n o f f      H y d r o g r a p h
------------------------------------------------------------------------------
                Hydrograph in   5   Minute intervals ((CFS))

------------------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0        5.0      10.0      15.0      20.0
------------------------------------------------------------------------------
  0+ 5       0.0000      0.00  Q          |         |         |         |
  0+10       0.0000      0.00  Q          |         |         |         |
  0+15       0.0001      0.01  Q          |         |         |         |
  0+20       0.0002      0.02  Q          |         |         |         |
  0+25       0.0004      0.03  Q          |         |         |         |
  0+30       0.0007      0.04  Q          |         |         |         |
  0+35       0.0012      0.07  Q          |         |         |         |
  0+40       0.0017      0.08  Q          |         |         |         |
  0+45       0.0023      0.09  Q          |         |         |         |
  0+50       0.0029      0.09  Q          |         |         |         |
  0+55       0.0036      0.10  Q          |         |         |         |
  1+ 0       0.0044      0.11  Q          |         |         |         |
  1+ 5       0.0052      0.12  Q          |         |         |         |
  1+10       0.0060      0.12  Q          |         |         |         |
  1+15       0.0069      0.13  Q          |         |         |         |
  1+20       0.0078      0.13  Q          |         |         |         |
  1+25       0.0088      0.14  Q          |         |         |         |
  1+30       0.0098      0.15  Q          |         |         |         |
  1+35       0.0109      0.16  Q          |         |         |         |
  1+40       0.0121      0.17  Q          |         |         |         |
  1+45       0.0137      0.22  Q          |         |         |         |
  1+50       0.0159      0.32  Q          |         |         |         |
  1+55       0.0195      0.52  |Q         |         |         |         |
  2+ 0       0.0259      0.93  |Q         |         |         |         |
  2+ 5       0.0399      2.04  | V Q      |         |         |         |
  2+10       0.0648      3.62  |  V   Q   |         |         |         |
  2+15       0.0999      5.10  |    V    Q|         |         |         |
  2+20       0.1469      6.82  |       V |  Q       |         |         |
  2+25       0.2104      9.22  |         | V     Q  |         |         |
  2+30       0.2967     12.54  |         |      V   |    Q    |         |
  2+35       0.3880     13.25  |         |          | V   Q   |         |
  2+40       0.4398      7.53  |         |    Q     |    V    |         |
  2+45       0.4769      5.39  |         Q          |      V  |         |
  2+50       0.5056      4.16  |       Q |          |       V|         |
  2+55       0.5296      3.49  |     Q   |          |         |V        |
  3+ 0       0.5501      2.96  |    Q    |          |         | V       |
  3+ 5       0.5678      2.58  |    Q    |          |         |  V      |
  3+10       0.5831      2.22  |   Q     |          |         |   V     |
  3+15       0.5965      1.95  |  Q      |          |         |    V    |
  3+20       0.6084      1.73  |  Q      |          |         |     V   |
  3+25       0.6187      1.49  | Q       |          |         |     V   |
  3+30       0.6277      1.30  | Q       |          |         |      V  |
  3+35       0.6355      1.13  | Q       |          |         |      V  |
  3+40       0.6421      0.96  |Q        |          |         |       V |
  3+45       0.6476      0.80  |Q        |          |         |       V |
  3+50       0.6523      0.69  |Q        |          |         |       V |
  3+55       0.6563      0.58  |Q        |          |         |       V |
  4+ 0       0.6595      0.46  Q         |          |         |        V|
  4+ 5       0.6619      0.35  Q         |          |         |        V|
  4+10       0.6635      0.23  Q         |          |         |        V|
  4+15       0.6648      0.20  Q         |          |         |        V|
  4+20       0.6661      0.18  Q         |          |         |        V|
  4+25       0.6672      0.16  Q         |          |         |        V|
  4+30       0.6683      0.15  Q         |          |         |        V|
  4+35       0.6692      0.14  Q         |          |         |        V|
  4+40       0.6700      0.11  Q         |          |         |        V|
  4+45       0.6707      0.10  Q         |          |         |        V|
  4+50       0.6714      0.11  Q         |          |         |        V|
  4+55       0.6722      0.12  Q         |          |         |        V|
  5+ 0       0.6730      0.11  Q         |          |         |        V|
  5+ 5       0.6737      0.10  Q         |          |         |        V|
  5+10       0.6742      0.07  Q         |          |         |        V|
```

```
    5+15       0.6746      0.06  Q         |         |         |        V|
    5+20       0.6749      0.05  Q         |         |         |        V|
    5+25       0.6752      0.03  Q         |         |         |        V|
    5+30       0.6753      0.03  Q         |         |         |        V|
    5+35       0.6754      0.01  Q         |         |         |        V|
    5+40       0.6754      0.00  Q         |         |         |        V|
    5+45       0.6755      0.00  Q         |         |         |        V|
    5+50       0.6755      0.00  Q         |         |         |        V|
    5+55       0.6755      0.00  Q         |         |         |        V|
    6+ 0       0.6755      0.00  Q         |         |         |        V|
---------------------------------------------------------------------------
```

- 2 Year 6 Hour Pre-Development Unit Hydrograph – Area 'A'

```
        U n i t   H y d r o g r a p h   A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989-2012, Version 7.2

        Study date  10/13/16   File Name exa00206.out


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------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'A' - 2 YEAR 6 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

        Storm Event Year = 2

        Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 77.0      27.4          1.00     C     0.250     1.000    0.250

Area-averaged adjusted loss rate Fm (In/Hr) =  0.250

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)           Yield Fr
    27.39   1.000         77.0      59.4       6.84     0.030

Area-averaged catchment yield fraction, Y =  0.030
Area-averaged low loss fraction, Yb =  0.970
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.634 (hours)
Watershed area =      27.39(Ac.)
Catchment Lag time =   0.507 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 16.4301
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.250(In/Hr)
Average low loss rate fraction (Yb) = 0.970 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.190(In)
Computed peak 30-minute rainfall =  0.400(In)
Specified peak 1-hour rainfall =  0.530(In)
Computed peak 3-hour rainfall =  0.890(In)
Specified peak 6-hour rainfall =  1.220(In)
Specified peak 24-hour rainfall =  2.050(In)


Rainfall depth area reduction factors:
Using a total area of      27.39(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.190(In)
30-minute factor = 0.999    Adjusted rainfall =  0.399(In)
```

1-hour factor = 0.999 Adjusted rainfall = 0.529(In)
3-hour factor = 1.000 Adjusted rainfall = 0.890(In)
6-hour factor = 1.000 Adjusted rainfall = 1.220(In)
24-hour factor = 1.000 Adjusted rainfall = 2.050(In)

U n i t H y d r o g r a p h

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 331.25 (CFS))	
1	1.045	3.460
2	3.789	9.091
3	7.751	13.124
4	13.221	18.120
5	21.491	27.393
6	36.217	48.781
7	54.473	60.474
8	62.841	27.717
9	68.774	19.653
10	73.329	15.088
11	77.162	12.697
12	80.366	10.614
13	83.164	9.269
14	85.522	7.809
15	87.588	6.846
16	89.439	6.129
17	91.016	5.225
18	92.402	4.591
19	93.644	4.115
20	94.698	3.491
21	95.567	2.878
22	96.324	2.506
23	96.984	2.187
24	97.511	1.746
25	97.915	1.337
26	98.128	0.705
27	98.325	0.653
28	98.516	0.633
29	98.683	0.552
30	98.847	0.544
31	99.001	0.509
32	99.105	0.347
33	99.204	0.327
34	99.307	0.342
35	99.435	0.423
36	99.566	0.435
37	99.690	0.410
38	99.765	0.247
39	99.830	0.218
40	99.893	0.207
41	99.931	0.126
42	99.964	0.109
43	100.000	0.054

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.1898	0.1898
2	0.2531	0.0633
3	0.2995	0.0464
4	0.3376	0.0380
5	0.3703	0.0328
6	0.3995	0.0291
7	0.4253	0.0258
8	0.4490	0.0237
9	0.4710	0.0220
10	0.4916	0.0206
11	0.5109	0.0194
12	0.5293	0.0184

13	0.5497	0.0204
14	0.5693	0.0196
15	0.5882	0.0189
16	0.6064	0.0182
17	0.6241	0.0176
18	0.6412	0.0171
19	0.6578	0.0166
20	0.6739	0.0161
21	0.6897	0.0157
22	0.7050	0.0153
23	0.7200	0.0150
24	0.7346	0.0146
25	0.7489	0.0143
26	0.7629	0.0140
27	0.7767	0.0137
28	0.7902	0.0135
29	0.8034	0.0132
30	0.8164	0.0130
31	0.8291	0.0128
32	0.8417	0.0125
33	0.8540	0.0123
34	0.8661	0.0121
35	0.8781	0.0120
36	0.8899	0.0118
37	0.9010	0.0112
38	0.9120	0.0110
39	0.9229	0.0108
40	0.9336	0.0107
41	0.9441	0.0106
42	0.9545	0.0104
43	0.9648	0.0103
44	0.9750	0.0101
45	0.9850	0.0100
46	0.9949	0.0099
47	1.0047	0.0098
48	1.0143	0.0097
49	1.0239	0.0096
50	1.0334	0.0095
51	1.0427	0.0094
52	1.0520	0.0093
53	1.0611	0.0092
54	1.0702	0.0091
55	1.0792	0.0090
56	1.0881	0.0089
57	1.0969	0.0088
58	1.1056	0.0087
59	1.1142	0.0086
60	1.1228	0.0086
61	1.1312	0.0085
62	1.1396	0.0084
63	1.1480	0.0083
64	1.1562	0.0083
65	1.1644	0.0082
66	1.1725	0.0081
67	1.1806	0.0081
68	1.1886	0.0080
69	1.1965	0.0079
70	1.2044	0.0079
71	1.2122	0.0078
72	1.2199	0.0077

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0077	0.0075	0.0002
2	0.0078	0.0076	0.0002
3	0.0079	0.0077	0.0002
4	0.0080	0.0077	0.0002
5	0.0081	0.0079	0.0002
6	0.0082	0.0079	0.0002

7	0.0083	0.0081	0.0003
8	0.0084	0.0081	0.0003
9	0.0086	0.0083	0.0003
10	0.0086	0.0084	0.0003
11	0.0088	0.0085	0.0003
12	0.0089	0.0086	0.0003
13	0.0091	0.0088	0.0003
14	0.0092	0.0089	0.0003
15	0.0094	0.0091	0.0003
16	0.0095	0.0092	0.0003
17	0.0097	0.0094	0.0003
18	0.0098	0.0095	0.0003
19	0.0100	0.0097	0.0003
20	0.0101	0.0098	0.0003
21	0.0104	0.0101	0.0003
22	0.0106	0.0102	0.0003
23	0.0108	0.0105	0.0003
24	0.0110	0.0107	0.0003
25	0.0118	0.0114	0.0004
26	0.0120	0.0116	0.0004
27	0.0123	0.0120	0.0004
28	0.0125	0.0122	0.0004
29	0.0130	0.0126	0.0004
30	0.0132	0.0128	0.0004
31	0.0137	0.0133	0.0004
32	0.0140	0.0136	0.0004
33	0.0146	0.0142	0.0004
34	0.0150	0.0145	0.0005
35	0.0157	0.0153	0.0005
36	0.0161	0.0157	0.0005
37	0.0171	0.0166	0.0005
38	0.0176	0.0171	0.0005
39	0.0189	0.0183	0.0006
40	0.0196	0.0190	0.0006
41	0.0184	0.0178	0.0006
42	0.0194	0.0188	0.0006
43	0.0220	0.0208	0.0012
44	0.0237	0.0208	0.0029
45	0.0291	0.0208	0.0083
46	0.0328	0.0208	0.0120
47	0.0464	0.0208	0.0256
48	0.0633	0.0208	0.0425
49	0.1898	0.0208	0.1689
50	0.0380	0.0208	0.0172
51	0.0258	0.0208	0.0050
52	0.0206	0.0200	0.0006
53	0.0204	0.0198	0.0006
54	0.0182	0.0177	0.0006
55	0.0166	0.0161	0.0005
56	0.0153	0.0149	0.0005
57	0.0143	0.0139	0.0004
58	0.0135	0.0131	0.0004
59	0.0128	0.0124	0.0004
60	0.0121	0.0118	0.0004
61	0.0112	0.0108	0.0003
62	0.0107	0.0104	0.0003
63	0.0103	0.0100	0.0003
64	0.0099	0.0096	0.0003
65	0.0096	0.0093	0.0003
66	0.0093	0.0090	0.0003
67	0.0090	0.0087	0.0003
68	0.0087	0.0085	0.0003
69	0.0085	0.0082	0.0003
70	0.0083	0.0080	0.0002
71	0.0081	0.0078	0.0002
72	0.0079	0.0076	0.0002

Total soil rain loss = 0.91(In)
Total effective rainfall = 0.31(In)
Peak flow rate in flood hydrograph = 13.25(CFS)

6 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0 5.0 10.0 15.0 20.0
0+ 5	0.0000	0.00	Q
0+10	0.0000	0.00	Q
0+15	0.0001	0.01	Q
0+20	0.0001	0.01	Q
0+25	0.0003	0.02	Q
0+30	0.0005	0.03	Q
0+35	0.0007	0.04	Q
0+40	0.0011	0.05	Q
0+45	0.0015	0.06	Q
0+50	0.0019	0.06	Q
0+55	0.0023	0.06	Q
1+ 0	0.0028	0.07	Q
1+ 5	0.0033	0.07	Q
1+10	0.0037	0.07	Q
1+15	0.0043	0.07	Q
1+20	0.0048	0.08	Q
1+25	0.0053	0.08	Q
1+30	0.0059	0.08	Q
1+35	0.0065	0.08	Q
1+40	0.0071	0.09	Q
1+45	0.0077	0.09	Q
1+50	0.0083	0.09	Q
1+55	0.0089	0.09	Q
2+ 0	0.0096	0.09	Q
2+ 5	0.0103	0.10	Q
2+10	0.0109	0.10	Q
2+15	0.0116	0.10	Q
2+20	0.0123	0.10	Q
2+25	0.0131	0.11	Q
2+30	0.0138	0.11	Q
2+35	0.0146	0.11	Q
2+40	0.0154	0.11	Q
2+45	0.0162	0.12	Q
2+50	0.0170	0.12	Q
2+55	0.0179	0.12	QV
3+ 0	0.0187	0.13	QV
3+ 5	0.0196	0.13	QV
3+10	0.0206	0.14	QV
3+15	0.0215	0.14	QV
3+20	0.0225	0.15	QV
3+25	0.0236	0.15	QV
3+30	0.0247	0.16	QV
3+35	0.0258	0.16	QV
3+40	0.0270	0.18	QV
3+45	0.0286	0.23	QV
3+50	0.0308	0.33	QV
3+55	0.0345	0.53	Q
4+ 0	0.0409	0.93	QV
4+ 5	0.0549	2.04	VQ
4+10	0.0798	3.62	V Q
4+15	0.1150	5.10	V Q
4+20	0.1619	6.82	V Q
4+25	0.2255	9.22	V Q
4+30	0.3118	12.54	V Q
4+35	0.4031	13.25	V Q
4+40	0.4549	7.53	Q V
4+45	0.4920	5.39	Q V
4+50	0.5207	4.16	Q V
4+55	0.5447	3.49	Q V
5+ 0	0.5652	2.96	Q V
5+ 5	0.5829	2.58	Q V

```
    5+10       0.5983      2.22  |   Q     |         |         |   V     |
    5+15       0.6117      1.96  |  Q      |         |         |    V    |
    5+20       0.6237      1.74  |  Q      |         |         |    V    |
    5+25       0.6342      1.52  |  Q      |         |         |     V   |
    5+30       0.6434      1.34  | Q       |         |         |     V   |
    5+35       0.6516      1.19  | Q       |         |         |      V  |
    5+40       0.6587      1.02  | Q       |         |         |      V  |
    5+45       0.6647      0.87  |Q        |         |         |       V |
    5+50       0.6699      0.76  |Q        |         |         |       V |
    5+55       0.6744      0.65  |Q        |         |         |       V |
    6+ 0       0.6780      0.53  |Q        |         |         |       V |
    6+ 5       0.6810      0.42  Q         |         |         |        V|
    6+10       0.6830      0.30  Q         |         |         |        V|
    6+15       0.6849      0.27  Q         |         |         |        V|
    6+20       0.6866      0.25  Q         |         |         |        V|
    6+25       0.6881      0.22  Q         |         |         |        V|
    6+30       0.6895      0.20  Q         |         |         |        V|
    6+35       0.6907      0.17  Q         |         |         |        V|
    6+40       0.6916      0.14  Q         |         |         |        V|
    6+45       0.6925      0.13  Q         |         |         |        V|
    6+50       0.6934      0.13  Q         |         |         |        V|
    6+55       0.6943      0.13  Q         |         |         |        V|
    7+ 0       0.6952      0.13  Q         |         |         |        V|
    7+ 5       0.6960      0.11  Q         |         |         |        V|
    7+10       0.6965      0.08  Q         |         |         |        V|
    7+15       0.6970      0.07  Q         |         |         |        V|
    7+20       0.6974      0.06  Q         |         |         |        V|
    7+25       0.6977      0.04  Q         |         |         |        V|
    7+30       0.6979      0.03  Q         |         |         |        V|
    7+35       0.6980      0.02  Q         |         |         |        V|
    7+40       0.6981      0.01  Q         |         |         |        V|
    7+45       0.6981      0.00  Q         |         |         |        V|
    7+50       0.6981      0.00  Q         |         |         |        V|
    7+55       0.6982      0.00  Q         |         |         |        V|
    8+ 0       0.6982      0.00  Q         |         |         |        V|
    8+ 5       0.6982      0.00  Q         |         |         |        V|
    8+10       0.6982      0.00  Q         |         |         |        V|
    8+15       0.6982      0.00  Q         |         |         |        V|
    8+20       0.6982      0.00  Q         |         |         |        V|
    8+25       0.6982      0.00  Q         |         |         |        V|
    8+30       0.6982      0.00  Q         |         |         |        V|
    8+35       0.6982      0.00  Q         |         |         |        V|
    8+40       0.6982      0.00  Q         |         |         |        V|
    8+45       0.6982      0.00  Q         |         |         |        V|
    8+50       0.6983      0.00  Q         |         |         |        V|
    8+55       0.6983      0.00  Q         |         |         |        V|
    9+ 0       0.6983      0.00  Q         |         |         |        V|
-------------------------------------------------------------------------
```

- 2 Year 12 Hour Pre-Development Unit Hydrograph – Area 'A'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/13/16   File Name exa00212.out


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'A' - 2 YEAR 12 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 2

       Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 77.0      27.4          1.00     C     0.250     1.000    0.250

Area-averaged adjusted loss rate Fm (In/Hr) =  0.250

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
    27.39   1.000         77.0      59.4       6.84     0.030

Area-averaged catchment yield fraction, Y =  0.030
Area-averaged low loss fraction, Yb =  0.970
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.634 (hours)
Watershed area =      27.39(Ac.)
Catchment Lag time =   0.507 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 16.4301
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.250(In/Hr)
Average low loss rate fraction (Yb) = 0.970 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.190(In)
Computed peak 30-minute rainfall =  0.400(In)
Specified peak 1-hour rainfall =  0.530(In)
Computed peak 3-hour rainfall =  0.890(In)
Specified peak 6-hour rainfall =  1.220(In)
Specified peak 24-hour rainfall =  2.050(In)


Rainfall depth area reduction factors:
Using a total area of      27.39(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.190(In)
30-minute factor = 0.999    Adjusted rainfall =  0.399(In)
```

```
1-hour factor = 0.999       Adjusted rainfall =  0.529(In)
3-hour factor = 1.000       Adjusted rainfall =  0.890(In)
6-hour factor = 1.000       Adjusted rainfall =  1.220(In)
24-hour factor = 1.000 Adjusted rainfall =  2.050(In)
```

U n i t H y d r o g r a p h

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 331.25 (CFS))	
1	1.045	3.460
2	3.789	9.091
3	7.751	13.124
4	13.221	18.120
5	21.491	27.393
6	36.217	48.781
7	54.473	60.474
8	62.841	27.717
9	68.774	19.653
10	73.329	15.088
11	77.162	12.697
12	80.366	10.614
13	83.164	9.269
14	85.522	7.809
15	87.588	6.846
16	89.439	6.129
17	91.016	5.225
18	92.402	4.591
19	93.644	4.115
20	94.698	3.491
21	95.567	2.878
22	96.324	2.506
23	96.984	2.187
24	97.511	1.746
25	97.915	1.337
26	98.128	0.705
27	98.325	0.653
28	98.516	0.633
29	98.683	0.552
30	98.847	0.544
31	99.001	0.509
32	99.105	0.347
33	99.204	0.327
34	99.307	0.342
35	99.435	0.423
36	99.566	0.435
37	99.690	0.410
38	99.765	0.247
39	99.830	0.218
40	99.893	0.207
41	99.931	0.126
42	99.964	0.109
43	100.000	0.054

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.1898	0.1898
2	0.2531	0.0633
3	0.2995	0.0464
4	0.3376	0.0380
5	0.3703	0.0328
6	0.3995	0.0291
7	0.4253	0.0258
8	0.4490	0.0237
9	0.4710	0.0220
10	0.4916	0.0206
11	0.5109	0.0194
12	0.5293	0.0184

13	0.5497	0.0204
14	0.5693	0.0196
15	0.5882	0.0189
16	0.6064	0.0182
17	0.6241	0.0176
18	0.6412	0.0171
19	0.6578	0.0166
20	0.6739	0.0161
21	0.6897	0.0157
22	0.7050	0.0153
23	0.7200	0.0150
24	0.7346	0.0146
25	0.7489	0.0143
26	0.7629	0.0140
27	0.7767	0.0137
28	0.7902	0.0135
29	0.8034	0.0132
30	0.8164	0.0130
31	0.8291	0.0128
32	0.8417	0.0125
33	0.8540	0.0123
34	0.8661	0.0121
35	0.8781	0.0120
36	0.8899	0.0118
37	0.9010	0.0112
38	0.9120	0.0110
39	0.9229	0.0108
40	0.9336	0.0107
41	0.9441	0.0106
42	0.9545	0.0104
43	0.9648	0.0103
44	0.9750	0.0101
45	0.9850	0.0100
46	0.9949	0.0099
47	1.0047	0.0098
48	1.0143	0.0097
49	1.0239	0.0096
50	1.0334	0.0095
51	1.0427	0.0094
52	1.0520	0.0093
53	1.0611	0.0092
54	1.0702	0.0091
55	1.0792	0.0090
56	1.0881	0.0089
57	1.0969	0.0088
58	1.1056	0.0087
59	1.1142	0.0086
60	1.1228	0.0086
61	1.1312	0.0085
62	1.1396	0.0084
63	1.1480	0.0083
64	1.1562	0.0083
65	1.1644	0.0082
66	1.1725	0.0081
67	1.1806	0.0081
68	1.1886	0.0080
69	1.1965	0.0079
70	1.2044	0.0079
71	1.2122	0.0078
72	1.2199	0.0077
73	1.2262	0.0063
74	1.2325	0.0063
75	1.2387	0.0062
76	1.2448	0.0062
77	1.2509	0.0061
78	1.2570	0.0061
79	1.2630	0.0060
80	1.2690	0.0060
81	1.2749	0.0059
82	1.2808	0.0059
83	1.2866	0.0058

84	1.2924	0.0058
85	1.2981	0.0057
86	1.3038	0.0057
87	1.3095	0.0057
88	1.3151	0.0056
89	1.3207	0.0056
90	1.3262	0.0055
91	1.3317	0.0055
92	1.3372	0.0055
93	1.3426	0.0054
94	1.3480	0.0054
95	1.3533	0.0054
96	1.3586	0.0053
97	1.3639	0.0053
98	1.3692	0.0052
99	1.3744	0.0052
100	1.3796	0.0052
101	1.3847	0.0051
102	1.3898	0.0051
103	1.3949	0.0051
104	1.4000	0.0051
105	1.4050	0.0050
106	1.4100	0.0050
107	1.4149	0.0050
108	1.4199	0.0049
109	1.4248	0.0049
110	1.4297	0.0049
111	1.4345	0.0049
112	1.4393	0.0048
113	1.4441	0.0048
114	1.4489	0.0048
115	1.4537	0.0047
116	1.4584	0.0047
117	1.4631	0.0047
118	1.4677	0.0047
119	1.4724	0.0046
120	1.4770	0.0046
121	1.4816	0.0046
122	1.4862	0.0046
123	1.4907	0.0045
124	1.4953	0.0045
125	1.4998	0.0045
126	1.5042	0.0045
127	1.5087	0.0045
128	1.5131	0.0044
129	1.5176	0.0044
130	1.5219	0.0044
131	1.5263	0.0044
132	1.5307	0.0044
133	1.5350	0.0043
134	1.5393	0.0043
135	1.5436	0.0043
136	1.5479	0.0043
137	1.5521	0.0043
138	1.5564	0.0042
139	1.5606	0.0042
140	1.5648	0.0042
141	1.5689	0.0042
142	1.5731	0.0042
143	1.5772	0.0041
144	1.5814	0.0041

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0041	0.0040	0.0001
2	0.0041	0.0040	0.0001
3	0.0042	0.0040	0.0001
4	0.0042	0.0041	0.0001
5	0.0042	0.0041	0.0001

6	0.0043	0.0041	0.0001
7	0.0043	0.0042	0.0001
8	0.0043	0.0042	0.0001
9	0.0044	0.0042	0.0001
10	0.0044	0.0042	0.0001
11	0.0044	0.0043	0.0001
12	0.0044	0.0043	0.0001
13	0.0045	0.0043	0.0001
14	0.0045	0.0044	0.0001
15	0.0045	0.0044	0.0001
16	0.0046	0.0044	0.0001
17	0.0046	0.0045	0.0001
18	0.0046	0.0045	0.0001
19	0.0047	0.0046	0.0001
20	0.0047	0.0046	0.0001
21	0.0048	0.0046	0.0001
22	0.0048	0.0047	0.0001
23	0.0049	0.0047	0.0001
24	0.0049	0.0047	0.0001
25	0.0049	0.0048	0.0001
26	0.0050	0.0048	0.0002
27	0.0050	0.0049	0.0002
28	0.0051	0.0049	0.0002
29	0.0051	0.0050	0.0002
30	0.0051	0.0050	0.0002
31	0.0052	0.0051	0.0002
32	0.0052	0.0051	0.0002
33	0.0053	0.0052	0.0002
34	0.0054	0.0052	0.0002
35	0.0054	0.0053	0.0002
36	0.0055	0.0053	0.0002
37	0.0055	0.0054	0.0002
38	0.0056	0.0054	0.0002
39	0.0057	0.0055	0.0002
40	0.0057	0.0055	0.0002
41	0.0058	0.0056	0.0002
42	0.0058	0.0056	0.0002
43	0.0059	0.0057	0.0002
44	0.0060	0.0058	0.0002
45	0.0061	0.0059	0.0002
46	0.0061	0.0059	0.0002
47	0.0062	0.0060	0.0002
48	0.0063	0.0061	0.0002
49	0.0077	0.0075	0.0002
50	0.0078	0.0076	0.0002
51	0.0079	0.0077	0.0002
52	0.0080	0.0077	0.0002
53	0.0081	0.0079	0.0002
54	0.0082	0.0079	0.0002
55	0.0083	0.0081	0.0003
56	0.0084	0.0081	0.0003
57	0.0086	0.0083	0.0003
58	0.0086	0.0084	0.0003
59	0.0088	0.0085	0.0003
60	0.0089	0.0086	0.0003
61	0.0091	0.0088	0.0003
62	0.0092	0.0089	0.0003
63	0.0094	0.0091	0.0003
64	0.0095	0.0092	0.0003
65	0.0097	0.0094	0.0003
66	0.0098	0.0095	0.0003
67	0.0100	0.0097	0.0003
68	0.0101	0.0098	0.0003
69	0.0104	0.0101	0.0003
70	0.0106	0.0102	0.0003
71	0.0108	0.0105	0.0003
72	0.0110	0.0107	0.0003
73	0.0118	0.0114	0.0004
74	0.0120	0.0116	0.0004
75	0.0123	0.0120	0.0004
76	0.0125	0.0122	0.0004

77	0.0130	0.0126	0.0004
78	0.0132	0.0128	0.0004
79	0.0137	0.0133	0.0004
80	0.0140	0.0136	0.0004
81	0.0146	0.0142	0.0004
82	0.0150	0.0145	0.0005
83	0.0157	0.0153	0.0005
84	0.0161	0.0157	0.0005
85	0.0171	0.0166	0.0005
86	0.0176	0.0171	0.0005
87	0.0189	0.0183	0.0006
88	0.0196	0.0190	0.0006
89	0.0184	0.0178	0.0006
90	0.0194	0.0188	0.0006
91	0.0220	0.0208	0.0012
92	0.0237	0.0208	0.0029
93	0.0291	0.0208	0.0083
94	0.0328	0.0208	0.0120
95	0.0464	0.0208	0.0256
96	0.0633	0.0208	0.0425
97	0.1898	0.0208	0.1689
98	0.0380	0.0208	0.0172
99	0.0258	0.0208	0.0050
100	0.0206	0.0200	0.0006
101	0.0204	0.0198	0.0006
102	0.0182	0.0177	0.0006
103	0.0166	0.0161	0.0005
104	0.0153	0.0149	0.0005
105	0.0143	0.0139	0.0004
106	0.0135	0.0131	0.0004
107	0.0128	0.0124	0.0004
108	0.0121	0.0118	0.0004
109	0.0112	0.0108	0.0003
110	0.0107	0.0104	0.0003
111	0.0103	0.0100	0.0003
112	0.0099	0.0096	0.0003
113	0.0096	0.0093	0.0003
114	0.0093	0.0090	0.0003
115	0.0090	0.0087	0.0003
116	0.0087	0.0085	0.0003
117	0.0085	0.0082	0.0003
118	0.0083	0.0080	0.0002
119	0.0081	0.0078	0.0002
120	0.0079	0.0076	0.0002
121	0.0063	0.0061	0.0002
122	0.0062	0.0060	0.0002
123	0.0060	0.0058	0.0002
124	0.0059	0.0057	0.0002
125	0.0057	0.0056	0.0002
126	0.0056	0.0054	0.0002
127	0.0055	0.0053	0.0002
128	0.0054	0.0052	0.0002
129	0.0053	0.0051	0.0002
130	0.0052	0.0050	0.0002
131	0.0051	0.0049	0.0002
132	0.0050	0.0048	0.0002
133	0.0049	0.0048	0.0001
134	0.0048	0.0047	0.0001
135	0.0047	0.0046	0.0001
136	0.0047	0.0045	0.0001
137	0.0046	0.0045	0.0001
138	0.0045	0.0044	0.0001
139	0.0045	0.0043	0.0001
140	0.0044	0.0043	0.0001
141	0.0043	0.0042	0.0001
142	0.0043	0.0041	0.0001
143	0.0042	0.0041	0.0001
144	0.0042	0.0040	0.0001

Total soil rain loss = 1.26(In)

```
      Total effective rainfall =      0.32(In)
      Peak flow rate in flood hydrograph =     13.25(CFS)
      ------------------------------------------------------------------------
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                         12 - H O U R    S T O R M
                    R u n o f f      H y d r o g r a p h
      ------------------------------------------------------------------------
                  Hydrograph in   5   Minute intervals ((CFS))

      ------------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0        5.0      10.0      15.0      20.0
----------------------------------------------------------------------------
  0+ 5       0.0000      0.00  Q         |         |         |         |
  0+10       0.0000      0.00  Q         |         |         |         |
  0+15       0.0000      0.00  Q         |         |         |         |
  0+20       0.0001      0.01  Q         |         |         |         |
  0+25       0.0001      0.01  Q         |         |         |         |
  0+30       0.0002      0.02  Q         |         |         |         |
  0+35       0.0004      0.02  Q         |         |         |         |
  0+40       0.0006      0.03  Q         |         |         |         |
  0+45       0.0008      0.03  Q         |         |         |         |
  0+50       0.0010      0.03  Q         |         |         |         |
  0+55       0.0012      0.03  Q         |         |         |         |
  1+ 0       0.0015      0.03  Q         |         |         |         |
  1+ 5       0.0017      0.04  Q         |         |         |         |
  1+10       0.0020      0.04  Q         |         |         |         |
  1+15       0.0022      0.04  Q         |         |         |         |
  1+20       0.0025      0.04  Q         |         |         |         |
  1+25       0.0028      0.04  Q         |         |         |         |
  1+30       0.0030      0.04  Q         |         |         |         |
  1+35       0.0033      0.04  Q         |         |         |         |
  1+40       0.0036      0.04  Q         |         |         |         |
  1+45       0.0039      0.04  Q         |         |         |         |
  1+50       0.0042      0.04  Q         |         |         |         |
  1+55       0.0045      0.04  Q         |         |         |         |
  2+ 0       0.0048      0.04  Q         |         |         |         |
  2+ 5       0.0052      0.05  Q         |         |         |         |
  2+10       0.0055      0.05  Q         |         |         |         |
  2+15       0.0058      0.05  Q         |         |         |         |
  2+20       0.0061      0.05  Q         |         |         |         |
  2+25       0.0064      0.05  Q         |         |         |         |
  2+30       0.0068      0.05  Q         |         |         |         |
  2+35       0.0071      0.05  Q         |         |         |         |
  2+40       0.0074      0.05  Q         |         |         |         |
  2+45       0.0078      0.05  Q         |         |         |         |
  2+50       0.0081      0.05  Q         |         |         |         |
  2+55       0.0085      0.05  Q         |         |         |         |
  3+ 0       0.0088      0.05  Q         |         |         |         |
  3+ 5       0.0092      0.05  Q         |         |         |         |
  3+10       0.0095      0.05  Q         |         |         |         |
  3+15       0.0099      0.05  Q         |         |         |         |
  3+20       0.0102      0.05  Q         |         |         |         |
  3+25       0.0106      0.05  Q         |         |         |         |
  3+30       0.0110      0.05  Q         |         |         |         |
  3+35       0.0114      0.05  Q         |         |         |         |
  3+40       0.0117      0.05  Q         |         |         |         |
  3+45       0.0121      0.06  Q         |         |         |         |
  3+50       0.0125      0.06  Q         |         |         |         |
  3+55       0.0129      0.06  Q         |         |         |         |
  4+ 0       0.0133      0.06  Q         |         |         |         |
  4+ 5       0.0137      0.06  Q         |         |         |         |
  4+10       0.0141      0.06  Q         |         |         |         |
  4+15       0.0145      0.06  Q         |         |         |         |
  4+20       0.0149      0.06  Q         |         |         |         |
  4+25       0.0154      0.06  Q         |         |         |         |
  4+30       0.0158      0.07  Q         |         |         |         |
  4+35       0.0163      0.07  Q         |         |         |         |
  4+40       0.0168      0.07  Q         |         |         |         |
  4+45       0.0173      0.07  Q         |         |         |         |
  4+50       0.0178      0.08  Q         |         |         |         |
  4+55       0.0184      0.08  QV        |         |         |         |
```

```
 5+ 0       0.0189      0.08  QV        |         |         |         |
 5+ 5       0.0195      0.08  QV        |         |         |         |
 5+10       0.0200      0.08  QV        |         |         |         |
 5+15       0.0206      0.08  QV        |         |         |         |
 5+20       0.0211      0.08  QV        |         |         |         |
 5+25       0.0217      0.08  QV        |         |         |         |
 5+30       0.0223      0.09  QV        |         |         |         |
 5+35       0.0229      0.09  QV        |         |         |         |
 5+40       0.0235      0.09  QV        |         |         |         |
 5+45       0.0242      0.09  QV        |         |         |         |
 5+50       0.0248      0.09  QV        |         |         |         |
 5+55       0.0255      0.09  QV        |         |         |         |
 6+ 0       0.0261      0.10  QV        |         |         |         |
 6+ 5       0.0268      0.10  QV        |         |         |         |
 6+10       0.0275      0.10  QV        |         |         |         |
 6+15       0.0282      0.10  QV        |         |         |         |
 6+20       0.0289      0.10  QV        |         |         |         |
 6+25       0.0296      0.11  QV        |         |         |         |
 6+30       0.0304      0.11  QV        |         |         |         |
 6+35       0.0311      0.11  QV        |         |         |         |
 6+40       0.0319      0.12  QV        |         |         |         |
 6+45       0.0327      0.12  QV        |         |         |         |
 6+50       0.0336      0.12  QV        |         |         |         |
 6+55       0.0344      0.12  QV        |         |         |         |
 7+ 0       0.0353      0.13  QV        |         |         |         |
 7+ 5       0.0362      0.13  Q V       |         |         |         |
 7+10       0.0372      0.14  Q V       |         |         |         |
 7+15       0.0381      0.14  Q V       |         |         |         |
 7+20       0.0391      0.15  Q V       |         |         |         |
 7+25       0.0402      0.15  Q V       |         |         |         |
 7+30       0.0412      0.16  Q V       |         |         |         |
 7+35       0.0424      0.16  Q V       |         |         |         |
 7+40       0.0436      0.18  Q V       |         |         |         |
 7+45       0.0452      0.23  Q V       |         |         |         |
 7+50       0.0474      0.33  Q V       |         |         |         |
 7+55       0.0510      0.53  |QV       |         |         |         |
 8+ 0       0.0575      0.93  |Q V      |         |         |         |
 8+ 5       0.0715      2.04  |  VQ     |         |         |         |
 8+10       0.0964      3.62  |    V Q  |         |         |         |
 8+15       0.1316      5.10  |      V  Q         |         |         |
 8+20       0.1785      6.82  |        V|  Q      |         |         |
 8+25       0.2420      9.22  |         |  V    Q |         |         |
 8+30       0.3284     12.54  |         |       V |    Q    |         |
 8+35       0.4197     13.25  |         |         |  V  Q   |         |
 8+40       0.4715      7.53  |         |    Q    |     V   |         |
 8+45       0.5086      5.39  |         Q         |       V |         |
 8+50       0.5373      4.16  |        Q |        |         V|         |
 8+55       0.5613      3.49  |     Q    |        |          |V        |
 9+ 0       0.5817      2.96  |    Q     |        |          | V       |
 9+ 5       0.5995      2.58  |    Q     |        |          |  V      |
 9+10       0.6148      2.22  |   Q      |        |          |   V     |
 9+15       0.6283      1.96  |  Q       |        |          |   V     |
 9+20       0.6403      1.74  |  Q       |        |          |    V    |
 9+25       0.6508      1.52  |  Q       |        |          |    V    |
 9+30       0.6600      1.34  | Q        |        |          |     V   |
 9+35       0.6682      1.19  | Q        |        |          |     V   |
 9+40       0.6752      1.02  | Q        |        |          |      V  |
 9+45       0.6812      0.87  |Q         |        |          |      V  |
 9+50       0.6864      0.76  |Q         |        |          |      V  |
 9+55       0.6910      0.65  |Q         |        |          |       V |
10+ 0       0.6946      0.53  |Q         |        |          |       V |
10+ 5       0.6976      0.42  Q          |        |          |       V |
10+10       0.6996      0.30  Q          |        |          |       V |
10+15       0.7015      0.27  Q          |        |          |       V |
10+20       0.7033      0.26  Q          |        |          |       V |
10+25       0.7049      0.24  Q          |        |          |       V |
10+30       0.7065      0.22  Q          |        |          |        V|
10+35       0.7079      0.21  Q          |        |          |        V|
10+40       0.7091      0.17  Q          |        |          |        V|
10+45       0.7102      0.17  Q          |        |          |        V|
10+50       0.7114      0.17  Q          |        |          |        V|
```

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  10+55       0.7126      0.18  Q          |          |          |         V|
  11+ 0       0.7138      0.17  Q          |          |          |         V|
  11+ 5       0.7149      0.16  Q          |          |          |         V|
  11+10       0.7158      0.13  Q          |          |          |         V|
  11+15       0.7166      0.12  Q          |          |          |         V|
  11+20       0.7173      0.11  Q          |          |          |         V|
  11+25       0.7179      0.09  Q          |          |          |         V|
  11+30       0.7185      0.08  Q          |          |          |         V|
  11+35       0.7189      0.06  Q          |          |          |         V|
  11+40       0.7193      0.05  Q          |          |          |         V|
  11+45       0.7196      0.05  Q          |          |          |         V|
  11+50       0.7200      0.05  Q          |          |          |         V|
  11+55       0.7203      0.05  Q          |          |          |         V|
  12+ 0       0.7206      0.05  Q          |          |          |         V|
  12+ 5       0.7210      0.05  Q          |          |          |         V|
  12+10       0.7213      0.04  Q          |          |          |         V|
  12+15       0.7216      0.04  Q          |          |          |         V|
  12+20       0.7218      0.04  Q          |          |          |         V|
  12+25       0.7221      0.04  Q          |          |          |         V|
  12+30       0.7223      0.03  Q          |          |          |         V|
  12+35       0.7224      0.02  Q          |          |          |         V|
  12+40       0.7226      0.02  Q          |          |          |         V|
  12+45       0.7227      0.01  Q          |          |          |         V|
  12+50       0.7227      0.01  Q          |          |          |         V|
  12+55       0.7228      0.01  Q          |          |          |         V|
  13+ 0       0.7229      0.01  Q          |          |          |         V|
  13+ 5       0.7229      0.01  Q          |          |          |         V|
  13+10       0.7230      0.01  Q          |          |          |         V|
  13+15       0.7230      0.01  Q          |          |          |         V|
  13+20       0.7230      0.00  Q          |          |          |         V|
  13+25       0.7231      0.00  Q          |          |          |         V|
  13+30       0.7231      0.00  Q          |          |          |         V|
  13+35       0.7231      0.00  Q          |          |          |         V|
  13+40       0.7231      0.00  Q          |          |          |         V|
  13+45       0.7231      0.00  Q          |          |          |         V|
  13+50       0.7232      0.00  Q          |          |          |         V|
  13+55       0.7232      0.00  Q          |          |          |         V|
  14+ 0       0.7232      0.00  Q          |          |          |         V|
  14+ 5       0.7232      0.00  Q          |          |          |         V|
  14+10       0.7232      0.00  Q          |          |          |         V|
  14+15       0.7232      0.00  Q          |          |          |         V|
  14+20       0.7232      0.00  Q          |          |          |         V|
  14+25       0.7232      0.00  Q          |          |          |         V|
  14+30       0.7232      0.00  Q          |          |          |         V|
  14+35       0.7232      0.00  Q          |          |          |         V|
  14+40       0.7232      0.00  Q          |          |          |         V|
  14+45       0.7232      0.00  Q          |          |          |         V|
  14+50       0.7232      0.00  Q          |          |          |         V|
  14+55       0.7232      0.00  Q          |          |          |         V|
  15+ 0       0.7232      0.00  Q          |          |          |         V|
  15+ 5       0.7232      0.00  Q          |          |          |         V|
  15+10       0.7232      0.00  Q          |          |          |         V|
  15+15       0.7232      0.00  Q          |          |          |         V|
  15+20       0.7232      0.00  Q          |          |          |         V|
  15+25       0.7232      0.00  Q          |          |          |         V|
  15+30       0.7232      0.00  Q          |          |          |          V
-------------------------------------------------------------------------------
```

- 2 Year 24 Hour Pre-Development Unit Hydrograph – Area 'A'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989-2012, Version 7.2

       Study date  10/13/16   File Name exa00224.out


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------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'A' - 2 YEAR 24 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 2

       Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 77.0      27.4          1.00     C     0.250     1.000    0.250

Area-averaged adjusted loss rate Fm (In/Hr) =  0.250

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
    27.39   1.000         77.0      59.4       6.84     0.030

Area-averaged catchment yield fraction, Y =  0.030
Area-averaged low loss fraction, Yb =  0.970
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.634 (hours)
Watershed area =      27.39(Ac.)
Catchment Lag time =   0.507 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 16.4301
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.250(In/Hr)
Average low loss rate fraction (Yb) = 0.970 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.190(In)
Computed peak 30-minute rainfall =  0.400(In)
Specified peak 1-hour rainfall =  0.530(In)
Computed peak 3-hour rainfall =  0.890(In)
Specified peak 6-hour rainfall =  1.220(In)
Specified peak 24-hour rainfall =  2.050(In)


Rainfall depth area reduction factors:
Using a total area of      27.39(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.190(In)
30-minute factor = 0.999    Adjusted rainfall =  0.399(In)
```

```
1-hour factor = 0.999       Adjusted rainfall =  0.529(In)
3-hour factor = 1.000       Adjusted rainfall =  0.890(In)
6-hour factor = 1.000       Adjusted rainfall =  1.220(In)
24-hour factor = 1.000 Adjusted rainfall =  2.050(In)
--------------------------------------------------------------------

                     U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------
               (K =       331.25 (CFS))

  1                1.045                   3.460
  2                3.789                   9.091
  3                7.751                  13.124
  4               13.221                  18.120
  5               21.491                  27.393
  6               36.217                  48.781
  7               54.473                  60.474
  8               62.841                  27.717
  9               68.774                  19.653
 10               73.329                  15.088
 11               77.162                  12.697
 12               80.366                  10.614
 13               83.164                   9.269
 14               85.522                   7.809
 15               87.588                   6.846
 16               89.439                   6.129
 17               91.016                   5.225
 18               92.402                   4.591
 19               93.644                   4.115
 20               94.698                   3.491
 21               95.567                   2.878
 22               96.324                   2.506
 23               96.984                   2.187
 24               97.511                   1.746
 25               97.915                   1.337
 26               98.128                   0.705
 27               98.325                   0.653
 28               98.516                   0.633
 29               98.683                   0.552
 30               98.847                   0.544
 31               99.001                   0.509
 32               99.105                   0.347
 33               99.204                   0.327
 34               99.307                   0.342
 35               99.435                   0.423
 36               99.566                   0.435
 37               99.690                   0.410
 38               99.765                   0.247
 39               99.830                   0.218
 40               99.893                   0.207
 41               99.931                   0.126
 42               99.964                   0.109
 43              100.000                   0.054
--------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.1898              0.1898
  2              0.2531              0.0633
  3              0.2995              0.0464
  4              0.3376              0.0380
  5              0.3703              0.0328
  6              0.3995              0.0291
  7              0.4253              0.0258
  8              0.4490              0.0237
  9              0.4710              0.0220
 10              0.4916              0.0206
 11              0.5109              0.0194
 12              0.5293              0.0184
```

13	0.5497	0.0204
14	0.5693	0.0196
15	0.5882	0.0189
16	0.6064	0.0182
17	0.6241	0.0176
18	0.6412	0.0171
19	0.6578	0.0166
20	0.6739	0.0161
21	0.6897	0.0157
22	0.7050	0.0153
23	0.7200	0.0150
24	0.7346	0.0146
25	0.7489	0.0143
26	0.7629	0.0140
27	0.7767	0.0137
28	0.7902	0.0135
29	0.8034	0.0132
30	0.8164	0.0130
31	0.8291	0.0128
32	0.8417	0.0125
33	0.8540	0.0123
34	0.8661	0.0121
35	0.8781	0.0120
36	0.8899	0.0118
37	0.9010	0.0112
38	0.9120	0.0110
39	0.9229	0.0108
40	0.9336	0.0107
41	0.9441	0.0106
42	0.9545	0.0104
43	0.9648	0.0103
44	0.9750	0.0101
45	0.9850	0.0100
46	0.9949	0.0099
47	1.0047	0.0098
48	1.0143	0.0097
49	1.0239	0.0096
50	1.0334	0.0095
51	1.0427	0.0094
52	1.0520	0.0093
53	1.0611	0.0092
54	1.0702	0.0091
55	1.0792	0.0090
56	1.0881	0.0089
57	1.0969	0.0088
58	1.1056	0.0087
59	1.1142	0.0086
60	1.1228	0.0086
61	1.1312	0.0085
62	1.1396	0.0084
63	1.1480	0.0083
64	1.1562	0.0083
65	1.1644	0.0082
66	1.1725	0.0081
67	1.1806	0.0081
68	1.1886	0.0080
69	1.1965	0.0079
70	1.2044	0.0079
71	1.2122	0.0078
72	1.2199	0.0077
73	1.2262	0.0063
74	1.2325	0.0063
75	1.2387	0.0062
76	1.2448	0.0062
77	1.2509	0.0061
78	1.2570	0.0061
79	1.2630	0.0060
80	1.2690	0.0060
81	1.2749	0.0059
82	1.2808	0.0059
83	1.2866	0.0058

84	1.2924	0.0058
85	1.2981	0.0057
86	1.3038	0.0057
87	1.3095	0.0057
88	1.3151	0.0056
89	1.3207	0.0056
90	1.3262	0.0055
91	1.3317	0.0055
92	1.3372	0.0055
93	1.3426	0.0054
94	1.3480	0.0054
95	1.3533	0.0054
96	1.3586	0.0053
97	1.3639	0.0053
98	1.3692	0.0052
99	1.3744	0.0052
100	1.3796	0.0052
101	1.3847	0.0051
102	1.3898	0.0051
103	1.3949	0.0051
104	1.4000	0.0051
105	1.4050	0.0050
106	1.4100	0.0050
107	1.4149	0.0050
108	1.4199	0.0049
109	1.4248	0.0049
110	1.4297	0.0049
111	1.4345	0.0049
112	1.4393	0.0048
113	1.4441	0.0048
114	1.4489	0.0048
115	1.4537	0.0047
116	1.4584	0.0047
117	1.4631	0.0047
118	1.4677	0.0047
119	1.4724	0.0046
120	1.4770	0.0046
121	1.4816	0.0046
122	1.4862	0.0046
123	1.4907	0.0045
124	1.4953	0.0045
125	1.4998	0.0045
126	1.5042	0.0045
127	1.5087	0.0045
128	1.5131	0.0044
129	1.5176	0.0044
130	1.5219	0.0044
131	1.5263	0.0044
132	1.5307	0.0044
133	1.5350	0.0043
134	1.5393	0.0043
135	1.5436	0.0043
136	1.5479	0.0043
137	1.5521	0.0043
138	1.5564	0.0042
139	1.5606	0.0042
140	1.5648	0.0042
141	1.5689	0.0042
142	1.5731	0.0042
143	1.5772	0.0041
144	1.5814	0.0041
145	1.5855	0.0041
146	1.5895	0.0041
147	1.5936	0.0041
148	1.5977	0.0041
149	1.6017	0.0040
150	1.6057	0.0040
151	1.6097	0.0040
152	1.6137	0.0040
153	1.6177	0.0040
154	1.6216	0.0040

155	1.6256	0.0039
156	1.6295	0.0039
157	1.6334	0.0039
158	1.6373	0.0039
159	1.6411	0.0039
160	1.6450	0.0039
161	1.6488	0.0038
162	1.6527	0.0038
163	1.6565	0.0038
164	1.6603	0.0038
165	1.6641	0.0038
166	1.6678	0.0038
167	1.6716	0.0038
168	1.6753	0.0037
169	1.6790	0.0037
170	1.6828	0.0037
171	1.6865	0.0037
172	1.6901	0.0037
173	1.6938	0.0037
174	1.6975	0.0037
175	1.7011	0.0036
176	1.7047	0.0036
177	1.7084	0.0036
178	1.7120	0.0036
179	1.7156	0.0036
180	1.7192	0.0036
181	1.7227	0.0036
182	1.7263	0.0036
183	1.7298	0.0035
184	1.7334	0.0035
185	1.7369	0.0035
186	1.7404	0.0035
187	1.7439	0.0035
188	1.7474	0.0035
189	1.7508	0.0035
190	1.7543	0.0035
191	1.7578	0.0035
192	1.7612	0.0034
193	1.7646	0.0034
194	1.7680	0.0034
195	1.7715	0.0034
196	1.7749	0.0034
197	1.7782	0.0034
198	1.7816	0.0034
199	1.7850	0.0034
200	1.7883	0.0034
201	1.7917	0.0033
202	1.7950	0.0033
203	1.7983	0.0033
204	1.8016	0.0033
205	1.8049	0.0033
206	1.8082	0.0033
207	1.8115	0.0033
208	1.8148	0.0033
209	1.8180	0.0033
210	1.8213	0.0033
211	1.8245	0.0032
212	1.8278	0.0032
213	1.8310	0.0032
214	1.8342	0.0032
215	1.8374	0.0032
216	1.8406	0.0032
217	1.8438	0.0032
218	1.8470	0.0032
219	1.8501	0.0032
220	1.8533	0.0032
221	1.8564	0.0031
222	1.8596	0.0031
223	1.8627	0.0031
224	1.8658	0.0031
225	1.8690	0.0031

226	1.8721	0.0031
227	1.8752	0.0031
228	1.8782	0.0031
229	1.8813	0.0031
230	1.8844	0.0031
231	1.8875	0.0031
232	1.8905	0.0031
233	1.8936	0.0030
234	1.8966	0.0030
235	1.8996	0.0030
236	1.9027	0.0030
237	1.9057	0.0030
238	1.9087	0.0030
239	1.9117	0.0030
240	1.9147	0.0030
241	1.9176	0.0030
242	1.9206	0.0030
243	1.9236	0.0030
244	1.9266	0.0030
245	1.9295	0.0030
246	1.9324	0.0029
247	1.9354	0.0029
248	1.9383	0.0029
249	1.9412	0.0029
250	1.9442	0.0029
251	1.9471	0.0029
252	1.9500	0.0029
253	1.9529	0.0029
254	1.9557	0.0029
255	1.9586	0.0029
256	1.9615	0.0029
257	1.9644	0.0029
258	1.9672	0.0029
259	1.9701	0.0029
260	1.9729	0.0028
261	1.9758	0.0028
262	1.9786	0.0028
263	1.9814	0.0028
264	1.9842	0.0028
265	1.9870	0.0028
266	1.9898	0.0028
267	1.9926	0.0028
268	1.9954	0.0028
269	1.9982	0.0028
270	2.0010	0.0028
271	2.0038	0.0028
272	2.0065	0.0028
273	2.0093	0.0028
274	2.0120	0.0028
275	2.0148	0.0027
276	2.0175	0.0027
277	2.0203	0.0027
278	2.0230	0.0027
279	2.0257	0.0027
280	2.0284	0.0027
281	2.0311	0.0027
282	2.0338	0.0027
283	2.0365	0.0027
284	2.0392	0.0027
285	2.0419	0.0027
286	2.0446	0.0027
287	2.0473	0.0027
288	2.0499	0.0027

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0027	0.0026	0.0001
2	0.0027	0.0026	0.0001
3	0.0027	0.0026	0.0001

4	0.0027	0.0026	0.0001
5	0.0027	0.0026	0.0001
6	0.0027	0.0026	0.0001
7	0.0027	0.0026	0.0001
8	0.0027	0.0026	0.0001
9	0.0027	0.0027	0.0001
10	0.0027	0.0027	0.0001
11	0.0028	0.0027	0.0001
12	0.0028	0.0027	0.0001
13	0.0028	0.0027	0.0001
14	0.0028	0.0027	0.0001
15	0.0028	0.0027	0.0001
16	0.0028	0.0027	0.0001
17	0.0028	0.0027	0.0001
18	0.0028	0.0027	0.0001
19	0.0028	0.0028	0.0001
20	0.0028	0.0028	0.0001
21	0.0029	0.0028	0.0001
22	0.0029	0.0028	0.0001
23	0.0029	0.0028	0.0001
24	0.0029	0.0028	0.0001
25	0.0029	0.0028	0.0001
26	0.0029	0.0028	0.0001
27	0.0029	0.0028	0.0001
28	0.0029	0.0028	0.0001
29	0.0029	0.0029	0.0001
30	0.0030	0.0029	0.0001
31	0.0030	0.0029	0.0001
32	0.0030	0.0029	0.0001
33	0.0030	0.0029	0.0001
34	0.0030	0.0029	0.0001
35	0.0030	0.0029	0.0001
36	0.0030	0.0029	0.0001
37	0.0030	0.0029	0.0001
38	0.0030	0.0030	0.0001
39	0.0031	0.0030	0.0001
40	0.0031	0.0030	0.0001
41	0.0031	0.0030	0.0001
42	0.0031	0.0030	0.0001
43	0.0031	0.0030	0.0001
44	0.0031	0.0030	0.0001
45	0.0031	0.0030	0.0001
46	0.0031	0.0031	0.0001
47	0.0032	0.0031	0.0001
48	0.0032	0.0031	0.0001
49	0.0032	0.0031	0.0001
50	0.0032	0.0031	0.0001
51	0.0032	0.0031	0.0001
52	0.0032	0.0031	0.0001
53	0.0033	0.0032	0.0001
54	0.0033	0.0032	0.0001
55	0.0033	0.0032	0.0001
56	0.0033	0.0032	0.0001
57	0.0033	0.0032	0.0001
58	0.0033	0.0032	0.0001
59	0.0033	0.0032	0.0001
60	0.0034	0.0033	0.0001
61	0.0034	0.0033	0.0001
62	0.0034	0.0033	0.0001
63	0.0034	0.0033	0.0001
64	0.0034	0.0033	0.0001
65	0.0034	0.0033	0.0001
66	0.0035	0.0033	0.0001
67	0.0035	0.0034	0.0001
68	0.0035	0.0034	0.0001
69	0.0035	0.0034	0.0001
70	0.0035	0.0034	0.0001
71	0.0035	0.0034	0.0001
72	0.0036	0.0034	0.0001
73	0.0036	0.0035	0.0001
74	0.0036	0.0035	0.0001

75	0.0036	0.0035	0.0001
76	0.0036	0.0035	0.0001
77	0.0037	0.0035	0.0001
78	0.0037	0.0036	0.0001
79	0.0037	0.0036	0.0001
80	0.0037	0.0036	0.0001
81	0.0037	0.0036	0.0001
82	0.0038	0.0036	0.0001
83	0.0038	0.0037	0.0001
84	0.0038	0.0037	0.0001
85	0.0038	0.0037	0.0001
86	0.0038	0.0037	0.0001
87	0.0039	0.0038	0.0001
88	0.0039	0.0038	0.0001
89	0.0039	0.0038	0.0001
90	0.0039	0.0038	0.0001
91	0.0040	0.0038	0.0001
92	0.0040	0.0039	0.0001
93	0.0040	0.0039	0.0001
94	0.0040	0.0039	0.0001
95	0.0041	0.0039	0.0001
96	0.0041	0.0040	0.0001
97	0.0041	0.0040	0.0001
98	0.0041	0.0040	0.0001
99	0.0042	0.0040	0.0001
100	0.0042	0.0041	0.0001
101	0.0042	0.0041	0.0001
102	0.0043	0.0041	0.0001
103	0.0043	0.0042	0.0001
104	0.0043	0.0042	0.0001
105	0.0044	0.0042	0.0001
106	0.0044	0.0042	0.0001
107	0.0044	0.0043	0.0001
108	0.0044	0.0043	0.0001
109	0.0045	0.0043	0.0001
110	0.0045	0.0044	0.0001
111	0.0045	0.0044	0.0001
112	0.0046	0.0044	0.0001
113	0.0046	0.0045	0.0001
114	0.0046	0.0045	0.0001
115	0.0047	0.0046	0.0001
116	0.0047	0.0046	0.0001
117	0.0048	0.0046	0.0001
118	0.0048	0.0047	0.0001
119	0.0049	0.0047	0.0001
120	0.0049	0.0047	0.0001
121	0.0049	0.0048	0.0001
122	0.0050	0.0048	0.0002
123	0.0050	0.0049	0.0002
124	0.0051	0.0049	0.0002
125	0.0051	0.0050	0.0002
126	0.0051	0.0050	0.0002
127	0.0052	0.0051	0.0002
128	0.0052	0.0051	0.0002
129	0.0053	0.0052	0.0002
130	0.0054	0.0052	0.0002
131	0.0054	0.0053	0.0002
132	0.0055	0.0053	0.0002
133	0.0055	0.0054	0.0002
134	0.0056	0.0054	0.0002
135	0.0057	0.0055	0.0002
136	0.0057	0.0055	0.0002
137	0.0058	0.0056	0.0002
138	0.0058	0.0056	0.0002
139	0.0059	0.0057	0.0002
140	0.0060	0.0058	0.0002
141	0.0061	0.0059	0.0002
142	0.0061	0.0059	0.0002
143	0.0062	0.0060	0.0002
144	0.0063	0.0061	0.0002
145	0.0077	0.0075	0.0002

146	0.0078	0.0076	0.0002
147	0.0079	0.0077	0.0002
148	0.0080	0.0077	0.0002
149	0.0081	0.0079	0.0002
150	0.0082	0.0079	0.0002
151	0.0083	0.0081	0.0003
152	0.0084	0.0081	0.0003
153	0.0086	0.0083	0.0003
154	0.0086	0.0084	0.0003
155	0.0088	0.0085	0.0003
156	0.0089	0.0086	0.0003
157	0.0091	0.0088	0.0003
158	0.0092	0.0089	0.0003
159	0.0094	0.0091	0.0003
160	0.0095	0.0092	0.0003
161	0.0097	0.0094	0.0003
162	0.0098	0.0095	0.0003
163	0.0100	0.0097	0.0003
164	0.0101	0.0098	0.0003
165	0.0104	0.0101	0.0003
166	0.0106	0.0102	0.0003
167	0.0108	0.0105	0.0003
168	0.0110	0.0107	0.0003
169	0.0118	0.0114	0.0004
170	0.0120	0.0116	0.0004
171	0.0123	0.0120	0.0004
172	0.0125	0.0122	0.0004
173	0.0130	0.0126	0.0004
174	0.0132	0.0128	0.0004
175	0.0137	0.0133	0.0004
176	0.0140	0.0136	0.0004
177	0.0146	0.0142	0.0004
178	0.0150	0.0145	0.0005
179	0.0157	0.0153	0.0005
180	0.0161	0.0157	0.0005
181	0.0171	0.0166	0.0005
182	0.0176	0.0171	0.0005
183	0.0189	0.0183	0.0006
184	0.0196	0.0190	0.0006
185	0.0184	0.0178	0.0006
186	0.0194	0.0188	0.0006
187	0.0220	0.0208	0.0012
188	0.0237	0.0208	0.0029
189	0.0291	0.0208	0.0083
190	0.0328	0.0208	0.0120
191	0.0464	0.0208	0.0256
192	0.0633	0.0208	0.0425
193	0.1898	0.0208	0.1689
194	0.0380	0.0208	0.0172
195	0.0258	0.0208	0.0050
196	0.0206	0.0200	0.0006
197	0.0204	0.0198	0.0006
198	0.0182	0.0177	0.0006
199	0.0166	0.0161	0.0005
200	0.0153	0.0149	0.0005
201	0.0143	0.0139	0.0004
202	0.0135	0.0131	0.0004
203	0.0128	0.0124	0.0004
204	0.0121	0.0118	0.0004
205	0.0112	0.0108	0.0003
206	0.0107	0.0104	0.0003
207	0.0103	0.0100	0.0003
208	0.0099	0.0096	0.0003
209	0.0096	0.0093	0.0003
210	0.0093	0.0090	0.0003
211	0.0090	0.0087	0.0003
212	0.0087	0.0085	0.0003
213	0.0085	0.0082	0.0003
214	0.0083	0.0080	0.0002
215	0.0081	0.0078	0.0002
216	0.0079	0.0076	0.0002

217	0.0063	0.0061	0.0002
218	0.0062	0.0060	0.0002
219	0.0060	0.0058	0.0002
220	0.0059	0.0057	0.0002
221	0.0057	0.0056	0.0002
222	0.0056	0.0054	0.0002
223	0.0055	0.0053	0.0002
224	0.0054	0.0052	0.0002
225	0.0053	0.0051	0.0002
226	0.0052	0.0050	0.0002
227	0.0051	0.0049	0.0002
228	0.0050	0.0048	0.0002
229	0.0049	0.0048	0.0001
230	0.0048	0.0047	0.0001
231	0.0047	0.0046	0.0001
232	0.0047	0.0045	0.0001
233	0.0046	0.0045	0.0001
234	0.0045	0.0044	0.0001
235	0.0045	0.0043	0.0001
236	0.0044	0.0043	0.0001
237	0.0043	0.0042	0.0001
238	0.0043	0.0041	0.0001
239	0.0042	0.0041	0.0001
240	0.0042	0.0040	0.0001
241	0.0041	0.0040	0.0001
242	0.0041	0.0039	0.0001
243	0.0040	0.0039	0.0001
244	0.0040	0.0038	0.0001
245	0.0039	0.0038	0.0001
246	0.0039	0.0037	0.0001
247	0.0038	0.0037	0.0001
248	0.0038	0.0037	0.0001
249	0.0037	0.0036	0.0001
250	0.0037	0.0036	0.0001
251	0.0036	0.0035	0.0001
252	0.0036	0.0035	0.0001
253	0.0036	0.0035	0.0001
254	0.0035	0.0034	0.0001
255	0.0035	0.0034	0.0001
256	0.0035	0.0034	0.0001
257	0.0034	0.0033	0.0001
258	0.0034	0.0033	0.0001
259	0.0034	0.0033	0.0001
260	0.0033	0.0032	0.0001
261	0.0033	0.0032	0.0001
262	0.0033	0.0032	0.0001
263	0.0032	0.0031	0.0001
264	0.0032	0.0031	0.0001
265	0.0032	0.0031	0.0001
266	0.0032	0.0031	0.0001
267	0.0031	0.0030	0.0001
268	0.0031	0.0030	0.0001
269	0.0031	0.0030	0.0001
270	0.0031	0.0030	0.0001
271	0.0030	0.0029	0.0001
272	0.0030	0.0029	0.0001
273	0.0030	0.0029	0.0001
274	0.0030	0.0029	0.0001
275	0.0029	0.0028	0.0001
276	0.0029	0.0028	0.0001
277	0.0029	0.0028	0.0001
278	0.0029	0.0028	0.0001
279	0.0029	0.0028	0.0001
280	0.0028	0.0027	0.0001
281	0.0028	0.0027	0.0001
282	0.0028	0.0027	0.0001
283	0.0028	0.0027	0.0001
284	0.0028	0.0027	0.0001
285	0.0027	0.0027	0.0001
286	0.0027	0.0026	0.0001
287	0.0027	0.0026	0.0001

```
      288              0.0027           0.0026              0.0001
      ------------------------------------------------------------------------
      ------------------------------------------------------------------------
      Total soil rain loss =      1.72(In)
      Total effective rainfall =      0.33(In)
      Peak flow rate in flood hydrograph =     13.25(CFS)
      ------------------------------------------------------------------------
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                        24 - H O U R    S T O R M
                    R u n o f f      H y d r o g r a p h
      ------------------------------------------------------------------------
                Hydrograph in   5   Minute intervals ((CFS))

      ------------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0        5.0      10.0      15.0      20.0
-------------------------------------------------------------------------
  0+ 5       0.0000      0.00  Q         |         |         |         |
  0+10       0.0000      0.00  Q         |         |         |         |
  0+15       0.0000      0.00  Q         |         |         |         |
  0+20       0.0000      0.00  Q         |         |         |         |
  0+25       0.0001      0.01  Q         |         |         |         |
  0+30       0.0002      0.01  Q         |         |         |         |
  0+35       0.0003      0.01  Q         |         |         |         |
  0+40       0.0004      0.02  Q         |         |         |         |
  0+45       0.0005      0.02  Q         |         |         |         |
  0+50       0.0006      0.02  Q         |         |         |         |
  0+55       0.0008      0.02  Q         |         |         |         |
  1+ 0       0.0009      0.02  Q         |         |         |         |
  1+ 5       0.0011      0.02  Q         |         |         |         |
  1+10       0.0012      0.02  Q         |         |         |         |
  1+15       0.0014      0.02  Q         |         |         |         |
  1+20       0.0016      0.02  Q         |         |         |         |
  1+25       0.0018      0.03  Q         |         |         |         |
  1+30       0.0019      0.03  Q         |         |         |         |
  1+35       0.0021      0.03  Q         |         |         |         |
  1+40       0.0023      0.03  Q         |         |         |         |
  1+45       0.0025      0.03  Q         |         |         |         |
  1+50       0.0027      0.03  Q         |         |         |         |
  1+55       0.0028      0.03  Q         |         |         |         |
  2+ 0       0.0030      0.03  Q         |         |         |         |
  2+ 5       0.0032      0.03  Q         |         |         |         |
  2+10       0.0034      0.03  Q         |         |         |         |
  2+15       0.0036      0.03  Q         |         |         |         |
  2+20       0.0038      0.03  Q         |         |         |         |
  2+25       0.0040      0.03  Q         |         |         |         |
  2+30       0.0042      0.03  Q         |         |         |         |
  2+35       0.0044      0.03  Q         |         |         |         |
  2+40       0.0046      0.03  Q         |         |         |         |
  2+45       0.0048      0.03  Q         |         |         |         |
  2+50       0.0050      0.03  Q         |         |         |         |
  2+55       0.0052      0.03  Q         |         |         |         |
  3+ 0       0.0054      0.03  Q         |         |         |         |
  3+ 5       0.0056      0.03  Q         |         |         |         |
  3+10       0.0058      0.03  Q         |         |         |         |
  3+15       0.0060      0.03  Q         |         |         |         |
  3+20       0.0062      0.03  Q         |         |         |         |
  3+25       0.0064      0.03  Q         |         |         |         |
  3+30       0.0066      0.03  Q         |         |         |         |
  3+35       0.0068      0.03  Q         |         |         |         |
  3+40       0.0070      0.03  Q         |         |         |         |
  3+45       0.0073      0.03  Q         |         |         |         |
  3+50       0.0075      0.03  Q         |         |         |         |
  3+55       0.0077      0.03  Q         |         |         |         |
  4+ 0       0.0079      0.03  Q         |         |         |         |
  4+ 5       0.0081      0.03  Q         |         |         |         |
  4+10       0.0083      0.03  Q         |         |         |         |
  4+15       0.0085      0.03  Q         |         |         |         |
  4+20       0.0087      0.03  Q         |         |         |         |
  4+25       0.0090      0.03  Q         |         |         |         |
  4+30       0.0092      0.03  Q         |         |         |         |
  4+35       0.0094      0.03  Q         |         |         |         |
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4+40	0.0096	0.03	Q				
4+45	0.0098	0.03	Q				
4+50	0.0101	0.03	Q				
4+55	0.0103	0.03	Q				
5+ 0	0.0105	0.03	Q				
5+ 5	0.0107	0.03	Q				
5+10	0.0110	0.03	Q				
5+15	0.0112	0.03	Q				
5+20	0.0114	0.03	Q				
5+25	0.0116	0.03	Q				
5+30	0.0119	0.03	Q				
5+35	0.0121	0.03	Q				
5+40	0.0123	0.03	Q				
5+45	0.0126	0.03	Q				
5+50	0.0128	0.03	Q				
5+55	0.0130	0.03	Q				
6+ 0	0.0133	0.03	Q				
6+ 5	0.0135	0.03	Q				
6+10	0.0137	0.03	Q				
6+15	0.0140	0.03	Q				
6+20	0.0142	0.03	Q				
6+25	0.0145	0.04	Q				
6+30	0.0147	0.04	Q				
6+35	0.0150	0.04	Q				
6+40	0.0152	0.04	Q				
6+45	0.0154	0.04	Q				
6+50	0.0157	0.04	Q				
6+55	0.0159	0.04	Q				
7+ 0	0.0162	0.04	Q				
7+ 5	0.0164	0.04	Q				
7+10	0.0167	0.04	Q				
7+15	0.0170	0.04	Q				
7+20	0.0172	0.04	Q				
7+25	0.0175	0.04	Q				
7+30	0.0177	0.04	Q				
7+35	0.0180	0.04	Q				
7+40	0.0183	0.04	Q				
7+45	0.0185	0.04	Q				
7+50	0.0188	0.04	Q				
7+55	0.0191	0.04	QV				
8+ 0	0.0193	0.04	QV				
8+ 5	0.0196	0.04	QV				
8+10	0.0199	0.04	QV				
8+15	0.0201	0.04	QV				
8+20	0.0204	0.04	QV				
8+25	0.0207	0.04	QV				
8+30	0.0210	0.04	QV				
8+35	0.0213	0.04	QV				
8+40	0.0215	0.04	QV				
8+45	0.0218	0.04	QV				
8+50	0.0221	0.04	QV				
8+55	0.0224	0.04	QV				
9+ 0	0.0227	0.04	QV				
9+ 5	0.0230	0.04	QV				
9+10	0.0233	0.04	QV				
9+15	0.0236	0.04	QV				
9+20	0.0239	0.04	QV				
9+25	0.0242	0.04	QV				
9+30	0.0245	0.04	QV				
9+35	0.0248	0.04	QV				
9+40	0.0251	0.04	QV				
9+45	0.0254	0.04	QV				
9+50	0.0257	0.05	QV				
9+55	0.0260	0.05	QV				
10+ 0	0.0263	0.05	QV				
10+ 5	0.0266	0.05	QV				
10+10	0.0270	0.05	QV				
10+15	0.0273	0.05	QV				
10+20	0.0276	0.05	QV				
10+25	0.0280	0.05	QV				
10+30	0.0283	0.05	QV				

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10+35       0.0286      0.05  QV        |         |         |         |
10+40       0.0290      0.05  QV        |         |         |         |
10+45       0.0293      0.05  QV        |         |         |         |
10+50       0.0296      0.05  QV        |         |         |         |
10+55       0.0300      0.05  QV        |         |         |         |
11+ 0       0.0303      0.05  QV        |         |         |         |
11+ 5       0.0307      0.05  QV        |         |         |         |
11+10       0.0311      0.05  QV        |         |         |         |
11+15       0.0314      0.05  QV        |         |         |         |
11+20       0.0318      0.05  QV        |         |         |         |
11+25       0.0321      0.05  QV        |         |         |         |
11+30       0.0325      0.05  QV        |         |         |         |
11+35       0.0329      0.05  QV        |         |         |         |
11+40       0.0333      0.05  QV        |         |         |         |
11+45       0.0336      0.06  QV        |         |         |         |
11+50       0.0340      0.06  QV        |         |         |         |
11+55       0.0344      0.06  QV        |         |         |         |
12+ 0       0.0348      0.06  QV        |         |         |         |
12+ 5       0.0352      0.06  QV        |         |         |         |
12+10       0.0356      0.06  QV        |         |         |         |
12+15       0.0360      0.06  QV        |         |         |         |
12+20       0.0365      0.06  QV        |         |         |         |
12+25       0.0369      0.06  QV        |         |         |         |
12+30       0.0374      0.07  QV        |         |         |         |
12+35       0.0379      0.07  Q V       |         |         |         |
12+40       0.0384      0.07  Q V       |         |         |         |
12+45       0.0389      0.07  Q V       |         |         |         |
12+50       0.0394      0.08  Q V       |         |         |         |
12+55       0.0399      0.08  Q V       |         |         |         |
13+ 0       0.0404      0.08  Q V       |         |         |         |
13+ 5       0.0410      0.08  Q V       |         |         |         |
13+10       0.0415      0.08  Q V       |         |         |         |
13+15       0.0421      0.08  Q V       |         |         |         |
13+20       0.0427      0.08  Q V       |         |         |         |
13+25       0.0433      0.08  Q V       |         |         |         |
13+30       0.0439      0.09  Q V       |         |         |         |
13+35       0.0445      0.09  Q V       |         |         |         |
13+40       0.0451      0.09  Q V       |         |         |         |
13+45       0.0457      0.09  Q V       |         |         |         |
13+50       0.0463      0.09  Q V       |         |         |         |
13+55       0.0470      0.09  Q V       |         |         |         |
14+ 0       0.0476      0.10  Q V       |         |         |         |
14+ 5       0.0483      0.10  Q V       |         |         |         |
14+10       0.0490      0.10  Q V       |         |         |         |
14+15       0.0497      0.10  Q V       |         |         |         |
14+20       0.0504      0.10  Q V       |         |         |         |
14+25       0.0511      0.11  Q V       |         |         |         |
14+30       0.0519      0.11  Q V       |         |         |         |
14+35       0.0527      0.11  Q V       |         |         |         |
14+40       0.0535      0.12  Q V       |         |         |         |
14+45       0.0543      0.12  Q V       |         |         |         |
14+50       0.0551      0.12  Q V       |         |         |         |
14+55       0.0560      0.12  Q V       |         |         |         |
15+ 0       0.0568      0.13  Q  V       |         |         |         |
15+ 5       0.0578      0.13  Q  V       |         |         |         |
15+10       0.0587      0.14  Q  V       |         |         |         |
15+15       0.0597      0.14  Q  V       |         |         |         |
15+20       0.0607      0.15  Q  V       |         |         |         |
15+25       0.0617      0.15  Q  V       |         |         |         |
15+30       0.0628      0.16  Q  V       |         |         |         |
15+35       0.0639      0.16  Q  V       |         |         |         |
15+40       0.0651      0.18  Q  V       |         |         |         |
15+45       0.0667      0.23  Q  V       |         |         |         |
15+50       0.0690      0.33  Q  V       |         |         |         |
15+55       0.0726      0.53  |Q V       |         |         |         |
16+ 0       0.0790      0.93  |Q  V      |         |         |         |
16+ 5       0.0930      2.04  |   Q      |         |         |         |
16+10       0.1179      3.62  |     VQ   |         |         |         |
16+15       0.1531      5.10  |       V Q          |         |         |
16+20       0.2000      6.82  |         V  Q       |         |         |
16+25       0.2636      9.22  |          |  V    Q |         |         |
```

```
16+30       0.3499     12.54  |          |        V |    Q     |          |
16+35       0.4411     13.25  |          |          |  V  Q    |          |
16+40       0.4930      7.53  |          |    Q     |     V    |          |
16+45       0.5302      5.39  |          Q          |       V  |          |
16+50       0.5588      4.16  |        Q |          |         V|          |
16+55       0.5829      3.49  |      Q   |          |          V          |
17+ 0       0.6033      2.96  |     Q    |          |          |V         |
17+ 5       0.6211      2.58  |     Q    |          |          | V        |
17+10       0.6364      2.22  |    Q     |          |          |  V       |
17+15       0.6499      1.96  |   Q      |          |          |   V      |
17+20       0.6619      1.74  |   Q      |          |          |    V     |
17+25       0.6723      1.52  |   Q      |          |          |    V     |
17+30       0.6815      1.34  |  Q       |          |          |     V    |
17+35       0.6897      1.19  |  Q       |          |          |     V    |
17+40       0.6968      1.02  |  Q       |          |          |     V    |
17+45       0.7028      0.87  |Q         |          |          |      V   |
17+50       0.7080      0.76  |Q         |          |          |      V   |
17+55       0.7125      0.65  |Q         |          |          |      V   |
18+ 0       0.7162      0.53  |Q         |          |          |      V   |
18+ 5       0.7191      0.42  Q          |          |          |       V  |
18+10       0.7212      0.30  Q          |          |          |       V  |
18+15       0.7231      0.27  Q          |          |          |       V  |
18+20       0.7248      0.26  Q          |          |          |       V  |
18+25       0.7265      0.24  Q          |          |          |       V  |
18+30       0.7280      0.22  Q          |          |          |       V  |
18+35       0.7294      0.21  Q          |          |          |       V  |
18+40       0.7306      0.17  Q          |          |          |       V  |
18+45       0.7318      0.17  Q          |          |          |       V  |
18+50       0.7329      0.17  Q          |          |          |       V  |
18+55       0.7342      0.18  Q          |          |          |       V  |
19+ 0       0.7354      0.17  Q          |          |          |       V  |
19+ 5       0.7365      0.16  Q          |          |          |       V  |
19+10       0.7373      0.13  Q          |          |          |        V|
19+15       0.7381      0.12  Q          |          |          |        V|
19+20       0.7389      0.11  Q          |          |          |        V|
19+25       0.7395      0.09  Q          |          |          |        V|
19+30       0.7400      0.08  Q          |          |          |        V|
19+35       0.7404      0.06  Q          |          |          |        V|
19+40       0.7408      0.05  Q          |          |          |        V|
19+45       0.7412      0.05  Q          |          |          |        V|
19+50       0.7415      0.05  Q          |          |          |        V|
19+55       0.7419      0.05  Q          |          |          |        V|
20+ 0       0.7422      0.05  Q          |          |          |        V|
20+ 5       0.7425      0.05  Q          |          |          |        V|
20+10       0.7428      0.05  Q          |          |          |        V|
20+15       0.7431      0.05  Q          |          |          |        V|
20+20       0.7435      0.04  Q          |          |          |        V|
20+25       0.7438      0.04  Q          |          |          |        V|
20+30       0.7441      0.04  Q          |          |          |        V|
20+35       0.7444      0.04  Q          |          |          |        V|
20+40       0.7446      0.04  Q          |          |          |        V|
20+45       0.7449      0.04  Q          |          |          |        V|
20+50       0.7452      0.04  Q          |          |          |        V|
20+55       0.7455      0.04  Q          |          |          |        V|
21+ 0       0.7458      0.04  Q          |          |          |        V|
21+ 5       0.7460      0.04  Q          |          |          |        V|
21+10       0.7463      0.04  Q          |          |          |        V|
21+15       0.7466      0.04  Q          |          |          |        V|
21+20       0.7468      0.04  Q          |          |          |        V|
21+25       0.7471      0.04  Q          |          |          |        V|
21+30       0.7474      0.04  Q          |          |          |        V|
21+35       0.7476      0.04  Q          |          |          |        V|
21+40       0.7479      0.04  Q          |          |          |        V|
21+45       0.7481      0.04  Q          |          |          |        V|
21+50       0.7484      0.04  Q          |          |          |        V|
21+55       0.7486      0.04  Q          |          |          |        V|
22+ 0       0.7488      0.03  Q          |          |          |        V|
22+ 5       0.7491      0.03  Q          |          |          |        V|
22+10       0.7493      0.03  Q          |          |          |        V|
22+15       0.7495      0.03  Q          |          |          |        V|
22+20       0.7498      0.03  Q          |          |          |        V|
```

22+25	0.7500	0.03	Q	|	|	|	V|
22+30	0.7502	0.03	Q	|	|	|	V|
22+35	0.7505	0.03	Q	|	|	|	V|
22+40	0.7507	0.03	Q	|	|	|	V|
22+45	0.7509	0.03	Q	|	|	|	V|
22+50	0.7511	0.03	Q	|	|	|	V|
22+55	0.7513	0.03	Q	|	|	|	V|
23+ 0	0.7516	0.03	Q	|	|	|	V|
23+ 5	0.7518	0.03	Q	|	|	|	V|
23+10	0.7520	0.03	Q	|	|	|	V|
23+15	0.7522	0.03	Q	|	|	|	V|
23+20	0.7524	0.03	Q	|	|	|	V|
23+25	0.7526	0.03	Q	|	|	|	V|
23+30	0.7528	0.03	Q	|	|	|	V|
23+35	0.7530	0.03	Q	|	|	|	V|
23+40	0.7532	0.03	Q	|	|	|	V|
23+45	0.7534	0.03	Q	|	|	|	V|
23+50	0.7536	0.03	Q	|	|	|	V|
23+55	0.7538	0.03	Q	|	|	|	V|
24+ 0	0.7540	0.03	Q	|	|	|	V|
24+ 5	0.7542	0.03	Q	|	|	|	V|
24+10	0.7544	0.03	Q	|	|	|	V|
24+15	0.7546	0.03	Q	|	|	|	V|
24+20	0.7547	0.02	Q	|	|	|	V|
24+25	0.7549	0.02	Q	|	|	|	V|
24+30	0.7550	0.02	Q	|	|	|	V|
24+35	0.7551	0.01	Q	|	|	|	V|
24+40	0.7552	0.01	Q	|	|	|	V|
24+45	0.7552	0.01	Q	|	|	|	V|
24+50	0.7553	0.01	Q	|	|	|	V|
24+55	0.7553	0.01	Q	|	|	|	V|
25+ 0	0.7554	0.01	Q	|	|	|	V|
25+ 5	0.7554	0.00	Q	|	|	|	V|
25+10	0.7554	0.00	Q	|	|	|	V|
25+15	0.7554	0.00	Q	|	|	|	V|
25+20	0.7555	0.00	Q	|	|	|	V|
25+25	0.7555	0.00	Q	|	|	|	V|
25+30	0.7555	0.00	Q	|	|	|	V|
25+35	0.7555	0.00	Q	|	|	|	V|
25+40	0.7555	0.00	Q	|	|	|	V|
25+45	0.7555	0.00	Q	|	|	|	V|
25+50	0.7555	0.00	Q	|	|	|	V|
25+55	0.7555	0.00	Q	|	|	|	V|
26+ 0	0.7555	0.00	Q	|	|	|	V|
26+ 5	0.7555	0.00	Q	|	|	|	V|
26+10	0.7555	0.00	Q	|	|	|	V|
26+15	0.7555	0.00	Q	|	|	|	V|
26+20	0.7556	0.00	Q	|	|	|	V|
26+25	0.7556	0.00	Q	|	|	|	V|
26+30	0.7556	0.00	Q	|	|	|	V|
26+35	0.7556	0.00	Q	|	|	|	V|
26+40	0.7556	0.00	Q	|	|	|	V|
26+45	0.7556	0.00	Q	|	|	|	V|
26+50	0.7556	0.00	Q	|	|	|	V|
26+55	0.7556	0.00	Q	|	|	|	V|
27+ 0	0.7556	0.00	Q	|	|	|	V|
27+ 5	0.7556	0.00	Q	|	|	|	V|
27+10	0.7556	0.00	Q	|	|	|	V|
27+15	0.7556	0.00	Q	|	|	|	V|
27+20	0.7556	0.00	Q	|	|	|	V|
27+25	0.7556	0.00	Q	|	|	|	V|
27+30	0.7556	0.00	Q	|	|	|	V|

- 5 Year 3 Hour Pre-Development Unit Hydrograph – Area 'A'

```
        U n i t   H y d r o g r a p h   A n a l y s i s

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        Study date  10/13/16   File Name exa00503.out


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------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'A' - 5 YEAR 3 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

        Storm Event Year = 5

        Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 77.0      27.4          1.00     C     0.250     1.000    0.250

Area-averaged adjusted loss rate Fm (In/Hr) =  0.250

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)           Yield Fr
    27.39   1.000         77.0      59.4       6.84     0.107

Area-averaged catchment yield fraction, Y =  0.107
Area-averaged low loss fraction, Yb =  0.893
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.346 (hours)
Watershed area =      27.39(Ac.)
Catchment Lag time =   0.277 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 30.1060
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.250(In/Hr)
Average low loss rate fraction (Yb) = 0.893 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.260(In)
Computed peak 30-minute rainfall =  0.590(In)
Specified peak 1-hour rainfall =  0.780(In)
Computed peak 3-hour rainfall =  1.310(In)
Specified peak 6-hour rainfall =  1.810(In)
Specified peak 24-hour rainfall =  3.030(In)


Rainfall depth area reduction factors:
Using a total area of      27.39(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.260(In)
30-minute factor = 0.999    Adjusted rainfall =  0.589(In)
```

1-hour factor = 0.999 Adjusted rainfall = 0.779(In)
3-hour factor = 1.000 Adjusted rainfall = 1.310(In)
6-hour factor = 1.000 Adjusted rainfall = 1.810(In)
24-hour factor = 1.000 Adjusted rainfall = 3.030(In)

U n i t H y d r o g r a p h

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 331.25 (CFS))	
1	2.160	7.154
2	9.083	22.934
3	22.827	45.527
4	52.104	96.979
5	67.288	50.296
6	75.550	27.368
7	81.530	19.809
8	86.014	14.854
9	89.533	11.656
10	92.276	9.085
11	94.421	7.106
12	96.002	5.235
13	97.200	3.968
14	97.957	2.510
15	98.338	1.262
16	98.666	1.087
17	98.958	0.967
18	99.161	0.672
19	99.358	0.652
20	99.596	0.790
21	99.769	0.571
22	99.884	0.382
23	99.955	0.234
24	100.000	0.150

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.2597	0.2597
2	0.3565	0.0969
3	0.4292	0.0726
4	0.4895	0.0603
5	0.5421	0.0526
6	0.5892	0.0471
7	0.6270	0.0377
8	0.6616	0.0346
9	0.6938	0.0321
10	0.7238	0.0301
11	0.7522	0.0283
12	0.7790	0.0268
13	0.8091	0.0301
14	0.8379	0.0289
15	0.8657	0.0278
16	0.8925	0.0268
17	0.9185	0.0260
18	0.9437	0.0252
19	0.9681	0.0244
20	0.9919	0.0238
21	1.0150	0.0232
22	1.0376	0.0226
23	1.0597	0.0220
24	1.0812	0.0215
25	1.1023	0.0211
26	1.1229	0.0206
27	1.1432	0.0202
28	1.1630	0.0198
29	1.1825	0.0195
30	1.2016	0.0191
31	1.2204	0.0188

```
 32              1.2388              0.0185
 33              1.2570              0.0182
 34              1.2749              0.0179
 35              1.2925              0.0176
 36              1.3098              0.0173
-------------------------------------------------------------------------
Unit              Unit              Unit              Effective
Period            Rainfall          Soil-Loss         Rainfall
(number)            (In)            (In)                (In)
-------------------------------------------------------------------------
  1              0.0173            0.0155              0.0019
  2              0.0176            0.0157              0.0019
  3              0.0182            0.0162              0.0020
  4              0.0185            0.0165              0.0020
  5              0.0191            0.0171              0.0021
  6              0.0195            0.0174              0.0021
  7              0.0202            0.0181              0.0022
  8              0.0206            0.0184              0.0022
  9              0.0215            0.0192              0.0023
 10              0.0220            0.0197              0.0024
 11              0.0232            0.0207              0.0025
 12              0.0238            0.0208              0.0029
 13              0.0252            0.0208              0.0043
 14              0.0260            0.0208              0.0051
 15              0.0278            0.0208              0.0070
 16              0.0289            0.0208              0.0080
 17              0.0268            0.0208              0.0060
 18              0.0283            0.0208              0.0075
 19              0.0321            0.0208              0.0113
 20              0.0346            0.0208              0.0138
 21              0.0471            0.0208              0.0263
 22              0.0526            0.0208              0.0318
 23              0.0726            0.0208              0.0518
 24              0.0969            0.0208              0.0760
 25              0.2597            0.0208              0.2388
 26              0.0603            0.0208              0.0395
 27              0.0377            0.0208              0.0169
 28              0.0301            0.0208              0.0092
 29              0.0301            0.0208              0.0092
 30              0.0268            0.0208              0.0060
 31              0.0244            0.0208              0.0036
 32              0.0226            0.0202              0.0024
 33              0.0211            0.0188              0.0023
 34              0.0198            0.0177              0.0021
 35              0.0188            0.0168              0.0020
 36              0.0179            0.0160              0.0019
-------------------------------------------------------------------------
-------------------------------------------------------------------------
Total soil rain loss =      0.70(In)
Total effective rainfall =      0.61(In)
Peak flow rate in flood hydrograph =     32.10(CFS)
-------------------------------------------------------------------------
+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                    3 - H O U R    S T O R M
                R u n o f f      H y d r o g r a p h
-------------------------------------------------------------------------
            Hydrograph in   5   Minute intervals ((CFS))

-------------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0       10.0      20.0      30.0      40.0
-------------------------------------------------------------------------
  0+ 5       0.0001      0.01  Q         |         |         |         |
  0+10       0.0005      0.06  Q         |         |         |         |
  0+15       0.0015      0.14  Q         |         |         |         |
  0+20       0.0037      0.33  Q         |         |         |         |
  0+25       0.0066      0.43  Q         |         |         |         |
  0+30       0.0100      0.49  Q         |         |         |         |
  0+35       0.0137      0.54  Q         |         |         |         |
  0+40       0.0177      0.58  Q         |         |         |         |
  0+45       0.0219      0.61  Q         |         |         |         |
  0+50       0.0264      0.65  Q         |         |         |         |
```

```
   0+55       0.0311      0.68  Q          |          |          |          |
   1+ 0       0.0360      0.72  QV         |          |          |          |
   1+ 5       0.0413      0.77  QV         |          |          |          |
   1+10       0.0471      0.85  QV         |          |          |          |
   1+15       0.0540      1.00  |Q         |          |          |          |
   1+20       0.0627      1.26  |Q         |          |          |          |
   1+25       0.0731      1.52  |QV        |          |          |          |
   1+30       0.0855      1.80  |QV        |          |          |          |
   1+35       0.0995      2.03  | Q        |          |          |          |
   1+40       0.1143      2.15  | QV       |          |          |          |
   1+45       0.1323      2.62  | QV       |          |          |          |
   1+50       0.1566      3.52  |  QV      |          |          |          |
   1+55       0.1900      4.85  |   QV     |          |          |          |
   2+ 0       0.2397      7.22  |     VQ   |          |          |          |
   2+ 5       0.3167     11.19  |         V|Q         |          |          |
   2+10       0.4358     17.29  |          | V    Q   |          |          |
   2+15       0.5998     23.82  |          |      V   |  Q       |          |
   2+20       0.8209     32.10  |          |          |  V       | Q        |
   2+25       0.9662     21.09  |          |          |Q     V   |          |
   2+30       1.0623     13.96  |          |  Q       |          V          |
   2+35       1.1347     10.52  |          Q          |          | V        |
   2+40       1.1924      8.37  |        Q |          |          |   V      |
   2+45       1.2382      6.65  |      Q   |          |          |    V     |
   2+50       1.2740      5.21  |    Q     |          |          |     V    |
   2+55       1.3022      4.09  |   Q      |          |          |      V   |
   3+ 0       1.3241      3.19  |  Q       |          |          |       V  |
   3+ 5       1.3413      2.50  | Q        |          |          |       V  |
   3+10       1.3540      1.85  |Q         |          |          |       V  |
   3+15       1.3630      1.30  |Q         |          |          |        V|
   3+20       1.3694      0.93  Q          |          |          |        V|
   3+25       1.3744      0.72  Q          |          |          |        V|
   3+30       1.3781      0.55  Q          |          |          |        V|
   3+35       1.3813      0.46  Q          |          |          |        V|
   3+40       1.3842      0.41  Q          |          |          |        V|
   3+45       1.3863      0.31  Q          |          |          |        V|
   3+50       1.3878      0.22  Q          |          |          |        V|
   3+55       1.3887      0.14  Q          |          |          |        V|
   4+ 0       1.3894      0.09  Q          |          |          |        V|
   4+ 5       1.3896      0.04  Q          |          |          |        V|
   4+10       1.3898      0.02  Q          |          |          |        V|
   4+15       1.3899      0.02  Q          |          |          |        V|
   4+20       1.3900      0.01  Q          |          |          |        V|
   4+25       1.3901      0.01  Q          |          |          |        V|
   4+30       1.3901      0.01  Q          |          |          |        V|
   4+35       1.3901      0.00  Q          |          |          |        V|
   4+40       1.3901      0.00  Q          |          |          |        V|
   4+45       1.3902      0.00  Q          |          |          |        V|
   4+50       1.3902      0.00  Q          |          |          |        V|
   4+55       1.3902      0.00  Q          |          |          |         V
-------------------------------------------------------------------------
```

- 5 Year 6 Hour Pre-Development Unit Hydrograph – Area 'A'

```
        U n i t   H y d r o g r a p h   A n a l y s i s

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        Study date  10/13/16   File Name exa00506.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'A' - 5 YEAR 6 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

        Storm Event Year = 5

        Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 77.0      27.4          1.00     C     0.250     1.000    0.250

Area-averaged adjusted loss rate Fm (In/Hr) =  0.250

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)           Yield Fr
    27.39   1.000         77.0      59.4       6.84     0.107

Area-averaged catchment yield fraction, Y =  0.107
Area-averaged low loss fraction, Yb =  0.893
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.346 (hours)
Watershed area =      27.39(Ac.)
Catchment Lag time =   0.277 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 30.1060
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.250(In/Hr)
Average low loss rate fraction (Yb) = 0.893 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.260(In)
Computed peak 30-minute rainfall =  0.590(In)
Specified peak 1-hour rainfall =  0.780(In)
Computed peak 3-hour rainfall =  1.310(In)
Specified peak 6-hour rainfall =  1.810(In)
Specified peak 24-hour rainfall =  3.030(In)


Rainfall depth area reduction factors:
Using a total area of      27.39(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.260(In)
30-minute factor = 0.999    Adjusted rainfall =  0.589(In)
```

```
1-hour factor = 0.999       Adjusted rainfall =  0.779(In)
3-hour factor = 1.000       Adjusted rainfall =  1.310(In)
6-hour factor = 1.000       Adjusted rainfall =  1.810(In)
24-hour factor = 1.000 Adjusted rainfall =  3.030(In)
--------------------------------------------------------------------

                    U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------
               (K =       331.25 (CFS))

  1                2.160                   7.154
  2                9.083                  22.934
  3               22.827                  45.527
  4               52.104                  96.979
  5               67.288                  50.296
  6               75.550                  27.368
  7               81.530                  19.809
  8               86.014                  14.854
  9               89.533                  11.656
 10               92.276                   9.085
 11               94.421                   7.106
 12               96.002                   5.235
 13               97.200                   3.968
 14               97.957                   2.510
 15               98.338                   1.262
 16               98.666                   1.087
 17               98.958                   0.967
 18               99.161                   0.672
 19               99.358                   0.652
 20               99.596                   0.790
 21               99.769                   0.571
 22               99.884                   0.382
 23               99.955                   0.234
 24              100.000                   0.150
--------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)               (In)
  1              0.2597              0.2597
  2              0.3565              0.0969
  3              0.4292              0.0726
  4              0.4895              0.0603
  5              0.5421              0.0526
  6              0.5892              0.0471
  7              0.6270              0.0377
  8              0.6616              0.0346
  9              0.6938              0.0321
 10              0.7238              0.0301
 11              0.7522              0.0283
 12              0.7790              0.0268
 13              0.8091              0.0301
 14              0.8379              0.0289
 15              0.8657              0.0278
 16              0.8925              0.0268
 17              0.9185              0.0260
 18              0.9437              0.0252
 19              0.9681              0.0244
 20              0.9919              0.0238
 21              1.0150              0.0232
 22              1.0376              0.0226
 23              1.0597              0.0220
 24              1.0812              0.0215
 25              1.1023              0.0211
 26              1.1229              0.0206
 27              1.1432              0.0202
 28              1.1630              0.0198
 29              1.1825              0.0195
 30              1.2016              0.0191
 31              1.2204              0.0188
```

32	1.2388	0.0185
33	1.2570	0.0182
34	1.2749	0.0179
35	1.2925	0.0176
36	1.3098	0.0173
37	1.3266	0.0168
38	1.3432	0.0166
39	1.3596	0.0164
40	1.3758	0.0162
41	1.3917	0.0159
42	1.4075	0.0157
43	1.4230	0.0155
44	1.4383	0.0153
45	1.4535	0.0152
46	1.4685	0.0150
47	1.4833	0.0148
48	1.4979	0.0146
49	1.5124	0.0145
50	1.5267	0.0143
51	1.5409	0.0142
52	1.5549	0.0140
53	1.5688	0.0139
54	1.5825	0.0137
55	1.5961	0.0136
56	1.6096	0.0135
57	1.6230	0.0133
58	1.6362	0.0132
59	1.6493	0.0131
60	1.6623	0.0130
61	1.6751	0.0129
62	1.6879	0.0128
63	1.7005	0.0126
64	1.7131	0.0125
65	1.7255	0.0124
66	1.7378	0.0123
67	1.7501	0.0122
68	1.7622	0.0121
69	1.7743	0.0120
70	1.7862	0.0120
71	1.7981	0.0119
72	1.8098	0.0118

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0118	0.0105	0.0013
2	0.0119	0.0106	0.0013
3	0.0120	0.0107	0.0013
4	0.0121	0.0108	0.0013
5	0.0123	0.0110	0.0013
6	0.0124	0.0111	0.0013
7	0.0126	0.0113	0.0014
8	0.0128	0.0114	0.0014
9	0.0130	0.0116	0.0014
10	0.0131	0.0117	0.0014
11	0.0133	0.0119	0.0014
12	0.0135	0.0120	0.0014
13	0.0137	0.0123	0.0015
14	0.0139	0.0124	0.0015
15	0.0142	0.0126	0.0015
16	0.0143	0.0128	0.0015
17	0.0146	0.0131	0.0016
18	0.0148	0.0132	0.0016
19	0.0152	0.0135	0.0016
20	0.0153	0.0137	0.0016
21	0.0157	0.0140	0.0017
22	0.0159	0.0142	0.0017
23	0.0164	0.0146	0.0018
24	0.0166	0.0148	0.0018
25	0.0173	0.0155	0.0019

```
       26              0.0176          0.0157              0.0019
       27              0.0182          0.0162              0.0020
       28              0.0185          0.0165              0.0020
       29              0.0191          0.0171              0.0021
       30              0.0195          0.0174              0.0021
       31              0.0202          0.0181              0.0022
       32              0.0206          0.0184              0.0022
       33              0.0215          0.0192              0.0023
       34              0.0220          0.0197              0.0024
       35              0.0232          0.0207              0.0025
       36              0.0238          0.0208              0.0029
       37              0.0252          0.0208              0.0043
       38              0.0260          0.0208              0.0051
       39              0.0278          0.0208              0.0070
       40              0.0289          0.0208              0.0080
       41              0.0268          0.0208              0.0060
       42              0.0283          0.0208              0.0075
       43              0.0321          0.0208              0.0113
       44              0.0346          0.0208              0.0138
       45              0.0471          0.0208              0.0263
       46              0.0526          0.0208              0.0318
       47              0.0726          0.0208              0.0518
       48              0.0969          0.0208              0.0760
       49              0.2597          0.0208              0.2388
       50              0.0603          0.0208              0.0395
       51              0.0377          0.0208              0.0169
       52              0.0301          0.0208              0.0092
       53              0.0301          0.0208              0.0092
       54              0.0268          0.0208              0.0060
       55              0.0244          0.0208              0.0036
       56              0.0226          0.0202              0.0024
       57              0.0211          0.0188              0.0023
       58              0.0198          0.0177              0.0021
       59              0.0188          0.0168              0.0020
       60              0.0179          0.0160              0.0019
       61              0.0168          0.0150              0.0018
       62              0.0162          0.0144              0.0017
       63              0.0155          0.0139              0.0017
       64              0.0150          0.0134              0.0016
       65              0.0145          0.0129              0.0016
       66              0.0140          0.0125              0.0015
       67              0.0136          0.0121              0.0015
       68              0.0132          0.0118              0.0014
       69              0.0129          0.0115              0.0014
       70              0.0125          0.0112              0.0013
       71              0.0122          0.0109              0.0013
       72              0.0120          0.0107              0.0013
      ------------------------------------------------------------------------
      ------------------------------------------------------------------------
      Total soil rain loss =      1.15(In)
      Total effective rainfall =      0.66(In)
      Peak flow rate in flood hydrograph =     32.10(CFS)
      ------------------------------------------------------------------------
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          6 - H O U R    S T O R M
                     R u n o f f      H y d r o g r a p h
      ------------------------------------------------------------------------
                  Hydrograph in   5   Minute intervals ((CFS))

      ------------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0       10.0      20.0      30.0      40.0
----------------------------------------------------------------------------
  0+ 5       0.0001      0.01  Q         |         |         |         |
  0+10       0.0003      0.04  Q         |         |         |         |
  0+15       0.0010      0.10  Q         |         |         |         |
  0+20       0.0025      0.22  Q         |         |         |         |
  0+25       0.0045      0.29  Q         |         |         |         |
  0+30       0.0067      0.32  Q         |         |         |         |
  0+35       0.0091      0.35  Q         |         |         |         |
  0+40       0.0117      0.38  Q         |         |         |         |
  0+45       0.0144      0.39  Q         |         |         |         |
```

```
0+50      0.0172     0.41  Q         |         |         |         |
0+55      0.0202     0.42  Q         |         |         |         |
1+ 0      0.0232     0.44  Q         |         |         |         |
1+ 5      0.0263     0.45  Q         |         |         |         |
1+10      0.0294     0.46  Q         |         |         |         |
1+15      0.0326     0.47  Q         |         |         |         |
1+20      0.0359     0.47  Q         |         |         |         |
1+25      0.0392     0.48  QV        |         |         |         |
1+30      0.0426     0.49  QV        |         |         |         |
1+35      0.0460     0.50  QV        |         |         |         |
1+40      0.0495     0.51  QV        |         |         |         |
1+45      0.0531     0.52  QV        |         |         |         |
1+50      0.0567     0.53  QV        |         |         |         |
1+55      0.0604     0.54  QV        |         |         |         |
2+ 0      0.0641     0.55  QV        |         |         |         |
2+ 5      0.0680     0.56  QV        |         |         |         |
2+10      0.0719     0.57  QV        |         |         |         |
2+15      0.0759     0.58  Q V       |         |         |         |
2+20      0.0800     0.60  Q V       |         |         |         |
2+25      0.0842     0.61  Q V       |         |         |         |
2+30      0.0885     0.62  Q V       |         |         |         |
2+35      0.0929     0.64  Q V       |         |         |         |
2+40      0.0974     0.66  Q V       |         |         |         |
2+45      0.1020     0.67  Q V       |         |         |         |
2+50      0.1068     0.69  Q V       |         |         |         |
2+55      0.1117     0.71  Q V       |         |         |         |
3+ 0      0.1168     0.74  Q  V      |         |         |         |
3+ 5      0.1222     0.78  Q  V      |         |         |         |
3+10      0.1281     0.86  Q  V      |         |         |         |
3+15      0.1351     1.01  |Q V      |         |         |         |
3+20      0.1438     1.26  |Q V      |         |         |         |
3+25      0.1543     1.52  |Q  V     |         |         |         |
3+30      0.1667     1.81  |Q  V     |         |         |         |
3+35      0.1807     2.03  | Q V     |         |         |         |
3+40      0.1956     2.15  | Q  V    |         |         |         |
3+45      0.2136     2.62  | Q  V    |         |         |         |
3+50      0.2378     3.52  |  Q  V   |         |         |         |
3+55      0.2712     4.85  |   Q  V  |         |         |         |
4+ 0      0.3210     7.22  |      QV |         |         |         |
4+ 5      0.3980    11.19  |         VQ        |         |         |
4+10      0.5171    17.29  |          |  V   Q |         |         |
4+15      0.6811    23.82  |          |       V|  Q      |         |
4+20      0.9021    32.10  |          |        |  V      | Q       |
4+25      1.0474    21.09  |          |        |Q     V  |         |
4+30      1.1435    13.96  |          |  Q     |        V|         |
4+35      1.2160    10.52  |          Q        |         | V       |
4+40      1.2736     8.37  |        Q |        |         |  V      |
4+45      1.3194     6.65  |      Q   |        |         |   V     |
4+50      1.3553     5.21  |     Q    |        |         |    V    |
4+55      1.3834     4.09  |    Q     |        |         |     V   |
5+ 0      1.4054     3.19  |  Q       |        |         |      V  |
5+ 5      1.4227     2.51  | Q        |        |         |      V  |
5+10      1.4358     1.90  |Q         |        |         |      V  |
5+15      1.4456     1.43  |Q         |        |         |       V |
5+20      1.4541     1.24  |Q         |        |         |       V |
5+25      1.4617     1.10  |Q         |        |         |       V |
5+30      1.4684     0.97  Q          |        |         |       V |
5+35      1.4746     0.90  Q          |        |         |       V |
5+40      1.4805     0.86  Q          |        |         |        V|
5+45      1.4858     0.77  Q          |        |         |        V|
5+50      1.4905     0.68  Q          |        |         |        V|
5+55      1.4946     0.60  Q          |        |         |        V|
6+ 0      1.4984     0.55  Q          |        |         |        V|
6+ 5      1.5017     0.48  Q          |        |         |        V|
6+10      1.5046     0.43  Q          |        |         |        V|
6+15      1.5071     0.36  Q          |        |         |        V|
6+20      1.5086     0.22  Q          |        |         |        V|
6+25      1.5096     0.15  Q          |        |         |        V|
6+30      1.5104     0.11  Q          |        |         |        V|
6+35      1.5110     0.09  Q          |        |         |        V|
6+40      1.5115     0.06  Q          |        |         |        V|
```

```
    6+45       1.5118      0.05  Q         |         |         |        V|
    6+50       1.5120      0.04  Q         |         |         |        V|
    6+55       1.5122      0.03  Q         |         |         |        V|
    7+ 0       1.5123      0.02  Q         |         |         |        V|
    7+ 5       1.5124      0.01  Q         |         |         |        V|
    7+10       1.5125      0.01  Q         |         |         |        V|
    7+15       1.5125      0.01  Q         |         |         |        V|
    7+20       1.5126      0.01  Q         |         |         |        V|
    7+25       1.5126      0.00  Q         |         |         |        V|
    7+30       1.5126      0.00  Q         |         |         |        V|
    7+35       1.5127      0.00  Q         |         |         |        V|
    7+40       1.5127      0.00  Q         |         |         |        V|
    7+45       1.5127      0.00  Q         |         |         |        V|
    7+50       1.5127      0.00  Q         |         |         |        V|
    7+55       1.5127      0.00  Q         |         |         |         V
--------------------------------------------------------------------------
```

- 5 Year 12 Hour Pre-Development Unit Hydrograph – Area 'A'

```
        U n i t   H y d r o g r a p h   A n a l y s i s

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        Study date  10/13/16   File Name exa00512.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

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RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'A' - 5 YEAR 12 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

        Storm Event Year = 5

        Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 77.0      27.4          1.00     C     0.250     1.000    0.250

Area-averaged adjusted loss rate Fm (In/Hr) =  0.250

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)           Yield Fr
    27.39   1.000         77.0      59.4       6.84     0.107

Area-averaged catchment yield fraction, Y =  0.107
Area-averaged low loss fraction, Yb =  0.893
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.346 (hours)
Watershed area =      27.39(Ac.)
Catchment Lag time =   0.277 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 30.1060
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.250(In/Hr)
Average low loss rate fraction (Yb) = 0.893 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.260(In)
Computed peak 30-minute rainfall =  0.590(In)
Specified peak 1-hour rainfall =  0.780(In)
Computed peak 3-hour rainfall =  1.310(In)
Specified peak 6-hour rainfall =  1.810(In)
Specified peak 24-hour rainfall =  3.030(In)


Rainfall depth area reduction factors:
Using a total area of      27.39(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.260(In)
30-minute factor = 0.999    Adjusted rainfall =  0.589(In)
```

```
1-hour factor = 0.999       Adjusted rainfall =  0.779(In)
3-hour factor = 1.000       Adjusted rainfall =  1.310(In)
6-hour factor = 1.000       Adjusted rainfall =  1.810(In)
24-hour factor = 1.000 Adjusted rainfall =  3.030(In)
```

U n i t H y d r o g r a p h

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 331.25 (CFS))	
1	2.160	7.154
2	9.083	22.934
3	22.827	45.527
4	52.104	96.979
5	67.288	50.296
6	75.550	27.368
7	81.530	19.809
8	86.014	14.854
9	89.533	11.656
10	92.276	9.085
11	94.421	7.106
12	96.002	5.235
13	97.200	3.968
14	97.957	2.510
15	98.338	1.262
16	98.666	1.087
17	98.958	0.967
18	99.161	0.672
19	99.358	0.652
20	99.596	0.790
21	99.769	0.571
22	99.884	0.382
23	99.955	0.234
24	100.000	0.150

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.2597	0.2597
2	0.3565	0.0969
3	0.4292	0.0726
4	0.4895	0.0603
5	0.5421	0.0526
6	0.5892	0.0471
7	0.6270	0.0377
8	0.6616	0.0346
9	0.6938	0.0321
10	0.7238	0.0301
11	0.7522	0.0283
12	0.7790	0.0268
13	0.8091	0.0301
14	0.8379	0.0289
15	0.8657	0.0278
16	0.8925	0.0268
17	0.9185	0.0260
18	0.9437	0.0252
19	0.9681	0.0244
20	0.9919	0.0238
21	1.0150	0.0232
22	1.0376	0.0226
23	1.0597	0.0220
24	1.0812	0.0215
25	1.1023	0.0211
26	1.1229	0.0206
27	1.1432	0.0202
28	1.1630	0.0198
29	1.1825	0.0195
30	1.2016	0.0191
31	1.2204	0.0188

32	1.2388	0.0185
33	1.2570	0.0182
34	1.2749	0.0179
35	1.2925	0.0176
36	1.3098	0.0173
37	1.3266	0.0168
38	1.3432	0.0166
39	1.3596	0.0164
40	1.3758	0.0162
41	1.3917	0.0159
42	1.4075	0.0157
43	1.4230	0.0155
44	1.4383	0.0153
45	1.4535	0.0152
46	1.4685	0.0150
47	1.4833	0.0148
48	1.4979	0.0146
49	1.5124	0.0145
50	1.5267	0.0143
51	1.5409	0.0142
52	1.5549	0.0140
53	1.5688	0.0139
54	1.5825	0.0137
55	1.5961	0.0136
56	1.6096	0.0135
57	1.6230	0.0133
58	1.6362	0.0132
59	1.6493	0.0131
60	1.6623	0.0130
61	1.6751	0.0129
62	1.6879	0.0128
63	1.7005	0.0126
64	1.7131	0.0125
65	1.7255	0.0124
66	1.7378	0.0123
67	1.7501	0.0122
68	1.7622	0.0121
69	1.7743	0.0120
70	1.7862	0.0120
71	1.7981	0.0119
72	1.8098	0.0118
73	1.8191	0.0093
74	1.8284	0.0092
75	1.8375	0.0091
76	1.8466	0.0091
77	1.8556	0.0090
78	1.8645	0.0089
79	1.8734	0.0088
80	1.8821	0.0088
81	1.8908	0.0087
82	1.8995	0.0086
83	1.9081	0.0086
84	1.9166	0.0085
85	1.9250	0.0084
86	1.9334	0.0084
87	1.9417	0.0083
88	1.9500	0.0083
89	1.9582	0.0082
90	1.9664	0.0081
91	1.9745	0.0081
92	1.9825	0.0080
93	1.9905	0.0080
94	1.9984	0.0079
95	2.0063	0.0079
96	2.0141	0.0078
97	2.0219	0.0078
98	2.0296	0.0077
99	2.0373	0.0077
100	2.0449	0.0076
101	2.0525	0.0076
102	2.0600	0.0075

103	2.0675	0.0075
104	2.0749	0.0074
105	2.0823	0.0074
106	2.0897	0.0073
107	2.0970	0.0073
108	2.1042	0.0073
109	2.1115	0.0072
110	2.1186	0.0072
111	2.1258	0.0071
112	2.1329	0.0071
113	2.1399	0.0071
114	2.1470	0.0070
115	2.1539	0.0070
116	2.1609	0.0069
117	2.1678	0.0069
118	2.1747	0.0069
119	2.1815	0.0068
120	2.1883	0.0068
121	2.1950	0.0068
122	2.2018	0.0067
123	2.2085	0.0067
124	2.2151	0.0067
125	2.2217	0.0066
126	2.2283	0.0066
127	2.2349	0.0066
128	2.2414	0.0065
129	2.2479	0.0065
130	2.2544	0.0065
131	2.2608	0.0064
132	2.2672	0.0064
133	2.2736	0.0064
134	2.2799	0.0063
135	2.2862	0.0063
136	2.2925	0.0063
137	2.2987	0.0063
138	2.3050	0.0062
139	2.3112	0.0062
140	2.3173	0.0062
141	2.3235	0.0061
142	2.3296	0.0061
143	2.3357	0.0061
144	2.3417	0.0061

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0061	0.0054	0.0007
2	0.0061	0.0054	0.0007
3	0.0061	0.0055	0.0007
4	0.0062	0.0055	0.0007
5	0.0062	0.0056	0.0007
6	0.0063	0.0056	0.0007
7	0.0063	0.0056	0.0007
8	0.0063	0.0057	0.0007
9	0.0064	0.0057	0.0007
10	0.0064	0.0057	0.0007
11	0.0065	0.0058	0.0007
12	0.0065	0.0058	0.0007
13	0.0066	0.0059	0.0007
14	0.0066	0.0059	0.0007
15	0.0067	0.0060	0.0007
16	0.0067	0.0060	0.0007
17	0.0068	0.0061	0.0007
18	0.0068	0.0061	0.0007
19	0.0069	0.0062	0.0007
20	0.0069	0.0062	0.0007
21	0.0070	0.0063	0.0008
22	0.0071	0.0063	0.0008
23	0.0071	0.0064	0.0008
24	0.0072	0.0064	0.0008

25	0.0073	0.0065	0.0008
26	0.0073	0.0065	0.0008
27	0.0074	0.0066	0.0008
28	0.0074	0.0066	0.0008
29	0.0075	0.0067	0.0008
30	0.0076	0.0068	0.0008
31	0.0077	0.0068	0.0008
32	0.0077	0.0069	0.0008
33	0.0078	0.0070	0.0008
34	0.0079	0.0070	0.0008
35	0.0080	0.0071	0.0009
36	0.0080	0.0072	0.0009
37	0.0081	0.0073	0.0009
38	0.0082	0.0073	0.0009
39	0.0083	0.0074	0.0009
40	0.0084	0.0075	0.0009
41	0.0085	0.0076	0.0009
42	0.0086	0.0077	0.0009
43	0.0087	0.0078	0.0009
44	0.0088	0.0078	0.0009
45	0.0089	0.0080	0.0010
46	0.0090	0.0080	0.0010
47	0.0091	0.0082	0.0010
48	0.0092	0.0082	0.0010
49	0.0118	0.0105	0.0013
50	0.0119	0.0106	0.0013
51	0.0120	0.0107	0.0013
52	0.0121	0.0108	0.0013
53	0.0123	0.0110	0.0013
54	0.0124	0.0111	0.0013
55	0.0126	0.0113	0.0014
56	0.0128	0.0114	0.0014
57	0.0130	0.0116	0.0014
58	0.0131	0.0117	0.0014
59	0.0133	0.0119	0.0014
60	0.0135	0.0120	0.0014
61	0.0137	0.0123	0.0015
62	0.0139	0.0124	0.0015
63	0.0142	0.0126	0.0015
64	0.0143	0.0128	0.0015
65	0.0146	0.0131	0.0016
66	0.0148	0.0132	0.0016
67	0.0152	0.0135	0.0016
68	0.0153	0.0137	0.0016
69	0.0157	0.0140	0.0017
70	0.0159	0.0142	0.0017
71	0.0164	0.0146	0.0018
72	0.0166	0.0148	0.0018
73	0.0173	0.0155	0.0019
74	0.0176	0.0157	0.0019
75	0.0182	0.0162	0.0020
76	0.0185	0.0165	0.0020
77	0.0191	0.0171	0.0021
78	0.0195	0.0174	0.0021
79	0.0202	0.0181	0.0022
80	0.0206	0.0184	0.0022
81	0.0215	0.0192	0.0023
82	0.0220	0.0197	0.0024
83	0.0232	0.0207	0.0025
84	0.0238	0.0208	0.0029
85	0.0252	0.0208	0.0043
86	0.0260	0.0208	0.0051
87	0.0278	0.0208	0.0070
88	0.0289	0.0208	0.0080
89	0.0268	0.0208	0.0060
90	0.0283	0.0208	0.0075
91	0.0321	0.0208	0.0113
92	0.0346	0.0208	0.0138
93	0.0471	0.0208	0.0263
94	0.0526	0.0208	0.0318
95	0.0726	0.0208	0.0518

96	0.0969	0.0208	0.0760
97	0.2597	0.0208	0.2388
98	0.0603	0.0208	0.0395
99	0.0377	0.0208	0.0169
100	0.0301	0.0208	0.0092
101	0.0301	0.0208	0.0092
102	0.0268	0.0208	0.0060
103	0.0244	0.0208	0.0036
104	0.0226	0.0202	0.0024
105	0.0211	0.0188	0.0023
106	0.0198	0.0177	0.0021
107	0.0188	0.0168	0.0020
108	0.0179	0.0160	0.0019
109	0.0168	0.0150	0.0018
110	0.0162	0.0144	0.0017
111	0.0155	0.0139	0.0017
112	0.0150	0.0134	0.0016
113	0.0145	0.0129	0.0016
114	0.0140	0.0125	0.0015
115	0.0136	0.0121	0.0015
116	0.0132	0.0118	0.0014
117	0.0129	0.0115	0.0014
118	0.0125	0.0112	0.0013
119	0.0122	0.0109	0.0013
120	0.0120	0.0107	0.0013
121	0.0093	0.0083	0.0010
122	0.0091	0.0081	0.0010
123	0.0088	0.0079	0.0010
124	0.0086	0.0077	0.0009
125	0.0084	0.0075	0.0009
126	0.0083	0.0074	0.0009
127	0.0081	0.0072	0.0009
128	0.0079	0.0071	0.0009
129	0.0078	0.0069	0.0008
130	0.0076	0.0068	0.0008
131	0.0075	0.0067	0.0008
132	0.0073	0.0066	0.0008
133	0.0072	0.0064	0.0008
134	0.0071	0.0063	0.0008
135	0.0070	0.0062	0.0007
136	0.0069	0.0061	0.0007
137	0.0068	0.0060	0.0007
138	0.0067	0.0059	0.0007
139	0.0066	0.0059	0.0007
140	0.0065	0.0058	0.0007
141	0.0064	0.0057	0.0007
142	0.0063	0.0056	0.0007
143	0.0062	0.0055	0.0007
144	0.0061	0.0055	0.0007

Total soil rain loss = 1.62(In)
Total effective rainfall = 0.72(In)
Peak flow rate in flood hydrograph = 32.10(CFS)

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12 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	10.0	20.0	30.0	40.0
0+ 5	0.0000	0.00	Q	|	|	|	|
0+10	0.0002	0.02	Q	|	|	|	|
0+15	0.0005	0.05	Q	|	|	|	|
0+20	0.0013	0.11	Q	|	|	|	|
0+25	0.0023	0.15	Q	|	|	|	|
0+30	0.0034	0.16	Q	|	|	|	|
0+35	0.0047	0.18	Q	|	|	|	|

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0+40       0.0060      0.19  Q          |          |          |          |
0+45       0.0073      0.20  Q          |          |          |          |
0+50       0.0087      0.21  Q          |          |          |          |
0+55       0.0102      0.21  Q          |          |          |          |
1+ 0       0.0117      0.22  Q          |          |          |          |
1+ 5       0.0132      0.22  Q          |          |          |          |
1+10       0.0148      0.22  Q          |          |          |          |
1+15       0.0163      0.23  Q          |          |          |          |
1+20       0.0179      0.23  Q          |          |          |          |
1+25       0.0195      0.23  Q          |          |          |          |
1+30       0.0211      0.23  Q          |          |          |          |
1+35       0.0227      0.24  Q          |          |          |          |
1+40       0.0244      0.24  Q          |          |          |          |
1+45       0.0260      0.24  Q          |          |          |          |
1+50       0.0277      0.24  Q          |          |          |          |
1+55       0.0294      0.24  Q          |          |          |          |
2+ 0       0.0311      0.25  Q          |          |          |          |
2+ 5       0.0328      0.25  Q          |          |          |          |
2+10       0.0345      0.25  Q          |          |          |          |
2+15       0.0363      0.25  Q          |          |          |          |
2+20       0.0380      0.26  Q          |          |          |          |
2+25       0.0398      0.26  Q          |          |          |          |
2+30       0.0416      0.26  QV         |          |          |          |
2+35       0.0434      0.26  QV         |          |          |          |
2+40       0.0452      0.26  QV         |          |          |          |
2+45       0.0470      0.27  QV         |          |          |          |
2+50       0.0489      0.27  QV         |          |          |          |
2+55       0.0508      0.27  QV         |          |          |          |
3+ 0       0.0527      0.27  QV         |          |          |          |
3+ 5       0.0546      0.28  QV         |          |          |          |
3+10       0.0565      0.28  QV         |          |          |          |
3+15       0.0584      0.28  QV         |          |          |          |
3+20       0.0604      0.29  QV         |          |          |          |
3+25       0.0624      0.29  QV         |          |          |          |
3+30       0.0644      0.29  QV         |          |          |          |
3+35       0.0664      0.29  QV         |          |          |          |
3+40       0.0685      0.30  QV         |          |          |          |
3+45       0.0706      0.30  QV         |          |          |          |
3+50       0.0727      0.30  QV         |          |          |          |
3+55       0.0748      0.31  QV         |          |          |          |
4+ 0       0.0769      0.31  QV         |          |          |          |
4+ 5       0.0791      0.32  QV         |          |          |          |
4+10       0.0814      0.33  QV         |          |          |          |
4+15       0.0837      0.34  Q V        |          |          |          |
4+20       0.0863      0.37  Q V        |          |          |          |
4+25       0.0890      0.39  Q V        |          |          |          |
4+30       0.0917      0.40  Q V        |          |          |          |
4+35       0.0946      0.41  Q V        |          |          |          |
4+40       0.0975      0.42  Q V        |          |          |          |
4+45       0.1004      0.43  Q V        |          |          |          |
4+50       0.1034      0.44  Q V        |          |          |          |
4+55       0.1065      0.44  Q V        |          |          |          |
5+ 0       0.1096      0.45  Q V        |          |          |          |
5+ 5       0.1127      0.46  Q V        |          |          |          |
5+10       0.1159      0.46  Q V        |          |          |          |
5+15       0.1191      0.47  Q V        |          |          |          |
5+20       0.1224      0.48  Q V        |          |          |          |
5+25       0.1258      0.48  Q  V       |          |          |          |
5+30       0.1292      0.49  Q  V       |          |          |          |
5+35       0.1326      0.50  Q  V       |          |          |          |
5+40       0.1361      0.51  Q  V       |          |          |          |
5+45       0.1397      0.52  Q  V       |          |          |          |
5+50       0.1433      0.53  Q  V       |          |          |          |
5+55       0.1470      0.54  Q  V       |          |          |          |
6+ 0       0.1507      0.55  Q  V       |          |          |          |
6+ 5       0.1546      0.56  Q  V       |          |          |          |
6+10       0.1585      0.57  Q  V       |          |          |          |
6+15       0.1625      0.58  Q  V       |          |          |          |
6+20       0.1666      0.60  Q   V      |          |          |          |
6+25       0.1708      0.61  Q   V      |          |          |          |
6+30       0.1751      0.62  Q   V      |          |          |          |
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 6+35      0.1795      0.64  Q   V     |         |         |         |
 6+40      0.1840      0.66  Q   V     |         |         |         |
 6+45      0.1887      0.67  Q   V     |         |         |         |
 6+50      0.1934      0.69  Q   V     |         |         |         |
 6+55      0.1983      0.71  Q   V     |         |         |         |
 7+ 0      0.2034      0.74  Q   V     |         |         |         |
 7+ 5      0.2088      0.78  Q    V    |         |         |         |
 7+10      0.2148      0.86  Q    V    |         |         |         |
 7+15      0.2217      1.01  |Q   V    |         |         |         |
 7+20      0.2304      1.26  |Q   V    |         |         |         |
 7+25      0.2409      1.52  |Q   V    |         |         |         |
 7+30      0.2534      1.81  |Q    V   |         |         |         |
 7+35      0.2673      2.03  | Q   V   |         |         |         |
 7+40      0.2822      2.15  | Q   V   |         |         |         |
 7+45      0.3002      2.62  | Q    V  |         |         |         |
 7+50      0.3244      3.52  |  Q   V  |         |         |         |
 7+55      0.3579      4.85  |   Q   V |         |         |         |
 8+ 0      0.4076      7.22  |      Q V|         |         |         |
 8+ 5      0.4846     11.19  |         |Q        |         |         |
 8+10      0.6037     17.29  |         |   V  Q  |         |         |
 8+15      0.7677     23.82  |         |       V |  Q      |         |
 8+20      0.9887     32.10  |         |         |   V     | Q       |
 8+25      1.1340     21.09  |         |         |Q     V  |         |
 8+30      1.2302     13.96  |         |  Q      |        V|         |
 8+35      1.3026     10.52  |         Q         |         |V        |
 8+40      1.3602      8.37  |        Q|         |         |  V      |
 8+45      1.4061      6.65  |     Q   |         |         |   V     |
 8+50      1.4419      5.21  |    Q    |         |         |    V    |
 8+55      1.4701      4.09  |   Q     |         |         |    V    |
 9+ 0      1.4920      3.19  |  Q      |         |         |     V   |
 9+ 5      1.5093      2.51  | Q       |         |         |     V   |
 9+10      1.5224      1.90  |Q        |         |         |      V  |
 9+15      1.5322      1.43  |Q        |         |         |      V  |
 9+20      1.5408      1.24  |Q        |         |         |      V  |
 9+25      1.5483      1.10  |Q        |         |         |      V  |
 9+30      1.5550      0.97  Q         |         |         |      V  |
 9+35      1.5612      0.90  Q         |         |         |       V |
 9+40      1.5671      0.86  Q         |         |         |       V |
 9+45      1.5724      0.77  Q         |         |         |       V |
 9+50      1.5771      0.68  Q         |         |         |       V |
 9+55      1.5812      0.60  Q         |         |         |       V |
10+ 0      1.5850      0.55  Q         |         |         |       V |
10+ 5      1.5883      0.49  Q         |         |         |       V |
10+10      1.5915      0.46  Q         |         |         |       V |
10+15      1.5944      0.43  Q         |         |         |       V |
10+20      1.5971      0.39  Q         |         |         |       V |
10+25      1.5997      0.37  Q         |         |         |       V |
10+30      1.6021      0.35  Q         |         |         |        V|
10+35      1.6044      0.34  Q         |         |         |        V|
10+40      1.6067      0.33  Q         |         |         |        V|
10+45      1.6088      0.32  Q         |         |         |        V|
10+50      1.6110      0.31  Q         |         |         |        V|
10+55      1.6130      0.30  Q         |         |         |        V|
11+ 0      1.6150      0.29  Q         |         |         |        V|
11+ 5      1.6169      0.28  Q         |         |         |        V|
11+10      1.6189      0.28  Q         |         |         |        V|
11+15      1.6207      0.27  Q         |         |         |        V|
11+20      1.6226      0.27  Q         |         |         |        V|
11+25      1.6244      0.26  Q         |         |         |        V|
11+30      1.6261      0.26  Q         |         |         |        V|
11+35      1.6279      0.25  Q         |         |         |        V|
11+40      1.6296      0.25  Q         |         |         |        V|
11+45      1.6312      0.24  Q         |         |         |        V|
11+50      1.6329      0.24  Q         |         |         |        V|
11+55      1.6345      0.24  Q         |         |         |        V|
12+ 0      1.6361      0.23  Q         |         |         |        V|
12+ 5      1.6376      0.22  Q         |         |         |        V|
12+10      1.6391      0.21  Q         |         |         |        V|
12+15      1.6403      0.17  Q         |         |         |        V|
12+20      1.6410      0.11  Q         |         |         |        V|
12+25      1.6415      0.07  Q         |         |         |        V|
```

```
  12+30       1.6419      0.06  Q          |          |          |         V|
  12+35       1.6422      0.04  Q          |          |          |         V|
  12+40       1.6424      0.03  Q          |          |          |         V|
  12+45       1.6426      0.02  Q          |          |          |         V|
  12+50       1.6427      0.02  Q          |          |          |         V|
  12+55       1.6428      0.01  Q          |          |          |         V|
  13+ 0       1.6428      0.01  Q          |          |          |         V|
  13+ 5       1.6429      0.01  Q          |          |          |         V|
  13+10       1.6429      0.00  Q          |          |          |         V|
  13+15       1.6429      0.00  Q          |          |          |         V|
  13+20       1.6430      0.00  Q          |          |          |         V|
  13+25       1.6430      0.00  Q          |          |          |         V|
  13+30       1.6430      0.00  Q          |          |          |         V|
  13+35       1.6430      0.00  Q          |          |          |         V|
  13+40       1.6430      0.00  Q          |          |          |         V|
  13+45       1.6430      0.00  Q          |          |          |         V|
  13+50       1.6430      0.00  Q          |          |          |         V|
  13+55       1.6430      0.00  Q          |          |          |          V
-------------------------------------------------------------------------------
```

- 5 Year 24 Hour Pre-Development Unit Hydrograph – Area 'A'

```
        U n i t   H y d r o g r a p h   A n a l y s i s

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        Study date  10/13/16   File Name exa00524.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'A' - 5 YEAR 24 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

        Storm Event Year = 5

        Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 77.0      27.4          1.00     C     0.250     1.000    0.250

Area-averaged adjusted loss rate Fm (In/Hr) =  0.250

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)           Yield Fr
    27.39   1.000         77.0      59.4       6.84     0.107

Area-averaged catchment yield fraction, Y =  0.107
Area-averaged low loss fraction, Yb =  0.893
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.346 (hours)
Watershed area =      27.39(Ac.)
Catchment Lag time =   0.277 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 30.1060
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.250(In/Hr)
Average low loss rate fraction (Yb) = 0.893 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.260(In)
Computed peak 30-minute rainfall =  0.590(In)
Specified peak 1-hour rainfall =  0.780(In)
Computed peak 3-hour rainfall =  1.310(In)
Specified peak 6-hour rainfall =  1.810(In)
Specified peak 24-hour rainfall =  3.030(In)


Rainfall depth area reduction factors:
Using a total area of      27.39(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.260(In)
30-minute factor = 0.999    Adjusted rainfall =  0.589(In)
```

```
1-hour factor = 0.999       Adjusted rainfall =  0.779(In)
3-hour factor = 1.000       Adjusted rainfall =  1.310(In)
6-hour factor = 1.000       Adjusted rainfall =  1.810(In)
24-hour factor = 1.000 Adjusted rainfall =  3.030(In)
------------------------------------------------------------------------

                     U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
------------------------------------------------------------------------
               (K =       331.25 (CFS))

  1                2.160                   7.154
  2                9.083                  22.934
  3               22.827                  45.527
  4               52.104                  96.979
  5               67.288                  50.296
  6               75.550                  27.368
  7               81.530                  19.809
  8               86.014                  14.854
  9               89.533                  11.656
 10               92.276                   9.085
 11               94.421                   7.106
 12               96.002                   5.235
 13               97.200                   3.968
 14               97.957                   2.510
 15               98.338                   1.262
 16               98.666                   1.087
 17               98.958                   0.967
 18               99.161                   0.672
 19               99.358                   0.652
 20               99.596                   0.790
 21               99.769                   0.571
 22               99.884                   0.382
 23               99.955                   0.234
 24              100.000                   0.150
------------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)               (In)
  1              0.2597              0.2597
  2              0.3565              0.0969
  3              0.4292              0.0726
  4              0.4895              0.0603
  5              0.5421              0.0526
  6              0.5892              0.0471
  7              0.6270              0.0377
  8              0.6616              0.0346
  9              0.6938              0.0321
 10              0.7238              0.0301
 11              0.7522              0.0283
 12              0.7790              0.0268
 13              0.8091              0.0301
 14              0.8379              0.0289
 15              0.8657              0.0278
 16              0.8925              0.0268
 17              0.9185              0.0260
 18              0.9437              0.0252
 19              0.9681              0.0244
 20              0.9919              0.0238
 21              1.0150              0.0232
 22              1.0376              0.0226
 23              1.0597              0.0220
 24              1.0812              0.0215
 25              1.1023              0.0211
 26              1.1229              0.0206
 27              1.1432              0.0202
 28              1.1630              0.0198
 29              1.1825              0.0195
 30              1.2016              0.0191
 31              1.2204              0.0188
```

32	1.2388	0.0185
33	1.2570	0.0182
34	1.2749	0.0179
35	1.2925	0.0176
36	1.3098	0.0173
37	1.3266	0.0168
38	1.3432	0.0166
39	1.3596	0.0164
40	1.3758	0.0162
41	1.3917	0.0159
42	1.4075	0.0157
43	1.4230	0.0155
44	1.4383	0.0153
45	1.4535	0.0152
46	1.4685	0.0150
47	1.4833	0.0148
48	1.4979	0.0146
49	1.5124	0.0145
50	1.5267	0.0143
51	1.5409	0.0142
52	1.5549	0.0140
53	1.5688	0.0139
54	1.5825	0.0137
55	1.5961	0.0136
56	1.6096	0.0135
57	1.6230	0.0133
58	1.6362	0.0132
59	1.6493	0.0131
60	1.6623	0.0130
61	1.6751	0.0129
62	1.6879	0.0128
63	1.7005	0.0126
64	1.7131	0.0125
65	1.7255	0.0124
66	1.7378	0.0123
67	1.7501	0.0122
68	1.7622	0.0121
69	1.7743	0.0120
70	1.7862	0.0120
71	1.7981	0.0119
72	1.8098	0.0118
73	1.8191	0.0093
74	1.8284	0.0092
75	1.8375	0.0091
76	1.8466	0.0091
77	1.8556	0.0090
78	1.8645	0.0089
79	1.8734	0.0088
80	1.8821	0.0088
81	1.8908	0.0087
82	1.8995	0.0086
83	1.9081	0.0086
84	1.9166	0.0085
85	1.9250	0.0084
86	1.9334	0.0084
87	1.9417	0.0083
88	1.9500	0.0083
89	1.9582	0.0082
90	1.9664	0.0081
91	1.9745	0.0081
92	1.9825	0.0080
93	1.9905	0.0080
94	1.9984	0.0079
95	2.0063	0.0079
96	2.0141	0.0078
97	2.0219	0.0078
98	2.0296	0.0077
99	2.0373	0.0077
100	2.0449	0.0076
101	2.0525	0.0076
102	2.0600	0.0075

103	2.0675	0.0075
104	2.0749	0.0074
105	2.0823	0.0074
106	2.0897	0.0073
107	2.0970	0.0073
108	2.1042	0.0073
109	2.1115	0.0072
110	2.1186	0.0072
111	2.1258	0.0071
112	2.1329	0.0071
113	2.1399	0.0071
114	2.1470	0.0070
115	2.1539	0.0070
116	2.1609	0.0069
117	2.1678	0.0069
118	2.1747	0.0069
119	2.1815	0.0068
120	2.1883	0.0068
121	2.1950	0.0068
122	2.2018	0.0067
123	2.2085	0.0067
124	2.2151	0.0067
125	2.2217	0.0066
126	2.2283	0.0066
127	2.2349	0.0066
128	2.2414	0.0065
129	2.2479	0.0065
130	2.2544	0.0065
131	2.2608	0.0064
132	2.2672	0.0064
133	2.2736	0.0064
134	2.2799	0.0063
135	2.2862	0.0063
136	2.2925	0.0063
137	2.2987	0.0063
138	2.3050	0.0062
139	2.3112	0.0062
140	2.3173	0.0062
141	2.3235	0.0061
142	2.3296	0.0061
143	2.3357	0.0061
144	2.3417	0.0061
145	2.3477	0.0060
146	2.3538	0.0060
147	2.3597	0.0060
148	2.3657	0.0060
149	2.3716	0.0059
150	2.3775	0.0059
151	2.3834	0.0059
152	2.3893	0.0059
153	2.3951	0.0058
154	2.4009	0.0058
155	2.4067	0.0058
156	2.4124	0.0058
157	2.4182	0.0057
158	2.4239	0.0057
159	2.4296	0.0057
160	2.4352	0.0057
161	2.4409	0.0056
162	2.4465	0.0056
163	2.4521	0.0056
164	2.4577	0.0056
165	2.4633	0.0056
166	2.4688	0.0055
167	2.4743	0.0055
168	2.4798	0.0055
169	2.4853	0.0055
170	2.4907	0.0055
171	2.4962	0.0054
172	2.5016	0.0054
173	2.5070	0.0054

174	2.5124	0.0054
175	2.5177	0.0054
176	2.5231	0.0053
177	2.5284	0.0053
178	2.5337	0.0053
179	2.5390	0.0053
180	2.5442	0.0053
181	2.5495	0.0052
182	2.5547	0.0052
183	2.5599	0.0052
184	2.5651	0.0052
185	2.5703	0.0052
186	2.5754	0.0052
187	2.5806	0.0051
188	2.5857	0.0051
189	2.5908	0.0051
190	2.5959	0.0051
191	2.6009	0.0051
192	2.6060	0.0051
193	2.6110	0.0050
194	2.6161	0.0050
195	2.6211	0.0050
196	2.6260	0.0050
197	2.6310	0.0050
198	2.6360	0.0050
199	2.6409	0.0049
200	2.6458	0.0049
201	2.6508	0.0049
202	2.6556	0.0049
203	2.6605	0.0049
204	2.6654	0.0049
205	2.6702	0.0048
206	2.6751	0.0048
207	2.6799	0.0048
208	2.6847	0.0048
209	2.6895	0.0048
210	2.6943	0.0048
211	2.6990	0.0048
212	2.7038	0.0047
213	2.7085	0.0047
214	2.7132	0.0047
215	2.7179	0.0047
216	2.7226	0.0047
217	2.7273	0.0047
218	2.7320	0.0047
219	2.7366	0.0047
220	2.7413	0.0046
221	2.7459	0.0046
222	2.7505	0.0046
223	2.7551	0.0046
224	2.7597	0.0046
225	2.7643	0.0046
226	2.7688	0.0046
227	2.7734	0.0045
228	2.7779	0.0045
229	2.7824	0.0045
230	2.7869	0.0045
231	2.7914	0.0045
232	2.7959	0.0045
233	2.8004	0.0045
234	2.8048	0.0045
235	2.8093	0.0044
236	2.8137	0.0044
237	2.8182	0.0044
238	2.8226	0.0044
239	2.8270	0.0044
240	2.8314	0.0044
241	2.8357	0.0044
242	2.8401	0.0044
243	2.8445	0.0044
244	2.8488	0.0043

245	2.8531	0.0043
246	2.8575	0.0043
247	2.8618	0.0043
248	2.8661	0.0043
249	2.8704	0.0043
250	2.8747	0.0043
251	2.8789	0.0043
252	2.8832	0.0043
253	2.8874	0.0042
254	2.8917	0.0042
255	2.8959	0.0042
256	2.9001	0.0042
257	2.9043	0.0042
258	2.9085	0.0042
259	2.9127	0.0042
260	2.9169	0.0042
261	2.9210	0.0042
262	2.9252	0.0042
263	2.9293	0.0041
264	2.9335	0.0041
265	2.9376	0.0041
266	2.9417	0.0041
267	2.9458	0.0041
268	2.9499	0.0041
269	2.9540	0.0041
270	2.9581	0.0041
271	2.9621	0.0041
272	2.9662	0.0041
273	2.9703	0.0040
274	2.9743	0.0040
275	2.9783	0.0040
276	2.9823	0.0040
277	2.9864	0.0040
278	2.9904	0.0040
279	2.9944	0.0040
280	2.9983	0.0040
281	3.0023	0.0040
282	3.0063	0.0040
283	3.0102	0.0040
284	3.0142	0.0039
285	3.0181	0.0039
286	3.0221	0.0039
287	3.0260	0.0039
288	3.0299	0.0039

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0039	0.0035	0.0004
2	0.0039	0.0035	0.0004
3	0.0039	0.0035	0.0004
4	0.0039	0.0035	0.0004
5	0.0040	0.0035	0.0004
6	0.0040	0.0035	0.0004
7	0.0040	0.0036	0.0004
8	0.0040	0.0036	0.0004
9	0.0040	0.0036	0.0004
10	0.0040	0.0036	0.0004
11	0.0040	0.0036	0.0004
12	0.0041	0.0036	0.0004
13	0.0041	0.0036	0.0004
14	0.0041	0.0036	0.0004
15	0.0041	0.0037	0.0004
16	0.0041	0.0037	0.0004
17	0.0041	0.0037	0.0004
18	0.0041	0.0037	0.0004
19	0.0042	0.0037	0.0004
20	0.0042	0.0037	0.0004
21	0.0042	0.0037	0.0005
22	0.0042	0.0038	0.0005

23	0.0042	0.0038	0.0005
24	0.0042	0.0038	0.0005
25	0.0043	0.0038	0.0005
26	0.0043	0.0038	0.0005
27	0.0043	0.0038	0.0005
28	0.0043	0.0038	0.0005
29	0.0043	0.0039	0.0005
30	0.0043	0.0039	0.0005
31	0.0044	0.0039	0.0005
32	0.0044	0.0039	0.0005
33	0.0044	0.0039	0.0005
34	0.0044	0.0039	0.0005
35	0.0044	0.0040	0.0005
36	0.0044	0.0040	0.0005
37	0.0045	0.0040	0.0005
38	0.0045	0.0040	0.0005
39	0.0045	0.0040	0.0005
40	0.0045	0.0040	0.0005
41	0.0045	0.0040	0.0005
42	0.0045	0.0041	0.0005
43	0.0046	0.0041	0.0005
44	0.0046	0.0041	0.0005
45	0.0046	0.0041	0.0005
46	0.0046	0.0041	0.0005
47	0.0047	0.0042	0.0005
48	0.0047	0.0042	0.0005
49	0.0047	0.0042	0.0005
50	0.0047	0.0042	0.0005
51	0.0047	0.0042	0.0005
52	0.0047	0.0042	0.0005
53	0.0048	0.0043	0.0005
54	0.0048	0.0043	0.0005
55	0.0048	0.0043	0.0005
56	0.0048	0.0043	0.0005
57	0.0049	0.0043	0.0005
58	0.0049	0.0044	0.0005
59	0.0049	0.0044	0.0005
60	0.0049	0.0044	0.0005
61	0.0050	0.0044	0.0005
62	0.0050	0.0044	0.0005
63	0.0050	0.0045	0.0005
64	0.0050	0.0045	0.0005
65	0.0051	0.0045	0.0005
66	0.0051	0.0045	0.0005
67	0.0051	0.0046	0.0005
68	0.0051	0.0046	0.0005
69	0.0052	0.0046	0.0006
70	0.0052	0.0046	0.0006
71	0.0052	0.0046	0.0006
72	0.0052	0.0047	0.0006
73	0.0053	0.0047	0.0006
74	0.0053	0.0047	0.0006
75	0.0053	0.0047	0.0006
76	0.0053	0.0048	0.0006
77	0.0054	0.0048	0.0006
78	0.0054	0.0048	0.0006
79	0.0054	0.0049	0.0006
80	0.0055	0.0049	0.0006
81	0.0055	0.0049	0.0006
82	0.0055	0.0049	0.0006
83	0.0056	0.0050	0.0006
84	0.0056	0.0050	0.0006
85	0.0056	0.0050	0.0006
86	0.0056	0.0050	0.0006
87	0.0057	0.0051	0.0006
88	0.0057	0.0051	0.0006
89	0.0058	0.0051	0.0006
90	0.0058	0.0052	0.0006
91	0.0058	0.0052	0.0006
92	0.0059	0.0052	0.0006
93	0.0059	0.0053	0.0006

94	0.0059	0.0053	0.0006
95	0.0060	0.0053	0.0006
96	0.0060	0.0054	0.0006
97	0.0061	0.0054	0.0007
98	0.0061	0.0054	0.0007
99	0.0061	0.0055	0.0007
100	0.0062	0.0055	0.0007
101	0.0062	0.0056	0.0007
102	0.0063	0.0056	0.0007
103	0.0063	0.0056	0.0007
104	0.0063	0.0057	0.0007
105	0.0064	0.0057	0.0007
106	0.0064	0.0057	0.0007
107	0.0065	0.0058	0.0007
108	0.0065	0.0058	0.0007
109	0.0066	0.0059	0.0007
110	0.0066	0.0059	0.0007
111	0.0067	0.0060	0.0007
112	0.0067	0.0060	0.0007
113	0.0068	0.0061	0.0007
114	0.0068	0.0061	0.0007
115	0.0069	0.0062	0.0007
116	0.0069	0.0062	0.0007
117	0.0070	0.0063	0.0008
118	0.0071	0.0063	0.0008
119	0.0071	0.0064	0.0008
120	0.0072	0.0064	0.0008
121	0.0073	0.0065	0.0008
122	0.0073	0.0065	0.0008
123	0.0074	0.0066	0.0008
124	0.0074	0.0066	0.0008
125	0.0075	0.0067	0.0008
126	0.0076	0.0068	0.0008
127	0.0077	0.0068	0.0008
128	0.0077	0.0069	0.0008
129	0.0078	0.0070	0.0008
130	0.0079	0.0070	0.0008
131	0.0080	0.0071	0.0009
132	0.0080	0.0072	0.0009
133	0.0081	0.0073	0.0009
134	0.0082	0.0073	0.0009
135	0.0083	0.0074	0.0009
136	0.0084	0.0075	0.0009
137	0.0085	0.0076	0.0009
138	0.0086	0.0077	0.0009
139	0.0087	0.0078	0.0009
140	0.0088	0.0078	0.0009
141	0.0089	0.0080	0.0010
142	0.0090	0.0080	0.0010
143	0.0091	0.0082	0.0010
144	0.0092	0.0082	0.0010
145	0.0118	0.0105	0.0013
146	0.0119	0.0106	0.0013
147	0.0120	0.0107	0.0013
148	0.0121	0.0108	0.0013
149	0.0123	0.0110	0.0013
150	0.0124	0.0111	0.0013
151	0.0126	0.0113	0.0014
152	0.0128	0.0114	0.0014
153	0.0130	0.0116	0.0014
154	0.0131	0.0117	0.0014
155	0.0133	0.0119	0.0014
156	0.0135	0.0120	0.0014
157	0.0137	0.0123	0.0015
158	0.0139	0.0124	0.0015
159	0.0142	0.0126	0.0015
160	0.0143	0.0128	0.0015
161	0.0146	0.0131	0.0016
162	0.0148	0.0132	0.0016
163	0.0152	0.0135	0.0016
164	0.0153	0.0137	0.0016

165	0.0157	0.0140	0.0017
166	0.0159	0.0142	0.0017
167	0.0164	0.0146	0.0018
168	0.0166	0.0148	0.0018
169	0.0173	0.0155	0.0019
170	0.0176	0.0157	0.0019
171	0.0182	0.0162	0.0020
172	0.0185	0.0165	0.0020
173	0.0191	0.0171	0.0021
174	0.0195	0.0174	0.0021
175	0.0202	0.0181	0.0022
176	0.0206	0.0184	0.0022
177	0.0215	0.0192	0.0023
178	0.0220	0.0197	0.0024
179	0.0232	0.0207	0.0025
180	0.0238	0.0208	0.0029
181	0.0252	0.0208	0.0043
182	0.0260	0.0208	0.0051
183	0.0278	0.0208	0.0070
184	0.0289	0.0208	0.0080
185	0.0268	0.0208	0.0060
186	0.0283	0.0208	0.0075
187	0.0321	0.0208	0.0113
188	0.0346	0.0208	0.0138
189	0.0471	0.0208	0.0263
190	0.0526	0.0208	0.0318
191	0.0726	0.0208	0.0518
192	0.0969	0.0208	0.0760
193	0.2597	0.0208	0.2388
194	0.0603	0.0208	0.0395
195	0.0377	0.0208	0.0169
196	0.0301	0.0208	0.0092
197	0.0301	0.0208	0.0092
198	0.0268	0.0208	0.0060
199	0.0244	0.0208	0.0036
200	0.0226	0.0202	0.0024
201	0.0211	0.0188	0.0023
202	0.0198	0.0177	0.0021
203	0.0188	0.0168	0.0020
204	0.0179	0.0160	0.0019
205	0.0168	0.0150	0.0018
206	0.0162	0.0144	0.0017
207	0.0155	0.0139	0.0017
208	0.0150	0.0134	0.0016
209	0.0145	0.0129	0.0016
210	0.0140	0.0125	0.0015
211	0.0136	0.0121	0.0015
212	0.0132	0.0118	0.0014
213	0.0129	0.0115	0.0014
214	0.0125	0.0112	0.0013
215	0.0122	0.0109	0.0013
216	0.0120	0.0107	0.0013
217	0.0093	0.0083	0.0010
218	0.0091	0.0081	0.0010
219	0.0088	0.0079	0.0010
220	0.0086	0.0077	0.0009
221	0.0084	0.0075	0.0009
222	0.0083	0.0074	0.0009
223	0.0081	0.0072	0.0009
224	0.0079	0.0071	0.0009
225	0.0078	0.0069	0.0008
226	0.0076	0.0068	0.0008
227	0.0075	0.0067	0.0008
228	0.0073	0.0066	0.0008
229	0.0072	0.0064	0.0008
230	0.0071	0.0063	0.0008
231	0.0070	0.0062	0.0007
232	0.0069	0.0061	0.0007
233	0.0068	0.0060	0.0007
234	0.0067	0.0059	0.0007
235	0.0066	0.0059	0.0007

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      236              0.0065          0.0058              0.0007
      237              0.0064          0.0057              0.0007
      238              0.0063          0.0056              0.0007
      239              0.0062          0.0055              0.0007
      240              0.0061          0.0055              0.0007
      241              0.0060          0.0054              0.0006
      242              0.0060          0.0053              0.0006
      243              0.0059          0.0052              0.0006
      244              0.0058          0.0052              0.0006
      245              0.0057          0.0051              0.0006
      246              0.0057          0.0051              0.0006
      247              0.0056          0.0050              0.0006
      248              0.0055          0.0049              0.0006
      249              0.0055          0.0049              0.0006
      250              0.0054          0.0048              0.0006
      251              0.0054          0.0048              0.0006
      252              0.0053          0.0047              0.0006
      253              0.0052          0.0047              0.0006
      254              0.0052          0.0046              0.0006
      255              0.0051          0.0046              0.0006
      256              0.0051          0.0045              0.0005
      257              0.0050          0.0045              0.0005
      258              0.0050          0.0045              0.0005
      259              0.0049          0.0044              0.0005
      260              0.0049          0.0044              0.0005
      261              0.0048          0.0043              0.0005
      262              0.0048          0.0043              0.0005
      263              0.0048          0.0043              0.0005
      264              0.0047          0.0042              0.0005
      265              0.0047          0.0042              0.0005
      266              0.0046          0.0041              0.0005
      267              0.0046          0.0041              0.0005
      268              0.0046          0.0041              0.0005
      269              0.0045          0.0040              0.0005
      270              0.0045          0.0040              0.0005
      271              0.0044          0.0040              0.0005
      272              0.0044          0.0039              0.0005
      273              0.0044          0.0039              0.0005
      274              0.0043          0.0039              0.0005
      275              0.0043          0.0038              0.0005
      276              0.0043          0.0038              0.0005
      277              0.0042          0.0038              0.0005
      278              0.0042          0.0038              0.0005
      279              0.0042          0.0037              0.0004
      280              0.0042          0.0037              0.0004
      281              0.0041          0.0037              0.0004
      282              0.0041          0.0037              0.0004
      283              0.0041          0.0036              0.0004
      284              0.0040          0.0036              0.0004
      285              0.0040          0.0036              0.0004
      286              0.0040          0.0036              0.0004
      287              0.0040          0.0035              0.0004
      288              0.0039          0.0035              0.0004
      ---------------------------------------------------------------------
      ---------------------------------------------------------------------
      Total soil rain loss =      2.24(In)
      Total effective rainfall =      0.79(In)
      Peak flow rate in flood hydrograph =     32.10(CFS)
      ---------------------------------------------------------------------
      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                        24 - H O U R    S T O R M
                   R u n o f f      H y d r o g r a p h
      ---------------------------------------------------------------------
                Hydrograph in   5   Minute intervals ((CFS))

      ---------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0       10.0      20.0      30.0      40.0
---------------------------------------------------------------------
  0+ 5       0.0000      0.00  Q         |         |         |         |
  0+10       0.0001      0.01  Q         |         |         |         |
  0+15       0.0003      0.03  Q         |         |         |         |
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0+20	0.0008	0.07	Q	|	|	|	|
0+25	0.0015	0.09	Q	|	|	|	|
0+30	0.0022	0.11	Q	|	|	|	|
0+35	0.0030	0.11	Q	|	|	|	|
0+40	0.0038	0.12	Q	|	|	|	|
0+45	0.0047	0.13	Q	|	|	|	|
0+50	0.0056	0.13	Q	|	|	|	|
0+55	0.0065	0.13	Q	|	|	|	|
1+ 0	0.0075	0.14	Q	|	|	|	|
1+ 5	0.0084	0.14	Q	|	|	|	|
1+10	0.0094	0.14	Q	|	|	|	|
1+15	0.0104	0.14	Q	|	|	|	|
1+20	0.0113	0.14	Q	|	|	|	|
1+25	0.0123	0.14	Q	|	|	|	|
1+30	0.0133	0.14	Q	|	|	|	|
1+35	0.0143	0.14	Q	|	|	|	|
1+40	0.0153	0.15	Q	|	|	|	|
1+45	0.0163	0.15	Q	|	|	|	|
1+50	0.0173	0.15	Q	|	|	|	|
1+55	0.0184	0.15	Q	|	|	|	|
2+ 0	0.0194	0.15	Q	|	|	|	|
2+ 5	0.0204	0.15	Q	|	|	|	|
2+10	0.0214	0.15	Q	|	|	|	|
2+15	0.0225	0.15	Q	|	|	|	|
2+20	0.0235	0.15	Q	|	|	|	|
2+25	0.0246	0.15	Q	|	|	|	|
2+30	0.0256	0.15	Q	|	|	|	|
2+35	0.0267	0.15	Q	|	|	|	|
2+40	0.0277	0.15	Q	|	|	|	|
2+45	0.0288	0.15	Q	|	|	|	|
2+50	0.0298	0.15	Q	|	|	|	|
2+55	0.0309	0.15	Q	|	|	|	|
3+ 0	0.0320	0.16	Q	|	|	|	|
3+ 5	0.0330	0.16	Q	|	|	|	|
3+10	0.0341	0.16	Q	|	|	|	|
3+15	0.0352	0.16	Q	|	|	|	|
3+20	0.0363	0.16	Q	|	|	|	|
3+25	0.0374	0.16	Q	|	|	|	|
3+30	0.0385	0.16	Q	|	|	|	|
3+35	0.0396	0.16	Q	|	|	|	|
3+40	0.0407	0.16	Q	|	|	|	|
3+45	0.0418	0.16	Q	|	|	|	|
3+50	0.0429	0.16	Q	|	|	|	|
3+55	0.0440	0.16	Q	|	|	|	|
4+ 0	0.0451	0.16	Q	|	|	|	|
4+ 5	0.0463	0.16	QV	|	|	|	|
4+10	0.0474	0.16	QV	|	|	|	|
4+15	0.0485	0.17	QV	|	|	|	|
4+20	0.0497	0.17	QV	|	|	|	|
4+25	0.0508	0.17	QV	|	|	|	|
4+30	0.0520	0.17	QV	|	|	|	|
4+35	0.0531	0.17	QV	|	|	|	|
4+40	0.0543	0.17	QV	|	|	|	|
4+45	0.0555	0.17	QV	|	|	|	|
4+50	0.0566	0.17	QV	|	|	|	|
4+55	0.0578	0.17	QV	|	|	|	|
5+ 0	0.0590	0.17	QV	|	|	|	|
5+ 5	0.0602	0.17	QV	|	|	|	|
5+10	0.0614	0.17	QV	|	|	|	|
5+15	0.0626	0.17	QV	|	|	|	|
5+20	0.0638	0.18	QV	|	|	|	|
5+25	0.0650	0.18	QV	|	|	|	|
5+30	0.0662	0.18	QV	|	|	|	|
5+35	0.0674	0.18	QV	|	|	|	|
5+40	0.0687	0.18	QV	|	|	|	|
5+45	0.0699	0.18	QV	|	|	|	|
5+50	0.0711	0.18	QV	|	|	|	|
5+55	0.0724	0.18	QV	|	|	|	|
6+ 0	0.0736	0.18	QV	|	|	|	|
6+ 5	0.0749	0.18	QV	|	|	|	|
6+10	0.0762	0.18	QV	|	|	|	|

6+15	0.0774	0.18	QV	|	|	|	|
6+20	0.0787	0.19	QV	|	|	|	|
6+25	0.0800	0.19	QV	|	|	|	|
6+30	0.0813	0.19	QV	|	|	|	|
6+35	0.0826	0.19	QV	|	|	|	|
6+40	0.0839	0.19	QV	|	|	|	|
6+45	0.0852	0.19	QV	|	|	|	|
6+50	0.0865	0.19	QV	|	|	|	|
6+55	0.0879	0.19	QV	|	|	|	|
7+ 0	0.0892	0.19	QV	|	|	|	|
7+ 5	0.0905	0.19	QV	|	|	|	|
7+10	0.0919	0.20	Q V	|	|	|	|
7+15	0.0932	0.20	Q V	|	|	|	|
7+20	0.0946	0.20	Q V	|	|	|	|
7+25	0.0960	0.20	Q V	|	|	|	|
7+30	0.0974	0.20	Q V	|	|	|	|
7+35	0.0988	0.20	Q V	|	|	|	|
7+40	0.1002	0.20	Q V	|	|	|	|
7+45	0.1016	0.20	Q V	|	|	|	|
7+50	0.1030	0.21	Q V	|	|	|	|
7+55	0.1044	0.21	Q V	|	|	|	|
8+ 0	0.1058	0.21	Q V	|	|	|	|
8+ 5	0.1073	0.21	Q V	|	|	|	|
8+10	0.1087	0.21	Q V	|	|	|	|
8+15	0.1102	0.21	Q V	|	|	|	|
8+20	0.1117	0.21	Q V	|	|	|	|
8+25	0.1131	0.21	Q V	|	|	|	|
8+30	0.1146	0.22	Q V	|	|	|	|
8+35	0.1161	0.22	Q V	|	|	|	|
8+40	0.1176	0.22	Q V	|	|	|	|
8+45	0.1192	0.22	Q V	|	|	|	|
8+50	0.1207	0.22	Q V	|	|	|	|
8+55	0.1222	0.22	Q V	|	|	|	|
9+ 0	0.1238	0.23	Q V	|	|	|	|
9+ 5	0.1253	0.23	Q V	|	|	|	|
9+10	0.1269	0.23	Q V	|	|	|	|
9+15	0.1285	0.23	Q V	|	|	|	|
9+20	0.1301	0.23	Q V	|	|	|	|
9+25	0.1317	0.23	Q V	|	|	|	|
9+30	0.1333	0.24	Q V	|	|	|	|
9+35	0.1350	0.24	Q V	|	|	|	|
9+40	0.1366	0.24	Q V	|	|	|	|
9+45	0.1383	0.24	Q V	|	|	|	|
9+50	0.1399	0.24	Q V	|	|	|	|
9+55	0.1416	0.24	Q V	|	|	|	|
10+ 0	0.1433	0.25	Q V	|	|	|	|
10+ 5	0.1450	0.25	Q V	|	|	|	|
10+10	0.1468	0.25	Q V	|	|	|	|
10+15	0.1485	0.25	Q V	|	|	|	|
10+20	0.1503	0.26	Q V	|	|	|	|
10+25	0.1520	0.26	Q V	|	|	|	|
10+30	0.1538	0.26	Q V	|	|	|	|
10+35	0.1556	0.26	Q V	|	|	|	|
10+40	0.1574	0.26	Q V	|	|	|	|
10+45	0.1593	0.27	Q V	|	|	|	|
10+50	0.1611	0.27	Q V	|	|	|	|
10+55	0.1630	0.27	Q V	|	|	|	|
11+ 0	0.1649	0.27	Q V	|	|	|	|
11+ 5	0.1668	0.28	Q V	|	|	|	|
11+10	0.1687	0.28	Q V	|	|	|	|
11+15	0.1707	0.28	Q V	|	|	|	|
11+20	0.1726	0.29	Q V	|	|	|	|
11+25	0.1746	0.29	Q V	|	|	|	|
11+30	0.1766	0.29	Q V	|	|	|	|
11+35	0.1787	0.29	Q V	|	|	|	|
11+40	0.1807	0.30	Q V	|	|	|	|
11+45	0.1828	0.30	Q V	|	|	|	|
11+50	0.1849	0.30	Q V	|	|	|	|
11+55	0.1870	0.31	Q V	|	|	|	|
12+ 0	0.1892	0.31	Q V	|	|	|	|
12+ 5	0.1914	0.32	Q V	|	|	|	|

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12+10       0.1936      0.33  Q   V     |          |          |          |
12+15       0.1960      0.34  Q   V     |          |          |          |
12+20       0.1985      0.37  Q   V     |          |          |          |
12+25       0.2012      0.39  Q   V     |          |          |          |
12+30       0.2040      0.40  Q   V     |          |          |          |
12+35       0.2068      0.41  Q   V     |          |          |          |
12+40       0.2097      0.42  Q   V     |          |          |          |
12+45       0.2126      0.43  Q   V     |          |          |          |
12+50       0.2156      0.44  Q   V     |          |          |          |
12+55       0.2187      0.44  Q   V     |          |          |          |
13+ 0       0.2218      0.45  Q   V     |          |          |          |
13+ 5       0.2249      0.46  Q   V     |          |          |          |
13+10       0.2281      0.46  Q    V    |          |          |          |
13+15       0.2314      0.47  Q    V    |          |          |          |
13+20       0.2347      0.48  Q    V    |          |          |          |
13+25       0.2380      0.48  Q    V    |          |          |          |
13+30       0.2414      0.49  Q    V    |          |          |          |
13+35       0.2448      0.50  Q    V    |          |          |          |
13+40       0.2483      0.51  Q    V    |          |          |          |
13+45       0.2519      0.52  Q    V    |          |          |          |
13+50       0.2555      0.53  Q    V    |          |          |          |
13+55       0.2592      0.54  Q    V    |          |          |          |
14+ 0       0.2630      0.55  Q    V    |          |          |          |
14+ 5       0.2668      0.56  Q    V    |          |          |          |
14+10       0.2707      0.57  Q    V    |          |          |          |
14+15       0.2747      0.58  Q     V   |          |          |          |
14+20       0.2788      0.60  Q     V   |          |          |          |
14+25       0.2830      0.61  Q     V   |          |          |          |
14+30       0.2873      0.62  Q     V   |          |          |          |
14+35       0.2917      0.64  Q     V   |          |          |          |
14+40       0.2963      0.66  Q     V   |          |          |          |
14+45       0.3009      0.67  Q     V   |          |          |          |
14+50       0.3057      0.69  Q     V   |          |          |          |
14+55       0.3106      0.71  Q     V   |          |          |          |
15+ 0       0.3157      0.74  Q     V   |          |          |          |
15+ 5       0.3211      0.78  Q      V  |          |          |          |
15+10       0.3270      0.86  Q      V  |          |          |          |
15+15       0.3340      1.01  |Q     V  |          |          |          |
15+20       0.3427      1.26  |Q     V  |          |          |          |
15+25       0.3532      1.52  |Q     V  |          |          |          |
15+30       0.3656      1.81  |Q      V |          |          |          |
15+35       0.3796      2.03  | Q     V |          |          |          |
15+40       0.3944      2.15  | Q     V |          |          |          |
15+45       0.4124      2.62  | Q      V|          |          |          |
15+50       0.4367      3.52  |  Q     V|          |          |          |
15+55       0.4701      4.85  |   Q     V          |          |          |
16+ 0       0.5198      7.22  |      Q  |V         |          |          |
16+ 5       0.5969     11.19  |         |Q V       |          |          |
16+10       0.7159     17.29  |         |    V Q   |          |          |
16+15       0.8799     23.82  |         |        V|  Q       |          |
16+20       1.1010     32.10  |         |         |   V      | Q        |
16+25       1.2463     21.09  |         |         |Q     V   |          |
16+30       1.3424     13.96  |         |  Q      |        V|          |
16+35       1.4149     10.52  |         Q         |         |V         |
16+40       1.4725      8.37  |        Q |        |         | V        |
16+45       1.5183      6.65  |      Q   |        |         |  V       |
16+50       1.5542      5.21  |     Q    |        |         |   V      |
16+55       1.5823      4.09  |    Q     |        |         |   V      |
17+ 0       1.6042      3.19  |  Q       |        |         |    V     |
17+ 5       1.6215      2.51  | Q        |        |         |    V     |
17+10       1.6346      1.90  |Q         |        |         |     V    |
17+15       1.6445      1.43  |Q         |        |         |     V    |
17+20       1.6530      1.24  |Q         |        |         |     V    |
17+25       1.6606      1.10  |Q         |        |         |     V    |
17+30       1.6672      0.97  Q          |        |         |     V    |
17+35       1.6734      0.90  Q          |        |         |     V    |
17+40       1.6794      0.86  Q          |        |         |      V   |
17+45       1.6847      0.77  Q          |        |         |      V   |
17+50       1.6893      0.68  Q          |        |         |      V   |
17+55       1.6934      0.60  Q          |        |         |      V   |
18+ 0       1.6972      0.55  Q          |        |         |      V   |
```

18+ 5	1.7006	0.49	Q	|	|	|	V |
18+10	1.7037	0.46	Q	|	|	|	V |
18+15	1.7067	0.43	Q	|	|	|	V |
18+20	1.7094	0.39	Q	|	|	|	V |
18+25	1.7119	0.37	Q	|	|	|	V |
18+30	1.7143	0.35	Q	|	|	|	V |
18+35	1.7167	0.34	Q	|	|	|	V |
18+40	1.7189	0.33	Q	|	|	|	V |
18+45	1.7211	0.32	Q	|	|	|	V |
18+50	1.7232	0.31	Q	|	|	|	V |
18+55	1.7252	0.30	Q	|	|	|	V |
19+ 0	1.7272	0.29	Q	|	|	|	V |
19+ 5	1.7292	0.28	Q	|	|	|	V |
19+10	1.7311	0.28	Q	|	|	|	V |
19+15	1.7330	0.27	Q	|	|	|	V |
19+20	1.7348	0.27	Q	|	|	|	V |
19+25	1.7366	0.26	Q	|	|	|	V |
19+30	1.7384	0.26	Q	|	|	|	V |
19+35	1.7401	0.25	Q	|	|	|	V |
19+40	1.7418	0.25	Q	|	|	|	V |
19+45	1.7435	0.24	Q	|	|	|	V |
19+50	1.7451	0.24	Q	|	|	|	V |
19+55	1.7467	0.24	Q	|	|	|	V |
20+ 0	1.7483	0.23	Q	|	|	|	V |
20+ 5	1.7499	0.23	Q	|	|	|	V |
20+10	1.7515	0.23	Q	|	|	|	V |
20+15	1.7530	0.22	Q	|	|	|	V |
20+20	1.7545	0.22	Q	|	|	|	V |
20+25	1.7560	0.22	Q	|	|	|	V |
20+30	1.7575	0.21	Q	|	|	|	V |
20+35	1.7589	0.21	Q	|	|	|	V |
20+40	1.7604	0.21	Q	|	|	|	V |
20+45	1.7618	0.21	Q	|	|	|	V |
20+50	1.7632	0.20	Q	|	|	|	V |
20+55	1.7646	0.20	Q	|	|	|	V |
21+ 0	1.7659	0.20	Q	|	|	|	V |
21+ 5	1.7673	0.20	Q	|	|	|	V|
21+10	1.7686	0.19	Q	|	|	|	V|
21+15	1.7699	0.19	Q	|	|	|	V|
21+20	1.7712	0.19	Q	|	|	|	V|
21+25	1.7725	0.19	Q	|	|	|	V|
21+30	1.7738	0.19	Q	|	|	|	V|
21+35	1.7751	0.18	Q	|	|	|	V|
21+40	1.7763	0.18	Q	|	|	|	V|
21+45	1.7776	0.18	Q	|	|	|	V|
21+50	1.7788	0.18	Q	|	|	|	V|
21+55	1.7800	0.18	Q	|	|	|	V|
22+ 0	1.7812	0.18	Q	|	|	|	V|
22+ 5	1.7824	0.17	Q	|	|	|	V|
22+10	1.7836	0.17	Q	|	|	|	V|
22+15	1.7848	0.17	Q	|	|	|	V|
22+20	1.7859	0.17	Q	|	|	|	V|
22+25	1.7871	0.17	Q	|	|	|	V|
22+30	1.7882	0.17	Q	|	|	|	V|
22+35	1.7894	0.16	Q	|	|	|	V|
22+40	1.7905	0.16	Q	|	|	|	V|
22+45	1.7916	0.16	Q	|	|	|	V|
22+50	1.7927	0.16	Q	|	|	|	V|
22+55	1.7938	0.16	Q	|	|	|	V|
23+ 0	1.7949	0.16	Q	|	|	|	V|
23+ 5	1.7960	0.16	Q	|	|	|	V|
23+10	1.7970	0.16	Q	|	|	|	V|
23+15	1.7981	0.15	Q	|	|	|	V|
23+20	1.7991	0.15	Q	|	|	|	V|
23+25	1.8002	0.15	Q	|	|	|	V|
23+30	1.8012	0.15	Q	|	|	|	V|
23+35	1.8022	0.15	Q	|	|	|	V|
23+40	1.8033	0.15	Q	|	|	|	V|
23+45	1.8043	0.15	Q	|	|	|	V|
23+50	1.8053	0.15	Q	|	|	|	V|
23+55	1.8063	0.15	Q	|	|	|	V|

```
  24+ 0       1.8073      0.14  Q          |          |          |         V|
  24+ 5       1.8083      0.14  Q          |          |          |         V|
  24+10       1.8091      0.13  Q          |          |          |         V|
  24+15       1.8099      0.11  Q          |          |          |         V|
  24+20       1.8104      0.07  Q          |          |          |         V|
  24+25       1.8107      0.05  Q          |          |          |         V|
  24+30       1.8109      0.03  Q          |          |          |         V|
  24+35       1.8111      0.03  Q          |          |          |         V|
  24+40       1.8113      0.02  Q          |          |          |         V|
  24+45       1.8114      0.01  Q          |          |          |         V|
  24+50       1.8114      0.01  Q          |          |          |         V|
  24+55       1.8115      0.01  Q          |          |          |         V|
  25+ 0       1.8115      0.01  Q          |          |          |         V|
  25+ 5       1.8116      0.00  Q          |          |          |         V|
  25+10       1.8116      0.00  Q          |          |          |         V|
  25+15       1.8116      0.00  Q          |          |          |         V|
  25+20       1.8116      0.00  Q          |          |          |         V|
  25+25       1.8116      0.00  Q          |          |          |         V|
  25+30       1.8116      0.00  Q          |          |          |         V|
  25+35       1.8116      0.00  Q          |          |          |         V|
  25+40       1.8116      0.00  Q          |          |          |         V|
  25+45       1.8116      0.00  Q          |          |          |         V|
  25+50       1.8116      0.00  Q          |          |          |         V|
  25+55       1.8116      0.00  Q          |          |          |          V
------------------------------------------------------------------------------
```

- 25 Year 3 Hour Pre-Development Unit Hydrograph – Area 'A'

```
        U n i t   H y d r o g r a p h   A n a l y s i s

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        Study date  10/13/16   File Name exa02503.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'A' - 25 YEAR 3 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

        Storm Event Year = 25

        Antecedent Moisture Condition = 2

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 77.0      27.4          1.00     C     0.250     1.000    0.250

Area-averaged adjusted loss rate Fm (In/Hr) =  0.250

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC2)           Yield Fr
    27.39   1.000         77.0      77.0       2.99     0.491

Area-averaged catchment yield fraction, Y =  0.491
Area-averaged low loss fraction, Yb =  0.509
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.329 (hours)
Watershed area =      27.39(Ac.)
Catchment Lag time =   0.263 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 31.6424
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.250(In/Hr)
Average low loss rate fraction (Yb) = 0.509 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.400(In)
Computed peak 30-minute rainfall =  0.870(In)
Specified peak 1-hour rainfall =  1.150(In)
Computed peak 3-hour rainfall =  1.940(In)
Specified peak 6-hour rainfall =  2.710(In)
Specified peak 24-hour rainfall =  4.490(In)


Rainfall depth area reduction factors:
Using a total area of      27.39(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.399(In)
30-minute factor = 0.999    Adjusted rainfall =  0.869(In)
```

```
1-hour factor = 0.999       Adjusted rainfall =  1.149(In)
3-hour factor = 1.000       Adjusted rainfall =  1.940(In)
6-hour factor = 1.000       Adjusted rainfall =  2.710(In)
24-hour factor = 1.000 Adjusted rainfall =  4.490(In)
------------------------------------------------------------------------

                     U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
------------------------------------------------------------------------
               (K =       331.25 (CFS))

  1                2.302                   7.626
  2                9.842                  24.974
  3               25.949                  53.356
  4               56.150                 100.039
  5               69.474                  44.137
  6               77.390                  26.222
  7               83.152                  19.086
  8               87.470                  14.302
  9               90.796                  11.018
 10               93.380                   8.560
 11               95.329                   6.457
 12               96.751                   4.709
 13               97.742                   3.284
 14               98.226                   1.603
 15               98.587                   1.194
 16               98.902                   1.045
 17               99.133                   0.764
 18               99.335                   0.669
 19               99.583                   0.823
 20               99.768                   0.613
 21               99.888                   0.397
 22               99.961                   0.240
 23              100.000                   0.130
------------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.3995               0.3995
  2              0.5396               0.1401
  3              0.6433               0.1037
  4              0.7288               0.0855
  5              0.8028               0.0740
  6              0.8689               0.0661
  7              0.9245               0.0556
  8              0.9756               0.0511
  9              1.0229               0.0474
 10              1.0672               0.0443
 11              1.1090               0.0417
 12              1.1485               0.0395
 13              1.1932               0.0447
 14              1.2362               0.0429
 15              1.2775               0.0414
 16              1.3175               0.0399
 17              1.3561               0.0387
 18              1.3936               0.0375
 19              1.4300               0.0364
 20              1.4654               0.0354
 21              1.4999               0.0345
 22              1.5336               0.0337
 23              1.5665               0.0329
 24              1.5986               0.0321
 25              1.6300               0.0314
 26              1.6608               0.0308
 27              1.6910               0.0302
 28              1.7206               0.0296
 29              1.7496               0.0290
 30              1.7781               0.0285
 31              1.8061               0.0280
 32              1.8337               0.0276
```

```
 33              1.8608              0.0271
 34              1.8875              0.0267
 35              1.9138              0.0263
 36              1.9397              0.0259
---------------------------------------------------------------------
Unit              Unit            Unit              Effective
Period            Rainfall        Soil-Loss         Rainfall
(number)            (In)          (In)                (In)
---------------------------------------------------------------------
  1              0.0259           0.0132              0.0127
  2              0.0263           0.0134              0.0129
  3              0.0271           0.0138              0.0133
  4              0.0276           0.0140              0.0135
  5              0.0285           0.0145              0.0140
  6              0.0290           0.0148              0.0142
  7              0.0302           0.0154              0.0148
  8              0.0308           0.0157              0.0151
  9              0.0321           0.0164              0.0158
 10              0.0329           0.0167              0.0161
 11              0.0345           0.0176              0.0169
 12              0.0354           0.0180              0.0174
 13              0.0375           0.0191              0.0184
 14              0.0387           0.0197              0.0190
 15              0.0414           0.0208              0.0205
 16              0.0429           0.0208              0.0221
 17              0.0395           0.0201              0.0194
 18              0.0417           0.0208              0.0209
 19              0.0474           0.0208              0.0265
 20              0.0511           0.0208              0.0302
 21              0.0661           0.0208              0.0452
 22              0.0740           0.0208              0.0532
 23              0.1037           0.0208              0.0829
 24              0.1401           0.0208              0.1193
 25              0.3995           0.0208              0.3787
 26              0.0855           0.0208              0.0646
 27              0.0556           0.0208              0.0348
 28              0.0443           0.0208              0.0235
 29              0.0447           0.0208              0.0239
 30              0.0399           0.0203              0.0196
 31              0.0364           0.0185              0.0179
 32              0.0337           0.0171              0.0165
 33              0.0314           0.0160              0.0154
 34              0.0296           0.0151              0.0145
 35              0.0280           0.0143              0.0137
 36              0.0267           0.0136              0.0131
---------------------------------------------------------------------
---------------------------------------------------------------------
Total soil rain loss =      0.65(In)
Total effective rainfall =      1.29(In)
Peak flow rate in flood hydrograph =     52.47(CFS)
---------------------------------------------------------------------
+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                    3 - H O U R    S T O R M
                R u n o f f      H y d r o g r a p h
---------------------------------------------------------------------
            Hydrograph in   5   Minute intervals ((CFS))

---------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0       15.0      30.0      45.0      60.0
---------------------------------------------------------------------
  0+ 5       0.0007      0.10  Q         |         |         |         |
  0+10       0.0035      0.42  Q         |         |         |         |
  0+15       0.0111      1.10  Q         |         |         |         |
  0+20       0.0276      2.39  VQ        |         |         |         |
  0+25       0.0483      3.00  V Q       |         |         |         |
  0+30       0.0718      3.41  V Q       |         |         |         |
  0+35       0.0975      3.74  |VQ       |         |         |         |
  0+40       0.1252      4.02  |VQ       |         |         |         |
  0+45       0.1545      4.26  | Q       |         |         |         |
  0+50       0.1855      4.50  | Q       |         |         |         |
  0+55       0.2179      4.71  | VQ      |         |         |         |
```

```
   1+ 0       0.2519      4.92  |  Q      |         |         |         |
   1+ 5       0.2872      5.13  |  Q      |         |         |         |
   1+10       0.3239      5.34  |  QV     |         |         |         |
   1+15       0.3622      5.55  |  QV     |         |         |         |
   1+20       0.4023      5.82  |  Q V    |         |         |         |
   1+25       0.4442      6.08  |   Q V   |         |         |         |
   1+30       0.4880      6.37  |   Q V   |         |         |         |
   1+35       0.5335      6.60  |   Q  V  |         |         |         |
   1+40       0.5799      6.74  |   Q  V  |         |         |         |
   1+45       0.6309      7.39  |   Q   V |         |         |         |
   1+50       0.6905      8.67  |    Q   V|         |         |         |
   1+55       0.7633     10.56  |      Q  V         |         |         |
   2+ 0       0.8586     13.85  |        Q|V        |         |         |
   2+ 5       0.9964     20.01  |         |  Q      |         |         |
   2+10       1.2025     29.92  |         |     V  Q|         |         |
   2+15       1.4866     41.26  |         |         V      Q  |         |
   2+20       1.8480     52.47  |         |         |    V    |   Q     |
   2+25       2.0719     32.51  |         |         |Q      V |         |
   2+30       2.2318     23.23  |         |    Q    |         V         |
   2+35       2.3589     18.45  |         | Q       |         | V       |
   2+40       2.4652     15.44  |         Q         |         |  V      |
   2+45       2.5548     13.00  |       Q |         |         |   V     |
   2+50       2.6312     11.10  |      Q  |         |         |    V    |
   2+55       2.6966      9.50  |     Q   |         |         |     V   |
   3+ 0       2.7528      8.15  |    Q    |         |         |      V  |
   3+ 5       2.8005      6.93  |   Q     |         |         |       V |
   3+10       2.8391      5.60  |  Q      |         |         |       V |
   3+15       2.8696      4.42  | Q       |         |         |       V |
   3+20       2.8892      2.85  |Q        |         |         |        V|
   3+25       2.9034      2.06  |Q        |         |         |        V|
   3+30       2.9143      1.58  |Q        |         |         |        V|
   3+35       2.9232      1.29  Q         |         |         |        V|
   3+40       2.9298      0.96  Q         |         |         |        V|
   3+45       2.9345      0.68  Q         |         |         |        V|
   3+50       2.9377      0.46  Q         |         |         |        V|
   3+55       2.9398      0.31  Q         |         |         |        V|
   4+ 0       2.9410      0.18  Q         |         |         |        V|
   4+ 5       2.9419      0.12  Q         |         |         |        V|
   4+10       2.9425      0.09  Q         |         |         |        V|
   4+15       2.9430      0.07  Q         |         |         |        V|
   4+20       2.9434      0.05  Q         |         |         |        V|
   4+25       2.9436      0.04  Q         |         |         |        V|
   4+30       2.9439      0.03  Q         |         |         |        V|
   4+35       2.9440      0.02  Q         |         |         |        V|
   4+40       2.9441      0.01  Q         |         |         |        V|
   4+45       2.9441      0.00  Q         |         |         |        V|
   4+50       2.9441      0.00  Q         |         |         |        V|
-------------------------------------------------------------------------
```

- 25 Year 6 Hour Pre-Development Unit Hydrograph – Area 'A'

```
        U n i t   H y d r o g r a p h   A n a l y s i s

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        Study date  10/13/16   File Name exa02506.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'A' - 25 YEAR 6 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

        Storm Event Year = 25

        Antecedent Moisture Condition = 2

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 77.0      27.4          1.00     C     0.250     1.000    0.250

Area-averaged adjusted loss rate Fm (In/Hr) =  0.250

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC2)           Yield Fr
    27.39   1.000         77.0      77.0       2.99     0.491

Area-averaged catchment yield fraction, Y =  0.491
Area-averaged low loss fraction, Yb =  0.509
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.329 (hours)
Watershed area =      27.39(Ac.)
Catchment Lag time =   0.263 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 31.6424
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.250(In/Hr)
Average low loss rate fraction (Yb) = 0.509 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.400(In)
Computed peak 30-minute rainfall =  0.870(In)
Specified peak 1-hour rainfall =  1.150(In)
Computed peak 3-hour rainfall =  1.940(In)
Specified peak 6-hour rainfall =  2.710(In)
Specified peak 24-hour rainfall =  4.490(In)


Rainfall depth area reduction factors:
Using a total area of      27.39(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.399(In)
30-minute factor = 0.999    Adjusted rainfall =  0.869(In)
```

```
1-hour factor = 0.999       Adjusted rainfall =  1.149(In)
3-hour factor = 1.000       Adjusted rainfall =  1.940(In)
6-hour factor = 1.000       Adjusted rainfall =  2.710(In)
24-hour factor = 1.000 Adjusted rainfall =  4.490(In)
------------------------------------------------------------------------

                     U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
------------------------------------------------------------------------
               (K =       331.25 (CFS))

  1                2.302                   7.626
  2                9.842                  24.974
  3               25.949                  53.356
  4               56.150                 100.039
  5               69.474                  44.137
  6               77.390                  26.222
  7               83.152                  19.086
  8               87.470                  14.302
  9               90.796                  11.018
 10               93.380                   8.560
 11               95.329                   6.457
 12               96.751                   4.709
 13               97.742                   3.284
 14               98.226                   1.603
 15               98.587                   1.194
 16               98.902                   1.045
 17               99.133                   0.764
 18               99.335                   0.669
 19               99.583                   0.823
 20               99.768                   0.613
 21               99.888                   0.397
 22               99.961                   0.240
 23              100.000                   0.130
------------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.3995               0.3995
  2              0.5396               0.1401
  3              0.6433               0.1037
  4              0.7288               0.0855
  5              0.8028               0.0740
  6              0.8689               0.0661
  7              0.9245               0.0556
  8              0.9756               0.0511
  9              1.0229               0.0474
 10              1.0672               0.0443
 11              1.1090               0.0417
 12              1.1485               0.0395
 13              1.1932               0.0447
 14              1.2362               0.0429
 15              1.2775               0.0414
 16              1.3175               0.0399
 17              1.3561               0.0387
 18              1.3936               0.0375
 19              1.4300               0.0364
 20              1.4654               0.0354
 21              1.4999               0.0345
 22              1.5336               0.0337
 23              1.5665               0.0329
 24              1.5986               0.0321
 25              1.6300               0.0314
 26              1.6608               0.0308
 27              1.6910               0.0302
 28              1.7206               0.0296
 29              1.7496               0.0290
 30              1.7781               0.0285
 31              1.8061               0.0280
 32              1.8337               0.0276
```

33	1.8608	0.0271
34	1.8875	0.0267
35	1.9138	0.0263
36	1.9397	0.0259
37	1.9655	0.0258
38	1.9909	0.0254
39	2.0160	0.0251
40	2.0408	0.0248
41	2.0653	0.0245
42	2.0894	0.0241
43	2.1133	0.0238
44	2.1368	0.0236
45	2.1601	0.0233
46	2.1831	0.0230
47	2.2059	0.0228
48	2.2284	0.0225
49	2.2507	0.0223
50	2.2727	0.0220
51	2.2945	0.0218
52	2.3161	0.0216
53	2.3375	0.0214
54	2.3587	0.0212
55	2.3796	0.0210
56	2.4004	0.0208
57	2.4210	0.0206
58	2.4414	0.0204
59	2.4616	0.0202
60	2.4816	0.0200
61	2.5015	0.0199
62	2.5212	0.0197
63	2.5407	0.0195
64	2.5601	0.0194
65	2.5793	0.0192
66	2.5984	0.0191
67	2.6173	0.0189
68	2.6361	0.0188
69	2.6547	0.0186
70	2.6732	0.0185
71	2.6915	0.0184
72	2.7098	0.0182

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0182	0.0093	0.0089
2	0.0184	0.0093	0.0090
3	0.0186	0.0095	0.0091
4	0.0188	0.0096	0.0092
5	0.0191	0.0097	0.0094
6	0.0192	0.0098	0.0094
7	0.0195	0.0100	0.0096
8	0.0197	0.0100	0.0097
9	0.0200	0.0102	0.0098
10	0.0202	0.0103	0.0099
11	0.0206	0.0105	0.0101
12	0.0208	0.0106	0.0102
13	0.0212	0.0108	0.0104
14	0.0214	0.0109	0.0105
15	0.0218	0.0111	0.0107
16	0.0220	0.0112	0.0108
17	0.0225	0.0115	0.0110
18	0.0228	0.0116	0.0112
19	0.0233	0.0119	0.0114
20	0.0236	0.0120	0.0116
21	0.0241	0.0123	0.0118
22	0.0245	0.0125	0.0120
23	0.0251	0.0128	0.0123
24	0.0254	0.0130	0.0125
25	0.0259	0.0132	0.0127
26	0.0263	0.0134	0.0129

```
 27              0.0271          0.0138              0.0133
 28              0.0276          0.0140              0.0135
 29              0.0285          0.0145              0.0140
 30              0.0290          0.0148              0.0142
 31              0.0302          0.0154              0.0148
 32              0.0308          0.0157              0.0151
 33              0.0321          0.0164              0.0158
 34              0.0329          0.0167              0.0161
 35              0.0345          0.0176              0.0169
 36              0.0354          0.0180              0.0174
 37              0.0375          0.0191              0.0184
 38              0.0387          0.0197              0.0190
 39              0.0414          0.0208              0.0205
 40              0.0429          0.0208              0.0221
 41              0.0395          0.0201              0.0194
 42              0.0417          0.0208              0.0209
 43              0.0474          0.0208              0.0265
 44              0.0511          0.0208              0.0302
 45              0.0661          0.0208              0.0452
 46              0.0740          0.0208              0.0532
 47              0.1037          0.0208              0.0829
 48              0.1401          0.0208              0.1193
 49              0.3995          0.0208              0.3787
 50              0.0855          0.0208              0.0646
 51              0.0556          0.0208              0.0348
 52              0.0443          0.0208              0.0235
 53              0.0447          0.0208              0.0239
 54              0.0399          0.0203              0.0196
 55              0.0364          0.0185              0.0179
 56              0.0337          0.0171              0.0165
 57              0.0314          0.0160              0.0154
 58              0.0296          0.0151              0.0145
 59              0.0280          0.0143              0.0137
 60              0.0267          0.0136              0.0131
 61              0.0258          0.0131              0.0127
 62              0.0248          0.0126              0.0122
 63              0.0238          0.0122              0.0117
 64              0.0230          0.0117              0.0113
 65              0.0223          0.0113              0.0109
 66              0.0216          0.0110              0.0106
 67              0.0210          0.0107              0.0103
 68              0.0204          0.0104              0.0100
 69              0.0199          0.0101              0.0097
 70              0.0194          0.0099              0.0095
 71              0.0189          0.0096              0.0093
 72              0.0185          0.0094              0.0091
-------------------------------------------------------------------
-------------------------------------------------------------------
Total soil rain loss =      1.04(In)
Total effective rainfall =      1.67(In)
Peak flow rate in flood hydrograph =     52.47(CFS)
-------------------------------------------------------------------
+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                    6 - H O U R    S T O R M
                R u n o f f      H y d r o g r a p h
-------------------------------------------------------------------
            Hydrograph in   5   Minute intervals ((CFS))

-------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0       15.0      30.0      45.0      60.0
-------------------------------------------------------------------
  0+ 5       0.0005      0.07  Q         |         |         |         |
  0+10       0.0025      0.29  Q         |         |         |         |
  0+15       0.0078      0.77  Q         |         |         |         |
  0+20       0.0193      1.67  VQ        |         |         |         |
  0+25       0.0337      2.08  VQ        |         |         |         |
  0+30       0.0498      2.34  VQ        |         |         |         |
  0+35       0.0673      2.54  VQ        |         |         |         |
  0+40       0.0859      2.70  VQ        |         |         |         |
  0+45       0.1053      2.83  |Q        |         |         |         |
  0+50       0.1256      2.94  |Q        |         |         |         |
```

```
0+55      0.1464     3.03  |VQ       |         |         |         |
1+ 0      0.1679     3.11  |VQ       |         |         |         |
1+ 5      0.1898     3.18  |VQ       |         |         |         |
1+10      0.2121     3.24  | Q       |         |         |         |
1+15      0.2348     3.29  | Q       |         |         |         |
1+20      0.2579     3.35  | Q       |         |         |         |
1+25      0.2813     3.40  | Q       |         |         |         |
1+30      0.3052     3.46  | QV      |         |         |         |
1+35      0.3294     3.52  | QV      |         |         |         |
1+40      0.3541     3.58  | QV      |         |         |         |
1+45      0.3792     3.64  | QV      |         |         |         |
1+50      0.4047     3.71  | Q V     |         |         |         |
1+55      0.4307     3.77  | Q V     |         |         |         |
2+ 0      0.4571     3.84  | Q V     |         |         |         |
2+ 5      0.4841     3.91  | Q  V    |         |         |         |
2+10      0.5115     3.98  | Q  V    |         |         |         |
2+15      0.5394     4.05  | Q  V    |         |         |         |
2+20      0.5679     4.13  | Q  V    |         |         |         |
2+25      0.5968     4.21  | Q   V   |         |         |         |
2+30      0.6265     4.30  | Q   V   |         |         |         |
2+35      0.6568     4.40  | Q   V   |         |         |         |
2+40      0.6879     4.51  |  Q   V  |         |         |         |
2+45      0.7197     4.63  |  Q   V  |         |         |         |
2+50      0.7525     4.76  |  Q   V  |         |         |         |
2+55      0.7862     4.89  |  Q    V |         |         |         |
3+ 0      0.8210     5.05  |  Q    V |         |         |         |
3+ 5      0.8569     5.21  |  Q     V|         |         |         |
3+10      0.8942     5.41  |  Q     V|         |         |         |
3+15      0.9328     5.61  |  Q     V|         |         |         |
3+20      0.9732     5.87  |  Q      V         |         |         |
3+25      1.0153     6.12  |   Q     V         |         |         |
3+30      1.0594     6.39  |   Q     |V        |         |         |
3+35      1.1050     6.62  |   Q     |V        |         |         |
3+40      1.1515     6.75  |   Q     | V       |         |         |
3+45      1.2024     7.40  |   Q     | V       |         |         |
3+50      1.2621     8.67  |    Q    |  V      |         |         |
3+55      1.3348    10.56  |      Q  |   V     |         |         |
4+ 0      1.4302    13.85  |       Q |    V    |         |         |
4+ 5      1.5680    20.01  |         |  Q  V   |         |         |
4+10      1.7741    29.92  |         |      VQ |         |         |
4+15      2.0582    41.26  |         |         |V    Q   |         |
4+20      2.4196    52.47  |         |         |   V     |   Q     |
4+25      2.6434    32.51  |         |         |Q    V   |         |
4+30      2.8034    23.23  |         |   Q     |        V|         |
4+35      2.9305    18.45  |         | Q       |         V         |
4+40      3.0368    15.44  |         Q         |         |V        |
4+45      3.1264    13.00  |       Q |         |         | V       |
4+50      3.2028    11.10  |      Q  |         |         |  V      |
4+55      3.2682     9.50  |     Q   |         |         |   V     |
5+ 0      3.3244     8.15  |    Q    |         |         |   V     |
5+ 5      3.3728     7.03  |   Q     |         |         |    V    |
5+10      3.4142     6.01  |   Q     |         |         |    V    |
5+15      3.4520     5.49  |  Q      |         |         |     V   |
5+20      3.4874     5.15  |  Q      |         |         |     V   |
5+25      3.5206     4.82  |  Q      |         |         |      V  |
5+30      3.5522     4.58  |  Q      |         |         |      V  |
5+35      3.5826     4.42  | Q       |         |         |      V  |
5+40      3.6113     4.17  | Q       |         |         |      V  |
5+45      3.6384     3.93  | Q       |         |         |       V |
5+50      3.6640     3.72  | Q       |         |         |       V |
5+55      3.6885     3.55  | Q       |         |         |       V |
6+ 0      3.7119     3.40  | Q       |         |         |        V|
6+ 5      3.7341     3.23  | Q       |         |         |        V|
6+10      3.7542     2.92  |Q        |         |         |        V|
6+15      3.7705     2.37  |Q        |         |         |        V|
6+20      3.7802     1.42  Q         |         |         |        V|
6+25      3.7871     0.99  Q         |         |         |        V|
6+30      3.7921     0.73  Q         |         |         |        V|
6+35      3.7959     0.55  Q         |         |         |        V|
6+40      3.7987     0.40  Q         |         |         |        V|
6+45      3.8007     0.30  Q         |         |         |        V|
```

```
   6+50       3.8022      0.21  Q         |         |         |        V|
   6+55       3.8032      0.15  Q         |         |         |        V|
   7+ 0       3.8039      0.11  Q         |         |         |        V|
   7+ 5       3.8044      0.07  Q         |         |         |        V|
   7+10       3.8048      0.06  Q         |         |         |        V|
   7+15       3.8051      0.05  Q         |         |         |        V|
   7+20       3.8054      0.03  Q         |         |         |        V|
   7+25       3.8056      0.03  Q         |         |         |        V|
   7+30       3.8057      0.02  Q         |         |         |        V|
   7+35       3.8058      0.01  Q         |         |         |        V|
   7+40       3.8058      0.01  Q         |         |         |        V|
   7+45       3.8059      0.00  Q         |         |         |        V|
   7+50       3.8059      0.00  Q         |         |         |         V
-------------------------------------------------------------------------
```

- 25 Year 12 Hour Pre-Development Unit Hydrograph – Area 'A'

```
        U n i t   H y d r o g r a p h   A n a l y s i s

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        Study date  10/13/16   File Name exa02512.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'A' - 25 YEAR 12 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

        Storm Event Year = 25

        Antecedent Moisture Condition = 2

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 77.0      27.4          1.00     C     0.250     1.000    0.250

Area-averaged adjusted loss rate Fm (In/Hr) =  0.250

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC2)           Yield Fr
    27.39   1.000         77.0      77.0       2.99     0.491

Area-averaged catchment yield fraction, Y =  0.491
Area-averaged low loss fraction, Yb =  0.509
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.329 (hours)
Watershed area =      27.39(Ac.)
Catchment Lag time =   0.263 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 31.6424
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.250(In/Hr)
Average low loss rate fraction (Yb) = 0.509 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.400(In)
Computed peak 30-minute rainfall =  0.870(In)
Specified peak 1-hour rainfall =  1.150(In)
Computed peak 3-hour rainfall =  1.940(In)
Specified peak 6-hour rainfall =  2.710(In)
Specified peak 24-hour rainfall =  4.490(In)


Rainfall depth area reduction factors:
Using a total area of      27.39(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.399(In)
30-minute factor = 0.999    Adjusted rainfall =  0.869(In)
```

1-hour factor = 0.999 Adjusted rainfall = 1.149(In)
3-hour factor = 1.000 Adjusted rainfall = 1.940(In)
6-hour factor = 1.000 Adjusted rainfall = 2.710(In)
24-hour factor = 1.000 Adjusted rainfall = 4.490(In)

U n i t H y d r o g r a p h

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 331.25 (CFS))	
1	2.302	7.626
2	9.842	24.974
3	25.949	53.356
4	56.150	100.039
5	69.474	44.137
6	77.390	26.222
7	83.152	19.086
8	87.470	14.302
9	90.796	11.018
10	93.380	8.560
11	95.329	6.457
12	96.751	4.709
13	97.742	3.284
14	98.226	1.603
15	98.587	1.194
16	98.902	1.045
17	99.133	0.764
18	99.335	0.669
19	99.583	0.823
20	99.768	0.613
21	99.888	0.397
22	99.961	0.240
23	100.000	0.130

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.3995	0.3995
2	0.5396	0.1401
3	0.6433	0.1037
4	0.7288	0.0855
5	0.8028	0.0740
6	0.8689	0.0661
7	0.9245	0.0556
8	0.9756	0.0511
9	1.0229	0.0474
10	1.0672	0.0443
11	1.1090	0.0417
12	1.1485	0.0395
13	1.1932	0.0447
14	1.2362	0.0429
15	1.2775	0.0414
16	1.3175	0.0399
17	1.3561	0.0387
18	1.3936	0.0375
19	1.4300	0.0364
20	1.4654	0.0354
21	1.4999	0.0345
22	1.5336	0.0337
23	1.5665	0.0329
24	1.5986	0.0321
25	1.6300	0.0314
26	1.6608	0.0308
27	1.6910	0.0302
28	1.7206	0.0296
29	1.7496	0.0290
30	1.7781	0.0285
31	1.8061	0.0280
32	1.8337	0.0276

33	1.8608	0.0271
34	1.8875	0.0267
35	1.9138	0.0263
36	1.9397	0.0259
37	1.9655	0.0258
38	1.9909	0.0254
39	2.0160	0.0251
40	2.0408	0.0248
41	2.0653	0.0245
42	2.0894	0.0241
43	2.1133	0.0238
44	2.1368	0.0236
45	2.1601	0.0233
46	2.1831	0.0230
47	2.2059	0.0228
48	2.2284	0.0225
49	2.2507	0.0223
50	2.2727	0.0220
51	2.2945	0.0218
52	2.3161	0.0216
53	2.3375	0.0214
54	2.3587	0.0212
55	2.3796	0.0210
56	2.4004	0.0208
57	2.4210	0.0206
58	2.4414	0.0204
59	2.4616	0.0202
60	2.4816	0.0200
61	2.5015	0.0199
62	2.5212	0.0197
63	2.5407	0.0195
64	2.5601	0.0194
65	2.5793	0.0192
66	2.5984	0.0191
67	2.6173	0.0189
68	2.6361	0.0188
69	2.6547	0.0186
70	2.6732	0.0185
71	2.6915	0.0184
72	2.7098	0.0182
73	2.7234	0.0136
74	2.7369	0.0135
75	2.7504	0.0134
76	2.7637	0.0133
77	2.7769	0.0132
78	2.7899	0.0131
79	2.8029	0.0130
80	2.8158	0.0129
81	2.8286	0.0128
82	2.8412	0.0127
83	2.8538	0.0126
84	2.8663	0.0125
85	2.8787	0.0124
86	2.8909	0.0123
87	2.9031	0.0122
88	2.9153	0.0121
89	2.9273	0.0120
90	2.9392	0.0119
91	2.9511	0.0119
92	2.9628	0.0118
93	2.9745	0.0117
94	2.9861	0.0116
95	2.9977	0.0115
96	3.0091	0.0115
97	3.0205	0.0114
98	3.0318	0.0113
99	3.0430	0.0112
100	3.0542	0.0112
101	3.0653	0.0111
102	3.0763	0.0110
103	3.0873	0.0110

104	3.0982	0.0109
105	3.1090	0.0108
106	3.1197	0.0108
107	3.1304	0.0107
108	3.1410	0.0106
109	3.1516	0.0106
110	3.1621	0.0105
111	3.1725	0.0104
112	3.1829	0.0104
113	3.1932	0.0103
114	3.2035	0.0103
115	3.2137	0.0102
116	3.2239	0.0102
117	3.2340	0.0101
118	3.2440	0.0100
119	3.2540	0.0100
120	3.2639	0.0099
121	3.2738	0.0099
122	3.2836	0.0098
123	3.2934	0.0098
124	3.3031	0.0097
125	3.3128	0.0097
126	3.3224	0.0096
127	3.3320	0.0096
128	3.3416	0.0095
129	3.3510	0.0095
130	3.3605	0.0094
131	3.3699	0.0094
132	3.3792	0.0093
133	3.3885	0.0093
134	3.3978	0.0093
135	3.4070	0.0092
136	3.4162	0.0092
137	3.4253	0.0091
138	3.4344	0.0091
139	3.4434	0.0090
140	3.4524	0.0090
141	3.4614	0.0090
142	3.4703	0.0089
143	3.4792	0.0089
144	3.4880	0.0088

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0088	0.0045	0.0043
2	0.0089	0.0045	0.0044
3	0.0090	0.0046	0.0044
4	0.0090	0.0046	0.0044
5	0.0091	0.0046	0.0045
6	0.0091	0.0047	0.0045
7	0.0092	0.0047	0.0045
8	0.0093	0.0047	0.0045
9	0.0093	0.0048	0.0046
10	0.0094	0.0048	0.0046
11	0.0095	0.0048	0.0047
12	0.0095	0.0049	0.0047
13	0.0096	0.0049	0.0047
14	0.0097	0.0049	0.0047
15	0.0098	0.0050	0.0048
16	0.0098	0.0050	0.0048
17	0.0099	0.0051	0.0049
18	0.0100	0.0051	0.0049
19	0.0101	0.0051	0.0050
20	0.0102	0.0052	0.0050
21	0.0103	0.0052	0.0050
22	0.0103	0.0053	0.0051
23	0.0104	0.0053	0.0051
24	0.0105	0.0054	0.0052
25	0.0106	0.0054	0.0052

26	0.0107	0.0054	0.0052
27	0.0108	0.0055	0.0053
28	0.0109	0.0055	0.0053
29	0.0110	0.0056	0.0054
30	0.0111	0.0056	0.0054
31	0.0112	0.0057	0.0055
32	0.0113	0.0058	0.0055
33	0.0115	0.0058	0.0056
34	0.0115	0.0059	0.0057
35	0.0117	0.0060	0.0057
36	0.0118	0.0060	0.0058
37	0.0119	0.0061	0.0059
38	0.0120	0.0061	0.0059
39	0.0122	0.0062	0.0060
40	0.0123	0.0063	0.0060
41	0.0125	0.0064	0.0061
42	0.0126	0.0064	0.0062
43	0.0128	0.0065	0.0063
44	0.0129	0.0066	0.0063
45	0.0131	0.0067	0.0064
46	0.0132	0.0067	0.0065
47	0.0134	0.0068	0.0066
48	0.0135	0.0069	0.0066
49	0.0182	0.0093	0.0089
50	0.0184	0.0093	0.0090
51	0.0186	0.0095	0.0091
52	0.0188	0.0096	0.0092
53	0.0191	0.0097	0.0094
54	0.0192	0.0098	0.0094
55	0.0195	0.0100	0.0096
56	0.0197	0.0100	0.0097
57	0.0200	0.0102	0.0098
58	0.0202	0.0103	0.0099
59	0.0206	0.0105	0.0101
60	0.0208	0.0106	0.0102
61	0.0212	0.0108	0.0104
62	0.0214	0.0109	0.0105
63	0.0218	0.0111	0.0107
64	0.0220	0.0112	0.0108
65	0.0225	0.0115	0.0110
66	0.0228	0.0116	0.0112
67	0.0233	0.0119	0.0114
68	0.0236	0.0120	0.0116
69	0.0241	0.0123	0.0118
70	0.0245	0.0125	0.0120
71	0.0251	0.0128	0.0123
72	0.0254	0.0130	0.0125
73	0.0259	0.0132	0.0127
74	0.0263	0.0134	0.0129
75	0.0271	0.0138	0.0133
76	0.0276	0.0140	0.0135
77	0.0285	0.0145	0.0140
78	0.0290	0.0148	0.0142
79	0.0302	0.0154	0.0148
80	0.0308	0.0157	0.0151
81	0.0321	0.0164	0.0158
82	0.0329	0.0167	0.0161
83	0.0345	0.0176	0.0169
84	0.0354	0.0180	0.0174
85	0.0375	0.0191	0.0184
86	0.0387	0.0197	0.0190
87	0.0414	0.0208	0.0205
88	0.0429	0.0208	0.0221
89	0.0395	0.0201	0.0194
90	0.0417	0.0208	0.0209
91	0.0474	0.0208	0.0265
92	0.0511	0.0208	0.0302
93	0.0661	0.0208	0.0452
94	0.0740	0.0208	0.0532
95	0.1037	0.0208	0.0829
96	0.1401	0.0208	0.1193

```
        97              0.3995          0.0208              0.3787
        98              0.0855          0.0208              0.0646
        99              0.0556          0.0208              0.0348
       100              0.0443          0.0208              0.0235
       101              0.0447          0.0208              0.0239
       102              0.0399          0.0203              0.0196
       103              0.0364          0.0185              0.0179
       104              0.0337          0.0171              0.0165
       105              0.0314          0.0160              0.0154
       106              0.0296          0.0151              0.0145
       107              0.0280          0.0143              0.0137
       108              0.0267          0.0136              0.0131
       109              0.0258          0.0131              0.0127
       110              0.0248          0.0126              0.0122
       111              0.0238          0.0122              0.0117
       112              0.0230          0.0117              0.0113
       113              0.0223          0.0113              0.0109
       114              0.0216          0.0110              0.0106
       115              0.0210          0.0107              0.0103
       116              0.0204          0.0104              0.0100
       117              0.0199          0.0101              0.0097
       118              0.0194          0.0099              0.0095
       119              0.0189          0.0096              0.0093
       120              0.0185          0.0094              0.0091
       121              0.0136          0.0070              0.0067
       122              0.0133          0.0068              0.0065
       123              0.0130          0.0066              0.0064
       124              0.0127          0.0065              0.0062
       125              0.0124          0.0063              0.0061
       126              0.0121          0.0062              0.0059
       127              0.0119          0.0060              0.0058
       128              0.0116          0.0059              0.0057
       129              0.0114          0.0058              0.0056
       130              0.0112          0.0057              0.0055
       131              0.0110          0.0056              0.0054
       132              0.0108          0.0055              0.0053
       133              0.0106          0.0054              0.0052
       134              0.0104          0.0053              0.0051
       135              0.0102          0.0052              0.0050
       136              0.0100          0.0051              0.0049
       137              0.0099          0.0050              0.0048
       138              0.0097          0.0050              0.0048
       139              0.0096          0.0049              0.0047
       140              0.0094          0.0048              0.0046
       141              0.0093          0.0047              0.0046
       142              0.0092          0.0047              0.0045
       143              0.0090          0.0046              0.0044
       144              0.0089          0.0045              0.0044
      ---------------------------------------------------------------------
      ---------------------------------------------------------------------
      Total soil rain loss =      1.44(In)
      Total effective rainfall =      2.05(In)
      Peak flow rate in flood hydrograph =     52.47(CFS)
      ---------------------------------------------------------------------
      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                         12 - H O U R    S T O R M
                    R u n o f f      H y d r o g r a p h
      ---------------------------------------------------------------------
                 Hydrograph in   5   Minute intervals ((CFS))

      ---------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0       15.0      30.0      45.0      60.0
-------------------------------------------------------------------------
  0+ 5       0.0002      0.03  Q         |         |         |         |
  0+10       0.0012      0.14  Q         |         |         |         |
  0+15       0.0038      0.37  Q         |         |         |         |
  0+20       0.0094      0.81  Q         |         |         |         |
  0+25       0.0163      1.01  Q         |         |         |         |
  0+30       0.0240      1.13  Q         |         |         |         |
  0+35       0.0324      1.22  Q         |         |         |         |
  0+40       0.0413      1.29  Q         |         |         |         |
```

```
0+45      0.0506      1.34  Q          |          |          |          |
0+50      0.0601      1.39  Q          |          |          |          |
0+55      0.0700      1.43  Q          |          |          |          |
1+ 0      0.0800      1.46  Q          |          |          |          |
1+ 5      0.0902      1.48  Q          |          |          |          |
1+10      0.1006      1.50  VQ         |          |          |          |
1+15      0.1110      1.52  VQ         |          |          |          |
1+20      0.1216      1.53  |Q         |          |          |          |
1+25      0.1323      1.55  |Q         |          |          |          |
1+30      0.1430      1.56  |Q         |          |          |          |
1+35      0.1539      1.58  |Q         |          |          |          |
1+40      0.1649      1.59  |Q         |          |          |          |
1+45      0.1760      1.61  |Q         |          |          |          |
1+50      0.1872      1.62  |Q         |          |          |          |
1+55      0.1984      1.64  |Q         |          |          |          |
2+ 0      0.2098      1.65  |Q         |          |          |          |
2+ 5      0.2212      1.66  |Q         |          |          |          |
2+10      0.2328      1.68  |Q         |          |          |          |
2+15      0.2445      1.69  |QV        |          |          |          |
2+20      0.2562      1.71  |QV        |          |          |          |
2+25      0.2681      1.72  |QV        |          |          |          |
2+30      0.2800      1.74  |QV        |          |          |          |
2+35      0.2921      1.75  |QV        |          |          |          |
2+40      0.3043      1.77  |QV        |          |          |          |
2+45      0.3166      1.79  |QV        |          |          |          |
2+50      0.3290      1.80  |QV        |          |          |          |
2+55      0.3416      1.82  |QV        |          |          |          |
3+ 0      0.3542      1.84  |Q V       |          |          |          |
3+ 5      0.3670      1.86  |Q V       |          |          |          |
3+10      0.3799      1.88  |Q V       |          |          |          |
3+15      0.3930      1.89  |Q V       |          |          |          |
3+20      0.4062      1.91  |Q V       |          |          |          |
3+25      0.4195      1.93  |Q V       |          |          |          |
3+30      0.4329      1.96  |Q V       |          |          |          |
3+35      0.4466      1.98  |Q V       |          |          |          |
3+40      0.4603      2.00  |Q V       |          |          |          |
3+45      0.4742      2.02  |Q  V      |          |          |          |
3+50      0.4883      2.05  |Q  V      |          |          |          |
3+55      0.5026      2.07  |Q  V      |          |          |          |
4+ 0      0.5170      2.09  |Q  V      |          |          |          |
4+ 5      0.5317      2.14  |Q  V      |          |          |          |
4+10      0.5470      2.22  |Q  V      |          |          |          |
4+15      0.5632      2.36  |Q  V      |          |          |          |
4+20      0.5812      2.61  |Q  V      |          |          |          |
4+25      0.6000      2.73  |Q   V     |          |          |          |
4+30      0.6195      2.82  |Q   V     |          |          |          |
4+35      0.6394      2.90  |Q   V     |          |          |          |
4+40      0.6599      2.96  |Q   V     |          |          |          |
4+45      0.6807      3.02  | Q  V     |          |          |          |
4+50      0.7019      3.08  | Q   V    |          |          |          |
4+55      0.7234      3.13  | Q   V    |          |          |          |
5+ 0      0.7454      3.18  | Q   V    |          |          |          |
5+ 5      0.7676      3.23  | Q   V    |          |          |          |
5+10      0.7902      3.28  | Q   V    |          |          |          |
5+15      0.8131      3.32  | Q   V    |          |          |          |
5+20      0.8363      3.37  | Q    V   |          |          |          |
5+25      0.8599      3.42  | Q    V   |          |          |          |
5+30      0.8838      3.48  | Q    V   |          |          |          |
5+35      0.9081      3.53  | Q    V   |          |          |          |
5+40      0.9329      3.59  | Q    V   |          |          |          |
5+45      0.9580      3.65  | Q     V  |          |          |          |
5+50      0.9835      3.71  | Q     V  |          |          |          |
5+55      1.0095      3.77  | Q     V  |          |          |          |
6+ 0      1.0359      3.84  | Q     V  |          |          |          |
6+ 5      1.0629      3.91  | Q      V |          |          |          |
6+10      1.0903      3.98  | Q      V |          |          |          |
6+15      1.1182      4.05  | Q      V |          |          |          |
6+20      1.1467      4.13  | Q      V |          |          |          |
6+25      1.1756      4.21  | Q       V|          |          |          |
6+30      1.2053      4.30  | Q       V|          |          |          |
6+35      1.2356      4.40  | Q       V|          |          |          |
```

```
 6+40      1.2667      4.51  |  Q      V         |         |         |
 6+45      1.2985      4.63  |  Q      |V        |         |         |
 6+50      1.3313      4.76  |  Q      |V        |         |         |
 6+55      1.3650      4.89  |  Q      |V        |         |         |
 7+ 0      1.3998      5.05  |  Q      |V        |         |         |
 7+ 5      1.4357      5.21  |  Q      | V       |         |         |
 7+10      1.4730      5.41  |  Q      | V       |         |         |
 7+15      1.5116      5.61  |  Q      | V       |         |         |
 7+20      1.5520      5.87  |  Q      |  V      |         |         |
 7+25      1.5941      6.12  |   Q     |  V      |         |         |
 7+30      1.6382      6.39  |   Q     |   V     |         |         |
 7+35      1.6838      6.62  |   Q     |   V     |         |         |
 7+40      1.7303      6.75  |   Q     |   V     |         |         |
 7+45      1.7812      7.40  |   Q     |    V    |         |         |
 7+50      1.8409      8.67  |    Q    |    V    |         |         |
 7+55      1.9136     10.56  |      Q  |     V   |         |         |
 8+ 0      2.0090     13.85  |         Q|      V  |         |         |
 8+ 5      2.1468     20.01  |          |  Q    V |         |         |
 8+10      2.3529     29.92  |          |       QV|         |         |
 8+15      2.6370     41.26  |          |         | V    Q  |         |
 8+20      2.9984     52.47  |          |         |    V    |   Q     |
 8+25      3.2222     32.51  |          |         |Q     V  |         |
 8+30      3.3822     23.23  |          |    Q    |       V |         |
 8+35      3.5093     18.45  |          | Q       |         V         |
 8+40      3.6156     15.44  |          Q         |         V         |
 8+45      3.7052     13.00  |        Q |         |         |V        |
 8+50      3.7816     11.10  |       Q  |         |         | V       |
 8+55      3.8470      9.50  |      Q   |         |         | V       |
 9+ 0      3.9032      8.15  |     Q    |         |         |  V      |
 9+ 5      3.9516      7.03  |    Q     |         |         |  V      |
 9+10      3.9930      6.01  |    Q     |         |         |   V     |
 9+15      4.0308      5.49  |  Q       |         |         |   V     |
 9+20      4.0662      5.15  |  Q       |         |         |   V     |
 9+25      4.0994      4.82  |  Q       |         |         |    V    |
 9+30      4.1310      4.58  |  Q       |         |         |    V    |
 9+35      4.1614      4.42  | Q        |         |         |    V    |
 9+40      4.1901      4.17  | Q        |         |         |    V    |
 9+45      4.2172      3.93  | Q        |         |         |     V   |
 9+50      4.2428      3.72  | Q        |         |         |     V   |
 9+55      4.2673      3.55  | Q        |         |         |     V   |
10+ 0      4.2907      3.40  | Q        |         |         |     V   |
10+ 5      4.3132      3.28  | Q        |         |         |     V   |
10+10      4.3348      3.13  | Q        |         |         |      V  |
10+15      4.3550      2.94  |Q         |         |         |      V  |
10+20      4.3732      2.64  |Q         |         |         |      V  |
10+25      4.3903      2.48  |Q         |         |         |      V  |
10+30      4.4066      2.36  |Q         |         |         |      V  |
10+35      4.4222      2.26  |Q         |         |         |      V  |
10+40      4.4372      2.18  |Q         |         |         |      V  |
10+45      4.4517      2.11  |Q         |         |         |       V |
10+50      4.4657      2.04  |Q         |         |         |       V |
10+55      4.4794      1.98  |Q         |         |         |       V |
11+ 0      4.4927      1.93  |Q         |         |         |       V |
11+ 5      4.5057      1.88  |Q         |         |         |       V |
11+10      4.5184      1.84  |Q         |         |         |       V |
11+15      4.5308      1.81  |Q         |         |         |       V |
11+20      4.5430      1.77  |Q         |         |         |       V |
11+25      4.5550      1.74  |Q         |         |         |       V |
11+30      4.5667      1.70  |Q         |         |         |        V|
11+35      4.5782      1.67  |Q         |         |         |        V|
11+40      4.5896      1.64  |Q         |         |         |        V|
11+45      4.6007      1.62  |Q         |         |         |        V|
11+50      4.6117      1.59  |Q         |         |         |        V|
11+55      4.6224      1.57  |Q         |         |         |        V|
12+ 0      4.6331      1.54  |Q         |         |         |        V|
12+ 5      4.6433      1.49  Q          |         |         |        V|
12+10      4.6527      1.36  Q          |         |         |        V|
12+15      4.6603      1.11  Q          |         |         |        V|
12+20      4.6649      0.66  Q          |         |         |        V|
12+25      4.6680      0.46  Q          |         |         |        V|
12+30      4.6704      0.34  Q          |         |         |        V|
```

```
   12+35       4.6721      0.25  Q         |         |         |         V|
   12+40       4.6734      0.19  Q         |         |         |         V|
   12+45       4.6744      0.14  Q         |         |         |         V|
   12+50       4.6751      0.10  Q         |         |         |         V|
   12+55       4.6756      0.07  Q         |         |         |         V|
   13+ 0       4.6759      0.05  Q         |         |         |         V|
   13+ 5       4.6761      0.03  Q         |         |         |         V|
   13+10       4.6763      0.03  Q         |         |         |         V|
   13+15       4.6765      0.02  Q         |         |         |         V|
   13+20       4.6766      0.02  Q         |         |         |         V|
   13+25       4.6767      0.01  Q         |         |         |         V|
   13+30       4.6767      0.01  Q         |         |         |         V|
   13+35       4.6768      0.01  Q         |         |         |         V|
   13+40       4.6768      0.00  Q         |         |         |         V|
   13+45       4.6768      0.00  Q         |         |         |         V|
   13+50       4.6768      0.00  Q         |         |         |         V|
-------------------------------------------------------------------------
```

- 25 Year 24 Hour Pre-Development Unit Hydrograph – Area 'A'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989-2012, Version 7.2

       Study date  10/13/16   File Name exa02524.out


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'A' - 25 YEAR 24 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 25

       Antecedent Moisture Condition = 2

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 77.0      27.4          1.00     C     0.250     1.000    0.250

Area-averaged adjusted loss rate Fm (In/Hr) =  0.250

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC2)           Yield Fr
    27.39   1.000         77.0      77.0       2.99     0.491

Area-averaged catchment yield fraction, Y =  0.491
Area-averaged low loss fraction, Yb =  0.509
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.329 (hours)
Watershed area =      27.39(Ac.)
Catchment Lag time =   0.263 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 31.6424
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.250(In/Hr)
Average low loss rate fraction (Yb) = 0.509 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.400(In)
Computed peak 30-minute rainfall =  0.870(In)
Specified peak 1-hour rainfall =  1.150(In)
Computed peak 3-hour rainfall =  1.940(In)
Specified peak 6-hour rainfall =  2.710(In)
Specified peak 24-hour rainfall =  4.490(In)


Rainfall depth area reduction factors:
Using a total area of      27.39(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.399(In)
30-minute factor = 0.999    Adjusted rainfall =  0.869(In)
```

```
1-hour factor = 0.999       Adjusted rainfall =  1.149(In)
3-hour factor = 1.000       Adjusted rainfall =  1.940(In)
6-hour factor = 1.000       Adjusted rainfall =  2.710(In)
24-hour factor = 1.000 Adjusted rainfall =  4.490(In)
------------------------------------------------------------------------

                     U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
------------------------------------------------------------------------
               (K =       331.25 (CFS))

  1                2.302                   7.626
  2                9.842                  24.974
  3               25.949                  53.356
  4               56.150                 100.039
  5               69.474                  44.137
  6               77.390                  26.222
  7               83.152                  19.086
  8               87.470                  14.302
  9               90.796                  11.018
 10               93.380                   8.560
 11               95.329                   6.457
 12               96.751                   4.709
 13               97.742                   3.284
 14               98.226                   1.603
 15               98.587                   1.194
 16               98.902                   1.045
 17               99.133                   0.764
 18               99.335                   0.669
 19               99.583                   0.823
 20               99.768                   0.613
 21               99.888                   0.397
 22               99.961                   0.240
 23              100.000                   0.130
------------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.3995               0.3995
  2              0.5396               0.1401
  3              0.6433               0.1037
  4              0.7288               0.0855
  5              0.8028               0.0740
  6              0.8689               0.0661
  7              0.9245               0.0556
  8              0.9756               0.0511
  9              1.0229               0.0474
 10              1.0672               0.0443
 11              1.1090               0.0417
 12              1.1485               0.0395
 13              1.1932               0.0447
 14              1.2362               0.0429
 15              1.2775               0.0414
 16              1.3175               0.0399
 17              1.3561               0.0387
 18              1.3936               0.0375
 19              1.4300               0.0364
 20              1.4654               0.0354
 21              1.4999               0.0345
 22              1.5336               0.0337
 23              1.5665               0.0329
 24              1.5986               0.0321
 25              1.6300               0.0314
 26              1.6608               0.0308
 27              1.6910               0.0302
 28              1.7206               0.0296
 29              1.7496               0.0290
 30              1.7781               0.0285
 31              1.8061               0.0280
 32              1.8337               0.0276
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33	1.8608	0.0271
34	1.8875	0.0267
35	1.9138	0.0263
36	1.9397	0.0259
37	1.9655	0.0258
38	1.9909	0.0254
39	2.0160	0.0251
40	2.0408	0.0248
41	2.0653	0.0245
42	2.0894	0.0241
43	2.1133	0.0238
44	2.1368	0.0236
45	2.1601	0.0233
46	2.1831	0.0230
47	2.2059	0.0228
48	2.2284	0.0225
49	2.2507	0.0223
50	2.2727	0.0220
51	2.2945	0.0218
52	2.3161	0.0216
53	2.3375	0.0214
54	2.3587	0.0212
55	2.3796	0.0210
56	2.4004	0.0208
57	2.4210	0.0206
58	2.4414	0.0204
59	2.4616	0.0202
60	2.4816	0.0200
61	2.5015	0.0199
62	2.5212	0.0197
63	2.5407	0.0195
64	2.5601	0.0194
65	2.5793	0.0192
66	2.5984	0.0191
67	2.6173	0.0189
68	2.6361	0.0188
69	2.6547	0.0186
70	2.6732	0.0185
71	2.6915	0.0184
72	2.7098	0.0182
73	2.7234	0.0136
74	2.7369	0.0135
75	2.7504	0.0134
76	2.7637	0.0133
77	2.7769	0.0132
78	2.7899	0.0131
79	2.8029	0.0130
80	2.8158	0.0129
81	2.8286	0.0128
82	2.8412	0.0127
83	2.8538	0.0126
84	2.8663	0.0125
85	2.8787	0.0124
86	2.8909	0.0123
87	2.9031	0.0122
88	2.9153	0.0121
89	2.9273	0.0120
90	2.9392	0.0119
91	2.9511	0.0119
92	2.9628	0.0118
93	2.9745	0.0117
94	2.9861	0.0116
95	2.9977	0.0115
96	3.0091	0.0115
97	3.0205	0.0114
98	3.0318	0.0113
99	3.0430	0.0112
100	3.0542	0.0112
101	3.0653	0.0111
102	3.0763	0.0110
103	3.0873	0.0110

104	3.0982	0.0109
105	3.1090	0.0108
106	3.1197	0.0108
107	3.1304	0.0107
108	3.1410	0.0106
109	3.1516	0.0106
110	3.1621	0.0105
111	3.1725	0.0104
112	3.1829	0.0104
113	3.1932	0.0103
114	3.2035	0.0103
115	3.2137	0.0102
116	3.2239	0.0102
117	3.2340	0.0101
118	3.2440	0.0100
119	3.2540	0.0100
120	3.2639	0.0099
121	3.2738	0.0099
122	3.2836	0.0098
123	3.2934	0.0098
124	3.3031	0.0097
125	3.3128	0.0097
126	3.3224	0.0096
127	3.3320	0.0096
128	3.3416	0.0095
129	3.3510	0.0095
130	3.3605	0.0094
131	3.3699	0.0094
132	3.3792	0.0093
133	3.3885	0.0093
134	3.3978	0.0093
135	3.4070	0.0092
136	3.4162	0.0092
137	3.4253	0.0091
138	3.4344	0.0091
139	3.4434	0.0090
140	3.4524	0.0090
141	3.4614	0.0090
142	3.4703	0.0089
143	3.4792	0.0089
144	3.4880	0.0088
145	3.4968	0.0088
146	3.5056	0.0088
147	3.5143	0.0087
148	3.5230	0.0087
149	3.5317	0.0087
150	3.5403	0.0086
151	3.5489	0.0086
152	3.5574	0.0085
153	3.5659	0.0085
154	3.5744	0.0085
155	3.5828	0.0084
156	3.5912	0.0084
157	3.5996	0.0084
158	3.6079	0.0083
159	3.6162	0.0083
160	3.6245	0.0083
161	3.6327	0.0082
162	3.6409	0.0082
163	3.6491	0.0082
164	3.6573	0.0081
165	3.6654	0.0081
166	3.6734	0.0081
167	3.6815	0.0080
168	3.6895	0.0080
169	3.6975	0.0080
170	3.7054	0.0080
171	3.7134	0.0079
172	3.7213	0.0079
173	3.7291	0.0079
174	3.7370	0.0078

175	3.7448	0.0078
176	3.7525	0.0078
177	3.7603	0.0078
178	3.7680	0.0077
179	3.7757	0.0077
180	3.7834	0.0077
181	3.7910	0.0076
182	3.7986	0.0076
183	3.8062	0.0076
184	3.8138	0.0076
185	3.8213	0.0075
186	3.8288	0.0075
187	3.8363	0.0075
188	3.8438	0.0075
189	3.8512	0.0074
190	3.8586	0.0074
191	3.8660	0.0074
192	3.8734	0.0074
193	3.8807	0.0073
194	3.8880	0.0073
195	3.8953	0.0073
196	3.9026	0.0073
197	3.9098	0.0072
198	3.9170	0.0072
199	3.9242	0.0072
200	3.9314	0.0072
201	3.9386	0.0071
202	3.9457	0.0071
203	3.9528	0.0071
204	3.9599	0.0071
205	3.9669	0.0071
206	3.9740	0.0070
207	3.9810	0.0070
208	3.9880	0.0070
209	3.9949	0.0070
210	4.0019	0.0070
211	4.0088	0.0069
212	4.0157	0.0069
213	4.0226	0.0069
214	4.0295	0.0069
215	4.0363	0.0068
216	4.0432	0.0068
217	4.0500	0.0068
218	4.0568	0.0068
219	4.0635	0.0068
220	4.0703	0.0067
221	4.0770	0.0067
222	4.0837	0.0067
223	4.0904	0.0067
224	4.0971	0.0067
225	4.1037	0.0067
226	4.1104	0.0066
227	4.1170	0.0066
228	4.1236	0.0066
229	4.1302	0.0066
230	4.1367	0.0066
231	4.1433	0.0065
232	4.1498	0.0065
233	4.1563	0.0065
234	4.1628	0.0065
235	4.1693	0.0065
236	4.1757	0.0065
237	4.1822	0.0064
238	4.1886	0.0064
239	4.1950	0.0064
240	4.2014	0.0064
241	4.2077	0.0064
242	4.2141	0.0064
243	4.2204	0.0063
244	4.2267	0.0063
245	4.2330	0.0063

246	4.2393	0.0063
247	4.2456	0.0063
248	4.2518	0.0063
249	4.2581	0.0062
250	4.2643	0.0062
251	4.2705	0.0062
252	4.2767	0.0062
253	4.2829	0.0062
254	4.2890	0.0062
255	4.2952	0.0061
256	4.3013	0.0061
257	4.3074	0.0061
258	4.3135	0.0061
259	4.3196	0.0061
260	4.3257	0.0061
261	4.3317	0.0061
262	4.3377	0.0060
263	4.3438	0.0060
264	4.3498	0.0060
265	4.3558	0.0060
266	4.3618	0.0060
267	4.3677	0.0060
268	4.3737	0.0060
269	4.3796	0.0059
270	4.3855	0.0059
271	4.3914	0.0059
272	4.3973	0.0059
273	4.4032	0.0059
274	4.4091	0.0059
275	4.4149	0.0059
276	4.4208	0.0058
277	4.4266	0.0058
278	4.4324	0.0058
279	4.4382	0.0058
280	4.4440	0.0058
281	4.4498	0.0058
282	4.4555	0.0058
283	4.4613	0.0057
284	4.4670	0.0057
285	4.4728	0.0057
286	4.4785	0.0057
287	4.4842	0.0057
288	4.4898	0.0057

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0057	0.0029	0.0028
2	0.0057	0.0029	0.0028
3	0.0057	0.0029	0.0028
4	0.0057	0.0029	0.0028
5	0.0058	0.0029	0.0028
6	0.0058	0.0029	0.0028
7	0.0058	0.0030	0.0028
8	0.0058	0.0030	0.0029
9	0.0058	0.0030	0.0029
10	0.0059	0.0030	0.0029
11	0.0059	0.0030	0.0029
12	0.0059	0.0030	0.0029
13	0.0059	0.0030	0.0029
14	0.0059	0.0030	0.0029
15	0.0060	0.0030	0.0029
16	0.0060	0.0030	0.0029
17	0.0060	0.0031	0.0029
18	0.0060	0.0031	0.0030
19	0.0061	0.0031	0.0030
20	0.0061	0.0031	0.0030
21	0.0061	0.0031	0.0030
22	0.0061	0.0031	0.0030
23	0.0061	0.0031	0.0030

24	0.0062	0.0031	0.0030
25	0.0062	0.0032	0.0030
26	0.0062	0.0032	0.0030
27	0.0062	0.0032	0.0031
28	0.0063	0.0032	0.0031
29	0.0063	0.0032	0.0031
30	0.0063	0.0032	0.0031
31	0.0063	0.0032	0.0031
32	0.0064	0.0032	0.0031
33	0.0064	0.0033	0.0031
34	0.0064	0.0033	0.0031
35	0.0064	0.0033	0.0032
36	0.0065	0.0033	0.0032
37	0.0065	0.0033	0.0032
38	0.0065	0.0033	0.0032
39	0.0065	0.0033	0.0032
40	0.0066	0.0033	0.0032
41	0.0066	0.0034	0.0032
42	0.0066	0.0034	0.0032
43	0.0067	0.0034	0.0033
44	0.0067	0.0034	0.0033
45	0.0067	0.0034	0.0033
46	0.0067	0.0034	0.0033
47	0.0068	0.0034	0.0033
48	0.0068	0.0035	0.0033
49	0.0068	0.0035	0.0033
50	0.0068	0.0035	0.0034
51	0.0069	0.0035	0.0034
52	0.0069	0.0035	0.0034
53	0.0070	0.0035	0.0034
54	0.0070	0.0036	0.0034
55	0.0070	0.0036	0.0034
56	0.0070	0.0036	0.0035
57	0.0071	0.0036	0.0035
58	0.0071	0.0036	0.0035
59	0.0071	0.0036	0.0035
60	0.0072	0.0037	0.0035
61	0.0072	0.0037	0.0035
62	0.0072	0.0037	0.0036
63	0.0073	0.0037	0.0036
64	0.0073	0.0037	0.0036
65	0.0074	0.0037	0.0036
66	0.0074	0.0038	0.0036
67	0.0074	0.0038	0.0036
68	0.0075	0.0038	0.0037
69	0.0075	0.0038	0.0037
70	0.0075	0.0038	0.0037
71	0.0076	0.0039	0.0037
72	0.0076	0.0039	0.0037
73	0.0077	0.0039	0.0038
74	0.0077	0.0039	0.0038
75	0.0078	0.0039	0.0038
76	0.0078	0.0040	0.0038
77	0.0078	0.0040	0.0038
78	0.0079	0.0040	0.0039
79	0.0079	0.0040	0.0039
80	0.0080	0.0041	0.0039
81	0.0080	0.0041	0.0039
82	0.0080	0.0041	0.0039
83	0.0081	0.0041	0.0040
84	0.0081	0.0041	0.0040
85	0.0082	0.0042	0.0040
86	0.0082	0.0042	0.0040
87	0.0083	0.0042	0.0041
88	0.0083	0.0042	0.0041
89	0.0084	0.0043	0.0041
90	0.0084	0.0043	0.0041
91	0.0085	0.0043	0.0042
92	0.0085	0.0044	0.0042
93	0.0086	0.0044	0.0042
94	0.0087	0.0044	0.0042

95	0.0087	0.0044	0.0043
96	0.0088	0.0045	0.0043
97	0.0088	0.0045	0.0043
98	0.0089	0.0045	0.0044
99	0.0090	0.0046	0.0044
100	0.0090	0.0046	0.0044
101	0.0091	0.0046	0.0045
102	0.0091	0.0047	0.0045
103	0.0092	0.0047	0.0045
104	0.0093	0.0047	0.0045
105	0.0093	0.0048	0.0046
106	0.0094	0.0048	0.0046
107	0.0095	0.0048	0.0047
108	0.0095	0.0049	0.0047
109	0.0096	0.0049	0.0047
110	0.0097	0.0049	0.0047
111	0.0098	0.0050	0.0048
112	0.0098	0.0050	0.0048
113	0.0099	0.0051	0.0049
114	0.0100	0.0051	0.0049
115	0.0101	0.0051	0.0050
116	0.0102	0.0052	0.0050
117	0.0103	0.0052	0.0050
118	0.0103	0.0053	0.0051
119	0.0104	0.0053	0.0051
120	0.0105	0.0054	0.0052
121	0.0106	0.0054	0.0052
122	0.0107	0.0054	0.0052
123	0.0108	0.0055	0.0053
124	0.0109	0.0055	0.0053
125	0.0110	0.0056	0.0054
126	0.0111	0.0056	0.0054
127	0.0112	0.0057	0.0055
128	0.0113	0.0058	0.0055
129	0.0115	0.0058	0.0056
130	0.0115	0.0059	0.0057
131	0.0117	0.0060	0.0057
132	0.0118	0.0060	0.0058
133	0.0119	0.0061	0.0059
134	0.0120	0.0061	0.0059
135	0.0122	0.0062	0.0060
136	0.0123	0.0063	0.0060
137	0.0125	0.0064	0.0061
138	0.0126	0.0064	0.0062
139	0.0128	0.0065	0.0063
140	0.0129	0.0066	0.0063
141	0.0131	0.0067	0.0064
142	0.0132	0.0067	0.0065
143	0.0134	0.0068	0.0066
144	0.0135	0.0069	0.0066
145	0.0182	0.0093	0.0089
146	0.0184	0.0093	0.0090
147	0.0186	0.0095	0.0091
148	0.0188	0.0096	0.0092
149	0.0191	0.0097	0.0094
150	0.0192	0.0098	0.0094
151	0.0195	0.0100	0.0096
152	0.0197	0.0100	0.0097
153	0.0200	0.0102	0.0098
154	0.0202	0.0103	0.0099
155	0.0206	0.0105	0.0101
156	0.0208	0.0106	0.0102
157	0.0212	0.0108	0.0104
158	0.0214	0.0109	0.0105
159	0.0218	0.0111	0.0107
160	0.0220	0.0112	0.0108
161	0.0225	0.0115	0.0110
162	0.0228	0.0116	0.0112
163	0.0233	0.0119	0.0114
164	0.0236	0.0120	0.0116
165	0.0241	0.0123	0.0118

166	0.0245	0.0125	0.0120
167	0.0251	0.0128	0.0123
168	0.0254	0.0130	0.0125
169	0.0259	0.0132	0.0127
170	0.0263	0.0134	0.0129
171	0.0271	0.0138	0.0133
172	0.0276	0.0140	0.0135
173	0.0285	0.0145	0.0140
174	0.0290	0.0148	0.0142
175	0.0302	0.0154	0.0148
176	0.0308	0.0157	0.0151
177	0.0321	0.0164	0.0158
178	0.0329	0.0167	0.0161
179	0.0345	0.0176	0.0169
180	0.0354	0.0180	0.0174
181	0.0375	0.0191	0.0184
182	0.0387	0.0197	0.0190
183	0.0414	0.0208	0.0205
184	0.0429	0.0208	0.0221
185	0.0395	0.0201	0.0194
186	0.0417	0.0208	0.0209
187	0.0474	0.0208	0.0265
188	0.0511	0.0208	0.0302
189	0.0661	0.0208	0.0452
190	0.0740	0.0208	0.0532
191	0.1037	0.0208	0.0829
192	0.1401	0.0208	0.1193
193	0.3995	0.0208	0.3787
194	0.0855	0.0208	0.0646
195	0.0556	0.0208	0.0348
196	0.0443	0.0208	0.0235
197	0.0447	0.0208	0.0239
198	0.0399	0.0203	0.0196
199	0.0364	0.0185	0.0179
200	0.0337	0.0171	0.0165
201	0.0314	0.0160	0.0154
202	0.0296	0.0151	0.0145
203	0.0280	0.0143	0.0137
204	0.0267	0.0136	0.0131
205	0.0258	0.0131	0.0127
206	0.0248	0.0126	0.0122
207	0.0238	0.0122	0.0117
208	0.0230	0.0117	0.0113
209	0.0223	0.0113	0.0109
210	0.0216	0.0110	0.0106
211	0.0210	0.0107	0.0103
212	0.0204	0.0104	0.0100
213	0.0199	0.0101	0.0097
214	0.0194	0.0099	0.0095
215	0.0189	0.0096	0.0093
216	0.0185	0.0094	0.0091
217	0.0136	0.0070	0.0067
218	0.0133	0.0068	0.0065
219	0.0130	0.0066	0.0064
220	0.0127	0.0065	0.0062
221	0.0124	0.0063	0.0061
222	0.0121	0.0062	0.0059
223	0.0119	0.0060	0.0058
224	0.0116	0.0059	0.0057
225	0.0114	0.0058	0.0056
226	0.0112	0.0057	0.0055
227	0.0110	0.0056	0.0054
228	0.0108	0.0055	0.0053
229	0.0106	0.0054	0.0052
230	0.0104	0.0053	0.0051
231	0.0102	0.0052	0.0050
232	0.0100	0.0051	0.0049
233	0.0099	0.0050	0.0048
234	0.0097	0.0050	0.0048
235	0.0096	0.0049	0.0047
236	0.0094	0.0048	0.0046

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      237              0.0093           0.0047             0.0046
      238              0.0092           0.0047             0.0045
      239              0.0090           0.0046             0.0044
      240              0.0089           0.0045             0.0044
      241              0.0088           0.0045             0.0043
      242              0.0087           0.0044             0.0043
      243              0.0086           0.0044             0.0042
      244              0.0085           0.0043             0.0042
      245              0.0084           0.0043             0.0041
      246              0.0083           0.0042             0.0041
      247              0.0082           0.0042             0.0040
      248              0.0081           0.0041             0.0040
      249              0.0080           0.0041             0.0039
      250              0.0079           0.0040             0.0039
      251              0.0078           0.0040             0.0038
      252              0.0077           0.0039             0.0038
      253              0.0076           0.0039             0.0037
      254              0.0076           0.0039             0.0037
      255              0.0075           0.0038             0.0037
      256              0.0074           0.0038             0.0036
      257              0.0073           0.0037             0.0036
      258              0.0073           0.0037             0.0036
      259              0.0072           0.0037             0.0035
      260              0.0071           0.0036             0.0035
      261              0.0071           0.0036             0.0035
      262              0.0070           0.0036             0.0034
      263              0.0069           0.0035             0.0034
      264              0.0069           0.0035             0.0034
      265              0.0068           0.0035             0.0033
      266              0.0067           0.0034             0.0033
      267              0.0067           0.0034             0.0033
      268              0.0066           0.0034             0.0033
      269              0.0066           0.0034             0.0032
      270              0.0065           0.0033             0.0032
      271              0.0065           0.0033             0.0032
      272              0.0064           0.0033             0.0031
      273              0.0064           0.0032             0.0031
      274              0.0063           0.0032             0.0031
      275              0.0063           0.0032             0.0031
      276              0.0062           0.0032             0.0031
      277              0.0062           0.0031             0.0030
      278              0.0061           0.0031             0.0030
      279              0.0061           0.0031             0.0030
      280              0.0060           0.0031             0.0030
      281              0.0060           0.0031             0.0029
      282              0.0060           0.0030             0.0029
      283              0.0059           0.0030             0.0029
      284              0.0059           0.0030             0.0029
      285              0.0058           0.0030             0.0029
      286              0.0058           0.0029             0.0028
      287              0.0057           0.0029             0.0028
      288              0.0057           0.0029             0.0028
     ------------------------------------------------------------------------
     ------------------------------------------------------------------------
     Total soil rain loss =      1.95(In)
     Total effective rainfall =      2.54(In)
     Peak flow rate in flood hydrograph =     52.47(CFS)
     ------------------------------------------------------------------------
     ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                        24 - H O U R    S T O R M
                   R u n o f f      H y d r o g r a p h
     ------------------------------------------------------------------------
                Hydrograph in   5   Minute intervals ((CFS))

     ------------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0       15.0      30.0      45.0      60.0
-------------------------------------------------------------------------
  0+ 5       0.0001      0.02  Q         |         |         |         |
  0+10       0.0008      0.09  Q         |         |         |         |
  0+15       0.0024      0.24  Q         |         |         |         |
  0+20       0.0060      0.52  Q         |         |         |         |
```

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0+25       0.0104      0.64  Q          |          |          |          |
0+30       0.0154      0.72  Q          |          |          |          |
0+35       0.0207      0.78  Q          |          |          |          |
0+40       0.0264      0.82  Q          |          |          |          |
0+45       0.0322      0.85  Q          |          |          |          |
0+50       0.0383      0.88  Q          |          |          |          |
0+55       0.0445      0.90  Q          |          |          |          |
1+ 0       0.0508      0.92  Q          |          |          |          |
1+ 5       0.0572      0.93  Q          |          |          |          |
1+10       0.0636      0.94  Q          |          |          |          |
1+15       0.0701      0.94  Q          |          |          |          |
1+20       0.0766      0.95  Q          |          |          |          |
1+25       0.0832      0.95  Q          |          |          |          |
1+30       0.0898      0.96  Q          |          |          |          |
1+35       0.0964      0.96  Q          |          |          |          |
1+40       0.1031      0.97  Q          |          |          |          |
1+45       0.1098      0.97  Q          |          |          |          |
1+50       0.1165      0.98  Q          |          |          |          |
1+55       0.1233      0.98  Q          |          |          |          |
2+ 0       0.1301      0.99  Q          |          |          |          |
2+ 5       0.1369      0.99  Q          |          |          |          |
2+10       0.1438      0.99  Q          |          |          |          |
2+15       0.1506      1.00  QV         |          |          |          |
2+20       0.1575      1.00  QV         |          |          |          |
2+25       0.1644      1.00  QV         |          |          |          |
2+30       0.1714      1.01  QV         |          |          |          |
2+35       0.1783      1.01  QV         |          |          |          |
2+40       0.1853      1.02  QV         |          |          |          |
2+45       0.1924      1.02  QV         |          |          |          |
2+50       0.1994      1.02  QV         |          |          |          |
2+55       0.2065      1.03  QV         |          |          |          |
3+ 0       0.2136      1.03  QV         |          |          |          |
3+ 5       0.2207      1.04  QV         |          |          |          |
3+10       0.2279      1.04  QV         |          |          |          |
3+15       0.2351      1.04  QV         |          |          |          |
3+20       0.2423      1.05  QV         |          |          |          |
3+25       0.2496      1.05  QV         |          |          |          |
3+30       0.2569      1.06  QV         |          |          |          |
3+35       0.2642      1.06  QV         |          |          |          |
3+40       0.2715      1.07  QV         |          |          |          |
3+45       0.2789      1.07  QV         |          |          |          |
3+50       0.2863      1.08  QV         |          |          |          |
3+55       0.2937      1.08  Q V        |          |          |          |
4+ 0       0.3012      1.08  Q V        |          |          |          |
4+ 5       0.3087      1.09  Q V        |          |          |          |
4+10       0.3162      1.09  Q V        |          |          |          |
4+15       0.3238      1.10  Q V        |          |          |          |
4+20       0.3314      1.10  Q V        |          |          |          |
4+25       0.3390      1.11  Q V        |          |          |          |
4+30       0.3467      1.11  Q V        |          |          |          |
4+35       0.3544      1.12  Q V        |          |          |          |
4+40       0.3621      1.12  Q V        |          |          |          |
4+45       0.3699      1.13  Q V        |          |          |          |
4+50       0.3777      1.13  Q V        |          |          |          |
4+55       0.3855      1.14  Q V        |          |          |          |
5+ 0       0.3934      1.14  Q V        |          |          |          |
5+ 5       0.4013      1.15  Q V        |          |          |          |
5+10       0.4092      1.15  Q V        |          |          |          |
5+15       0.4172      1.16  Q V        |          |          |          |
5+20       0.4253      1.17  Q V        |          |          |          |
5+25       0.4333      1.17  Q V        |          |          |          |
5+30       0.4414      1.18  Q  V       |          |          |          |
5+35       0.4496      1.18  Q  V       |          |          |          |
5+40       0.4578      1.19  Q  V       |          |          |          |
5+45       0.4660      1.19  Q  V       |          |          |          |
5+50       0.4742      1.20  Q  V       |          |          |          |
5+55       0.4826      1.21  Q  V       |          |          |          |
6+ 0       0.4909      1.21  Q  V       |          |          |          |
6+ 5       0.4993      1.22  Q  V       |          |          |          |
6+10       0.5077      1.22  Q  V       |          |          |          |
6+15       0.5162      1.23  Q  V       |          |          |          |
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 6+20       0.5247      1.24  Q  V      |          |          |          |
 6+25       0.5333      1.24  Q  V      |          |          |          |
 6+30       0.5419      1.25  Q  V      |          |          |          |
 6+35       0.5506      1.26  Q  V      |          |          |          |
 6+40       0.5593      1.26  Q  V      |          |          |          |
 6+45       0.5680      1.27  Q  V      |          |          |          |
 6+50       0.5768      1.28  Q  V      |          |          |          |
 6+55       0.5857      1.29  Q   V     |          |          |          |
 7+ 0       0.5946      1.29  Q   V     |          |          |          |
 7+ 5       0.6035      1.30  Q   V     |          |          |          |
 7+10       0.6126      1.31  Q   V     |          |          |          |
 7+15       0.6216      1.31  Q   V     |          |          |          |
 7+20       0.6307      1.32  Q   V     |          |          |          |
 7+25       0.6399      1.33  Q   V     |          |          |          |
 7+30       0.6491      1.34  Q   V     |          |          |          |
 7+35       0.6584      1.35  Q   V     |          |          |          |
 7+40       0.6677      1.35  Q   V     |          |          |          |
 7+45       0.6771      1.36  Q   V     |          |          |          |
 7+50       0.6865      1.37  Q   V     |          |          |          |
 7+55       0.6960      1.38  Q   V     |          |          |          |
 8+ 0       0.7056      1.39  Q   V     |          |          |          |
 8+ 5       0.7152      1.40  Q   V     |          |          |          |
 8+10       0.7249      1.41  Q    V    |          |          |          |
 8+15       0.7346      1.42  Q    V    |          |          |          |
 8+20       0.7445      1.42  Q    V    |          |          |          |
 8+25       0.7543      1.43  Q    V    |          |          |          |
 8+30       0.7643      1.44  Q    V    |          |          |          |
 8+35       0.7743      1.45  Q    V    |          |          |          |
 8+40       0.7844      1.46  Q    V    |          |          |          |
 8+45       0.7945      1.47  Q    V    |          |          |          |
 8+50       0.8047      1.48  Q    V    |          |          |          |
 8+55       0.8150      1.49  Q    V    |          |          |          |
 9+ 0       0.8254      1.50  |Q   V    |          |          |          |
 9+ 5       0.8358      1.52  |Q   V    |          |          |          |
 9+10       0.8463      1.53  |Q   V    |          |          |          |
 9+15       0.8569      1.54  |Q   V    |          |          |          |
 9+20       0.8676      1.55  |Q   V    |          |          |          |
 9+25       0.8783      1.56  |Q    V   |          |          |          |
 9+30       0.8892      1.57  |Q    V   |          |          |          |
 9+35       0.9001      1.59  |Q    V   |          |          |          |
 9+40       0.9111      1.60  |Q    V   |          |          |          |
 9+45       0.9222      1.61  |Q    V   |          |          |          |
 9+50       0.9334      1.62  |Q    V   |          |          |          |
 9+55       0.9446      1.64  |Q    V   |          |          |          |
10+ 0       0.9560      1.65  |Q    V   |          |          |          |
10+ 5       0.9675      1.66  |Q    V   |          |          |          |
10+10       0.9790      1.68  |Q    V   |          |          |          |
10+15       0.9907      1.69  |Q    V   |          |          |          |
10+20       1.0024      1.71  |Q    V   |          |          |          |
10+25       1.0143      1.72  |Q    V   |          |          |          |
10+30       1.0263      1.74  |Q     V  |          |          |          |
10+35       1.0383      1.75  |Q     V  |          |          |          |
10+40       1.0505      1.77  |Q     V  |          |          |          |
10+45       1.0628      1.79  |Q     V  |          |          |          |
10+50       1.0752      1.80  |Q     V  |          |          |          |
10+55       1.0878      1.82  |Q     V  |          |          |          |
11+ 0       1.1004      1.84  |Q     V  |          |          |          |
11+ 5       1.1132      1.86  |Q     V  |          |          |          |
11+10       1.1261      1.88  |Q     V  |          |          |          |
11+15       1.1392      1.89  |Q     V  |          |          |          |
11+20       1.1524      1.91  |Q     V  |          |          |          |
11+25       1.1657      1.93  |Q      V |          |          |          |
11+30       1.1792      1.96  |Q      V |          |          |          |
11+35       1.1928      1.98  |Q      V |          |          |          |
11+40       1.2065      2.00  |Q      V |          |          |          |
11+45       1.2205      2.02  |Q      V |          |          |          |
11+50       1.2345      2.05  |Q      V |          |          |          |
11+55       1.2488      2.07  |Q      V |          |          |          |
12+ 0       1.2632      2.09  |Q      V |          |          |          |
12+ 5       1.2779      2.14  |Q      V |          |          |          |
12+10       1.2932      2.22  |Q      V |          |          |          |
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12+15       1.3094      2.36  |Q       V|         |          |         |
12+20       1.3274      2.61  |Q       V|         |          |         |
12+25       1.3462      2.73  |Q       V|         |          |         |
12+30       1.3657      2.82  |Q       V|         |          |         |
12+35       1.3857      2.90  |Q       V|         |          |         |
12+40       1.4061      2.96  |Q       V|         |          |         |
12+45       1.4269      3.02  | Q      V|         |          |         |
12+50       1.4481      3.08  | Q      V|         |          |         |
12+55       1.4697      3.13  | Q       V         |          |         |
13+ 0       1.4916      3.18  | Q       V         |          |         |
13+ 5       1.5138      3.23  | Q       V         |          |         |
13+10       1.5364      3.28  | Q       V         |          |         |
13+15       1.5593      3.32  | Q       V         |          |         |
13+20       1.5825      3.37  | Q       V         |          |         |
13+25       1.6061      3.42  | Q       |V        |          |         |
13+30       1.6300      3.48  | Q       |V        |          |         |
13+35       1.6544      3.53  | Q       |V        |          |         |
13+40       1.6791      3.59  | Q       |V        |          |         |
13+45       1.7042      3.65  | Q       |V        |          |         |
13+50       1.7297      3.71  | Q       |V        |          |         |
13+55       1.7557      3.77  | Q       | V       |          |         |
14+ 0       1.7822      3.84  | Q       | V       |          |         |
14+ 5       1.8091      3.91  | Q       | V       |          |         |
14+10       1.8365      3.98  | Q       | V       |          |         |
14+15       1.8644      4.05  | Q       | V       |          |         |
14+20       1.8929      4.13  | Q       |  V      |          |         |
14+25       1.9218      4.21  | Q       |  V      |          |         |
14+30       1.9515      4.30  | Q       |  V      |          |         |
14+35       1.9818      4.40  | Q       |  V      |          |         |
14+40       2.0129      4.51  |  Q      |  V      |          |         |
14+45       2.0447      4.63  |  Q      |   V     |          |         |
14+50       2.0775      4.76  |  Q      |   V     |          |         |
14+55       2.1112      4.89  |  Q      |   V     |          |         |
15+ 0       2.1460      5.05  |  Q      |   V     |          |         |
15+ 5       2.1819      5.21  |  Q      |    V    |          |         |
15+10       2.2192      5.41  |  Q      |    V    |          |         |
15+15       2.2578      5.61  |  Q      |    V    |          |         |
15+20       2.2982      5.87  |  Q      |    V    |          |         |
15+25       2.3404      6.12  |   Q     |     V   |          |         |
15+30       2.3844      6.39  |   Q     |     V   |          |         |
15+35       2.4300      6.62  |   Q     |     V   |          |         |
15+40       2.4765      6.75  |   Q     |      V  |          |         |
15+45       2.5274      7.40  |   Q     |      V  |          |         |
15+50       2.5871      8.67  |    Q    |      V  |          |         |
15+55       2.6599     10.56  |      Q  |       V |          |         |
16+ 0       2.7552     13.85  |        Q|        V|          |         |
16+ 5       2.8930     20.01  |         |  Q     V|          |         |
16+10       3.0991     29.92  |         |        Q|V         |         |
16+15       3.3832     41.26  |         |         |  V   Q   |         |
16+20       3.7446     52.47  |         |         |    V     |   Q     |
16+25       3.9685     32.51  |         |         |Q     V   |         |
16+30       4.1284     23.23  |         |    Q    |       V  |         |
16+35       4.2555     18.45  |         | Q       |        V|         |
16+40       4.3618     15.44  |         Q         |         V         |
16+45       4.4514     13.00  |       Q |         |         V         |
16+50       4.5278     11.10  |      Q  |         |         |V        |
16+55       4.5932      9.50  |     Q   |         |         |V        |
17+ 0       4.6494      8.15  |    Q    |         |         | V       |
17+ 5       4.6978      7.03  |   Q     |         |         | V       |
17+10       4.7392      6.01  |   Q     |         |         | V       |
17+15       4.7770      5.49  |  Q      |         |         | V       |
17+20       4.8125      5.15  |  Q      |         |         |  V      |
17+25       4.8456      4.82  |  Q      |         |         |  V      |
17+30       4.8772      4.58  |  Q      |         |         |  V      |
17+35       4.9076      4.42  | Q       |         |         |  V      |
17+40       4.9364      4.17  | Q       |         |         |   V     |
17+45       4.9634      3.93  | Q       |         |         |   V     |
17+50       4.9890      3.72  | Q       |         |         |   V     |
17+55       5.0135      3.55  | Q       |         |         |   V     |
18+ 0       5.0369      3.40  | Q       |         |         |   V     |
18+ 5       5.0594      3.28  | Q       |         |         |   V     |
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18+10       5.0810      3.13  | Q       |         |         |    V    |
18+15       5.1012      2.94  |Q        |         |         |    V    |
18+20       5.1194      2.64  |Q        |         |         |    V    |
18+25       5.1365      2.48  |Q        |         |         |    V    |
18+30       5.1528      2.36  |Q        |         |         |    V    |
18+35       5.1684      2.26  |Q        |         |         |    V    |
18+40       5.1834      2.18  |Q        |         |         |    V    |
18+45       5.1979      2.11  |Q        |         |         |    V    |
18+50       5.2120      2.04  |Q        |         |         |    V    |
18+55       5.2256      1.98  |Q        |         |         |     V   |
19+ 0       5.2389      1.93  |Q        |         |         |     V   |
19+ 5       5.2519      1.88  |Q        |         |         |     V   |
19+10       5.2646      1.84  |Q        |         |         |     V   |
19+15       5.2770      1.81  |Q        |         |         |     V   |
19+20       5.2892      1.77  |Q        |         |         |     V   |
19+25       5.3012      1.74  |Q        |         |         |     V   |
19+30       5.3129      1.70  |Q        |         |         |     V   |
19+35       5.3244      1.67  |Q        |         |         |     V   |
19+40       5.3358      1.64  |Q        |         |         |     V   |
19+45       5.3469      1.62  |Q        |         |         |     V   |
19+50       5.3579      1.59  |Q        |         |         |     V   |
19+55       5.3687      1.57  |Q        |         |         |      V  |
20+ 0       5.3793      1.54  |Q        |         |         |      V  |
20+ 5       5.3898      1.52  |Q        |         |         |      V  |
20+10       5.4001      1.50  Q         |         |         |      V  |
20+15       5.4103      1.48  Q         |         |         |      V  |
20+20       5.4203      1.46  Q         |         |         |      V  |
20+25       5.4302      1.44  Q         |         |         |      V  |
20+30       5.4400      1.42  Q         |         |         |      V  |
20+35       5.4496      1.40  Q         |         |         |      V  |
20+40       5.4591      1.38  Q         |         |         |      V  |
20+45       5.4685      1.37  Q         |         |         |      V  |
20+50       5.4778      1.35  Q         |         |         |      V  |
20+55       5.4870      1.33  Q         |         |         |      V  |
21+ 0       5.4961      1.32  Q         |         |         |      V  |
21+ 5       5.5051      1.30  Q         |         |         |      V  |
21+10       5.5139      1.29  Q         |         |         |       V |
21+15       5.5227      1.27  Q         |         |         |       V |
21+20       5.5314      1.26  Q         |         |         |       V |
21+25       5.5400      1.25  Q         |         |         |       V |
21+30       5.5485      1.23  Q         |         |         |       V |
21+35       5.5569      1.22  Q         |         |         |       V |
21+40       5.5652      1.21  Q         |         |         |       V |
21+45       5.5734      1.20  Q         |         |         |       V |
21+50       5.5816      1.18  Q         |         |         |       V |
21+55       5.5897      1.17  Q         |         |         |       V |
22+ 0       5.5977      1.16  Q         |         |         |       V |
22+ 5       5.6056      1.15  Q         |         |         |       V |
22+10       5.6134      1.14  Q         |         |         |       V |
22+15       5.6212      1.13  Q         |         |         |       V |
22+20       5.6289      1.12  Q         |         |         |       V |
22+25       5.6366      1.11  Q         |         |         |       V |
22+30       5.6441      1.10  Q         |         |         |       V |
22+35       5.6516      1.09  Q         |         |         |       V |
22+40       5.6591      1.08  Q         |         |         |        V|
22+45       5.6665      1.07  Q         |         |         |        V|
22+50       5.6738      1.06  Q         |         |         |        V|
22+55       5.6811      1.05  Q         |         |         |        V|
23+ 0       5.6883      1.05  Q         |         |         |        V|
23+ 5       5.6954      1.04  Q         |         |         |        V|
23+10       5.7025      1.03  Q         |         |         |        V|
23+15       5.7095      1.02  Q         |         |         |        V|
23+20       5.7165      1.01  Q         |         |         |        V|
23+25       5.7234      1.01  Q         |         |         |        V|
23+30       5.7303      1.00  Q         |         |         |        V|
23+35       5.7371      0.99  Q         |         |         |        V|
23+40       5.7439      0.98  Q         |         |         |        V|
23+45       5.7506      0.98  Q         |         |         |        V|
23+50       5.7573      0.97  Q         |         |         |        V|
23+55       5.7639      0.96  Q         |         |         |        V|
24+ 0       5.7705      0.96  Q         |         |         |        V|
```

```
  24+ 5       5.7769      0.93  Q         |         |         |         V|
  24+10       5.7827      0.85  Q         |         |         |         V|
  24+15       5.7876      0.70  Q         |         |         |         V|
  24+20       5.7904      0.41  Q         |         |         |         V|
  24+25       5.7924      0.29  Q         |         |         |         V|
  24+30       5.7939      0.21  Q         |         |         |         V|
  24+35       5.7950      0.16  Q         |         |         |         V|
  24+40       5.7958      0.12  Q         |         |         |         V|
  24+45       5.7964      0.09  Q         |         |         |         V|
  24+50       5.7968      0.06  Q         |         |         |         V|
  24+55       5.7971      0.04  Q         |         |         |         V|
  25+ 0       5.7973      0.03  Q         |         |         |         V|
  25+ 5       5.7975      0.02  Q         |         |         |         V|
  25+10       5.7976      0.02  Q         |         |         |         V|
  25+15       5.7977      0.01  Q         |         |         |         V|
  25+20       5.7977      0.01  Q         |         |         |         V|
  25+25       5.7978      0.01  Q         |         |         |         V|
  25+30       5.7978      0.01  Q         |         |         |         V|
  25+35       5.7979      0.00  Q         |         |         |         V|
  25+40       5.7979      0.00  Q         |         |         |         V|
  25+45       5.7979      0.00  Q         |         |         |         V|
  25+50       5.7979      0.00  Q         |         |         |         V|
-------------------------------------------------------------------------
```

- 100 Year 3 Hour Pre-Development Unit Hydrograph – Area 'A'

```
        U n i t   H y d r o g r a p h   A n a l y s i s

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        Study date  10/13/16   File Name exa10003.out


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------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'A' - 100 YEAR 3 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

        Storm Event Year = 100

        Antecedent Moisture Condition = 3

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 77.0      27.4          1.00     C     0.250     1.000    0.250

Area-averaged adjusted loss rate Fm (In/Hr) =  0.250

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC3)           Yield Fr
    27.39   1.000         77.0      92.2       0.85     0.840

Area-averaged catchment yield fraction, Y =  0.840
Area-averaged low loss fraction, Yb =  0.160
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.321 (hours)
Watershed area =      27.39(Ac.)
Catchment Lag time =   0.256 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 32.5013
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.250(In/Hr)
Average low loss rate fraction (Yb) = 0.160 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.520(In)
Computed peak 30-minute rainfall =  1.090(In)
Specified peak 1-hour rainfall =  1.450(In)
Computed peak 3-hour rainfall =  2.430(In)
Specified peak 6-hour rainfall =  3.360(In)
Specified peak 24-hour rainfall =  5.630(In)


Rainfall depth area reduction factors:
Using a total area of      27.39(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.519(In)
30-minute factor = 0.999    Adjusted rainfall =  1.089(In)
```

```
1-hour factor = 0.999       Adjusted rainfall =  1.448(In)
3-hour factor = 1.000       Adjusted rainfall =  2.430(In)
6-hour factor = 1.000       Adjusted rainfall =  3.360(In)
24-hour factor = 1.000 Adjusted rainfall =  5.630(In)
------------------------------------------------------------------------

                     U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
------------------------------------------------------------------------
               (K =       331.25 (CFS))

  1                2.383                   7.893
  2               10.292                  26.200
  3               27.973                  58.567
  4               57.969                  99.360
  5               70.597                  41.832
  6               78.366                  25.736
  7               84.004                  18.673
  8               88.214                  13.948
  9               91.446                  10.704
 10               93.947                   8.286
 11               95.774                   6.051
 12               97.109                   4.423
 13               97.951                   2.788
 14               98.364                   1.371
 15               98.713                   1.154
 16               99.013                   0.995
 17               99.218                   0.678
 18               99.450                   0.770
 19               99.691                   0.799
 20               99.835                   0.476
 21               99.933                   0.323
 22              100.000                   0.223
------------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.5193              0.5193
  2              0.6915              0.1722
  3              0.8176              0.1261
  4              0.9207              0.1032
  5              1.0096              0.0889
  6              1.0886              0.0790
  7              1.1599              0.0713
  8              1.2255              0.0656
  9              1.2864              0.0609
 10              1.3434              0.0570
 11              1.3972              0.0538
 12              1.4481              0.0510
 13              1.5038              0.0556
 14              1.5572              0.0534
 15              1.6086              0.0514
 16              1.6583              0.0496
 17              1.7063              0.0480
 18              1.7529              0.0466
 19              1.7981              0.0452
 20              1.8421              0.0440
 21              1.8849              0.0428
 22              1.9266              0.0418
 23              1.9674              0.0408
 24              2.0072              0.0398
 25              2.0462              0.0390
 26              2.0843              0.0382
 27              2.1217              0.0374
 28              2.1584              0.0367
 29              2.1944              0.0360
 30              2.2297              0.0353
 31              2.2644              0.0347
 32              2.2985              0.0341
 33              2.3320              0.0336
```

```
 34              2.3651              0.0330
 35              2.3976              0.0325
 36              2.4296              0.0320
---------------------------------------------------------------------
Unit              Unit            Unit              Effective
Period            Rainfall        Soil-Loss         Rainfall
(number)            (In)          (In)                (In)
---------------------------------------------------------------------
  1              0.0320           0.0051              0.0269
  2              0.0325           0.0052              0.0273
  3              0.0336           0.0054              0.0282
  4              0.0341           0.0055              0.0287
  5              0.0353           0.0057              0.0297
  6              0.0360           0.0058              0.0302
  7              0.0374           0.0060              0.0314
  8              0.0382           0.0061              0.0320
  9              0.0398           0.0064              0.0335
 10              0.0408           0.0065              0.0342
 11              0.0428           0.0069              0.0360
 12              0.0440           0.0070              0.0369
 13              0.0466           0.0075              0.0391
 14              0.0480           0.0077              0.0403
 15              0.0514           0.0082              0.0432
 16              0.0534           0.0086              0.0449
 17              0.0510           0.0082              0.0428
 18              0.0538           0.0086              0.0452
 19              0.0609           0.0098              0.0511
 20              0.0656           0.0105              0.0551
 21              0.0790           0.0126              0.0663
 22              0.0889           0.0142              0.0747
 23              0.1261           0.0202              0.1059
 24              0.1722           0.0208              0.1513
 25              0.5193           0.0208              0.4985
 26              0.1032           0.0165              0.0866
 27              0.0713           0.0114              0.0599
 28              0.0570           0.0091              0.0479
 29              0.0556           0.0089              0.0467
 30              0.0496           0.0080              0.0417
 31              0.0452           0.0072              0.0380
 32              0.0418           0.0067              0.0351
 33              0.0390           0.0062              0.0327
 34              0.0367           0.0059              0.0308
 35              0.0347           0.0056              0.0291
 36              0.0330           0.0053              0.0277
---------------------------------------------------------------------
---------------------------------------------------------------------
Total soil rain loss =      0.32(In)
Total effective rainfall =      2.11(In)
Peak flow rate in flood hydrograph =     69.79(CFS)
---------------------------------------------------------------------
+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                    3 - H O U R    S T O R M
                R u n o f f      H y d r o g r a p h
---------------------------------------------------------------------
            Hydrograph in   5   Minute intervals ((CFS))

---------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0       17.5      35.0      52.5      70.0
---------------------------------------------------------------------
  0+ 5       0.0015      0.21  Q         |         |         |         |
  0+10       0.0078      0.92  Q         |         |         |         |
  0+15       0.0251      2.51  VQ        |         |         |         |
  0+20       0.0612      5.24  V Q       |         |         |         |
  0+25       0.1057      6.47  V  Q      |         |         |         |
  0+30       0.1562      7.33  |V  Q     |         |         |         |
  0+35       0.2114      8.01  |V  Q     |         |         |         |
  0+40       0.2706      8.60  | V Q     |         |         |         |
  0+45       0.3334      9.12  | V  Q    |         |         |         |
  0+50       0.3996      9.61  |  V Q    |         |         |         |
  0+55       0.4689     10.06  |  V Q    |         |         |         |
  1+ 0       0.5413     10.51  |   V Q   |         |         |         |
```

```
   1+ 5       0.6166     10.94  |    VQ   |         |         |         |
   1+10       0.6950     11.39  |    VQ   |         |         |         |
   1+15       0.7767     11.85  |     Q   |         |         |         |
   1+20       0.8621     12.40  |      Q  |         |         |         |
   1+25       0.9512     12.93  |      Q  |         |         |         |
   1+30       1.0440     13.48  |      QV |         |         |         |
   1+35       1.1398     13.91  |      Q V|         |         |         |
   1+40       1.2381     14.28  |       Q V         |         |         |
   1+45       1.3425     15.15  |       Q |V        |         |         |
   1+50       1.4561     16.51  |         Q| V      |         |         |
   1+55       1.5827     18.38  |          Q  V     |         |         |
   2+ 0       1.7313     21.57  |          | Q V    |         |         |
   2+ 5       1.9304     28.90  |          |     Q  |         |         |
   2+10       2.2151     41.35  |          |       V |  Q      |         |
   2+15       2.6082     57.08  |          |         |V        | Q       |
   2+20       3.0888     69.79  |          |         |    V    |        Q|
   2+25       3.3889     43.57  |          |         |   Q   V |         |
   2+30       3.6188     33.38  |          |        Q|         V         |
   2+35       3.8107     27.87  |          |    Q    |         |V        |
   2+40       3.9771     24.17  |          |  Q      |         |  V      |
   2+45       4.1226     21.12  |          | Q       |         |   V     |
   2+50       4.2507     18.60  |          Q         |         |    V    |
   2+55       4.3634     16.36  |         Q|         |         |     V   |
   3+ 0       4.4634     14.53  |        Q |         |         |      V  |
   3+ 5       4.5507     12.66  |       Q  |         |         |      V  |
   3+10       4.6238     10.62  |     Q    |         |         |       V |
   3+15       4.6814      8.36  |   Q      |         |         |       V |
   3+20       4.7172      5.21  | Q        |         |         |        V|
   3+25       4.7427      3.70  | Q        |         |         |        V|
   3+30       4.7624      2.85  |Q         |         |         |        V|
   3+35       4.7775      2.20  |Q         |         |         |        V|
   3+40       4.7884      1.57  Q          |         |         |        V|
   3+45       4.7961      1.12  Q          |         |         |        V|
   3+50       4.8014      0.78  Q          |         |         |        V|
   3+55       4.8047      0.48  Q          |         |         |        V|
   4+ 0       4.8069      0.32  Q          |         |         |        V|
   4+ 5       4.8085      0.23  Q          |         |         |        V|
   4+10       4.8097      0.18  Q          |         |         |        V|
   4+15       4.8106      0.14  Q          |         |         |        V|
   4+20       4.8113      0.10  Q          |         |         |        V|
   4+25       4.8119      0.08  Q          |         |         |        V|
   4+30       4.8122      0.05  Q          |         |         |        V|
   4+35       4.8124      0.03  Q          |         |         |        V|
   4+40       4.8125      0.02  Q          |         |         |        V|
   4+45       4.8126      0.01  Q          |         |         |        V|
-------------------------------------------------------------------------
```

- 100 Year 6 Hour Pre-Development Unit Hydrograph – Area 'A'

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        U n i t   H y d r o g r a p h   A n a l y s i s

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        Study date  10/13/16   File Name exa10006.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'A' - 100 YEAR 6 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

        Storm Event Year = 100

        Antecedent Moisture Condition = 3

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 77.0      27.4          1.00     C     0.250     1.000    0.250

Area-averaged adjusted loss rate Fm (In/Hr) =  0.250

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC3)          Yield Fr
    27.39   1.000         77.0      92.2       0.85     0.840

Area-averaged catchment yield fraction, Y =  0.840
Area-averaged low loss fraction, Yb =  0.160
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.321 (hours)
Watershed area =      27.39(Ac.)
Catchment Lag time =   0.256 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 32.5013
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.250(In/Hr)
Average low loss rate fraction (Yb) = 0.160 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.520(In)
Computed peak 30-minute rainfall =  1.090(In)
Specified peak 1-hour rainfall =  1.450(In)
Computed peak 3-hour rainfall =  2.430(In)
Specified peak 6-hour rainfall =  3.360(In)
Specified peak 24-hour rainfall =  5.630(In)


Rainfall depth area reduction factors:
Using a total area of      27.39(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.519(In)
30-minute factor = 0.999    Adjusted rainfall =  1.089(In)
```

```
1-hour factor = 0.999       Adjusted rainfall =  1.448(In)
3-hour factor = 1.000       Adjusted rainfall =  2.430(In)
6-hour factor = 1.000       Adjusted rainfall =  3.360(In)
24-hour factor = 1.000 Adjusted rainfall =  5.630(In)
------------------------------------------------------------------------

                     U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
------------------------------------------------------------------------
               (K =       331.25 (CFS))

  1                2.383                   7.893
  2               10.292                  26.200
  3               27.973                  58.567
  4               57.969                  99.360
  5               70.597                  41.832
  6               78.366                  25.736
  7               84.004                  18.673
  8               88.214                  13.948
  9               91.446                  10.704
 10               93.947                   8.286
 11               95.774                   6.051
 12               97.109                   4.423
 13               97.951                   2.788
 14               98.364                   1.371
 15               98.713                   1.154
 16               99.013                   0.995
 17               99.218                   0.678
 18               99.450                   0.770
 19               99.691                   0.799
 20               99.835                   0.476
 21               99.933                   0.323
 22              100.000                   0.223
------------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.5193              0.5193
  2              0.6915              0.1722
  3              0.8176              0.1261
  4              0.9207              0.1032
  5              1.0096              0.0889
  6              1.0886              0.0790
  7              1.1599              0.0713
  8              1.2255              0.0656
  9              1.2864              0.0609
 10              1.3434              0.0570
 11              1.3972              0.0538
 12              1.4481              0.0510
 13              1.5038              0.0556
 14              1.5572              0.0534
 15              1.6086              0.0514
 16              1.6583              0.0496
 17              1.7063              0.0480
 18              1.7529              0.0466
 19              1.7981              0.0452
 20              1.8421              0.0440
 21              1.8849              0.0428
 22              1.9266              0.0418
 23              1.9674              0.0408
 24              2.0072              0.0398
 25              2.0462              0.0390
 26              2.0843              0.0382
 27              2.1217              0.0374
 28              2.1584              0.0367
 29              2.1944              0.0360
 30              2.2297              0.0353
 31              2.2644              0.0347
 32              2.2985              0.0341
 33              2.3320              0.0336
```

34	2.3651	0.0330
35	2.3976	0.0325
36	2.4296	0.0320
37	2.4609	0.0313
38	2.4918	0.0309
39	2.5223	0.0305
40	2.5523	0.0300
41	2.5819	0.0296
42	2.6112	0.0293
43	2.6401	0.0289
44	2.6686	0.0285
45	2.6968	0.0282
46	2.7247	0.0279
47	2.7522	0.0275
48	2.7795	0.0272
49	2.8064	0.0269
50	2.8330	0.0266
51	2.8594	0.0264
52	2.8855	0.0261
53	2.9113	0.0258
54	2.9368	0.0256
55	2.9621	0.0253
56	2.9872	0.0251
57	3.0120	0.0248
58	3.0366	0.0246
59	3.0610	0.0244
60	3.0851	0.0242
61	3.1091	0.0239
62	3.1328	0.0237
63	3.1563	0.0235
64	3.1797	0.0233
65	3.2028	0.0231
66	3.2258	0.0229
67	3.2485	0.0228
68	3.2711	0.0226
69	3.2935	0.0224
70	3.3157	0.0222
71	3.3378	0.0221
72	3.3597	0.0219

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0219	0.0035	0.0184
2	0.0221	0.0035	0.0185
3	0.0224	0.0036	0.0188
4	0.0226	0.0036	0.0190
5	0.0229	0.0037	0.0193
6	0.0231	0.0037	0.0194
7	0.0235	0.0038	0.0198
8	0.0237	0.0038	0.0199
9	0.0242	0.0039	0.0203
10	0.0244	0.0039	0.0205
11	0.0248	0.0040	0.0209
12	0.0251	0.0040	0.0210
13	0.0256	0.0041	0.0215
14	0.0258	0.0041	0.0217
15	0.0264	0.0042	0.0221
16	0.0266	0.0043	0.0224
17	0.0272	0.0044	0.0229
18	0.0275	0.0044	0.0231
19	0.0282	0.0045	0.0237
20	0.0285	0.0046	0.0240
21	0.0293	0.0047	0.0246
22	0.0296	0.0047	0.0249
23	0.0305	0.0049	0.0256
24	0.0309	0.0049	0.0259
25	0.0320	0.0051	0.0269
26	0.0325	0.0052	0.0273
27	0.0336	0.0054	0.0282

```
      28              0.0341          0.0055              0.0287
      29              0.0353          0.0057              0.0297
      30              0.0360          0.0058              0.0302
      31              0.0374          0.0060              0.0314
      32              0.0382          0.0061              0.0320
      33              0.0398          0.0064              0.0335
      34              0.0408          0.0065              0.0342
      35              0.0428          0.0069              0.0360
      36              0.0440          0.0070              0.0369
      37              0.0466          0.0075              0.0391
      38              0.0480          0.0077              0.0403
      39              0.0514          0.0082              0.0432
      40              0.0534          0.0086              0.0449
      41              0.0510          0.0082              0.0428
      42              0.0538          0.0086              0.0452
      43              0.0609          0.0098              0.0511
      44              0.0656          0.0105              0.0551
      45              0.0790          0.0126              0.0663
      46              0.0889          0.0142              0.0747
      47              0.1261          0.0202              0.1059
      48              0.1722          0.0208              0.1513
      49              0.5193          0.0208              0.4985
      50              0.1032          0.0165              0.0866
      51              0.0713          0.0114              0.0599
      52              0.0570          0.0091              0.0479
      53              0.0556          0.0089              0.0467
      54              0.0496          0.0080              0.0417
      55              0.0452          0.0072              0.0380
      56              0.0418          0.0067              0.0351
      57              0.0390          0.0062              0.0327
      58              0.0367          0.0059              0.0308
      59              0.0347          0.0056              0.0291
      60              0.0330          0.0053              0.0277
      61              0.0313          0.0050              0.0263
      62              0.0300          0.0048              0.0252
      63              0.0289          0.0046              0.0243
      64              0.0279          0.0045              0.0234
      65              0.0269          0.0043              0.0226
      66              0.0261          0.0042              0.0219
      67              0.0253          0.0041              0.0213
      68              0.0246          0.0039              0.0207
      69              0.0239          0.0038              0.0201
      70              0.0233          0.0037              0.0196
      71              0.0228          0.0036              0.0191
      72              0.0222          0.0036              0.0187
     ---------------------------------------------------------------------
     ---------------------------------------------------------------------
     Total soil rain loss =      0.47(In)
     Total effective rainfall =      2.89(In)
     Peak flow rate in flood hydrograph =     69.79(CFS)
     ---------------------------------------------------------------------
     +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                        6 - H O U R    S T O R M
                   R u n o f f      H y d r o g r a p h
     ---------------------------------------------------------------------
                Hydrograph in   5   Minute intervals ((CFS))

     ---------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0       17.5      35.0      52.5      70.0
-------------------------------------------------------------------------
  0+ 5       0.0010      0.15  Q         |         |         |         |
  0+10       0.0053      0.63  Q         |         |         |         |
  0+15       0.0171      1.71  Q         |         |         |         |
  0+20       0.0416      3.56  V Q       |         |         |         |
  0+25       0.0716      4.36  V Q       |         |         |         |
  0+30       0.1053      4.89  V Q       |         |         |         |
  0+35       0.1417      5.29  V  Q      |         |         |         |
  0+40       0.1803      5.61  |V Q      |         |         |         |
  0+45       0.2208      5.87  |V Q      |         |         |         |
  0+50       0.2628      6.10  |V Q      |         |         |         |
  0+55       0.3061      6.29  |V Q      |         |         |         |
```

```
1+ 0       0.3505      6.45  | VQ      |         |         |         |
1+ 5       0.3959      6.59  | VQ      |         |         |         |
1+10       0.4421      6.71  | VQ      |         |         |         |
1+15       0.4890      6.82  | VQ      |         |         |         |
1+20       0.5368      6.94  |  Q      |         |         |         |
1+25       0.5854      7.05  |  VQ     |         |         |         |
1+30       0.6348      7.18  |  VQ     |         |         |         |
1+35       0.6851      7.30  |   Q     |         |         |         |
1+40       0.7363      7.43  |   Q     |         |         |         |
1+45       0.7884      7.56  |   Q     |         |         |         |
1+50       0.8414      7.70  |   QV    |         |         |         |
1+55       0.8953      7.83  |   QV    |         |         |         |
2+ 0       0.9503      7.98  |   QV    |         |         |         |
2+ 5       1.0063      8.13  |   Q V   |         |         |         |
2+10       1.0634      8.30  |   Q V   |         |         |         |
2+15       1.1218      8.48  |   Q V   |         |         |         |
2+20       1.1817      8.69  |   Q  V  |         |         |         |
2+25       1.2428      8.88  |    Q V  |         |         |         |
2+30       1.3055      9.10  |    Q V  |         |         |         |
2+35       1.3697      9.32  |    Q  V |         |         |         |
2+40       1.4356      9.57  |    Q  V |         |         |         |
2+45       1.5033      9.82  |    Q   V|         |         |         |
2+50       1.5729     10.11  |    Q   V|         |         |         |
2+55       1.6446     10.41  |    Q   V|         |         |         |
3+ 0       1.7186     10.75  |     Q   V         |         |         |
3+ 5       1.7951     11.10  |     Q   V         |         |         |
3+10       1.8744     11.52  |     Q   |V        |         |         |
3+15       1.9568     11.96  |     Q   |V        |         |         |
3+20       2.0428     12.49  |      Q  | V       |         |         |
3+25       2.1323     13.00  |      Q  | V       |         |         |
3+30       2.2255     13.53  |      Q  |  V      |         |         |
3+35       2.3214     13.93  |      Q  |   V     |         |         |
3+40       2.4199     14.29  |       Q |   V     |         |         |
3+45       2.5242     15.15  |       Q |    V    |         |         |
3+50       2.6379     16.51  |        Q|     V   |         |         |
3+55       2.7645     18.38  |         Q     V   |         |         |
4+ 0       2.9131     21.57  |         | Q    V  |         |         |
4+ 5       3.1121     28.90  |         |     Q V |         |         |
4+10       3.3969     41.35  |         |         V  Q      |         |
4+15       3.7900     57.08  |         |         | V       | Q       |
4+20       4.2706     69.79  |         |         |    V    |        Q|
4+25       4.5707     43.57  |         |         |   Q  V  |         |
4+30       4.8006     33.38  |         |        Q|       V|         |
4+35       4.9925     27.87  |         |    Q    |        V|         |
4+40       5.1589     24.17  |         |  Q      |         |V        |
4+45       5.3044     21.12  |         | Q       |         | V       |
4+50       5.4325     18.60  |         Q         |         | V       |
4+55       5.5452     16.36  |        Q|         |         |  V      |
5+ 0       5.6452     14.53  |       Q |         |         |   V     |
5+ 5       5.7339     12.87  |      Q  |         |         |   V     |
5+10       5.8131     11.51  |     Q   |         |         |    V    |
5+15       5.8872     10.75  |     Q   |         |         |    V    |
5+20       5.9569     10.12  |    Q    |         |         |     V   |
5+25       6.0225      9.52  |    Q    |         |         |     V   |
5+30       6.0854      9.13  |    Q    |         |         |     V   |
5+35       6.1456      8.75  |   Q     |         |         |      V  |
5+40       6.2025      8.26  |   Q     |         |         |      V  |
5+45       6.2567      7.88  |   Q     |         |         |      V  |
5+50       6.3087      7.54  |   Q     |         |         |       V |
5+55       6.3582      7.20  |   Q     |         |         |       V |
6+ 0       6.4063      6.97  |  Q      |         |         |       V |
6+ 5       6.4519      6.63  |  Q      |         |         |        V|
6+10       6.4930      5.97  |  Q      |         |         |        V|
6+15       6.5256      4.74  | Q       |         |         |        V|
6+20       6.5449      2.80  |Q        |         |         |        V|
6+25       6.5585      1.97  |Q        |         |         |        V|
6+30       6.5684      1.44  Q         |         |         |        V|
6+35       6.5758      1.07  Q         |         |         |        V|
6+40       6.5812      0.78  Q         |         |         |        V|
6+45       6.5851      0.57  Q         |         |         |        V|
6+50       6.5878      0.40  Q         |         |         |        V|
```

```
    6+55       6.5898      0.28  Q         |         |         |        V|
    7+ 0       6.5911      0.19  Q         |         |         |        V|
    7+ 5       6.5920      0.14  Q         |         |         |        V|
    7+10       6.5928      0.11  Q         |         |         |        V|
    7+15       6.5934      0.08  Q         |         |         |        V|
    7+20       6.5938      0.06  Q         |         |         |        V|
    7+25       6.5941      0.05  Q         |         |         |        V|
    7+30       6.5944      0.03  Q         |         |         |        V|
    7+35       6.5945      0.02  Q         |         |         |        V|
    7+40       6.5946      0.01  Q         |         |         |        V|
    7+45       6.5946      0.00  Q         |         |         |         V
--------------------------------------------------------------------------
```

- 100 Year 12 Hour Pre-Development Unit Hydrograph – Area 'A'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/13/16   File Name exa10012.out


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'A' - 100 YEAR 12 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 100

       Antecedent Moisture Condition = 3

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 77.0      27.4          1.00     C     0.250     1.000    0.250

Area-averaged adjusted loss rate Fm (In/Hr) =  0.250

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC3)          Yield Fr
    27.39   1.000         77.0      92.2       0.85     0.840

Area-averaged catchment yield fraction, Y =  0.840
Area-averaged low loss fraction, Yb =  0.160
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.321 (hours)
Watershed area =      27.39(Ac.)
Catchment Lag time =   0.256 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 32.5013
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.250(In/Hr)
Average low loss rate fraction (Yb) = 0.160 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.520(In)
Computed peak 30-minute rainfall =  1.090(In)
Specified peak 1-hour rainfall =  1.450(In)
Computed peak 3-hour rainfall =  2.430(In)
Specified peak 6-hour rainfall =  3.360(In)
Specified peak 24-hour rainfall =  5.630(In)


Rainfall depth area reduction factors:
Using a total area of      27.39(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.519(In)
30-minute factor = 0.999    Adjusted rainfall =  1.089(In)
```

```
1-hour factor = 0.999       Adjusted rainfall =  1.448(In)
3-hour factor = 1.000       Adjusted rainfall =  2.430(In)
6-hour factor = 1.000       Adjusted rainfall =  3.360(In)
24-hour factor = 1.000 Adjusted rainfall =  5.630(In)
------------------------------------------------------------------------

                     U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
------------------------------------------------------------------------
               (K =       331.25 (CFS))

  1                2.383                   7.893
  2               10.292                  26.200
  3               27.973                  58.567
  4               57.969                  99.360
  5               70.597                  41.832
  6               78.366                  25.736
  7               84.004                  18.673
  8               88.214                  13.948
  9               91.446                  10.704
 10               93.947                   8.286
 11               95.774                   6.051
 12               97.109                   4.423
 13               97.951                   2.788
 14               98.364                   1.371
 15               98.713                   1.154
 16               99.013                   0.995
 17               99.218                   0.678
 18               99.450                   0.770
 19               99.691                   0.799
 20               99.835                   0.476
 21               99.933                   0.323
 22              100.000                   0.223
------------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.5193              0.5193
  2              0.6915              0.1722
  3              0.8176              0.1261
  4              0.9207              0.1032
  5              1.0096              0.0889
  6              1.0886              0.0790
  7              1.1599              0.0713
  8              1.2255              0.0656
  9              1.2864              0.0609
 10              1.3434              0.0570
 11              1.3972              0.0538
 12              1.4481              0.0510
 13              1.5038              0.0556
 14              1.5572              0.0534
 15              1.6086              0.0514
 16              1.6583              0.0496
 17              1.7063              0.0480
 18              1.7529              0.0466
 19              1.7981              0.0452
 20              1.8421              0.0440
 21              1.8849              0.0428
 22              1.9266              0.0418
 23              1.9674              0.0408
 24              2.0072              0.0398
 25              2.0462              0.0390
 26              2.0843              0.0382
 27              2.1217              0.0374
 28              2.1584              0.0367
 29              2.1944              0.0360
 30              2.2297              0.0353
 31              2.2644              0.0347
 32              2.2985              0.0341
 33              2.3320              0.0336
```

34	2.3651	0.0330
35	2.3976	0.0325
36	2.4296	0.0320
37	2.4609	0.0313
38	2.4918	0.0309
39	2.5223	0.0305
40	2.5523	0.0300
41	2.5819	0.0296
42	2.6112	0.0293
43	2.6401	0.0289
44	2.6686	0.0285
45	2.6968	0.0282
46	2.7247	0.0279
47	2.7522	0.0275
48	2.7795	0.0272
49	2.8064	0.0269
50	2.8330	0.0266
51	2.8594	0.0264
52	2.8855	0.0261
53	2.9113	0.0258
54	2.9368	0.0256
55	2.9621	0.0253
56	2.9872	0.0251
57	3.0120	0.0248
58	3.0366	0.0246
59	3.0610	0.0244
60	3.0851	0.0242
61	3.1091	0.0239
62	3.1328	0.0237
63	3.1563	0.0235
64	3.1797	0.0233
65	3.2028	0.0231
66	3.2258	0.0229
67	3.2485	0.0228
68	3.2711	0.0226
69	3.2935	0.0224
70	3.3157	0.0222
71	3.3378	0.0221
72	3.3597	0.0219
73	3.3770	0.0173
74	3.3942	0.0172
75	3.4112	0.0170
76	3.4280	0.0169
77	3.4448	0.0167
78	3.4614	0.0166
79	3.4778	0.0165
80	3.4941	0.0163
81	3.5103	0.0162
82	3.5264	0.0161
83	3.5424	0.0160
84	3.5582	0.0158
85	3.5739	0.0157
86	3.5895	0.0156
87	3.6050	0.0155
88	3.6204	0.0154
89	3.6356	0.0153
90	3.6508	0.0152
91	3.6659	0.0151
92	3.6808	0.0149
93	3.6957	0.0148
94	3.7104	0.0147
95	3.7251	0.0146
96	3.7396	0.0146
97	3.7541	0.0145
98	3.7684	0.0144
99	3.7827	0.0143
100	3.7969	0.0142
101	3.8110	0.0141
102	3.8250	0.0140
103	3.8389	0.0139
104	3.8527	0.0138

105	3.8665	0.0138
106	3.8802	0.0137
107	3.8938	0.0136
108	3.9073	0.0135
109	3.9207	0.0134
110	3.9341	0.0134
111	3.9473	0.0133
112	3.9605	0.0132
113	3.9737	0.0131
114	3.9867	0.0131
115	3.9997	0.0130
116	4.0126	0.0129
117	4.0255	0.0128
118	4.0383	0.0128
119	4.0510	0.0127
120	4.0636	0.0126
121	4.0762	0.0126
122	4.0887	0.0125
123	4.1012	0.0124
124	4.1135	0.0124
125	4.1259	0.0123
126	4.1381	0.0123
127	4.1503	0.0122
128	4.1625	0.0121
129	4.1745	0.0121
130	4.1866	0.0120
131	4.1985	0.0120
132	4.2104	0.0119
133	4.2223	0.0118
134	4.2341	0.0118
135	4.2458	0.0117
136	4.2575	0.0117
137	4.2691	0.0116
138	4.2807	0.0116
139	4.2922	0.0115
140	4.3037	0.0115
141	4.3151	0.0114
142	4.3265	0.0114
143	4.3378	0.0113
144	4.3491	0.0113

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0113	0.0018	0.0095
2	0.0113	0.0018	0.0095
3	0.0114	0.0018	0.0096
4	0.0115	0.0018	0.0096
5	0.0116	0.0019	0.0097
6	0.0116	0.0019	0.0098
7	0.0117	0.0019	0.0099
8	0.0118	0.0019	0.0099
9	0.0119	0.0019	0.0100
10	0.0120	0.0019	0.0100
11	0.0121	0.0019	0.0101
12	0.0121	0.0019	0.0102
13	0.0123	0.0020	0.0103
14	0.0123	0.0020	0.0103
15	0.0124	0.0020	0.0105
16	0.0125	0.0020	0.0105
17	0.0126	0.0020	0.0106
18	0.0127	0.0020	0.0107
19	0.0128	0.0021	0.0108
20	0.0129	0.0021	0.0108
21	0.0131	0.0021	0.0110
22	0.0131	0.0021	0.0110
23	0.0133	0.0021	0.0112
24	0.0134	0.0021	0.0112
25	0.0135	0.0022	0.0113
26	0.0136	0.0022	0.0114

27	0.0138	0.0022	0.0116
28	0.0138	0.0022	0.0116
29	0.0140	0.0022	0.0118
30	0.0141	0.0023	0.0118
31	0.0143	0.0023	0.0120
32	0.0144	0.0023	0.0121
33	0.0146	0.0023	0.0122
34	0.0146	0.0023	0.0123
35	0.0148	0.0024	0.0125
36	0.0149	0.0024	0.0126
37	0.0152	0.0024	0.0127
38	0.0153	0.0024	0.0128
39	0.0155	0.0025	0.0130
40	0.0156	0.0025	0.0131
41	0.0158	0.0025	0.0133
42	0.0160	0.0026	0.0134
43	0.0162	0.0026	0.0136
44	0.0163	0.0026	0.0137
45	0.0166	0.0027	0.0139
46	0.0167	0.0027	0.0140
47	0.0170	0.0027	0.0143
48	0.0172	0.0027	0.0144
49	0.0219	0.0035	0.0184
50	0.0221	0.0035	0.0185
51	0.0224	0.0036	0.0188
52	0.0226	0.0036	0.0190
53	0.0229	0.0037	0.0193
54	0.0231	0.0037	0.0194
55	0.0235	0.0038	0.0198
56	0.0237	0.0038	0.0199
57	0.0242	0.0039	0.0203
58	0.0244	0.0039	0.0205
59	0.0248	0.0040	0.0209
60	0.0251	0.0040	0.0210
61	0.0256	0.0041	0.0215
62	0.0258	0.0041	0.0217
63	0.0264	0.0042	0.0221
64	0.0266	0.0043	0.0224
65	0.0272	0.0044	0.0229
66	0.0275	0.0044	0.0231
67	0.0282	0.0045	0.0237
68	0.0285	0.0046	0.0240
69	0.0293	0.0047	0.0246
70	0.0296	0.0047	0.0249
71	0.0305	0.0049	0.0256
72	0.0309	0.0049	0.0259
73	0.0320	0.0051	0.0269
74	0.0325	0.0052	0.0273
75	0.0336	0.0054	0.0282
76	0.0341	0.0055	0.0287
77	0.0353	0.0057	0.0297
78	0.0360	0.0058	0.0302
79	0.0374	0.0060	0.0314
80	0.0382	0.0061	0.0320
81	0.0398	0.0064	0.0335
82	0.0408	0.0065	0.0342
83	0.0428	0.0069	0.0360
84	0.0440	0.0070	0.0369
85	0.0466	0.0075	0.0391
86	0.0480	0.0077	0.0403
87	0.0514	0.0082	0.0432
88	0.0534	0.0086	0.0449
89	0.0510	0.0082	0.0428
90	0.0538	0.0086	0.0452
91	0.0609	0.0098	0.0511
92	0.0656	0.0105	0.0551
93	0.0790	0.0126	0.0663
94	0.0889	0.0142	0.0747
95	0.1261	0.0202	0.1059
96	0.1722	0.0208	0.1513
97	0.5193	0.0208	0.4985

```
       98              0.1032          0.0165              0.0866
       99              0.0713          0.0114              0.0599
      100              0.0570          0.0091              0.0479
      101              0.0556          0.0089              0.0467
      102              0.0496          0.0080              0.0417
      103              0.0452          0.0072              0.0380
      104              0.0418          0.0067              0.0351
      105              0.0390          0.0062              0.0327
      106              0.0367          0.0059              0.0308
      107              0.0347          0.0056              0.0291
      108              0.0330          0.0053              0.0277
      109              0.0313          0.0050              0.0263
      110              0.0300          0.0048              0.0252
      111              0.0289          0.0046              0.0243
      112              0.0279          0.0045              0.0234
      113              0.0269          0.0043              0.0226
      114              0.0261          0.0042              0.0219
      115              0.0253          0.0041              0.0213
      116              0.0246          0.0039              0.0207
      117              0.0239          0.0038              0.0201
      118              0.0233          0.0037              0.0196
      119              0.0228          0.0036              0.0191
      120              0.0222          0.0036              0.0187
      121              0.0173          0.0028              0.0145
      122              0.0169          0.0027              0.0142
      123              0.0165          0.0026              0.0138
      124              0.0161          0.0026              0.0135
      125              0.0157          0.0025              0.0132
      126              0.0154          0.0025              0.0129
      127              0.0151          0.0024              0.0126
      128              0.0147          0.0024              0.0124
      129              0.0145          0.0023              0.0121
      130              0.0142          0.0023              0.0119
      131              0.0139          0.0022              0.0117
      132              0.0137          0.0022              0.0115
      133              0.0134          0.0022              0.0113
      134              0.0132          0.0021              0.0111
      135              0.0130          0.0021              0.0109
      136              0.0128          0.0020              0.0107
      137              0.0126          0.0020              0.0106
      138              0.0124          0.0020              0.0104
      139              0.0122          0.0020              0.0102
      140              0.0120          0.0019              0.0101
      141              0.0118          0.0019              0.0100
      142              0.0117          0.0019              0.0098
      143              0.0115          0.0018              0.0097
      144              0.0114          0.0018              0.0095
     ------------------------------------------------------------------------
     ------------------------------------------------------------------------
     Total soil rain loss =      0.63(In)
     Total effective rainfall =      3.72(In)
     Peak flow rate in flood hydrograph =     69.79(CFS)
     ------------------------------------------------------------------------
     ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                         12 - H O U R    S T O R M
                    R u n o f f      H y d r o g r a p h
     ------------------------------------------------------------------------
                Hydrograph in   5   Minute intervals ((CFS))

     ------------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0       17.5      35.0      52.5      70.0
------------------------------------------------------------------------
  0+ 5       0.0005      0.07  Q         |         |         |         |
  0+10       0.0027      0.32  Q         |         |         |         |
  0+15       0.0088      0.88  Q         |         |         |         |
  0+20       0.0214      1.82  VQ        |         |         |         |
  0+25       0.0367      2.23  VQ        |         |         |         |
  0+30       0.0539      2.49  VQ        |         |         |         |
  0+35       0.0724      2.68  VQ        |         |         |         |
  0+40       0.0919      2.83  VQ        |         |         |         |
  0+45       0.1122      2.95  VQ        |         |         |         |
```

```
0+50       0.1333      3.05  VQ        |         |         |         |
0+55       0.1548      3.13  VQ        |         |         |         |
1+ 0       0.1768      3.20  VQ        |         |         |         |
1+ 5       0.1992      3.24  VQ        |         |         |         |
1+10       0.2218      3.28  |Q        |         |         |         |
1+15       0.2446      3.32  |Q        |         |         |         |
1+20       0.2677      3.35  |Q        |         |         |         |
1+25       0.2910      3.38  |Q        |         |         |         |
1+30       0.3145      3.42  |Q        |         |         |         |
1+35       0.3383      3.45  |Q        |         |         |         |
1+40       0.3622      3.48  |Q        |         |         |         |
1+45       0.3864      3.51  |VQ       |         |         |         |
1+50       0.4108      3.54  |VQ       |         |         |         |
1+55       0.4354      3.57  | Q       |         |         |         |
2+ 0       0.4601      3.60  | Q       |         |         |         |
2+ 5       0.4851      3.63  | Q       |         |         |         |
2+10       0.5103      3.66  | Q       |         |         |         |
2+15       0.5357      3.69  | Q       |         |         |         |
2+20       0.5613      3.72  | Q       |         |         |         |
2+25       0.5872      3.75  | Q       |         |         |         |
2+30       0.6133      3.79  | Q       |         |         |         |
2+35       0.6396      3.82  | QV      |         |         |         |
2+40       0.6661      3.86  | QV      |         |         |         |
2+45       0.6929      3.89  | QV      |         |         |         |
2+50       0.7200      3.93  | QV      |         |         |         |
2+55       0.7473      3.96  | QV      |         |         |         |
3+ 0       0.7748      4.00  | QV      |         |         |         |
3+ 5       0.8027      4.04  | QV      |         |         |         |
3+10       0.8308      4.08  | QV      |         |         |         |
3+15       0.8592      4.12  | Q V     |         |         |         |
3+20       0.8879      4.17  | Q V     |         |         |         |
3+25       0.9169      4.21  | Q V     |         |         |         |
3+30       0.9462      4.26  | Q V     |         |         |         |
3+35       0.9758      4.30  | Q V     |         |         |         |
3+40       1.0058      4.35  | Q V     |         |         |         |
3+45       1.0360      4.40  | Q V     |         |         |         |
3+50       1.0667      4.45  | Q  V    |         |         |         |
3+55       1.0977      4.50  | Q  V    |         |         |         |
4+ 0       1.1290      4.55  | Q  V    |         |         |         |
4+ 5       1.1610      4.64  | Q  V    |         |         |         |
4+10       1.1940      4.79  | Q  V    |         |         |         |
4+15       1.2289      5.07  | Q  V    |         |         |         |
4+20       1.2668      5.50  |  Q V    |         |         |         |
4+25       1.3062      5.72  |  Q  V   |         |         |         |
4+30       1.3468      5.89  |  Q  V   |         |         |         |
4+35       1.3883      6.03  |  Q  V   |         |         |         |
4+40       1.4307      6.15  |  Q  V   |         |         |         |
4+45       1.4738      6.27  |  Q  V   |         |         |         |
4+50       1.5178      6.38  |  Q   V  |         |         |         |
4+55       1.5624      6.48  |  Q   V  |         |         |         |
5+ 0       1.6078      6.59  |  Q   V  |         |         |         |
5+ 5       1.6538      6.68  |  Q   V  |         |         |         |
5+10       1.7005      6.78  |  Q    V |         |         |         |
5+15       1.7479      6.88  |  Q    V |         |         |         |
5+20       1.7960      6.99  |  Q    V |         |         |         |
5+25       1.8448      7.09  |   Q   V |         |         |         |
5+30       1.8944      7.20  |   Q   V |         |         |         |
5+35       1.9448      7.32  |   Q    V|         |         |         |
5+40       1.9961      7.44  |   Q    V|         |         |         |
5+45       2.0482      7.56  |   Q    V|         |         |         |
5+50       2.1012      7.70  |   Q    V|         |         |         |
5+55       2.1551      7.83  |   Q     V         |         |         |
6+ 0       2.2101      7.98  |   Q     V         |         |         |
6+ 5       2.2661      8.13  |   Q     V         |         |         |
6+10       2.3232      8.30  |   Q     V         |         |         |
6+15       2.3816      8.48  |   Q      |V       |         |         |
6+20       2.4415      8.69  |   Q      |V       |         |         |
6+25       2.5026      8.88  |    Q     |V       |         |         |
6+30       2.5653      9.10  |    Q     | V      |         |         |
6+35       2.6295      9.32  |    Q     | V      |         |         |
6+40       2.6954      9.57  |    Q     | V      |         |         |
```

```
 6+45      2.7630      9.82  |    Q    |  V      |         |         |
 6+50      2.8327     10.11  |    Q    |  V      |         |         |
 6+55      2.9043     10.41  |    Q    |  V      |         |         |
 7+ 0      2.9784     10.75  |     Q   |   V     |         |         |
 7+ 5      3.0549     11.10  |     Q   |   V     |         |         |
 7+10      3.1342     11.52  |     Q   |   V     |         |         |
 7+15      3.2166     11.96  |     Q   |    V    |         |         |
 7+20      3.3026     12.49  |      Q  |    V    |         |         |
 7+25      3.3921     13.00  |      Q  |    V    |         |         |
 7+30      3.4853     13.53  |      Q  |     V   |         |         |
 7+35      3.5812     13.93  |      Q  |     V   |         |         |
 7+40      3.6797     14.29  |       Q |      V  |         |         |
 7+45      3.7840     15.15  |       Q |      V  |         |         |
 7+50      3.8977     16.51  |        Q|       V |         |         |
 7+55      4.0243     18.38  |         Q       V |         |         |
 8+ 0      4.1729     21.57  |          | Q      V|         |         |
 8+ 5      4.3719     28.90  |          |     Q   V         |         |
 8+10      4.6567     41.35  |          |          |V Q     |         |
 8+15      5.0498     57.08  |          |          |  V     | Q       |
 8+20      5.5304     69.79  |          |          |     V  |         Q|
 8+25      5.8305     43.57  |          |          |   Q  V |          |
 8+30      6.0604     33.38  |          |         Q|       V|          |
 8+35      6.2523     27.87  |          |    Q     |        V|         |
 8+40      6.4187     24.17  |          |  Q       |         V         |
 8+45      6.5642     21.12  |          | Q        |         V         |
 8+50      6.6923     18.60  |          Q          |         |V        |
 8+55      6.8050     16.36  |         Q|          |         | V       |
 9+ 0      6.9050     14.53  |        Q |          |         | V       |
 9+ 5      6.9937     12.87  |       Q  |          |         | V       |
 9+10      7.0729     11.51  |     Q    |          |         |  V      |
 9+15      7.1470     10.75  |     Q    |          |         |  V      |
 9+20      7.2167     10.12  |    Q     |          |         |   V     |
 9+25      7.2823      9.52  |    Q     |          |         |   V     |
 9+30      7.3451      9.13  |    Q     |          |         |   V     |
 9+35      7.4054      8.75  |   Q      |          |         |   V     |
 9+40      7.4623      8.26  |   Q      |          |         |    V    |
 9+45      7.5165      7.88  |   Q      |          |         |    V    |
 9+50      7.5685      7.54  |   Q      |          |         |    V    |
 9+55      7.6180      7.20  |   Q      |          |         |    V    |
10+ 0      7.6661      6.97  |  Q       |          |         |     V   |
10+ 5      7.7125      6.74  |  Q       |          |         |     V   |
10+10      7.7570      6.46  |  Q       |          |         |     V   |
10+15      7.7988      6.07  |  Q       |          |         |     V   |
10+20      7.8370      5.55  |  Q       |          |         |     V   |
10+25      7.8731      5.25  | Q        |          |         |      V  |
10+30      7.9077      5.02  | Q        |          |         |      V  |
10+35      7.9410      4.83  | Q        |          |         |      V  |
10+40      7.9731      4.67  | Q        |          |         |      V  |
10+45      8.0043      4.52  | Q        |          |         |      V  |
10+50      8.0345      4.39  | Q        |          |         |      V  |
10+55      8.0640      4.28  | Q        |          |         |      V  |
11+ 0      8.0927      4.17  | Q        |          |         |       V |
11+ 5      8.1208      4.08  | Q        |          |         |       V |
11+10      8.1483      3.99  | Q        |          |         |       V |
11+15      8.1752      3.91  | Q        |          |         |       V |
11+20      8.2017      3.84  | Q        |          |         |       V |
11+25      8.2276      3.77  | Q        |          |         |       V |
11+30      8.2531      3.70  | Q        |          |         |       V |
11+35      8.2782      3.64  | Q        |          |         |        V|
11+40      8.3028      3.57  | Q        |          |         |        V|
11+45      8.3270      3.52  | Q        |          |         |        V|
11+50      8.3508      3.46  |Q         |          |         |        V|
11+55      8.3743      3.41  |Q         |          |         |        V|
12+ 0      8.3974      3.36  |Q         |          |         |        V|
12+ 5      8.4197      3.24  |Q         |          |         |        V|
12+10      8.4400      2.94  |Q         |          |         |        V|
12+15      8.4562      2.35  |Q         |          |         |        V|
12+20      8.4657      1.38  Q          |          |         |        V|
12+25      8.4724      0.97  Q          |          |         |        V|
12+30      8.4773      0.71  Q          |          |         |        V|
12+35      8.4809      0.53  Q          |          |         |        V|
```

```
   12+40       8.4835      0.39  Q         |         |         |        V|
   12+45       8.4855      0.28  Q         |         |         |        V|
   12+50       8.4868      0.20  Q         |         |         |        V|
   12+55       8.4878      0.14  Q         |         |         |        V|
   13+ 0       8.4884      0.10  Q         |         |         |        V|
   13+ 5       8.4889      0.07  Q         |         |         |        V|
   13+10       8.4893      0.05  Q         |         |         |        V|
   13+15       8.4896      0.04  Q         |         |         |        V|
   13+20       8.4898      0.03  Q         |         |         |        V|
   13+25       8.4900      0.03  Q         |         |         |        V|
   13+30       8.4901      0.02  Q         |         |         |        V|
   13+35       8.4901      0.01  Q         |         |         |        V|
   13+40       8.4902      0.01  Q         |         |         |        V|
   13+45       8.4902      0.00  Q         |         |         |         V
-------------------------------------------------------------------------
```

- 100 Year 24 Hour Pre-Development Unit Hydrograph – Area 'A'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/13/16   File Name exa10024.out


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------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'A' - 100 YEAR 24 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 100

       Antecedent Moisture Condition = 3

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 77.0      27.4          1.00     C     0.250     1.000    0.250

Area-averaged adjusted loss rate Fm (In/Hr) =  0.250

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC3)          Yield Fr
    27.39   1.000         77.0      92.2       0.85     0.840

Area-averaged catchment yield fraction, Y =  0.840
Area-averaged low loss fraction, Yb =  0.160
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.321 (hours)
Watershed area =      27.39(Ac.)
Catchment Lag time =   0.256 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 32.5013
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.250(In/Hr)
Average low loss rate fraction (Yb) = 0.160 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.520(In)
Computed peak 30-minute rainfall =  1.090(In)
Specified peak 1-hour rainfall =  1.450(In)
Computed peak 3-hour rainfall =  2.430(In)
Specified peak 6-hour rainfall =  3.360(In)
Specified peak 24-hour rainfall =  5.630(In)


Rainfall depth area reduction factors:
Using a total area of      27.39(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.519(In)
30-minute factor = 0.999    Adjusted rainfall =  1.089(In)
```

```
1-hour factor = 0.999       Adjusted rainfall =  1.448(In)
3-hour factor = 1.000       Adjusted rainfall =  2.430(In)
6-hour factor = 1.000       Adjusted rainfall =  3.360(In)
24-hour factor = 1.000 Adjusted rainfall =  5.630(In)
------------------------------------------------------------------------

                     U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
------------------------------------------------------------------------
               (K =       331.25 (CFS))

  1                2.383                   7.893
  2               10.292                  26.200
  3               27.973                  58.567
  4               57.969                  99.360
  5               70.597                  41.832
  6               78.366                  25.736
  7               84.004                  18.673
  8               88.214                  13.948
  9               91.446                  10.704
 10               93.947                   8.286
 11               95.774                   6.051
 12               97.109                   4.423
 13               97.951                   2.788
 14               98.364                   1.371
 15               98.713                   1.154
 16               99.013                   0.995
 17               99.218                   0.678
 18               99.450                   0.770
 19               99.691                   0.799
 20               99.835                   0.476
 21               99.933                   0.323
 22              100.000                   0.223
------------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.5193              0.5193
  2              0.6915              0.1722
  3              0.8176              0.1261
  4              0.9207              0.1032
  5              1.0096              0.0889
  6              1.0886              0.0790
  7              1.1599              0.0713
  8              1.2255              0.0656
  9              1.2864              0.0609
 10              1.3434              0.0570
 11              1.3972              0.0538
 12              1.4481              0.0510
 13              1.5038              0.0556
 14              1.5572              0.0534
 15              1.6086              0.0514
 16              1.6583              0.0496
 17              1.7063              0.0480
 18              1.7529              0.0466
 19              1.7981              0.0452
 20              1.8421              0.0440
 21              1.8849              0.0428
 22              1.9266              0.0418
 23              1.9674              0.0408
 24              2.0072              0.0398
 25              2.0462              0.0390
 26              2.0843              0.0382
 27              2.1217              0.0374
 28              2.1584              0.0367
 29              2.1944              0.0360
 30              2.2297              0.0353
 31              2.2644              0.0347
 32              2.2985              0.0341
 33              2.3320              0.0336
```

34	2.3651	0.0330
35	2.3976	0.0325
36	2.4296	0.0320
37	2.4609	0.0313
38	2.4918	0.0309
39	2.5223	0.0305
40	2.5523	0.0300
41	2.5819	0.0296
42	2.6112	0.0293
43	2.6401	0.0289
44	2.6686	0.0285
45	2.6968	0.0282
46	2.7247	0.0279
47	2.7522	0.0275
48	2.7795	0.0272
49	2.8064	0.0269
50	2.8330	0.0266
51	2.8594	0.0264
52	2.8855	0.0261
53	2.9113	0.0258
54	2.9368	0.0256
55	2.9621	0.0253
56	2.9872	0.0251
57	3.0120	0.0248
58	3.0366	0.0246
59	3.0610	0.0244
60	3.0851	0.0242
61	3.1091	0.0239
62	3.1328	0.0237
63	3.1563	0.0235
64	3.1797	0.0233
65	3.2028	0.0231
66	3.2258	0.0229
67	3.2485	0.0228
68	3.2711	0.0226
69	3.2935	0.0224
70	3.3157	0.0222
71	3.3378	0.0221
72	3.3597	0.0219
73	3.3770	0.0173
74	3.3942	0.0172
75	3.4112	0.0170
76	3.4280	0.0169
77	3.4448	0.0167
78	3.4614	0.0166
79	3.4778	0.0165
80	3.4941	0.0163
81	3.5103	0.0162
82	3.5264	0.0161
83	3.5424	0.0160
84	3.5582	0.0158
85	3.5739	0.0157
86	3.5895	0.0156
87	3.6050	0.0155
88	3.6204	0.0154
89	3.6356	0.0153
90	3.6508	0.0152
91	3.6659	0.0151
92	3.6808	0.0149
93	3.6957	0.0148
94	3.7104	0.0147
95	3.7251	0.0146
96	3.7396	0.0146
97	3.7541	0.0145
98	3.7684	0.0144
99	3.7827	0.0143
100	3.7969	0.0142
101	3.8110	0.0141
102	3.8250	0.0140
103	3.8389	0.0139
104	3.8527	0.0138

105	3.8665	0.0138
106	3.8802	0.0137
107	3.8938	0.0136
108	3.9073	0.0135
109	3.9207	0.0134
110	3.9341	0.0134
111	3.9473	0.0133
112	3.9605	0.0132
113	3.9737	0.0131
114	3.9867	0.0131
115	3.9997	0.0130
116	4.0126	0.0129
117	4.0255	0.0128
118	4.0383	0.0128
119	4.0510	0.0127
120	4.0636	0.0126
121	4.0762	0.0126
122	4.0887	0.0125
123	4.1012	0.0124
124	4.1135	0.0124
125	4.1259	0.0123
126	4.1381	0.0123
127	4.1503	0.0122
128	4.1625	0.0121
129	4.1745	0.0121
130	4.1866	0.0120
131	4.1985	0.0120
132	4.2104	0.0119
133	4.2223	0.0118
134	4.2341	0.0118
135	4.2458	0.0117
136	4.2575	0.0117
137	4.2691	0.0116
138	4.2807	0.0116
139	4.2922	0.0115
140	4.3037	0.0115
141	4.3151	0.0114
142	4.3265	0.0114
143	4.3378	0.0113
144	4.3491	0.0113
145	4.3603	0.0112
146	4.3715	0.0112
147	4.3826	0.0111
148	4.3937	0.0111
149	4.4047	0.0110
150	4.4157	0.0110
151	4.4266	0.0109
152	4.4375	0.0109
153	4.4484	0.0108
154	4.4592	0.0108
155	4.4699	0.0108
156	4.4807	0.0107
157	4.4913	0.0107
158	4.5020	0.0106
159	4.5126	0.0106
160	4.5231	0.0105
161	4.5336	0.0105
162	4.5441	0.0105
163	4.5545	0.0104
164	4.5649	0.0104
165	4.5752	0.0103
166	4.5855	0.0103
167	4.5958	0.0103
168	4.6060	0.0102
169	4.6162	0.0102
170	4.6264	0.0102
171	4.6365	0.0101
172	4.6466	0.0101
173	4.6566	0.0100
174	4.6666	0.0100
175	4.6766	0.0100

176	4.6865	0.0099
177	4.6964	0.0099
178	4.7063	0.0099
179	4.7161	0.0098
180	4.7259	0.0098
181	4.7357	0.0098
182	4.7454	0.0097
183	4.7551	0.0097
184	4.7647	0.0097
185	4.7744	0.0096
186	4.7840	0.0096
187	4.7935	0.0096
188	4.8030	0.0095
189	4.8125	0.0095
190	4.8220	0.0095
191	4.8314	0.0094
192	4.8409	0.0094
193	4.8502	0.0094
194	4.8596	0.0093
195	4.8689	0.0093
196	4.8782	0.0093
197	4.8874	0.0093
198	4.8966	0.0092
199	4.9058	0.0092
200	4.9150	0.0092
201	4.9241	0.0091
202	4.9332	0.0091
203	4.9423	0.0091
204	4.9514	0.0091
205	4.9604	0.0090
206	4.9694	0.0090
207	4.9784	0.0090
208	4.9873	0.0089
209	4.9962	0.0089
210	5.0051	0.0089
211	5.0140	0.0089
212	5.0228	0.0088
213	5.0316	0.0088
214	5.0404	0.0088
215	5.0492	0.0088
216	5.0579	0.0087
217	5.0666	0.0087
218	5.0753	0.0087
219	5.0839	0.0087
220	5.0926	0.0086
221	5.1012	0.0086
222	5.1098	0.0086
223	5.1183	0.0086
224	5.1269	0.0085
225	5.1354	0.0085
226	5.1439	0.0085
227	5.1523	0.0085
228	5.1608	0.0084
229	5.1692	0.0084
230	5.1776	0.0084
231	5.1859	0.0084
232	5.1943	0.0083
233	5.2026	0.0083
234	5.2109	0.0083
235	5.2192	0.0083
236	5.2275	0.0083
237	5.2357	0.0082
238	5.2439	0.0082
239	5.2521	0.0082
240	5.2603	0.0082
241	5.2684	0.0082
242	5.2766	0.0081
243	5.2847	0.0081
244	5.2928	0.0081
245	5.3008	0.0081
246	5.3089	0.0080

247	5.3169	0.0080
248	5.3249	0.0080
249	5.3329	0.0080
250	5.3408	0.0080
251	5.3488	0.0079
252	5.3567	0.0079
253	5.3646	0.0079
254	5.3725	0.0079
255	5.3804	0.0079
256	5.3882	0.0078
257	5.3961	0.0078
258	5.4039	0.0078
259	5.4117	0.0078
260	5.4194	0.0078
261	5.4272	0.0078
262	5.4349	0.0077
263	5.4426	0.0077
264	5.4503	0.0077
265	5.4580	0.0077
266	5.4657	0.0077
267	5.4733	0.0076
268	5.4809	0.0076
269	5.4885	0.0076
270	5.4961	0.0076
271	5.5037	0.0076
272	5.5112	0.0076
273	5.5188	0.0075
274	5.5263	0.0075
275	5.5338	0.0075
276	5.5413	0.0075
277	5.5488	0.0075
278	5.5562	0.0075
279	5.5636	0.0074
280	5.5711	0.0074
281	5.5785	0.0074
282	5.5858	0.0074
283	5.5932	0.0074
284	5.6006	0.0074
285	5.6079	0.0073
286	5.6152	0.0073
287	5.6225	0.0073
288	5.6298	0.0073

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0073	0.0012	0.0061
2	0.0073	0.0012	0.0061
3	0.0073	0.0012	0.0062
4	0.0074	0.0012	0.0062
5	0.0074	0.0012	0.0062
6	0.0074	0.0012	0.0062
7	0.0074	0.0012	0.0062
8	0.0075	0.0012	0.0063
9	0.0075	0.0012	0.0063
10	0.0075	0.0012	0.0063
11	0.0075	0.0012	0.0063
12	0.0076	0.0012	0.0063
13	0.0076	0.0012	0.0064
14	0.0076	0.0012	0.0064
15	0.0076	0.0012	0.0064
16	0.0077	0.0012	0.0064
17	0.0077	0.0012	0.0065
18	0.0077	0.0012	0.0065
19	0.0078	0.0012	0.0065
20	0.0078	0.0012	0.0065
21	0.0078	0.0013	0.0066
22	0.0078	0.0013	0.0066
23	0.0079	0.0013	0.0066
24	0.0079	0.0013	0.0066

25	0.0079	0.0013	0.0067
26	0.0079	0.0013	0.0067
27	0.0080	0.0013	0.0067
28	0.0080	0.0013	0.0067
29	0.0080	0.0013	0.0068
30	0.0081	0.0013	0.0068
31	0.0081	0.0013	0.0068
32	0.0081	0.0013	0.0068
33	0.0082	0.0013	0.0069
34	0.0082	0.0013	0.0069
35	0.0082	0.0013	0.0069
36	0.0083	0.0013	0.0069
37	0.0083	0.0013	0.0070
38	0.0083	0.0013	0.0070
39	0.0084	0.0013	0.0070
40	0.0084	0.0013	0.0070
41	0.0084	0.0014	0.0071
42	0.0085	0.0014	0.0071
43	0.0085	0.0014	0.0071
44	0.0085	0.0014	0.0072
45	0.0086	0.0014	0.0072
46	0.0086	0.0014	0.0072
47	0.0087	0.0014	0.0073
48	0.0087	0.0014	0.0073
49	0.0087	0.0014	0.0073
50	0.0088	0.0014	0.0074
51	0.0088	0.0014	0.0074
52	0.0088	0.0014	0.0074
53	0.0089	0.0014	0.0075
54	0.0089	0.0014	0.0075
55	0.0090	0.0014	0.0075
56	0.0090	0.0014	0.0076
57	0.0091	0.0014	0.0076
58	0.0091	0.0015	0.0076
59	0.0091	0.0015	0.0077
60	0.0092	0.0015	0.0077
61	0.0092	0.0015	0.0077
62	0.0093	0.0015	0.0078
63	0.0093	0.0015	0.0078
64	0.0093	0.0015	0.0078
65	0.0094	0.0015	0.0079
66	0.0094	0.0015	0.0079
67	0.0095	0.0015	0.0080
68	0.0095	0.0015	0.0080
69	0.0096	0.0015	0.0081
70	0.0096	0.0015	0.0081
71	0.0097	0.0016	0.0081
72	0.0097	0.0016	0.0082
73	0.0098	0.0016	0.0082
74	0.0098	0.0016	0.0083
75	0.0099	0.0016	0.0083
76	0.0099	0.0016	0.0083
77	0.0100	0.0016	0.0084
78	0.0100	0.0016	0.0084
79	0.0101	0.0016	0.0085
80	0.0102	0.0016	0.0085
81	0.0102	0.0016	0.0086
82	0.0103	0.0016	0.0086
83	0.0103	0.0017	0.0087
84	0.0104	0.0017	0.0087
85	0.0105	0.0017	0.0088
86	0.0105	0.0017	0.0088
87	0.0106	0.0017	0.0089
88	0.0106	0.0017	0.0089
89	0.0107	0.0017	0.0090
90	0.0108	0.0017	0.0090
91	0.0108	0.0017	0.0091
92	0.0109	0.0017	0.0091
93	0.0110	0.0018	0.0092
94	0.0110	0.0018	0.0093
95	0.0111	0.0018	0.0093

96	0.0112	0.0018	0.0094
97	0.0113	0.0018	0.0095
98	0.0113	0.0018	0.0095
99	0.0114	0.0018	0.0096
100	0.0115	0.0018	0.0096
101	0.0116	0.0019	0.0097
102	0.0116	0.0019	0.0098
103	0.0117	0.0019	0.0099
104	0.0118	0.0019	0.0099
105	0.0119	0.0019	0.0100
106	0.0120	0.0019	0.0100
107	0.0121	0.0019	0.0101
108	0.0121	0.0019	0.0102
109	0.0123	0.0020	0.0103
110	0.0123	0.0020	0.0103
111	0.0124	0.0020	0.0105
112	0.0125	0.0020	0.0105
113	0.0126	0.0020	0.0106
114	0.0127	0.0020	0.0107
115	0.0128	0.0021	0.0108
116	0.0129	0.0021	0.0108
117	0.0131	0.0021	0.0110
118	0.0131	0.0021	0.0110
119	0.0133	0.0021	0.0112
120	0.0134	0.0021	0.0112
121	0.0135	0.0022	0.0113
122	0.0136	0.0022	0.0114
123	0.0138	0.0022	0.0116
124	0.0138	0.0022	0.0116
125	0.0140	0.0022	0.0118
126	0.0141	0.0023	0.0118
127	0.0143	0.0023	0.0120
128	0.0144	0.0023	0.0121
129	0.0146	0.0023	0.0122
130	0.0146	0.0023	0.0123
131	0.0148	0.0024	0.0125
132	0.0149	0.0024	0.0126
133	0.0152	0.0024	0.0127
134	0.0153	0.0024	0.0128
135	0.0155	0.0025	0.0130
136	0.0156	0.0025	0.0131
137	0.0158	0.0025	0.0133
138	0.0160	0.0026	0.0134
139	0.0162	0.0026	0.0136
140	0.0163	0.0026	0.0137
141	0.0166	0.0027	0.0139
142	0.0167	0.0027	0.0140
143	0.0170	0.0027	0.0143
144	0.0172	0.0027	0.0144
145	0.0219	0.0035	0.0184
146	0.0221	0.0035	0.0185
147	0.0224	0.0036	0.0188
148	0.0226	0.0036	0.0190
149	0.0229	0.0037	0.0193
150	0.0231	0.0037	0.0194
151	0.0235	0.0038	0.0198
152	0.0237	0.0038	0.0199
153	0.0242	0.0039	0.0203
154	0.0244	0.0039	0.0205
155	0.0248	0.0040	0.0209
156	0.0251	0.0040	0.0210
157	0.0256	0.0041	0.0215
158	0.0258	0.0041	0.0217
159	0.0264	0.0042	0.0221
160	0.0266	0.0043	0.0224
161	0.0272	0.0044	0.0229
162	0.0275	0.0044	0.0231
163	0.0282	0.0045	0.0237
164	0.0285	0.0046	0.0240
165	0.0293	0.0047	0.0246
166	0.0296	0.0047	0.0249

167	0.0305	0.0049	0.0256
168	0.0309	0.0049	0.0259
169	0.0320	0.0051	0.0269
170	0.0325	0.0052	0.0273
171	0.0336	0.0054	0.0282
172	0.0341	0.0055	0.0287
173	0.0353	0.0057	0.0297
174	0.0360	0.0058	0.0302
175	0.0374	0.0060	0.0314
176	0.0382	0.0061	0.0320
177	0.0398	0.0064	0.0335
178	0.0408	0.0065	0.0342
179	0.0428	0.0069	0.0360
180	0.0440	0.0070	0.0369
181	0.0466	0.0075	0.0391
182	0.0480	0.0077	0.0403
183	0.0514	0.0082	0.0432
184	0.0534	0.0086	0.0449
185	0.0510	0.0082	0.0428
186	0.0538	0.0086	0.0452
187	0.0609	0.0098	0.0511
188	0.0656	0.0105	0.0551
189	0.0790	0.0126	0.0663
190	0.0889	0.0142	0.0747
191	0.1261	0.0202	0.1059
192	0.1722	0.0208	0.1513
193	0.5193	0.0208	0.4985
194	0.1032	0.0165	0.0866
195	0.0713	0.0114	0.0599
196	0.0570	0.0091	0.0479
197	0.0556	0.0089	0.0467
198	0.0496	0.0080	0.0417
199	0.0452	0.0072	0.0380
200	0.0418	0.0067	0.0351
201	0.0390	0.0062	0.0327
202	0.0367	0.0059	0.0308
203	0.0347	0.0056	0.0291
204	0.0330	0.0053	0.0277
205	0.0313	0.0050	0.0263
206	0.0300	0.0048	0.0252
207	0.0289	0.0046	0.0243
208	0.0279	0.0045	0.0234
209	0.0269	0.0043	0.0226
210	0.0261	0.0042	0.0219
211	0.0253	0.0041	0.0213
212	0.0246	0.0039	0.0207
213	0.0239	0.0038	0.0201
214	0.0233	0.0037	0.0196
215	0.0228	0.0036	0.0191
216	0.0222	0.0036	0.0187
217	0.0173	0.0028	0.0145
218	0.0169	0.0027	0.0142
219	0.0165	0.0026	0.0138
220	0.0161	0.0026	0.0135
221	0.0157	0.0025	0.0132
222	0.0154	0.0025	0.0129
223	0.0151	0.0024	0.0126
224	0.0147	0.0024	0.0124
225	0.0145	0.0023	0.0121
226	0.0142	0.0023	0.0119
227	0.0139	0.0022	0.0117
228	0.0137	0.0022	0.0115
229	0.0134	0.0022	0.0113
230	0.0132	0.0021	0.0111
231	0.0130	0.0021	0.0109
232	0.0128	0.0020	0.0107
233	0.0126	0.0020	0.0106
234	0.0124	0.0020	0.0104
235	0.0122	0.0020	0.0102
236	0.0120	0.0019	0.0101
237	0.0118	0.0019	0.0100

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      238              0.0117          0.0019              0.0098
      239              0.0115          0.0018              0.0097
      240              0.0114          0.0018              0.0095
      241              0.0112          0.0018              0.0094
      242              0.0111          0.0018              0.0093
      243              0.0109          0.0018              0.0092
      244              0.0108          0.0017              0.0091
      245              0.0107          0.0017              0.0090
      246              0.0105          0.0017              0.0089
      247              0.0104          0.0017              0.0088
      248              0.0103          0.0017              0.0087
      249              0.0102          0.0016              0.0086
      250              0.0101          0.0016              0.0085
      251              0.0100          0.0016              0.0084
      252              0.0099          0.0016              0.0083
      253              0.0098          0.0016              0.0082
      254              0.0097          0.0015              0.0081
      255              0.0096          0.0015              0.0080
      256              0.0095          0.0015              0.0080
      257              0.0094          0.0015              0.0079
      258              0.0093          0.0015              0.0078
      259              0.0092          0.0015              0.0077
      260              0.0091          0.0015              0.0076
      261              0.0090          0.0014              0.0076
      262              0.0089          0.0014              0.0075
      263              0.0089          0.0014              0.0074
      264              0.0088          0.0014              0.0074
      265              0.0087          0.0014              0.0073
      266              0.0086          0.0014              0.0072
      267              0.0086          0.0014              0.0072
      268              0.0085          0.0014              0.0071
      269              0.0084          0.0013              0.0071
      270              0.0083          0.0013              0.0070
      271              0.0083          0.0013              0.0070
      272              0.0082          0.0013              0.0069
      273              0.0082          0.0013              0.0068
      274              0.0081          0.0013              0.0068
      275              0.0080          0.0013              0.0067
      276              0.0080          0.0013              0.0067
      277              0.0079          0.0013              0.0066
      278              0.0078          0.0013              0.0066
      279              0.0078          0.0012              0.0065
      280              0.0077          0.0012              0.0065
      281              0.0077          0.0012              0.0064
      282              0.0076          0.0012              0.0064
      283              0.0076          0.0012              0.0064
      284              0.0075          0.0012              0.0063
      285              0.0075          0.0012              0.0063
      286              0.0074          0.0012              0.0062
      287              0.0074          0.0012              0.0062
      288              0.0073          0.0012              0.0061
      ------------------------------------------------------------------------
      ------------------------------------------------------------------------
      Total soil rain loss =      0.83(In)
      Total effective rainfall =      4.80(In)
      Peak flow rate in flood hydrograph =     69.79(CFS)
      ------------------------------------------------------------------------
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                         24 - H O U R    S T O R M
                    R u n o f f      H y d r o g r a p h
      ------------------------------------------------------------------------
                Hydrograph in   5   Minute intervals ((CFS))

      ------------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0       17.5      35.0      52.5      70.0
----------------------------------------------------------------------------
  0+ 5       0.0003      0.05  Q         |         |         |         |
  0+10       0.0018      0.21  Q         |         |         |         |
  0+15       0.0057      0.57  Q         |         |         |         |
  0+20       0.0138      1.18  Q         |         |         |         |
  0+25       0.0237      1.44  Q         |         |         |         |
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0+30      0.0347     1.60  Q          |          |          |          |
0+35      0.0465     1.72  Q          |          |          |          |
0+40      0.0590     1.81  VQ         |          |          |          |
0+45      0.0720     1.88  VQ         |          |          |          |
0+50      0.0853     1.94  VQ         |          |          |          |
0+55      0.0990     1.98  VQ         |          |          |          |
1+ 0      0.1128     2.02  VQ         |          |          |          |
1+ 5      0.1269     2.04  VQ         |          |          |          |
1+10      0.1410     2.06  VQ         |          |          |          |
1+15      0.1553     2.07  VQ         |          |          |          |
1+20      0.1696     2.08  VQ         |          |          |          |
1+25      0.1840     2.09  VQ         |          |          |          |
1+30      0.1986     2.11  VQ         |          |          |          |
1+35      0.2131     2.12  VQ         |          |          |          |
1+40      0.2278     2.13  VQ         |          |          |          |
1+45      0.2425     2.14  VQ         |          |          |          |
1+50      0.2573     2.15  VQ         |          |          |          |
1+55      0.2722     2.15  VQ         |          |          |          |
2+ 0      0.2870     2.16  |Q         |          |          |          |
2+ 5      0.3020     2.17  |Q         |          |          |          |
2+10      0.3170     2.18  |Q         |          |          |          |
2+15      0.3321     2.19  |Q         |          |          |          |
2+20      0.3472     2.19  |Q         |          |          |          |
2+25      0.3623     2.20  |Q         |          |          |          |
2+30      0.3776     2.21  |Q         |          |          |          |
2+35      0.3929     2.22  |Q         |          |          |          |
2+40      0.4082     2.23  |Q         |          |          |          |
2+45      0.4236     2.24  |Q         |          |          |          |
2+50      0.4391     2.25  |Q         |          |          |          |
2+55      0.4546     2.25  |Q         |          |          |          |
3+ 0      0.4702     2.26  |Q         |          |          |          |
3+ 5      0.4858     2.27  |Q         |          |          |          |
3+10      0.5015     2.28  |Q         |          |          |          |
3+15      0.5173     2.29  |Q         |          |          |          |
3+20      0.5331     2.30  |Q         |          |          |          |
3+25      0.5490     2.31  |QV        |          |          |          |
3+30      0.5650     2.32  |QV        |          |          |          |
3+35      0.5810     2.33  |QV        |          |          |          |
3+40      0.5971     2.34  |QV        |          |          |          |
3+45      0.6133     2.35  |QV        |          |          |          |
3+50      0.6295     2.36  |QV        |          |          |          |
3+55      0.6458     2.37  |QV        |          |          |          |
4+ 0      0.6621     2.38  |QV        |          |          |          |
4+ 5      0.6786     2.39  |QV        |          |          |          |
4+10      0.6951     2.40  |QV        |          |          |          |
4+15      0.7116     2.41  |QV        |          |          |          |
4+20      0.7283     2.42  |QV        |          |          |          |
4+25      0.7450     2.43  |QV        |          |          |          |
4+30      0.7618     2.44  |QV        |          |          |          |
4+35      0.7786     2.45  |QV        |          |          |          |
4+40      0.7956     2.46  |QV        |          |          |          |
4+45      0.8126     2.47  |QV        |          |          |          |
4+50      0.8297     2.48  |Q V       |          |          |          |
4+55      0.8468     2.49  |Q V       |          |          |          |
5+ 0      0.8641     2.50  |Q V       |          |          |          |
5+ 5      0.8814     2.52  |Q V       |          |          |          |
5+10      0.8988     2.53  |Q V       |          |          |          |
5+15      0.9163     2.54  |Q V       |          |          |          |
5+20      0.9339     2.55  |Q V       |          |          |          |
5+25      0.9515     2.56  |Q V       |          |          |          |
5+30      0.9693     2.58  |Q V       |          |          |          |
5+35      0.9871     2.59  |Q V       |          |          |          |
5+40      1.0050     2.60  |Q V       |          |          |          |
5+45      1.0230     2.61  |Q V       |          |          |          |
5+50      1.0411     2.63  |Q V       |          |          |          |
5+55      1.0593     2.64  |Q V       |          |          |          |
6+ 0      1.0775     2.65  |Q V       |          |          |          |
6+ 5      1.0959     2.67  |Q  V      |          |          |          |
6+10      1.1144     2.68  |Q  V      |          |          |          |
6+15      1.1329     2.69  |Q  V      |          |          |          |
6+20      1.1516     2.71  |Q  V      |          |          |          |
```

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 6+25      1.1703      2.72  |Q  V     |          |          |          |
 6+30      1.1891      2.74  |Q  V     |          |          |          |
 6+35      1.2081      2.75  |Q  V     |          |          |          |
 6+40      1.2271      2.77  |Q  V     |          |          |          |
 6+45      1.2463      2.78  |Q  V     |          |          |          |
 6+50      1.2655      2.80  |Q  V     |          |          |          |
 6+55      1.2849      2.81  |Q  V     |          |          |          |
 7+ 0      1.3044      2.83  |Q  V     |          |          |          |
 7+ 5      1.3239      2.84  |Q  V     |          |          |          |
 7+10      1.3436      2.86  |Q  V     |          |          |          |
 7+15      1.3634      2.87  |Q  V     |          |          |          |
 7+20      1.3833      2.89  |Q   V    |          |          |          |
 7+25      1.4034      2.91  |Q   V    |          |          |          |
 7+30      1.4235      2.93  |Q   V    |          |          |          |
 7+35      1.4438      2.94  |Q   V    |          |          |          |
 7+40      1.4641      2.96  |Q   V    |          |          |          |
 7+45      1.4847      2.98  |Q   V    |          |          |          |
 7+50      1.5053      3.00  |Q   V    |          |          |          |
 7+55      1.5261      3.01  |Q   V    |          |          |          |
 8+ 0      1.5469      3.03  |Q   V    |          |          |          |
 8+ 5      1.5680      3.05  |Q   V    |          |          |          |
 8+10      1.5891      3.07  |Q   V    |          |          |          |
 8+15      1.6104      3.09  |Q   V    |          |          |          |
 8+20      1.6318      3.11  |Q   V    |          |          |          |
 8+25      1.6534      3.13  |Q    V   |          |          |          |
 8+30      1.6751      3.15  |Q    V   |          |          |          |
 8+35      1.6970      3.17  |Q    V   |          |          |          |
 8+40      1.7190      3.20  |Q    V   |          |          |          |
 8+45      1.7411      3.22  |Q    V   |          |          |          |
 8+50      1.7634      3.24  |Q    V   |          |          |          |
 8+55      1.7859      3.26  |Q    V   |          |          |          |
 9+ 0      1.8085      3.28  |Q    V   |          |          |          |
 9+ 5      1.8313      3.31  |Q    V   |          |          |          |
 9+10      1.8542      3.33  |Q    V   |          |          |          |
 9+15      1.8773      3.36  |Q    V   |          |          |          |
 9+20      1.9006      3.38  |Q    V   |          |          |          |
 9+25      1.9241      3.41  |Q     V  |          |          |          |
 9+30      1.9477      3.43  |Q     V  |          |          |          |
 9+35      1.9715      3.46  |Q     V  |          |          |          |
 9+40      1.9955      3.49  |Q     V  |          |          |          |
 9+45      2.0197      3.51  | Q    V  |          |          |          |
 9+50      2.0441      3.54  | Q    V  |          |          |          |
 9+55      2.0687      3.57  | Q    V  |          |          |          |
10+ 0      2.0935      3.60  | Q    V  |          |          |          |
10+ 5      2.1184      3.63  | Q    V  |          |          |          |
10+10      2.1436      3.66  | Q    V  |          |          |          |
10+15      2.1690      3.69  | Q    V  |          |          |          |
10+20      2.1947      3.72  | Q     V |          |          |          |
10+25      2.2205      3.75  | Q     V |          |          |          |
10+30      2.2466      3.79  | Q     V |          |          |          |
10+35      2.2729      3.82  | Q     V |          |          |          |
10+40      2.2995      3.86  | Q     V |          |          |          |
10+45      2.3262      3.89  | Q     V |          |          |          |
10+50      2.3533      3.93  | Q     V |          |          |          |
10+55      2.3806      3.96  | Q     V |          |          |          |
11+ 0      2.4082      4.00  | Q     V |          |          |          |
11+ 5      2.4360      4.04  | Q     V |          |          |          |
11+10      2.4641      4.08  | Q      V|          |          |          |
11+15      2.4925      4.12  | Q      V|          |          |          |
11+20      2.5212      4.17  | Q      V|          |          |          |
11+25      2.5502      4.21  | Q      V|          |          |          |
11+30      2.5795      4.26  | Q      V|          |          |          |
11+35      2.6091      4.30  | Q      V|          |          |          |
11+40      2.6391      4.35  | Q      V|          |          |          |
11+45      2.6694      4.40  | Q      V|          |          |          |
11+50      2.7000      4.45  | Q      V|          |          |          |
11+55      2.7310      4.50  | Q      V|          |          |          |
12+ 0      2.7624      4.55  | Q       V          |          |          |
12+ 5      2.7943      4.64  | Q       V          |          |          |
12+10      2.8273      4.79  | Q       V          |          |          |
12+15      2.8622      5.07  | Q       V          |          |          |
```

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12+20       2.9001      5.50  |  Q      V         |         |         |
12+25       2.9395      5.72  |  Q      V         |         |         |
12+30       2.9801      5.89  |  Q      V         |         |         |
12+35       3.0216      6.03  |  Q      |V        |         |         |
12+40       3.0640      6.15  |  Q      |V        |         |         |
12+45       3.1072      6.27  |  Q      |V        |         |         |
12+50       3.1511      6.38  |  Q      |V        |         |         |
12+55       3.1958      6.48  |  Q      |V        |         |         |
13+ 0       3.2411      6.59  |  Q      |V        |         |         |
13+ 5       3.2871      6.68  |  Q      | V       |         |         |
13+10       3.3338      6.78  |  Q      | V       |         |         |
13+15       3.3812      6.88  |  Q      | V       |         |         |
13+20       3.4293      6.99  |  Q      | V       |         |         |
13+25       3.4782      7.09  |   Q     | V       |         |         |
13+30       3.5278      7.20  |   Q     | V       |         |         |
13+35       3.5782      7.32  |   Q     |  V      |         |         |
13+40       3.6294      7.44  |   Q     |  V      |         |         |
13+45       3.6815      7.56  |   Q     |  V      |         |         |
13+50       3.7345      7.70  |   Q     |  V      |         |         |
13+55       3.7884      7.83  |   Q     |  V      |         |         |
14+ 0       3.8434      7.98  |   Q     |   V     |         |         |
14+ 5       3.8994      8.13  |   Q     |   V     |         |         |
14+10       3.9566      8.30  |   Q     |   V     |         |         |
14+15       4.0150      8.48  |   Q     |   V     |         |         |
14+20       4.0748      8.69  |   Q     |   V     |         |         |
14+25       4.1360      8.88  |    Q    |    V    |         |         |
14+30       4.1986      9.10  |    Q    |    V    |         |         |
14+35       4.2628      9.32  |    Q    |    V    |         |         |
14+40       4.3287      9.57  |    Q    |    V    |         |         |
14+45       4.3964      9.82  |    Q    |     V   |         |         |
14+50       4.4660     10.11  |    Q    |     V   |         |         |
14+55       4.5377     10.41  |    Q    |     V   |         |         |
15+ 0       4.6117     10.75  |     Q   |     V   |         |         |
15+ 5       4.6882     11.10  |     Q   |      V  |         |         |
15+10       4.7675     11.52  |     Q   |      V  |         |         |
15+15       4.8499     11.96  |     Q   |      V  |         |         |
15+20       4.9359     12.49  |      Q  |       V |         |         |
15+25       5.0254     13.00  |      Q  |       V |         |         |
15+30       5.1186     13.53  |      Q  |       V |         |         |
15+35       5.2146     13.93  |      Q  |        V|         |         |
15+40       5.3130     14.29  |       Q |        V|         |         |
15+45       5.4173     15.15  |       Q |        V|         |         |
15+50       5.5310     16.51  |        Q|         V         |         |
15+55       5.6576     18.38  |         Q         V         |         |
16+ 0       5.8062     21.57  |         | Q       |V        |         |
16+ 5       6.0052     28.90  |         |    Q    |V        |         |
16+10       6.2900     41.35  |         |         | VQ      |         |
16+15       6.6831     57.08  |         |         |   V     | Q       |
16+20       7.1637     69.79  |         |         |     V   |        Q|
16+25       7.4638     43.57  |         |         |   Q  V  |         |
16+30       7.6937     33.38  |         |         Q|       V |         |
16+35       7.8856     27.87  |         |    Q    |       V |         |
16+40       8.0520     24.17  |         |  Q      |        V|         |
16+45       8.1975     21.12  |         | Q       |        V|         |
16+50       8.3256     18.60  |         Q         |         V         |
16+55       8.4383     16.36  |        Q|         |         V         |
17+ 0       8.5383     14.53  |       Q |         |         |V        |
17+ 5       8.6270     12.87  |      Q  |         |         |V        |
17+10       8.7063     11.51  |     Q   |         |         |V        |
17+15       8.7803     10.75  |     Q   |         |         | V       |
17+20       8.8500     10.12  |    Q    |         |         | V       |
17+25       8.9156      9.52  |    Q    |         |         | V       |
17+30       8.9785      9.13  |    Q    |         |         | V       |
17+35       9.0387      8.75  |   Q     |         |         |  V      |
17+40       9.0956      8.26  |   Q     |         |         |  V      |
17+45       9.1499      7.88  |   Q     |         |         |  V      |
17+50       9.2018      7.54  |   Q     |         |         |  V      |
17+55       9.2514      7.20  |   Q     |         |         |  V      |
18+ 0       9.2994      6.97  |  Q      |         |         |  V      |
18+ 5       9.3458      6.74  |  Q      |         |         |   V     |
18+10       9.3903      6.46  |  Q      |         |         |   V     |
```

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18+15       9.4321      6.07  |  Q       |          |          |   V      |
18+20       9.4703      5.55  |  Q       |          |          |   V      |
18+25       9.5065      5.25  | Q        |          |          |   V      |
18+30       9.5410      5.02  | Q        |          |          |   V      |
18+35       9.5743      4.83  | Q        |          |          |   V      |
18+40       9.6065      4.67  | Q        |          |          |    V     |
18+45       9.6376      4.52  | Q        |          |          |    V     |
18+50       9.6679      4.39  | Q        |          |          |    V     |
18+55       9.6973      4.28  | Q        |          |          |    V     |
19+ 0       9.7260      4.17  | Q        |          |          |    V     |
19+ 5       9.7541      4.08  | Q        |          |          |    V     |
19+10       9.7816      3.99  | Q        |          |          |    V     |
19+15       9.8086      3.91  | Q        |          |          |    V     |
19+20       9.8350      3.84  | Q        |          |          |    V     |
19+25       9.8610      3.77  | Q        |          |          |     V    |
19+30       9.8865      3.70  | Q        |          |          |     V    |
19+35       9.9115      3.64  | Q        |          |          |     V    |
19+40       9.9361      3.57  | Q        |          |          |     V    |
19+45       9.9603      3.52  | Q        |          |          |     V    |
19+50       9.9842      3.46  |Q         |          |          |     V    |
19+55      10.0076      3.41  |Q         |          |          |     V    |
20+ 0      10.0308      3.36  |Q         |          |          |     V    |
20+ 5      10.0536      3.31  |Q         |          |          |     V    |
20+10      10.0760      3.26  |Q         |          |          |     V    |
20+15      10.0982      3.22  |Q         |          |          |     V    |
20+20      10.1201      3.17  |Q         |          |          |     V    |
20+25      10.1416      3.13  |Q         |          |          |      V   |
20+30      10.1629      3.09  |Q         |          |          |      V   |
20+35      10.1840      3.05  |Q         |          |          |      V   |
20+40      10.2047      3.02  |Q         |          |          |      V   |
20+45      10.2252      2.98  |Q         |          |          |      V   |
20+50      10.2455      2.94  |Q         |          |          |      V   |
20+55      10.2655      2.91  |Q         |          |          |      V   |
21+ 0      10.2853      2.87  |Q         |          |          |      V   |
21+ 5      10.3049      2.84  |Q         |          |          |      V   |
21+10      10.3243      2.81  |Q         |          |          |      V   |
21+15      10.3434      2.78  |Q         |          |          |      V   |
21+20      10.3624      2.75  |Q         |          |          |      V   |
21+25      10.3811      2.72  |Q         |          |          |      V   |
21+30      10.3997      2.69  |Q         |          |          |       V  |
21+35      10.4180      2.67  |Q         |          |          |       V  |
21+40      10.4362      2.64  |Q         |          |          |       V  |
21+45      10.4542      2.61  |Q         |          |          |       V  |
21+50      10.4720      2.59  |Q         |          |          |       V  |
21+55      10.4897      2.56  |Q         |          |          |       V  |
22+ 0      10.5072      2.54  |Q         |          |          |       V  |
22+ 5      10.5245      2.52  |Q         |          |          |       V  |
22+10      10.5416      2.49  |Q         |          |          |       V  |
22+15      10.5587      2.47  |Q         |          |          |       V  |
22+20      10.5755      2.45  |Q         |          |          |       V  |
22+25      10.5922      2.43  |Q         |          |          |       V  |
22+30      10.6088      2.41  |Q         |          |          |       V  |
22+35      10.6252      2.39  |Q         |          |          |       V  |
22+40      10.6415      2.37  |Q         |          |          |       V  |
22+45      10.6577      2.35  |Q         |          |          |       V  |
22+50      10.6737      2.33  |Q         |          |          |        V |
22+55      10.6896      2.31  |Q         |          |          |        V |
23+ 0      10.7053      2.29  |Q         |          |          |        V |
23+ 5      10.7210      2.27  |Q         |          |          |        V |
23+10      10.7365      2.25  |Q         |          |          |        V |
23+15      10.7519      2.24  |Q         |          |          |        V |
23+20      10.7672      2.22  |Q         |          |          |        V |
23+25      10.7823      2.20  |Q         |          |          |        V |
23+30      10.7974      2.19  |Q         |          |          |        V |
23+35      10.8123      2.17  |Q         |          |          |        V |
23+40      10.8272      2.15  |Q         |          |          |        V |
23+45      10.8419      2.14  |Q         |          |          |        V |
23+50      10.8565      2.12  |Q         |          |          |        V |
23+55      10.8711      2.11  |Q         |          |          |        V |
24+ 0      10.8855      2.09  |Q         |          |          |        V |
24+ 5      10.8995      2.03  |Q         |          |          |        V |
```

```
  24+10      10.9123      1.86  |Q        |         |         |        V|
  24+15      10.9225      1.49  Q         |         |         |        V|
  24+20      10.9285      0.87  Q         |         |         |        V|
  24+25      10.9327      0.61  Q         |         |         |        V|
  24+30      10.9358      0.45  Q         |         |         |        V|
  24+35      10.9381      0.33  Q         |         |         |        V|
  24+40      10.9398      0.24  Q         |         |         |        V|
  24+45      10.9410      0.18  Q         |         |         |        V|
  24+50      10.9419      0.13  Q         |         |         |        V|
  24+55      10.9425      0.09  Q         |         |         |        V|
  25+ 0      10.9429      0.06  Q         |         |         |        V|
  25+ 5      10.9432      0.04  Q         |         |         |        V|
  25+10      10.9434      0.03  Q         |         |         |        V|
  25+15      10.9436      0.03  Q         |         |         |        V|
  25+20      10.9437      0.02  Q         |         |         |        V|
  25+25      10.9438      0.02  Q         |         |         |        V|
  25+30      10.9439      0.01  Q         |         |         |        V|
  25+35      10.9440      0.01  Q         |         |         |        V|
  25+40      10.9440      0.00  Q         |         |         |        V|
  25+45      10.9440      0.00  Q         |         |         |         V
-------------------------------------------------------------------------
```

- 2 Year 3 Hour Post-Development Unit Hydrograph – Area 'A'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/03/16   File Name PRA00203.out


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------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'A' - 2 YEAR 3 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 2

       Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 70.6      27.4          1.00     C     0.250     0.581    0.145

Area-averaged adjusted loss rate Fm (In/Hr) =  0.145

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
    15.91   0.581         70.6      51.7       9.33     0.002
    11.48   0.419         98.0      98.0       0.20     0.890

Area-averaged catchment yield fraction, Y =  0.374
Area-averaged low loss fraction, Yb =  0.626
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.246 (hours)
Watershed area =      27.39(Ac.)
Catchment Lag time =   0.197 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 42.2926
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.145(In/Hr)
Average low loss rate fraction (Yb) = 0.626 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.190(In)
Computed peak 30-minute rainfall =  0.400(In)
Specified peak 1-hour rainfall =  0.530(In)
Computed peak 3-hour rainfall =  0.890(In)
Specified peak 6-hour rainfall =  1.220(In)
Specified peak 24-hour rainfall =  2.050(In)


Rainfall depth area reduction factors:
Using a total area of      27.39(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.190(In)
```

```
30-minute factor = 0.999    Adjusted rainfall =  0.399(In)
1-hour factor = 0.999       Adjusted rainfall =  0.529(In)
3-hour factor = 1.000       Adjusted rainfall =  0.890(In)
6-hour factor = 1.000       Adjusted rainfall =  1.220(In)
24-hour factor = 1.000 Adjusted rainfall =  2.050(In)
------------------------------------------------------------------------

                     U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
------------------------------------------------------------------------
               (K =      331.25 (CFS))

  1                3.384                  11.210
  2               16.590                  43.745
  3               51.005                 113.997
  4               70.977                  66.157
  5               80.535                  31.661
  6               86.857                  20.941
  7               91.307                  14.739
  8               94.464                  10.458
  9               96.562                   6.951
 10               97.850                   4.267
 11               98.423                   1.898
 12               98.861                   1.450
 13               99.172                   1.030
 14               99.468                   0.979
 15               99.750                   0.935
 16               99.905                   0.514
 17              100.000                   0.314
------------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.1898               0.1898
  2              0.2531               0.0633
  3              0.2995               0.0464
  4              0.3376               0.0380
  5              0.3703               0.0328
  6              0.3995               0.0291
  7              0.4253               0.0258
  8              0.4490               0.0237
  9              0.4710               0.0220
 10              0.4916               0.0206
 11              0.5109               0.0194
 12              0.5293               0.0184
 13              0.5497               0.0204
 14              0.5693               0.0196
 15              0.5882               0.0189
 16              0.6064               0.0182
 17              0.6241               0.0176
 18              0.6412               0.0171
 19              0.6578               0.0166
 20              0.6739               0.0161
 21              0.6897               0.0157
 22              0.7050               0.0153
 23              0.7200               0.0150
 24              0.7346               0.0146
 25              0.7489               0.0143
 26              0.7629               0.0140
 27              0.7767               0.0137
 28              0.7902               0.0135
 29              0.8034               0.0132
 30              0.8164               0.0130
 31              0.8291               0.0128
 32              0.8417               0.0125
 33              0.8540               0.0123
 34              0.8661               0.0121
 35              0.8781               0.0120
 36              0.8899               0.0118
------------------------------------------------------------------------
```

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0118	0.0074	0.0044
2	0.0120	0.0075	0.0045
3	0.0123	0.0077	0.0046
4	0.0125	0.0079	0.0047
5	0.0130	0.0081	0.0049
6	0.0132	0.0083	0.0049
7	0.0137	0.0086	0.0051
8	0.0140	0.0088	0.0052
9	0.0146	0.0092	0.0055
10	0.0150	0.0094	0.0056
11	0.0157	0.0098	0.0059
12	0.0161	0.0101	0.0060
13	0.0171	0.0107	0.0064
14	0.0176	0.0110	0.0066
15	0.0189	0.0118	0.0071
16	0.0196	0.0121	0.0075
17	0.0184	0.0115	0.0069
18	0.0194	0.0121	0.0073
19	0.0220	0.0121	0.0099
20	0.0237	0.0121	0.0116
21	0.0291	0.0121	0.0170
22	0.0328	0.0121	0.0207
23	0.0464	0.0121	0.0343
24	0.0633	0.0121	0.0512
25	0.1898	0.0121	0.1777
26	0.0380	0.0121	0.0259
27	0.0258	0.0121	0.0137
28	0.0206	0.0121	0.0085
29	0.0204	0.0121	0.0083
30	0.0182	0.0114	0.0068
31	0.0166	0.0104	0.0062
32	0.0153	0.0096	0.0057
33	0.0143	0.0090	0.0054
34	0.0135	0.0084	0.0050
35	0.0128	0.0080	0.0048
36	0.0121	0.0076	0.0045

Total soil rain loss = 0.37(In)
Total effective rainfall = 0.52(In)
Peak flow rate in flood hydrograph = 26.97(CFS)

3 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	7.5	15.0	22.5	30.0
0+ 5	0.0003	0.05	Q				
0+10	0.0020	0.24	Q				
0+15	0.0072	0.75	Q				
0+20	0.0144	1.05	VQ				
0+25	0.0228	1.22	VQ				
0+30	0.0321	1.34	|Q				
0+35	0.0420	1.44	|Q				
0+40	0.0525	1.52	|VQ				
0+45	0.0635	1.60	| Q				
0+50	0.0750	1.66	| Q				
0+55	0.0869	1.73	| Q				
1+ 0	0.0992	1.79	| QV				
1+ 5	0.1120	1.86	| QV				
1+10	0.1253	1.93	| Q V				
1+15	0.1392	2.02	| Q V				
1+20	0.1538	2.11	| Q V				

```
   1+25       0.1690      2.21  | Q  V    |         |         |         |
   1+30       0.1848      2.29  |  Q  V   |         |         |         |
   1+35       0.2009      2.33  |  Q  V   |         |         |         |
   1+40       0.2181      2.50  |  Q   V  |         |         |         |
   1+45       0.2385      2.96  |  Q    V |         |         |         |
   1+50       0.2635      3.62  |   Q   V |         |         |         |
   1+55       0.2963      4.76  |     Q  V|         |         |         |
   2+ 0       0.3406      6.44  |        Q|V        |         |         |
   2+ 5       0.4139     10.64  |         |  VQ     |         |         |
   2+10       0.5351     17.59  |         |       V |  Q      |         |
   2+15       0.7208     26.97  |         |         |   V     |    Q    |
   2+20       0.8475     18.40  |         |         |   Q   V |         |
   2+25       0.9259     11.38  |         |    Q    |         |V        |
   2+30       0.9827      8.25  |         |  Q      |         |  V      |
   2+35       1.0269      6.41  |        Q|         |         |   V     |
   2+40       1.0617      5.06  |      Q  |         |         |    V    |
   2+45       1.0891      3.98  |     Q   |         |         |     V   |
   2+50       1.1108      3.15  |   Q     |         |         |      V  |
   2+55       1.1281      2.51  |  Q      |         |         |       V |
   3+ 0       1.1435      2.23  | Q       |         |         |       V |
   3+ 5       1.1570      1.97  | Q       |         |         |       V |
   3+10       1.1683      1.65  | Q       |         |         |        V|
   3+15       1.1755      1.04  |Q        |         |         |        V|
   3+20       1.1797      0.62  Q         |         |         |        V|
   3+25       1.1825      0.40  Q         |         |         |        V|
   3+30       1.1841      0.23  Q         |         |         |        V|
   3+35       1.1851      0.15  Q         |         |         |        V|
   3+40       1.1858      0.09  Q         |         |         |        V|
   3+45       1.1862      0.06  Q         |         |         |        V|
   3+50       1.1864      0.04  Q         |         |         |        V|
   3+55       1.1866      0.03  Q         |         |         |        V|
   4+ 0       1.1868      0.02  Q         |         |         |        V|
   4+ 5       1.1868      0.01  Q         |         |         |        V|
   4+10       1.1869      0.01  Q         |         |         |        V|
   4+15       1.1869      0.00  Q         |         |         |        V|
   4+20       1.1869      0.00  Q         |         |         |         V
-------------------------------------------------------------------------
```

- 2 Year 6 Hour Post-Development Unit Hydrograph – Area 'A'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/03/16   File Name PRA00206.out

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------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996
Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'A' - 2 YEAR 6 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------
       Storm Event Year = 2

       Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********

SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 70.6      27.4          1.00     C     0.250     0.581    0.145

Area-averaged adjusted loss rate Fm (In/Hr) =  0.145

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)           Yield Fr
    15.91   0.581         70.6      51.7       9.33     0.002
    11.48   0.419         98.0      98.0       0.20     0.890

Area-averaged catchment yield fraction, Y =  0.374
Area-averaged low loss fraction, Yb =  0.626
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.246 (hours)
Watershed area =      27.39(Ac.)
Catchment Lag time =   0.197 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 42.2926
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.145(In/Hr)
Average low loss rate fraction (Yb) = 0.626 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.190(In)
Computed peak 30-minute rainfall =  0.400(In)
Specified peak 1-hour rainfall =  0.530(In)
Computed peak 3-hour rainfall =  0.890(In)
Specified peak 6-hour rainfall =  1.220(In)
Specified peak 24-hour rainfall =  2.050(In)


Rainfall depth area reduction factors:
Using a total area of      27.39(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.190(In)
30-minute factor = 0.999    Adjusted rainfall =  0.399(In)
1-hour factor = 0.999       Adjusted rainfall =  0.529(In)
3-hour factor = 1.000       Adjusted rainfall =  0.890(In)
6-hour factor = 1.000       Adjusted rainfall =  1.220(In)
24-hour factor = 1.000 Adjusted rainfall =  2.050(In)
```

```
---------------------------------------------------------------------

                    U n i t  H y d r o g r a p h
+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
---------------------------------------------------------------------
               (K =       331.25 (CFS))

  1                3.384                  11.210
  2               16.590                  43.745
  3               51.005                 113.997
  4               70.977                  66.157
  5               80.535                  31.661
  6               86.857                  20.941
  7               91.307                  14.739
  8               94.464                  10.458
  9               96.562                   6.951
 10               97.850                   4.267
 11               98.423                   1.898
 12               98.861                   1.450
 13               99.172                   1.030
 14               99.468                   0.979
 15               99.750                   0.935
 16               99.905                   0.514
 17              100.000                   0.314
---------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.1898              0.1898
  2              0.2531              0.0633
  3              0.2995              0.0464
  4              0.3376              0.0380
  5              0.3703              0.0328
  6              0.3995              0.0291
  7              0.4253              0.0258
  8              0.4490              0.0237
  9              0.4710              0.0220
 10              0.4916              0.0206
 11              0.5109              0.0194
 12              0.5293              0.0184
 13              0.5497              0.0204
 14              0.5693              0.0196
 15              0.5882              0.0189
 16              0.6064              0.0182
 17              0.6241              0.0176
 18              0.6412              0.0171
 19              0.6578              0.0166
 20              0.6739              0.0161
 21              0.6897              0.0157
 22              0.7050              0.0153
 23              0.7200              0.0150
 24              0.7346              0.0146
 25              0.7489              0.0143
 26              0.7629              0.0140
 27              0.7767              0.0137
 28              0.7902              0.0135
 29              0.8034              0.0132
 30              0.8164              0.0130
 31              0.8291              0.0128
 32              0.8417              0.0125
 33              0.8540              0.0123
 34              0.8661              0.0121
 35              0.8781              0.0120
 36              0.8899              0.0118
 37              0.9010              0.0112
 38              0.9120              0.0110
 39              0.9229              0.0108
 40              0.9336              0.0107
 41              0.9441              0.0106
 42              0.9545              0.0104
```

43	0.9648	0.0103
44	0.9750	0.0101
45	0.9850	0.0100
46	0.9949	0.0099
47	1.0047	0.0098
48	1.0143	0.0097
49	1.0239	0.0096
50	1.0334	0.0095
51	1.0427	0.0094
52	1.0520	0.0093
53	1.0611	0.0092
54	1.0702	0.0091
55	1.0792	0.0090
56	1.0881	0.0089
57	1.0969	0.0088
58	1.1056	0.0087
59	1.1142	0.0086
60	1.1228	0.0086
61	1.1312	0.0085
62	1.1396	0.0084
63	1.1480	0.0083
64	1.1562	0.0083
65	1.1644	0.0082
66	1.1725	0.0081
67	1.1806	0.0081
68	1.1886	0.0080
69	1.1965	0.0079
70	1.2044	0.0079
71	1.2122	0.0078
72	1.2199	0.0077

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0077	0.0048	0.0029
2	0.0078	0.0049	0.0029
3	0.0079	0.0050	0.0030
4	0.0080	0.0050	0.0030
5	0.0081	0.0051	0.0030
6	0.0082	0.0051	0.0031
7	0.0083	0.0052	0.0031
8	0.0084	0.0053	0.0031
9	0.0086	0.0054	0.0032
10	0.0086	0.0054	0.0032
11	0.0088	0.0055	0.0033
12	0.0089	0.0056	0.0033
13	0.0091	0.0057	0.0034
14	0.0092	0.0057	0.0034
15	0.0094	0.0059	0.0035
16	0.0095	0.0059	0.0035
17	0.0097	0.0061	0.0036
18	0.0098	0.0061	0.0037
19	0.0100	0.0063	0.0037
20	0.0101	0.0064	0.0038
21	0.0104	0.0065	0.0039
22	0.0106	0.0066	0.0039
23	0.0108	0.0068	0.0041
24	0.0110	0.0069	0.0041
25	0.0118	0.0074	0.0044
26	0.0120	0.0075	0.0045
27	0.0123	0.0077	0.0046
28	0.0125	0.0079	0.0047
29	0.0130	0.0081	0.0049
30	0.0132	0.0083	0.0049
31	0.0137	0.0086	0.0051
32	0.0140	0.0088	0.0052
33	0.0146	0.0092	0.0055
34	0.0150	0.0094	0.0056
35	0.0157	0.0098	0.0059
36	0.0161	0.0101	0.0060

```
       37              0.0171          0.0107              0.0064
       38              0.0176          0.0110              0.0066
       39              0.0189          0.0118              0.0071
       40              0.0196          0.0121              0.0075
       41              0.0184          0.0115              0.0069
       42              0.0194          0.0121              0.0073
       43              0.0220          0.0121              0.0099
       44              0.0237          0.0121              0.0116
       45              0.0291          0.0121              0.0170
       46              0.0328          0.0121              0.0207
       47              0.0464          0.0121              0.0343
       48              0.0633          0.0121              0.0512
       49              0.1898          0.0121              0.1777
       50              0.0380          0.0121              0.0259
       51              0.0258          0.0121              0.0137
       52              0.0206          0.0121              0.0085
       53              0.0204          0.0121              0.0083
       54              0.0182          0.0114              0.0068
       55              0.0166          0.0104              0.0062
       56              0.0153          0.0096              0.0057
       57              0.0143          0.0090              0.0054
       58              0.0135          0.0084              0.0050
       59              0.0128          0.0080              0.0048
       60              0.0121          0.0076              0.0045
       61              0.0112          0.0070              0.0042
       62              0.0107          0.0067              0.0040
       63              0.0103          0.0064              0.0038
       64              0.0099          0.0062              0.0037
       65              0.0096          0.0060              0.0036
       66              0.0093          0.0058              0.0035
       67              0.0090          0.0056              0.0034
       68              0.0087          0.0055              0.0033
       69              0.0085          0.0053              0.0032
       70              0.0083          0.0052              0.0031
       71              0.0081          0.0050              0.0030
       72              0.0079          0.0049              0.0029
      ------------------------------------------------------------------------
      ------------------------------------------------------------------------
      Total soil rain loss =      0.58(In)
      Total effective rainfall =      0.64(In)
      Peak flow rate in flood hydrograph =     26.97(CFS)
      ------------------------------------------------------------------------
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                         6 - H O U R    S T O R M
                     R u n o f f      H y d r o g r a p h
      ------------------------------------------------------------------------
                  Hydrograph in   5   Minute intervals ((CFS))

      ------------------------------------------------------------------------
 Time(h+m) Volume Ac.Ft   Q(CFS)  0        7.5      15.0      22.5      30.0
 ------------------------------------------------------------------------
   0+ 5       0.0002      0.03  Q         |         |         |         |
   0+10       0.0013      0.16  Q         |         |         |         |
   0+15       0.0047      0.49  Q         |         |         |         |
   0+20       0.0094      0.69  Q         |         |         |         |
   0+25       0.0148      0.79  VQ        |         |         |         |
   0+30       0.0207      0.86  VQ        |         |         |         |
   0+35       0.0270      0.91  VQ        |         |         |         |
   0+40       0.0336      0.95  VQ        |         |         |         |
   0+45       0.0403      0.98  |Q        |         |         |         |
   0+50       0.0473      1.01  |Q        |         |         |         |
   0+55       0.0544      1.03  |Q        |         |         |         |
   1+ 0       0.0615      1.05  |Q        |         |         |         |
   1+ 5       0.0689      1.06  |Q        |         |         |         |
   1+10       0.0763      1.08  |QV       |         |         |         |
   1+15       0.0839      1.10  |QV       |         |         |         |
   1+20       0.0916      1.12  |QV       |         |         |         |
   1+25       0.0994      1.14  |QV       |         |         |         |
   1+30       0.1074      1.15  |QV       |         |         |         |
   1+35       0.1155      1.17  |Q V      |         |         |         |
   1+40       0.1237      1.19  |Q V      |         |         |         |
```

```
   1+45       0.1320      1.21  |Q V      |         |         |         |
   1+50       0.1405      1.24  |Q V      |         |         |         |
   1+55       0.1492      1.26  |Q  V     |         |         |         |
   2+ 0       0.1581      1.28  |Q  V     |         |         |         |
   2+ 5       0.1671      1.31  |Q  V     |         |         |         |
   2+10       0.1764      1.35  |Q  V     |         |         |         |
   2+15       0.1860      1.40  |Q   V    |         |         |         |
   2+20       0.1959      1.44  |Q   V    |         |         |         |
   2+25       0.2061      1.48  |Q   V    |         |         |         |
   2+30       0.2165      1.51  | Q  V    |         |         |         |
   2+35       0.2272      1.56  | Q   V   |         |         |         |
   2+40       0.2382      1.60  | Q   V   |         |         |         |
   2+45       0.2495      1.65  | Q   V   |         |         |         |
   2+50       0.2612      1.69  | Q    V  |         |         |         |
   2+55       0.2732      1.75  | Q    V  |         |         |         |
   3+ 0       0.2856      1.80  | Q    V  |         |         |         |
   3+ 5       0.2985      1.87  | Q     V |         |         |         |
   3+10       0.3119      1.94  | Q     V |         |         |         |
   3+15       0.3258      2.02  | Q     V |         |         |         |
   3+20       0.3404      2.11  | Q      V|         |         |         |
   3+25       0.3556      2.21  | Q      V|         |         |         |
   3+30       0.3714      2.29  |  Q      V         |         |         |
   3+35       0.3875      2.33  |  Q      V         |         |         |
   3+40       0.4047      2.50  |  Q      |V        |         |         |
   3+45       0.4251      2.96  |  Q      |V        |         |         |
   3+50       0.4501      3.62  |   Q     | V       |         |         |
   3+55       0.4829      4.76  |     Q   |  V      |         |         |
   4+ 0       0.5272      6.44  |       Q |   V     |         |         |
   4+ 5       0.6005     10.64  |         |   Q V   |         |         |
   4+10       0.7217     17.59  |         |        V|  Q      |         |
   4+15       0.9074     26.97  |         |         |   V     |    Q    |
   4+20       1.0341     18.40  |         |         |   Q   V |         |
   4+25       1.1125     11.38  |         |    Q    |        V|         |
   4+30       1.1693      8.25  |         Q         |         |V        |
   4+35       1.2135      6.41  |       Q |         |         |  V      |
   4+40       1.2483      5.06  |     Q   |         |         |   V     |
   4+45       1.2757      3.98  |    Q    |         |         |   V     |
   4+50       1.2974      3.15  |   Q     |         |         |    V    |
   4+55       1.3147      2.51  |  Q      |         |         |    V    |
   5+ 0       1.3301      2.23  | Q       |         |         |     V   |
   5+ 5       1.3439      2.01  | Q       |         |         |     V   |
   5+10       1.3568      1.87  | Q       |         |         |     V   |
   5+15       1.3688      1.73  | Q       |         |         |      V  |
   5+20       1.3795      1.56  | Q       |         |         |      V  |
   5+25       1.3894      1.44  |Q        |         |         |      V  |
   5+30       1.3985      1.32  |Q        |         |         |       V |
   5+35       1.4071      1.26  |Q        |         |         |       V |
   5+40       1.4155      1.21  |Q        |         |         |       V |
   5+45       1.4235      1.17  |Q        |         |         |       V |
   5+50       1.4313      1.13  |Q        |         |         |       V |
   5+55       1.4388      1.09  |Q        |         |         |        V|
   6+ 0       1.4461      1.06  |Q        |         |         |        V|
   6+ 5       1.4530      1.00  |Q        |         |         |        V|
   6+10       1.4589      0.85  |Q        |         |         |        V|
   6+15       1.4623      0.50  Q         |         |         |        V|
   6+20       1.4644      0.30  Q         |         |         |        V|
   6+25       1.4657      0.20  Q         |         |         |        V|
   6+30       1.4667      0.13  Q         |         |         |        V|
   6+35       1.4673      0.09  Q         |         |         |        V|
   6+40       1.4677      0.06  Q         |         |         |        V|
   6+45       1.4679      0.04  Q         |         |         |        V|
   6+50       1.4681      0.02  Q         |         |         |        V|
   6+55       1.4682      0.02  Q         |         |         |        V|
   7+ 0       1.4683      0.01  Q         |         |         |        V|
   7+ 5       1.4683      0.01  Q         |         |         |        V|
   7+10       1.4684      0.01  Q         |         |         |        V|
   7+15       1.4684      0.00  Q         |         |         |        V|
   7+20       1.4684      0.00  Q         |         |         |        V|
-------------------------------------------------------------------------
```

- 2 Year 12 Hour Post-Development Unit Hydrograph – Area 'A'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/03/16   File Name PRA00212.out


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------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'A' - 2 YEAR 12 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 2

       Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 70.6      27.4          1.00     C     0.250     0.581    0.145

Area-averaged adjusted loss rate Fm (In/Hr) =  0.145

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
    15.91   0.581         70.6      51.7       9.33     0.002
    11.48   0.419         98.0      98.0       0.20     0.890

Area-averaged catchment yield fraction, Y =  0.374
Area-averaged low loss fraction, Yb =  0.626
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.246 (hours)
Watershed area =      27.39(Ac.)
Catchment Lag time =   0.197 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 42.2926
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.145(In/Hr)
Average low loss rate fraction (Yb) = 0.626 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.190(In)
Computed peak 30-minute rainfall =  0.400(In)
Specified peak 1-hour rainfall =  0.530(In)
Computed peak 3-hour rainfall =  0.890(In)
Specified peak 6-hour rainfall =  1.220(In)
Specified peak 24-hour rainfall =  2.050(In)


Rainfall depth area reduction factors:
Using a total area of      27.39(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.190(In)
```

```
30-minute factor = 0.999    Adjusted rainfall =  0.399(In)
1-hour factor = 0.999       Adjusted rainfall =  0.529(In)
3-hour factor = 1.000       Adjusted rainfall =  0.890(In)
6-hour factor = 1.000       Adjusted rainfall =  1.220(In)
24-hour factor = 1.000 Adjusted rainfall =  2.050(In)
------------------------------------------------------------------------

                      U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
------------------------------------------------------------------------
               (K =      331.25 (CFS))

  1                3.384                 11.210
  2               16.590                 43.745
  3               51.005                113.997
  4               70.977                 66.157
  5               80.535                 31.661
  6               86.857                 20.941
  7               91.307                 14.739
  8               94.464                 10.458
  9               96.562                  6.951
 10               97.850                  4.267
 11               98.423                  1.898
 12               98.861                  1.450
 13               99.172                  1.030
 14               99.468                  0.979
 15               99.750                  0.935
 16               99.905                  0.514
 17              100.000                  0.314
------------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.1898              0.1898
  2              0.2531              0.0633
  3              0.2995              0.0464
  4              0.3376              0.0380
  5              0.3703              0.0328
  6              0.3995              0.0291
  7              0.4253              0.0258
  8              0.4490              0.0237
  9              0.4710              0.0220
 10              0.4916              0.0206
 11              0.5109              0.0194
 12              0.5293              0.0184
 13              0.5497              0.0204
 14              0.5693              0.0196
 15              0.5882              0.0189
 16              0.6064              0.0182
 17              0.6241              0.0176
 18              0.6412              0.0171
 19              0.6578              0.0166
 20              0.6739              0.0161
 21              0.6897              0.0157
 22              0.7050              0.0153
 23              0.7200              0.0150
 24              0.7346              0.0146
 25              0.7489              0.0143
 26              0.7629              0.0140
 27              0.7767              0.0137
 28              0.7902              0.0135
 29              0.8034              0.0132
 30              0.8164              0.0130
 31              0.8291              0.0128
 32              0.8417              0.0125
 33              0.8540              0.0123
 34              0.8661              0.0121
 35              0.8781              0.0120
 36              0.8899              0.0118
 37              0.9010              0.0112
```

38	0.9120	0.0110
39	0.9229	0.0108
40	0.9336	0.0107
41	0.9441	0.0106
42	0.9545	0.0104
43	0.9648	0.0103
44	0.9750	0.0101
45	0.9850	0.0100
46	0.9949	0.0099
47	1.0047	0.0098
48	1.0143	0.0097
49	1.0239	0.0096
50	1.0334	0.0095
51	1.0427	0.0094
52	1.0520	0.0093
53	1.0611	0.0092
54	1.0702	0.0091
55	1.0792	0.0090
56	1.0881	0.0089
57	1.0969	0.0088
58	1.1056	0.0087
59	1.1142	0.0086
60	1.1228	0.0086
61	1.1312	0.0085
62	1.1396	0.0084
63	1.1480	0.0083
64	1.1562	0.0083
65	1.1644	0.0082
66	1.1725	0.0081
67	1.1806	0.0081
68	1.1886	0.0080
69	1.1965	0.0079
70	1.2044	0.0079
71	1.2122	0.0078
72	1.2199	0.0077
73	1.2262	0.0063
74	1.2325	0.0063
75	1.2387	0.0062
76	1.2448	0.0062
77	1.2509	0.0061
78	1.2570	0.0061
79	1.2630	0.0060
80	1.2690	0.0060
81	1.2749	0.0059
82	1.2808	0.0059
83	1.2866	0.0058
84	1.2924	0.0058
85	1.2981	0.0057
86	1.3038	0.0057
87	1.3095	0.0057
88	1.3151	0.0056
89	1.3207	0.0056
90	1.3262	0.0055
91	1.3317	0.0055
92	1.3372	0.0055
93	1.3426	0.0054
94	1.3480	0.0054
95	1.3533	0.0054
96	1.3586	0.0053
97	1.3639	0.0053
98	1.3692	0.0052
99	1.3744	0.0052
100	1.3796	0.0052
101	1.3847	0.0051
102	1.3898	0.0051
103	1.3949	0.0051
104	1.4000	0.0051
105	1.4050	0.0050
106	1.4100	0.0050
107	1.4149	0.0050
108	1.4199	0.0049

109	1.4248	0.0049
110	1.4297	0.0049
111	1.4345	0.0049
112	1.4393	0.0048
113	1.4441	0.0048
114	1.4489	0.0048
115	1.4537	0.0047
116	1.4584	0.0047
117	1.4631	0.0047
118	1.4677	0.0047
119	1.4724	0.0046
120	1.4770	0.0046
121	1.4816	0.0046
122	1.4862	0.0046
123	1.4907	0.0045
124	1.4953	0.0045
125	1.4998	0.0045
126	1.5042	0.0045
127	1.5087	0.0045
128	1.5131	0.0044
129	1.5176	0.0044
130	1.5219	0.0044
131	1.5263	0.0044
132	1.5307	0.0044
133	1.5350	0.0043
134	1.5393	0.0043
135	1.5436	0.0043
136	1.5479	0.0043
137	1.5521	0.0043
138	1.5564	0.0042
139	1.5606	0.0042
140	1.5648	0.0042
141	1.5689	0.0042
142	1.5731	0.0042
143	1.5772	0.0041
144	1.5814	0.0041

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0041	0.0026	0.0015
2	0.0041	0.0026	0.0015
3	0.0042	0.0026	0.0016
4	0.0042	0.0026	0.0016
5	0.0042	0.0027	0.0016
6	0.0043	0.0027	0.0016
7	0.0043	0.0027	0.0016
8	0.0043	0.0027	0.0016
9	0.0044	0.0027	0.0016
10	0.0044	0.0027	0.0016
11	0.0044	0.0028	0.0017
12	0.0044	0.0028	0.0017
13	0.0045	0.0028	0.0017
14	0.0045	0.0028	0.0017
15	0.0045	0.0028	0.0017
16	0.0046	0.0029	0.0017
17	0.0046	0.0029	0.0017
18	0.0046	0.0029	0.0017
19	0.0047	0.0029	0.0018
20	0.0047	0.0030	0.0018
21	0.0048	0.0030	0.0018
22	0.0048	0.0030	0.0018
23	0.0049	0.0030	0.0018
24	0.0049	0.0031	0.0018
25	0.0049	0.0031	0.0018
26	0.0050	0.0031	0.0019
27	0.0050	0.0031	0.0019
28	0.0051	0.0032	0.0019
29	0.0051	0.0032	0.0019
30	0.0051	0.0032	0.0019

31	0.0052	0.0033	0.0019
32	0.0052	0.0033	0.0020
33	0.0053	0.0033	0.0020
34	0.0054	0.0034	0.0020
35	0.0054	0.0034	0.0020
36	0.0055	0.0034	0.0020
37	0.0055	0.0035	0.0021
38	0.0056	0.0035	0.0021
39	0.0057	0.0035	0.0021
40	0.0057	0.0036	0.0021
41	0.0058	0.0036	0.0022
42	0.0058	0.0036	0.0022
43	0.0059	0.0037	0.0022
44	0.0060	0.0037	0.0022
45	0.0061	0.0038	0.0023
46	0.0061	0.0038	0.0023
47	0.0062	0.0039	0.0023
48	0.0063	0.0039	0.0023
49	0.0077	0.0048	0.0029
50	0.0078	0.0049	0.0029
51	0.0079	0.0050	0.0030
52	0.0080	0.0050	0.0030
53	0.0081	0.0051	0.0030
54	0.0082	0.0051	0.0031
55	0.0083	0.0052	0.0031
56	0.0084	0.0053	0.0031
57	0.0086	0.0054	0.0032
58	0.0086	0.0054	0.0032
59	0.0088	0.0055	0.0033
60	0.0089	0.0056	0.0033
61	0.0091	0.0057	0.0034
62	0.0092	0.0057	0.0034
63	0.0094	0.0059	0.0035
64	0.0095	0.0059	0.0035
65	0.0097	0.0061	0.0036
66	0.0098	0.0061	0.0037
67	0.0100	0.0063	0.0037
68	0.0101	0.0064	0.0038
69	0.0104	0.0065	0.0039
70	0.0106	0.0066	0.0039
71	0.0108	0.0068	0.0041
72	0.0110	0.0069	0.0041
73	0.0118	0.0074	0.0044
74	0.0120	0.0075	0.0045
75	0.0123	0.0077	0.0046
76	0.0125	0.0079	0.0047
77	0.0130	0.0081	0.0049
78	0.0132	0.0083	0.0049
79	0.0137	0.0086	0.0051
80	0.0140	0.0088	0.0052
81	0.0146	0.0092	0.0055
82	0.0150	0.0094	0.0056
83	0.0157	0.0098	0.0059
84	0.0161	0.0101	0.0060
85	0.0171	0.0107	0.0064
86	0.0176	0.0110	0.0066
87	0.0189	0.0118	0.0071
88	0.0196	0.0121	0.0075
89	0.0184	0.0115	0.0069
90	0.0194	0.0121	0.0073
91	0.0220	0.0121	0.0099
92	0.0237	0.0121	0.0116
93	0.0291	0.0121	0.0170
94	0.0328	0.0121	0.0207
95	0.0464	0.0121	0.0343
96	0.0633	0.0121	0.0512
97	0.1898	0.0121	0.1777
98	0.0380	0.0121	0.0259
99	0.0258	0.0121	0.0137
100	0.0206	0.0121	0.0085
101	0.0204	0.0121	0.0083

```
      102              0.0182           0.0114              0.0068
      103              0.0166           0.0104              0.0062
      104              0.0153           0.0096              0.0057
      105              0.0143           0.0090              0.0054
      106              0.0135           0.0084              0.0050
      107              0.0128           0.0080              0.0048
      108              0.0121           0.0076              0.0045
      109              0.0112           0.0070              0.0042
      110              0.0107           0.0067              0.0040
      111              0.0103           0.0064              0.0038
      112              0.0099           0.0062              0.0037
      113              0.0096           0.0060              0.0036
      114              0.0093           0.0058              0.0035
      115              0.0090           0.0056              0.0034
      116              0.0087           0.0055              0.0033
      117              0.0085           0.0053              0.0032
      118              0.0083           0.0052              0.0031
      119              0.0081           0.0050              0.0030
      120              0.0079           0.0049              0.0029
      121              0.0063           0.0040              0.0024
      122              0.0062           0.0039              0.0023
      123              0.0060           0.0038              0.0022
      124              0.0059           0.0037              0.0022
      125              0.0057           0.0036              0.0021
      126              0.0056           0.0035              0.0021
      127              0.0055           0.0034              0.0021
      128              0.0054           0.0034              0.0020
      129              0.0053           0.0033              0.0020
      130              0.0052           0.0032              0.0019
      131              0.0051           0.0032              0.0019
      132              0.0050           0.0031              0.0019
      133              0.0049           0.0031              0.0018
      134              0.0048           0.0030              0.0018
      135              0.0047           0.0030              0.0018
      136              0.0047           0.0029              0.0017
      137              0.0046           0.0029              0.0017
      138              0.0045           0.0028              0.0017
      139              0.0045           0.0028              0.0017
      140              0.0044           0.0028              0.0016
      141              0.0043           0.0027              0.0016
      142              0.0043           0.0027              0.0016
      143              0.0042           0.0026              0.0016
      144              0.0042           0.0026              0.0016
      ------------------------------------------------------------------------
      ------------------------------------------------------------------------
      Total soil rain loss =      0.80(In)
      Total effective rainfall =      0.78(In)
      Peak flow rate in flood hydrograph =     26.97(CFS)
      ------------------------------------------------------------------------
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          12 - H O U R    S T O R M
                     R u n o f f      H y d r o g r a p h
      ------------------------------------------------------------------------
                  Hydrograph in   5   Minute intervals ((CFS))

      ------------------------------------------------------------------------
 Time(h+m) Volume Ac.Ft   Q(CFS)  0        7.5      15.0      22.5      30.0
 ------------------------------------------------------------------------
   0+ 5       0.0001      0.02  Q         |         |         |         |
   0+10       0.0007      0.08  Q         |         |         |         |
   0+15       0.0025      0.26  Q         |         |         |         |
   0+20       0.0050      0.36  Q         |         |         |         |
   0+25       0.0079      0.42  Q         |         |         |         |
   0+30       0.0110      0.45  Q         |         |         |         |
   0+35       0.0142      0.48  Q         |         |         |         |
   0+40       0.0177      0.50  Q         |         |         |         |
   0+45       0.0212      0.51  Q         |         |         |         |
   0+50       0.0247      0.52  Q         |         |         |         |
   0+55       0.0284      0.53  Q         |         |         |         |
   1+ 0       0.0320      0.53  Q         |         |         |         |
   1+ 5       0.0357      0.54  Q         |         |         |         |
```

```
1+10       0.0395      0.54  Q          |          |          |          |
1+15       0.0432      0.55  Q          |          |          |          |
1+20       0.0471      0.55  QV         |          |          |          |
1+25       0.0509      0.56  QV         |          |          |          |
1+30       0.0548      0.56  QV         |          |          |          |
1+35       0.0587      0.57  QV         |          |          |          |
1+40       0.0626      0.57  QV         |          |          |          |
1+45       0.0666      0.58  QV         |          |          |          |
1+50       0.0706      0.58  QV         |          |          |          |
1+55       0.0746      0.58  QV         |          |          |          |
2+ 0       0.0787      0.59  QV         |          |          |          |
2+ 5       0.0827      0.59  QV         |          |          |          |
2+10       0.0869      0.60  QV         |          |          |          |
2+15       0.0910      0.60  Q V        |          |          |          |
2+20       0.0952      0.61  Q V        |          |          |          |
2+25       0.0995      0.62  Q V        |          |          |          |
2+30       0.1038      0.62  Q V        |          |          |          |
2+35       0.1081      0.63  Q V        |          |          |          |
2+40       0.1124      0.63  Q V        |          |          |          |
2+45       0.1168      0.64  Q V        |          |          |          |
2+50       0.1212      0.64  Q V        |          |          |          |
2+55       0.1257      0.65  Q V        |          |          |          |
3+ 0       0.1302      0.66  Q V        |          |          |          |
3+ 5       0.1348      0.66  Q  V       |          |          |          |
3+10       0.1394      0.67  Q  V       |          |          |          |
3+15       0.1441      0.68  Q  V       |          |          |          |
3+20       0.1488      0.68  Q  V       |          |          |          |
3+25       0.1536      0.69  Q  V       |          |          |          |
3+30       0.1584      0.70  Q  V       |          |          |          |
3+35       0.1632      0.71  Q  V       |          |          |          |
3+40       0.1681      0.71  Q  V       |          |          |          |
3+45       0.1731      0.72  Q  V       |          |          |          |
3+50       0.1781      0.73  Q   V      |          |          |          |
3+55       0.1832      0.74  Q   V      |          |          |          |
4+ 0       0.1884      0.75  Q   V      |          |          |          |
4+ 5       0.1936      0.76  |Q  V      |          |          |          |
4+10       0.1991      0.79  |Q  V      |          |          |          |
4+15       0.2051      0.86  |Q  V      |          |          |          |
4+20       0.2113      0.91  |Q  V      |          |          |          |
4+25       0.2177      0.93  |Q  V      |          |          |          |
4+30       0.2243      0.96  |Q   V     |          |          |          |
4+35       0.2310      0.98  |Q   V     |          |          |          |
4+40       0.2379      0.99  |Q   V     |          |          |          |
4+45       0.2448      1.01  |Q   V     |          |          |          |
4+50       0.2519      1.02  |Q   V     |          |          |          |
4+55       0.2591      1.04  |Q   V     |          |          |          |
5+ 0       0.2663      1.05  |Q   V     |          |          |          |
5+ 5       0.2737      1.07  |Q    V    |          |          |          |
5+10       0.2812      1.09  |Q    V    |          |          |          |
5+15       0.2887      1.10  |Q    V    |          |          |          |
5+20       0.2964      1.12  |Q    V    |          |          |          |
5+25       0.3043      1.14  |Q    V    |          |          |          |
5+30       0.3122      1.15  |Q     V   |          |          |          |
5+35       0.3203      1.17  |Q     V   |          |          |          |
5+40       0.3285      1.19  |Q     V   |          |          |          |
5+45       0.3369      1.21  |Q     V   |          |          |          |
5+50       0.3454      1.24  |Q     V   |          |          |          |
5+55       0.3541      1.26  |Q     V   |          |          |          |
6+ 0       0.3629      1.28  |Q      V  |          |          |          |
6+ 5       0.3720      1.31  |Q      V  |          |          |          |
6+10       0.3812      1.35  |Q      V  |          |          |          |
6+15       0.3908      1.40  |Q      V  |          |          |          |
6+20       0.4007      1.44  |Q       V |          |          |          |
6+25       0.4109      1.48  |Q       V |          |          |          |
6+30       0.4213      1.51  | Q      V |          |          |          |
6+35       0.4320      1.56  | Q      V |          |          |          |
6+40       0.4431      1.60  | Q      V |          |          |          |
6+45       0.4544      1.65  | Q       V|          |          |          |
6+50       0.4660      1.69  | Q       V|          |          |          |
6+55       0.4781      1.75  | Q       V|          |          |          |
7+ 0       0.4905      1.80  | Q       |V          |          |          |
```

```
 7+ 5      0.5034     1.87  | Q       |V        |         |         |
 7+10      0.5167     1.94  | Q       |V        |         |         |
 7+15      0.5307     2.02  | Q       |V        |         |         |
 7+20      0.5452     2.11  | Q       | V       |         |         |
 7+25      0.5605     2.21  | Q       | V       |         |         |
 7+30      0.5763     2.29  |  Q      | V       |         |         |
 7+35      0.5923     2.33  |  Q      |  V      |         |         |
 7+40      0.6096     2.50  |  Q      |  V      |         |         |
 7+45      0.6300     2.96  |  Q      |   V     |         |         |
 7+50      0.6549     3.62  |   Q     |   V     |         |         |
 7+55      0.6877     4.76  |     Q   |    V    |         |         |
 8+ 0      0.7321     6.44  |       Q |     V   |         |         |
 8+ 5      0.8054    10.64  |         |   Q   V |         |         |
 8+10      0.9265    17.59  |         |         V  Q      |         |
 8+15      1.1123    26.97  |         |         |    V    |    Q    |
 8+20      1.2390    18.40  |         |         |   Q  V  |         |
 8+25      1.3174    11.38  |         |    Q    |        V|         |
 8+30      1.3742     8.25  |         Q         |         V         |
 8+35      1.4183     6.41  |       Q |         |         |V        |
 8+40      1.4532     5.06  |     Q   |         |         | V       |
 8+45      1.4806     3.98  |    Q    |         |         |  V      |
 8+50      1.5023     3.15  |   Q     |         |         |  V      |
 8+55      1.5196     2.51  |  Q      |         |         |   V     |
 9+ 0      1.5349     2.23  | Q       |         |         |   V     |
 9+ 5      1.5488     2.01  | Q       |         |         |   V     |
 9+10      1.5617     1.87  | Q       |         |         |    V    |
 9+15      1.5736     1.73  | Q       |         |         |    V    |
 9+20      1.5844     1.56  | Q       |         |         |    V    |
 9+25      1.5943     1.44  |Q        |         |         |    V    |
 9+30      1.6033     1.32  |Q        |         |         |     V   |
 9+35      1.6120     1.26  |Q        |         |         |     V   |
 9+40      1.6203     1.21  |Q        |         |         |     V   |
 9+45      1.6284     1.17  |Q        |         |         |     V   |
 9+50      1.6361     1.13  |Q        |         |         |     V   |
 9+55      1.6437     1.09  |Q        |         |         |      V  |
10+ 0      1.6510     1.06  |Q        |         |         |      V  |
10+ 5      1.6581     1.03  |Q        |         |         |      V  |
10+10      1.6648     0.98  |Q        |         |         |      V  |
10+15      1.6710     0.90  |Q        |         |         |      V  |
10+20      1.6767     0.84  |Q        |         |         |      V  |
10+25      1.6823     0.80  |Q        |         |         |      V  |
10+30      1.6876     0.77  |Q        |         |         |      V  |
10+35      1.6927     0.75  Q         |         |         |       V |
10+40      1.6977     0.73  Q         |         |         |       V |
10+45      1.7026     0.71  Q         |         |         |       V |
10+50      1.7074     0.69  Q         |         |         |       V |
10+55      1.7120     0.67  Q         |         |         |       V |
11+ 0      1.7165     0.66  Q         |         |         |       V |
11+ 5      1.7210     0.65  Q         |         |         |       V |
11+10      1.7254     0.63  Q         |         |         |       V |
11+15      1.7296     0.62  Q         |         |         |       V |
11+20      1.7338     0.61  Q         |         |         |        V|
11+25      1.7380     0.60  Q         |         |         |        V|
11+30      1.7420     0.59  Q         |         |         |        V|
11+35      1.7460     0.58  Q         |         |         |        V|
11+40      1.7500     0.57  Q         |         |         |        V|
11+45      1.7539     0.56  Q         |         |         |        V|
11+50      1.7577     0.55  Q         |         |         |        V|
11+55      1.7614     0.55  Q         |         |         |        V|
12+ 0      1.7651     0.54  Q         |         |         |        V|
12+ 5      1.7687     0.51  Q         |         |         |        V|
12+10      1.7717     0.44  Q         |         |         |        V|
12+15      1.7735     0.26  Q         |         |         |        V|
12+20      1.7745     0.15  Q         |         |         |        V|
12+25      1.7753     0.10  Q         |         |         |        V|
12+30      1.7757     0.07  Q         |         |         |        V|
12+35      1.7760     0.05  Q         |         |         |        V|
12+40      1.7762     0.03  Q         |         |         |        V|
12+45      1.7764     0.02  Q         |         |         |        V|
12+50      1.7765     0.01  Q         |         |         |        V|
12+55      1.7765     0.01  Q         |         |         |        V|
```

```
   13+ 0       1.7765      0.01  Q         |         |         |        V|
   13+ 5       1.7766      0.00  Q         |         |         |        V|
   13+10       1.7766      0.00  Q         |         |         |        V|
   13+15       1.7766      0.00  Q         |         |         |        V|
   13+20       1.7766      0.00  Q         |         |         |         V
------------------------------------------------------------------------
```

- 2 Year 24 Hour Post-Development Unit Hydrograph – Area 'A'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/13/16   File Name pra00224.out


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------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'A' - 2 YEAR 24 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 2

       Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 70.6      27.4          1.00     C     0.250     0.581    0.145

Area-averaged adjusted loss rate Fm (In/Hr) =  0.145

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
    15.91   0.581         70.6      51.7       9.33     0.002
    11.48   0.419         98.0      98.0       0.20     0.890

Area-averaged catchment yield fraction, Y =  0.374
Area-averaged low loss fraction, Yb =  0.626
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.246 (hours)
Watershed area =      27.39(Ac.)
Catchment Lag time =   0.197 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 42.2926
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.145(In/Hr)
Average low loss rate fraction (Yb) = 0.626 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.190(In)
Computed peak 30-minute rainfall =  0.400(In)
Specified peak 1-hour rainfall =  0.530(In)
Computed peak 3-hour rainfall =  0.890(In)
Specified peak 6-hour rainfall =  1.220(In)
Specified peak 24-hour rainfall =  2.050(In)


Rainfall depth area reduction factors:
Using a total area of      27.39(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.190(In)
```

```
30-minute factor = 0.999    Adjusted rainfall =  0.399(In)
1-hour factor = 0.999       Adjusted rainfall =  0.529(In)
3-hour factor = 1.000       Adjusted rainfall =  0.890(In)
6-hour factor = 1.000       Adjusted rainfall =  1.220(In)
24-hour factor = 1.000 Adjusted rainfall =  2.050(In)
------------------------------------------------------------------------

                     U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
------------------------------------------------------------------------
               (K =       331.25 (CFS))

  1                3.384                  11.210
  2               16.590                  43.745
  3               51.005                 113.997
  4               70.977                  66.157
  5               80.535                  31.661
  6               86.857                  20.941
  7               91.307                  14.739
  8               94.464                  10.458
  9               96.562                   6.951
 10               97.850                   4.267
 11               98.423                   1.898
 12               98.861                   1.450
 13               99.172                   1.030
 14               99.468                   0.979
 15               99.750                   0.935
 16               99.905                   0.514
 17              100.000                   0.314
------------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.1898              0.1898
  2              0.2531              0.0633
  3              0.2995              0.0464
  4              0.3376              0.0380
  5              0.3703              0.0328
  6              0.3995              0.0291
  7              0.4253              0.0258
  8              0.4490              0.0237
  9              0.4710              0.0220
 10              0.4916              0.0206
 11              0.5109              0.0194
 12              0.5293              0.0184
 13              0.5497              0.0204
 14              0.5693              0.0196
 15              0.5882              0.0189
 16              0.6064              0.0182
 17              0.6241              0.0176
 18              0.6412              0.0171
 19              0.6578              0.0166
 20              0.6739              0.0161
 21              0.6897              0.0157
 22              0.7050              0.0153
 23              0.7200              0.0150
 24              0.7346              0.0146
 25              0.7489              0.0143
 26              0.7629              0.0140
 27              0.7767              0.0137
 28              0.7902              0.0135
 29              0.8034              0.0132
 30              0.8164              0.0130
 31              0.8291              0.0128
 32              0.8417              0.0125
 33              0.8540              0.0123
 34              0.8661              0.0121
 35              0.8781              0.0120
 36              0.8899              0.0118
 37              0.9010              0.0112
```

38	0.9120	0.0110
39	0.9229	0.0108
40	0.9336	0.0107
41	0.9441	0.0106
42	0.9545	0.0104
43	0.9648	0.0103
44	0.9750	0.0101
45	0.9850	0.0100
46	0.9949	0.0099
47	1.0047	0.0098
48	1.0143	0.0097
49	1.0239	0.0096
50	1.0334	0.0095
51	1.0427	0.0094
52	1.0520	0.0093
53	1.0611	0.0092
54	1.0702	0.0091
55	1.0792	0.0090
56	1.0881	0.0089
57	1.0969	0.0088
58	1.1056	0.0087
59	1.1142	0.0086
60	1.1228	0.0086
61	1.1312	0.0085
62	1.1396	0.0084
63	1.1480	0.0083
64	1.1562	0.0083
65	1.1644	0.0082
66	1.1725	0.0081
67	1.1806	0.0081
68	1.1886	0.0080
69	1.1965	0.0079
70	1.2044	0.0079
71	1.2122	0.0078
72	1.2199	0.0077
73	1.2262	0.0063
74	1.2325	0.0063
75	1.2387	0.0062
76	1.2448	0.0062
77	1.2509	0.0061
78	1.2570	0.0061
79	1.2630	0.0060
80	1.2690	0.0060
81	1.2749	0.0059
82	1.2808	0.0059
83	1.2866	0.0058
84	1.2924	0.0058
85	1.2981	0.0057
86	1.3038	0.0057
87	1.3095	0.0057
88	1.3151	0.0056
89	1.3207	0.0056
90	1.3262	0.0055
91	1.3317	0.0055
92	1.3372	0.0055
93	1.3426	0.0054
94	1.3480	0.0054
95	1.3533	0.0054
96	1.3586	0.0053
97	1.3639	0.0053
98	1.3692	0.0052
99	1.3744	0.0052
100	1.3796	0.0052
101	1.3847	0.0051
102	1.3898	0.0051
103	1.3949	0.0051
104	1.4000	0.0051
105	1.4050	0.0050
106	1.4100	0.0050
107	1.4149	0.0050
108	1.4199	0.0049

109	1.4248	0.0049
110	1.4297	0.0049
111	1.4345	0.0049
112	1.4393	0.0048
113	1.4441	0.0048
114	1.4489	0.0048
115	1.4537	0.0047
116	1.4584	0.0047
117	1.4631	0.0047
118	1.4677	0.0047
119	1.4724	0.0046
120	1.4770	0.0046
121	1.4816	0.0046
122	1.4862	0.0046
123	1.4907	0.0045
124	1.4953	0.0045
125	1.4998	0.0045
126	1.5042	0.0045
127	1.5087	0.0045
128	1.5131	0.0044
129	1.5176	0.0044
130	1.5219	0.0044
131	1.5263	0.0044
132	1.5307	0.0044
133	1.5350	0.0043
134	1.5393	0.0043
135	1.5436	0.0043
136	1.5479	0.0043
137	1.5521	0.0043
138	1.5564	0.0042
139	1.5606	0.0042
140	1.5648	0.0042
141	1.5689	0.0042
142	1.5731	0.0042
143	1.5772	0.0041
144	1.5814	0.0041
145	1.5855	0.0041
146	1.5895	0.0041
147	1.5936	0.0041
148	1.5977	0.0041
149	1.6017	0.0040
150	1.6057	0.0040
151	1.6097	0.0040
152	1.6137	0.0040
153	1.6177	0.0040
154	1.6216	0.0040
155	1.6256	0.0039
156	1.6295	0.0039
157	1.6334	0.0039
158	1.6373	0.0039
159	1.6411	0.0039
160	1.6450	0.0039
161	1.6488	0.0038
162	1.6527	0.0038
163	1.6565	0.0038
164	1.6603	0.0038
165	1.6641	0.0038
166	1.6678	0.0038
167	1.6716	0.0038
168	1.6753	0.0037
169	1.6790	0.0037
170	1.6828	0.0037
171	1.6865	0.0037
172	1.6901	0.0037
173	1.6938	0.0037
174	1.6975	0.0037
175	1.7011	0.0036
176	1.7047	0.0036
177	1.7084	0.0036
178	1.7120	0.0036
179	1.7156	0.0036

180	1.7192	0.0036
181	1.7227	0.0036
182	1.7263	0.0036
183	1.7298	0.0035
184	1.7334	0.0035
185	1.7369	0.0035
186	1.7404	0.0035
187	1.7439	0.0035
188	1.7474	0.0035
189	1.7508	0.0035
190	1.7543	0.0035
191	1.7578	0.0035
192	1.7612	0.0034
193	1.7646	0.0034
194	1.7680	0.0034
195	1.7715	0.0034
196	1.7749	0.0034
197	1.7782	0.0034
198	1.7816	0.0034
199	1.7850	0.0034
200	1.7883	0.0034
201	1.7917	0.0033
202	1.7950	0.0033
203	1.7983	0.0033
204	1.8016	0.0033
205	1.8049	0.0033
206	1.8082	0.0033
207	1.8115	0.0033
208	1.8148	0.0033
209	1.8180	0.0033
210	1.8213	0.0033
211	1.8245	0.0032
212	1.8278	0.0032
213	1.8310	0.0032
214	1.8342	0.0032
215	1.8374	0.0032
216	1.8406	0.0032
217	1.8438	0.0032
218	1.8470	0.0032
219	1.8501	0.0032
220	1.8533	0.0032
221	1.8564	0.0031
222	1.8596	0.0031
223	1.8627	0.0031
224	1.8658	0.0031
225	1.8690	0.0031
226	1.8721	0.0031
227	1.8752	0.0031
228	1.8782	0.0031
229	1.8813	0.0031
230	1.8844	0.0031
231	1.8875	0.0031
232	1.8905	0.0031
233	1.8936	0.0030
234	1.8966	0.0030
235	1.8996	0.0030
236	1.9027	0.0030
237	1.9057	0.0030
238	1.9087	0.0030
239	1.9117	0.0030
240	1.9147	0.0030
241	1.9176	0.0030
242	1.9206	0.0030
243	1.9236	0.0030
244	1.9266	0.0030
245	1.9295	0.0030
246	1.9324	0.0029
247	1.9354	0.0029
248	1.9383	0.0029
249	1.9412	0.0029
250	1.9442	0.0029

251	1.9471	0.0029
252	1.9500	0.0029
253	1.9529	0.0029
254	1.9557	0.0029
255	1.9586	0.0029
256	1.9615	0.0029
257	1.9644	0.0029
258	1.9672	0.0029
259	1.9701	0.0029
260	1.9729	0.0028
261	1.9758	0.0028
262	1.9786	0.0028
263	1.9814	0.0028
264	1.9842	0.0028
265	1.9870	0.0028
266	1.9898	0.0028
267	1.9926	0.0028
268	1.9954	0.0028
269	1.9982	0.0028
270	2.0010	0.0028
271	2.0038	0.0028
272	2.0065	0.0028
273	2.0093	0.0028
274	2.0120	0.0028
275	2.0148	0.0027
276	2.0175	0.0027
277	2.0203	0.0027
278	2.0230	0.0027
279	2.0257	0.0027
280	2.0284	0.0027
281	2.0311	0.0027
282	2.0338	0.0027
283	2.0365	0.0027
284	2.0392	0.0027
285	2.0419	0.0027
286	2.0446	0.0027
287	2.0473	0.0027
288	2.0499	0.0027

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0027	0.0017	0.0010
2	0.0027	0.0017	0.0010
3	0.0027	0.0017	0.0010
4	0.0027	0.0017	0.0010
5	0.0027	0.0017	0.0010
6	0.0027	0.0017	0.0010
7	0.0027	0.0017	0.0010
8	0.0027	0.0017	0.0010
9	0.0027	0.0017	0.0010
10	0.0027	0.0017	0.0010
11	0.0028	0.0017	0.0010
12	0.0028	0.0017	0.0010
13	0.0028	0.0017	0.0010
14	0.0028	0.0017	0.0010
15	0.0028	0.0018	0.0010
16	0.0028	0.0018	0.0010
17	0.0028	0.0018	0.0011
18	0.0028	0.0018	0.0011
19	0.0028	0.0018	0.0011
20	0.0028	0.0018	0.0011
21	0.0029	0.0018	0.0011
22	0.0029	0.0018	0.0011
23	0.0029	0.0018	0.0011
24	0.0029	0.0018	0.0011
25	0.0029	0.0018	0.0011
26	0.0029	0.0018	0.0011
27	0.0029	0.0018	0.0011
28	0.0029	0.0018	0.0011

29	0.0029	0.0018	0.0011
30	0.0030	0.0018	0.0011
31	0.0030	0.0019	0.0011
32	0.0030	0.0019	0.0011
33	0.0030	0.0019	0.0011
34	0.0030	0.0019	0.0011
35	0.0030	0.0019	0.0011
36	0.0030	0.0019	0.0011
37	0.0030	0.0019	0.0011
38	0.0030	0.0019	0.0011
39	0.0031	0.0019	0.0011
40	0.0031	0.0019	0.0011
41	0.0031	0.0019	0.0012
42	0.0031	0.0019	0.0012
43	0.0031	0.0020	0.0012
44	0.0031	0.0020	0.0012
45	0.0031	0.0020	0.0012
46	0.0031	0.0020	0.0012
47	0.0032	0.0020	0.0012
48	0.0032	0.0020	0.0012
49	0.0032	0.0020	0.0012
50	0.0032	0.0020	0.0012
51	0.0032	0.0020	0.0012
52	0.0032	0.0020	0.0012
53	0.0033	0.0020	0.0012
54	0.0033	0.0020	0.0012
55	0.0033	0.0021	0.0012
56	0.0033	0.0021	0.0012
57	0.0033	0.0021	0.0012
58	0.0033	0.0021	0.0012
59	0.0033	0.0021	0.0012
60	0.0034	0.0021	0.0013
61	0.0034	0.0021	0.0013
62	0.0034	0.0021	0.0013
63	0.0034	0.0021	0.0013
64	0.0034	0.0021	0.0013
65	0.0034	0.0022	0.0013
66	0.0035	0.0022	0.0013
67	0.0035	0.0022	0.0013
68	0.0035	0.0022	0.0013
69	0.0035	0.0022	0.0013
70	0.0035	0.0022	0.0013
71	0.0035	0.0022	0.0013
72	0.0036	0.0022	0.0013
73	0.0036	0.0022	0.0013
74	0.0036	0.0023	0.0013
75	0.0036	0.0023	0.0014
76	0.0036	0.0023	0.0014
77	0.0037	0.0023	0.0014
78	0.0037	0.0023	0.0014
79	0.0037	0.0023	0.0014
80	0.0037	0.0023	0.0014
81	0.0037	0.0023	0.0014
82	0.0038	0.0024	0.0014
83	0.0038	0.0024	0.0014
84	0.0038	0.0024	0.0014
85	0.0038	0.0024	0.0014
86	0.0038	0.0024	0.0014
87	0.0039	0.0024	0.0014
88	0.0039	0.0024	0.0015
89	0.0039	0.0025	0.0015
90	0.0039	0.0025	0.0015
91	0.0040	0.0025	0.0015
92	0.0040	0.0025	0.0015
93	0.0040	0.0025	0.0015
94	0.0040	0.0025	0.0015
95	0.0041	0.0025	0.0015
96	0.0041	0.0026	0.0015
97	0.0041	0.0026	0.0015
98	0.0041	0.0026	0.0015
99	0.0042	0.0026	0.0016

100	0.0042	0.0026	0.0016
101	0.0042	0.0027	0.0016
102	0.0043	0.0027	0.0016
103	0.0043	0.0027	0.0016
104	0.0043	0.0027	0.0016
105	0.0044	0.0027	0.0016
106	0.0044	0.0027	0.0016
107	0.0044	0.0028	0.0017
108	0.0044	0.0028	0.0017
109	0.0045	0.0028	0.0017
110	0.0045	0.0028	0.0017
111	0.0045	0.0028	0.0017
112	0.0046	0.0029	0.0017
113	0.0046	0.0029	0.0017
114	0.0046	0.0029	0.0017
115	0.0047	0.0029	0.0018
116	0.0047	0.0030	0.0018
117	0.0048	0.0030	0.0018
118	0.0048	0.0030	0.0018
119	0.0049	0.0030	0.0018
120	0.0049	0.0031	0.0018
121	0.0049	0.0031	0.0018
122	0.0050	0.0031	0.0019
123	0.0050	0.0031	0.0019
124	0.0051	0.0032	0.0019
125	0.0051	0.0032	0.0019
126	0.0051	0.0032	0.0019
127	0.0052	0.0033	0.0019
128	0.0052	0.0033	0.0020
129	0.0053	0.0033	0.0020
130	0.0054	0.0034	0.0020
131	0.0054	0.0034	0.0020
132	0.0055	0.0034	0.0020
133	0.0055	0.0035	0.0021
134	0.0056	0.0035	0.0021
135	0.0057	0.0035	0.0021
136	0.0057	0.0036	0.0021
137	0.0058	0.0036	0.0022
138	0.0058	0.0036	0.0022
139	0.0059	0.0037	0.0022
140	0.0060	0.0037	0.0022
141	0.0061	0.0038	0.0023
142	0.0061	0.0038	0.0023
143	0.0062	0.0039	0.0023
144	0.0063	0.0039	0.0023
145	0.0077	0.0048	0.0029
146	0.0078	0.0049	0.0029
147	0.0079	0.0050	0.0030
148	0.0080	0.0050	0.0030
149	0.0081	0.0051	0.0030
150	0.0082	0.0051	0.0031
151	0.0083	0.0052	0.0031
152	0.0084	0.0053	0.0031
153	0.0086	0.0054	0.0032
154	0.0086	0.0054	0.0032
155	0.0088	0.0055	0.0033
156	0.0089	0.0056	0.0033
157	0.0091	0.0057	0.0034
158	0.0092	0.0057	0.0034
159	0.0094	0.0059	0.0035
160	0.0095	0.0059	0.0035
161	0.0097	0.0061	0.0036
162	0.0098	0.0061	0.0037
163	0.0100	0.0063	0.0037
164	0.0101	0.0064	0.0038
165	0.0104	0.0065	0.0039
166	0.0106	0.0066	0.0039
167	0.0108	0.0068	0.0041
168	0.0110	0.0069	0.0041
169	0.0118	0.0074	0.0044
170	0.0120	0.0075	0.0045

171	0.0123	0.0077	0.0046
172	0.0125	0.0079	0.0047
173	0.0130	0.0081	0.0049
174	0.0132	0.0083	0.0049
175	0.0137	0.0086	0.0051
176	0.0140	0.0088	0.0052
177	0.0146	0.0092	0.0055
178	0.0150	0.0094	0.0056
179	0.0157	0.0098	0.0059
180	0.0161	0.0101	0.0060
181	0.0171	0.0107	0.0064
182	0.0176	0.0110	0.0066
183	0.0189	0.0118	0.0071
184	0.0196	0.0121	0.0075
185	0.0184	0.0115	0.0069
186	0.0194	0.0121	0.0073
187	0.0220	0.0121	0.0099
188	0.0237	0.0121	0.0116
189	0.0291	0.0121	0.0170
190	0.0328	0.0121	0.0207
191	0.0464	0.0121	0.0343
192	0.0633	0.0121	0.0512
193	0.1898	0.0121	0.1777
194	0.0380	0.0121	0.0259
195	0.0258	0.0121	0.0137
196	0.0206	0.0121	0.0085
197	0.0204	0.0121	0.0083
198	0.0182	0.0114	0.0068
199	0.0166	0.0104	0.0062
200	0.0153	0.0096	0.0057
201	0.0143	0.0090	0.0054
202	0.0135	0.0084	0.0050
203	0.0128	0.0080	0.0048
204	0.0121	0.0076	0.0045
205	0.0112	0.0070	0.0042
206	0.0107	0.0067	0.0040
207	0.0103	0.0064	0.0038
208	0.0099	0.0062	0.0037
209	0.0096	0.0060	0.0036
210	0.0093	0.0058	0.0035
211	0.0090	0.0056	0.0034
212	0.0087	0.0055	0.0033
213	0.0085	0.0053	0.0032
214	0.0083	0.0052	0.0031
215	0.0081	0.0050	0.0030
216	0.0079	0.0049	0.0029
217	0.0063	0.0040	0.0024
218	0.0062	0.0039	0.0023
219	0.0060	0.0038	0.0022
220	0.0059	0.0037	0.0022
221	0.0057	0.0036	0.0021
222	0.0056	0.0035	0.0021
223	0.0055	0.0034	0.0021
224	0.0054	0.0034	0.0020
225	0.0053	0.0033	0.0020
226	0.0052	0.0032	0.0019
227	0.0051	0.0032	0.0019
228	0.0050	0.0031	0.0019
229	0.0049	0.0031	0.0018
230	0.0048	0.0030	0.0018
231	0.0047	0.0030	0.0018
232	0.0047	0.0029	0.0017
233	0.0046	0.0029	0.0017
234	0.0045	0.0028	0.0017
235	0.0045	0.0028	0.0017
236	0.0044	0.0028	0.0016
237	0.0043	0.0027	0.0016
238	0.0043	0.0027	0.0016
239	0.0042	0.0026	0.0016
240	0.0042	0.0026	0.0016
241	0.0041	0.0026	0.0015

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      242              0.0041          0.0025              0.0015
      243              0.0040          0.0025              0.0015
      244              0.0040          0.0025              0.0015
      245              0.0039          0.0024              0.0015
      246              0.0039          0.0024              0.0014
      247              0.0038          0.0024              0.0014
      248              0.0038          0.0024              0.0014
      249              0.0037          0.0023              0.0014
      250              0.0037          0.0023              0.0014
      251              0.0036          0.0023              0.0014
      252              0.0036          0.0023              0.0013
      253              0.0036          0.0022              0.0013
      254              0.0035          0.0022              0.0013
      255              0.0035          0.0022              0.0013
      256              0.0035          0.0022              0.0013
      257              0.0034          0.0021              0.0013
      258              0.0034          0.0021              0.0013
      259              0.0034          0.0021              0.0013
      260              0.0033          0.0021              0.0012
      261              0.0033          0.0021              0.0012
      262              0.0033          0.0020              0.0012
      263              0.0032          0.0020              0.0012
      264              0.0032          0.0020              0.0012
      265              0.0032          0.0020              0.0012
      266              0.0032          0.0020              0.0012
      267              0.0031          0.0020              0.0012
      268              0.0031          0.0019              0.0012
      269              0.0031          0.0019              0.0012
      270              0.0031          0.0019              0.0011
      271              0.0030          0.0019              0.0011
      272              0.0030          0.0019              0.0011
      273              0.0030          0.0019              0.0011
      274              0.0030          0.0019              0.0011
      275              0.0029          0.0018              0.0011
      276              0.0029          0.0018              0.0011
      277              0.0029          0.0018              0.0011
      278              0.0029          0.0018              0.0011
      279              0.0029          0.0018              0.0011
      280              0.0028          0.0018              0.0011
      281              0.0028          0.0018              0.0011
      282              0.0028          0.0017              0.0010
      283              0.0028          0.0017              0.0010
      284              0.0028          0.0017              0.0010
      285              0.0027          0.0017              0.0010
      286              0.0027          0.0017              0.0010
      287              0.0027          0.0017              0.0010
      288              0.0027          0.0017              0.0010
      ------------------------------------------------------------------------
      ------------------------------------------------------------------------
      Total soil rain loss =      1.10(In)
      Total effective rainfall =      0.95(In)
      Peak flow rate in flood hydrograph =     26.97(CFS)
      ------------------------------------------------------------------------
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          24 - H O U R    S T O R M
                     R u n o f f      H y d r o g r a p h
      ------------------------------------------------------------------------
                  Hydrograph in   5   Minute intervals ((CFS))

      ------------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0        7.5      15.0      22.5      30.0
------------------------------------------------------------------------
  0+ 5       0.0001      0.01  Q         |         |         |         |
  0+10       0.0005      0.05  Q         |         |         |         |
  0+15       0.0016      0.17  Q         |         |         |         |
  0+20       0.0032      0.24  Q         |         |         |         |
  0+25       0.0051      0.27  Q         |         |         |         |
  0+30       0.0071      0.29  Q         |         |         |         |
  0+35       0.0092      0.30  Q         |         |         |         |
  0+40       0.0113      0.32  Q         |         |         |         |
  0+45       0.0136      0.32  Q         |         |         |         |
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0+50       0.0158      0.33  Q          |          |          |          |
0+55       0.0181      0.33  Q          |          |          |          |
1+ 0       0.0204      0.34  Q          |          |          |          |
1+ 5       0.0228      0.34  Q          |          |          |          |
1+10       0.0251      0.34  Q          |          |          |          |
1+15       0.0275      0.34  Q          |          |          |          |
1+20       0.0298      0.34  Q          |          |          |          |
1+25       0.0322      0.34  Q          |          |          |          |
1+30       0.0346      0.35  Q          |          |          |          |
1+35       0.0370      0.35  Q          |          |          |          |
1+40       0.0394      0.35  Q          |          |          |          |
1+45       0.0418      0.35  Q          |          |          |          |
1+50       0.0442      0.35  Q          |          |          |          |
1+55       0.0466      0.35  Q          |          |          |          |
2+ 0       0.0491      0.35  Q          |          |          |          |
2+ 5       0.0515      0.35  Q          |          |          |          |
2+10       0.0540      0.36  Q          |          |          |          |
2+15       0.0564      0.36  QV         |          |          |          |
2+20       0.0589      0.36  QV         |          |          |          |
2+25       0.0614      0.36  QV         |          |          |          |
2+30       0.0639      0.36  QV         |          |          |          |
2+35       0.0664      0.36  QV         |          |          |          |
2+40       0.0689      0.36  QV         |          |          |          |
2+45       0.0714      0.37  QV         |          |          |          |
2+50       0.0739      0.37  QV         |          |          |          |
2+55       0.0765      0.37  QV         |          |          |          |
3+ 0       0.0790      0.37  QV         |          |          |          |
3+ 5       0.0816      0.37  QV         |          |          |          |
3+10       0.0841      0.37  QV         |          |          |          |
3+15       0.0867      0.37  QV         |          |          |          |
3+20       0.0893      0.38  QV         |          |          |          |
3+25       0.0919      0.38  QV         |          |          |          |
3+30       0.0945      0.38  QV         |          |          |          |
3+35       0.0971      0.38  QV         |          |          |          |
3+40       0.0997      0.38  QV         |          |          |          |
3+45       0.1024      0.38  QV         |          |          |          |
3+50       0.1050      0.39  QV         |          |          |          |
3+55       0.1077      0.39  QV         |          |          |          |
4+ 0       0.1104      0.39  Q V        |          |          |          |
4+ 5       0.1131      0.39  Q V        |          |          |          |
4+10       0.1158      0.39  Q V        |          |          |          |
4+15       0.1185      0.39  Q V        |          |          |          |
4+20       0.1212      0.40  Q V        |          |          |          |
4+25       0.1239      0.40  Q V        |          |          |          |
4+30       0.1267      0.40  Q V        |          |          |          |
4+35       0.1294      0.40  Q V        |          |          |          |
4+40       0.1322      0.40  Q V        |          |          |          |
4+45       0.1350      0.40  Q V        |          |          |          |
4+50       0.1378      0.41  Q V        |          |          |          |
4+55       0.1406      0.41  Q V        |          |          |          |
5+ 0       0.1434      0.41  Q V        |          |          |          |
5+ 5       0.1462      0.41  Q V        |          |          |          |
5+10       0.1491      0.41  Q V        |          |          |          |
5+15       0.1519      0.42  Q V        |          |          |          |
5+20       0.1548      0.42  Q V        |          |          |          |
5+25       0.1577      0.42  Q V        |          |          |          |
5+30       0.1606      0.42  Q V        |          |          |          |
5+35       0.1635      0.42  Q  V       |          |          |          |
5+40       0.1665      0.43  Q  V       |          |          |          |
5+45       0.1694      0.43  Q  V       |          |          |          |
5+50       0.1724      0.43  Q  V       |          |          |          |
5+55       0.1753      0.43  Q  V       |          |          |          |
6+ 0       0.1783      0.43  Q  V       |          |          |          |
6+ 5       0.1813      0.44  Q  V       |          |          |          |
6+10       0.1843      0.44  Q  V       |          |          |          |
6+15       0.1874      0.44  Q  V       |          |          |          |
6+20       0.1904      0.44  Q  V       |          |          |          |
6+25       0.1935      0.45  Q  V       |          |          |          |
6+30       0.1966      0.45  Q  V       |          |          |          |
6+35       0.1997      0.45  Q  V       |          |          |          |
6+40       0.2028      0.45  Q  V       |          |          |          |
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 6+45      0.2059      0.45  Q  V      |          |          |          |
 6+50      0.2091      0.46  Q  V      |          |          |          |
 6+55      0.2122      0.46  Q  V      |          |          |          |
 7+ 0      0.2154      0.46  Q  V      |          |          |          |
 7+ 5      0.2186      0.47  Q   V     |          |          |          |
 7+10      0.2218      0.47  Q   V     |          |          |          |
 7+15      0.2251      0.47  Q   V     |          |          |          |
 7+20      0.2283      0.47  Q   V     |          |          |          |
 7+25      0.2316      0.48  Q   V     |          |          |          |
 7+30      0.2349      0.48  Q   V     |          |          |          |
 7+35      0.2382      0.48  Q   V     |          |          |          |
 7+40      0.2416      0.48  Q   V     |          |          |          |
 7+45      0.2449      0.49  Q   V     |          |          |          |
 7+50      0.2483      0.49  Q   V     |          |          |          |
 7+55      0.2517      0.49  Q   V     |          |          |          |
 8+ 0      0.2551      0.50  Q   V     |          |          |          |
 8+ 5      0.2586      0.50  Q   V     |          |          |          |
 8+10      0.2620      0.50  Q   V     |          |          |          |
 8+15      0.2655      0.51  Q   V     |          |          |          |
 8+20      0.2690      0.51  Q   V     |          |          |          |
 8+25      0.2725      0.51  Q    V    |          |          |          |
 8+30      0.2761      0.52  Q    V    |          |          |          |
 8+35      0.2797      0.52  Q    V    |          |          |          |
 8+40      0.2833      0.52  Q    V    |          |          |          |
 8+45      0.2869      0.53  Q    V    |          |          |          |
 8+50      0.2906      0.53  Q    V    |          |          |          |
 8+55      0.2942      0.53  Q    V    |          |          |          |
 9+ 0      0.2979      0.54  Q    V    |          |          |          |
 9+ 5      0.3017      0.54  Q    V    |          |          |          |
 9+10      0.3054      0.55  Q    V    |          |          |          |
 9+15      0.3092      0.55  Q    V    |          |          |          |
 9+20      0.3130      0.55  Q    V    |          |          |          |
 9+25      0.3169      0.56  Q    V    |          |          |          |
 9+30      0.3207      0.56  Q    V    |          |          |          |
 9+35      0.3246      0.57  Q    V    |          |          |          |
 9+40      0.3286      0.57  Q     V   |          |          |          |
 9+45      0.3325      0.58  Q     V   |          |          |          |
 9+50      0.3365      0.58  Q     V   |          |          |          |
 9+55      0.3406      0.58  Q     V   |          |          |          |
10+ 0      0.3446      0.59  Q     V   |          |          |          |
10+ 5      0.3487      0.59  Q     V   |          |          |          |
10+10      0.3528      0.60  Q     V   |          |          |          |
10+15      0.3570      0.60  Q     V   |          |          |          |
10+20      0.3612      0.61  Q     V   |          |          |          |
10+25      0.3654      0.62  Q     V   |          |          |          |
10+30      0.3697      0.62  Q     V   |          |          |          |
10+35      0.3740      0.63  Q     V   |          |          |          |
10+40      0.3784      0.63  Q     V   |          |          |          |
10+45      0.3828      0.64  Q      V  |          |          |          |
10+50      0.3872      0.64  Q      V  |          |          |          |
10+55      0.3917      0.65  Q      V  |          |          |          |
11+ 0      0.3962      0.66  Q      V  |          |          |          |
11+ 5      0.4008      0.66  Q      V  |          |          |          |
11+10      0.4054      0.67  Q      V  |          |          |          |
11+15      0.4101      0.68  Q      V  |          |          |          |
11+20      0.4148      0.68  Q      V  |          |          |          |
11+25      0.4195      0.69  Q      V  |          |          |          |
11+30      0.4243      0.70  Q      V  |          |          |          |
11+35      0.4292      0.71  Q      V  |          |          |          |
11+40      0.4341      0.71  Q      V  |          |          |          |
11+45      0.4391      0.72  Q       V |          |          |          |
11+50      0.4441      0.73  Q       V |          |          |          |
11+55      0.4492      0.74  Q       V |          |          |          |
12+ 0      0.4544      0.75  Q       V |          |          |          |
12+ 5      0.4596      0.76  |Q      V |          |          |          |
12+10      0.4651      0.79  |Q      V |          |          |          |
12+15      0.4710      0.86  |Q      V |          |          |          |
12+20      0.4773      0.91  |Q      V |          |          |          |
12+25      0.4837      0.93  |Q      V |          |          |          |
12+30      0.4903      0.96  |Q       V|          |          |          |
12+35      0.4970      0.98  |Q       V|          |          |          |
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12+40       0.5039      0.99  |Q       V|         |         |         |
12+45       0.5108      1.01  |Q       V|         |         |         |
12+50       0.5179      1.02  |Q       V|         |         |         |
12+55       0.5250      1.04  |Q       V|         |         |         |
13+ 0       0.5323      1.05  |Q       V|         |         |         |
13+ 5       0.5396      1.07  |Q       V|         |         |         |
13+10       0.5471      1.09  |Q        V         |         |         |
13+15       0.5547      1.10  |Q        V         |         |         |
13+20       0.5624      1.12  |Q        V         |         |         |
13+25       0.5702      1.14  |Q        V         |         |         |
13+30       0.5782      1.15  |Q        V         |         |         |
13+35       0.5863      1.17  |Q        V         |         |         |
13+40       0.5945      1.19  |Q        V         |         |         |
13+45       0.6029      1.21  |Q        |V        |         |         |
13+50       0.6114      1.24  |Q        |V        |         |         |
13+55       0.6200      1.26  |Q        |V        |         |         |
14+ 0       0.6289      1.28  |Q        |V        |         |         |
14+ 5       0.6379      1.31  |Q        |V        |         |         |
14+10       0.6472      1.35  |Q        |V        |         |         |
14+15       0.6568      1.40  |Q        | V       |         |         |
14+20       0.6667      1.44  |Q        | V       |         |         |
14+25       0.6769      1.48  |Q        | V       |         |         |
14+30       0.6873      1.51  | Q       | V       |         |         |
14+35       0.6980      1.56  | Q       | V       |         |         |
14+40       0.7090      1.60  | Q       |  V      |         |         |
14+45       0.7203      1.65  | Q       |  V      |         |         |
14+50       0.7320      1.69  | Q       |  V      |         |         |
14+55       0.7440      1.75  | Q       |  V      |         |         |
15+ 0       0.7565      1.80  | Q       |  V      |         |         |
15+ 5       0.7693      1.87  | Q       |   V     |         |         |
15+10       0.7827      1.94  | Q       |   V     |         |         |
15+15       0.7966      2.02  | Q       |   V     |         |         |
15+20       0.8112      2.11  | Q       |   V     |         |         |
15+25       0.8264      2.21  | Q       |    V    |         |         |
15+30       0.8423      2.29  |  Q      |    V    |         |         |
15+35       0.8583      2.33  |  Q      |    V    |         |         |
15+40       0.8755      2.50  |  Q      |     V   |         |         |
15+45       0.8959      2.96  |  Q      |     V   |         |         |
15+50       0.9209      3.62  |   Q     |     V   |         |         |
15+55       0.9537      4.76  |     Q   |      V  |         |         |
16+ 0       0.9981      6.44  |       Q |       V |         |         |
16+ 5       1.0714     10.64  |         |   Q    V|         |         |
16+10       1.1925     17.59  |         |         |V Q      |         |
16+15       1.3782     26.97  |         |         |    V    |    Q    |
16+20       1.5049     18.40  |         |         |   Q  V  |         |
16+25       1.5833     11.38  |         |    Q    |        V|         |
16+30       1.6401      8.25  |         Q         |         V         |
16+35       1.6843      6.41  |       Q |         |         V         |
16+40       1.7191      5.06  |     Q   |         |         |V        |
16+45       1.7465      3.98  |    Q    |         |         | V       |
16+50       1.7682      3.15  |   Q     |         |         | V       |
16+55       1.7855      2.51  |  Q      |         |         | V       |
17+ 0       1.8009      2.23  | Q       |         |         |  V      |
17+ 5       1.8148      2.01  | Q       |         |         |  V      |
17+10       1.8277      1.87  | Q       |         |         |  V      |
17+15       1.8396      1.73  | Q       |         |         |  V      |
17+20       1.8503      1.56  | Q       |         |         |   V     |
17+25       1.8602      1.44  |Q        |         |         |   V     |
17+30       1.8693      1.32  |Q        |         |         |   V     |
17+35       1.8780      1.26  |Q        |         |         |   V     |
17+40       1.8863      1.21  |Q        |         |         |   V     |
17+45       1.8943      1.17  |Q        |         |         |   V     |
17+50       1.9021      1.13  |Q        |         |         |   V     |
17+55       1.9096      1.09  |Q        |         |         |    V    |
18+ 0       1.9169      1.06  |Q        |         |         |    V    |
18+ 5       1.9240      1.03  |Q        |         |         |    V    |
18+10       1.9308      0.98  |Q        |         |         |    V    |
18+15       1.9369      0.90  |Q        |         |         |    V    |
18+20       1.9427      0.84  |Q        |         |         |    V    |
18+25       1.9482      0.80  |Q        |         |         |    V    |
18+30       1.9536      0.77  |Q        |         |         |    V    |
```

```
18+35      1.9587      0.75  Q          |          |          |     V    |
18+40      1.9637      0.73  Q          |          |          |     V    |
18+45      1.9686      0.71  Q          |          |          |     V    |
18+50      1.9733      0.69  Q          |          |          |     V    |
18+55      1.9780      0.67  Q          |          |          |     V    |
19+ 0      1.9825      0.66  Q          |          |          |     V    |
19+ 5      1.9870      0.65  Q          |          |          |     V    |
19+10      1.9913      0.63  Q          |          |          |     V    |
19+15      1.9956      0.62  Q          |          |          |     V    |
19+20      1.9998      0.61  Q          |          |          |     V    |
19+25      2.0039      0.60  Q          |          |          |     V    |
19+30      2.0080      0.59  Q          |          |          |     V    |
19+35      2.0120      0.58  Q          |          |          |     V    |
19+40      2.0159      0.57  Q          |          |          |      V   |
19+45      2.0198      0.56  Q          |          |          |      V   |
19+50      2.0236      0.55  Q          |          |          |      V   |
19+55      2.0274      0.55  Q          |          |          |      V   |
20+ 0      2.0311      0.54  Q          |          |          |      V   |
20+ 5      2.0348      0.53  Q          |          |          |      V   |
20+10      2.0384      0.52  Q          |          |          |      V   |
20+15      2.0419      0.52  Q          |          |          |      V   |
20+20      2.0454      0.51  Q          |          |          |      V   |
20+25      2.0489      0.50  Q          |          |          |      V   |
20+30      2.0523      0.50  Q          |          |          |      V   |
20+35      2.0557      0.49  Q          |          |          |      V   |
20+40      2.0590      0.48  Q          |          |          |      V   |
20+45      2.0623      0.48  Q          |          |          |      V   |
20+50      2.0656      0.47  Q          |          |          |      V   |
20+55      2.0688      0.47  Q          |          |          |       V  |
21+ 0      2.0720      0.46  Q          |          |          |       V  |
21+ 5      2.0752      0.46  Q          |          |          |       V  |
21+10      2.0783      0.45  Q          |          |          |       V  |
21+15      2.0814      0.45  Q          |          |          |       V  |
21+20      2.0844      0.44  Q          |          |          |       V  |
21+25      2.0874      0.44  Q          |          |          |       V  |
21+30      2.0904      0.43  Q          |          |          |       V  |
21+35      2.0934      0.43  Q          |          |          |       V  |
21+40      2.0963      0.43  Q          |          |          |       V  |
21+45      2.0992      0.42  Q          |          |          |       V  |
21+50      2.1021      0.42  Q          |          |          |       V  |
21+55      2.1049      0.41  Q          |          |          |       V  |
22+ 0      2.1077      0.41  Q          |          |          |       V  |
22+ 5      2.1105      0.41  Q          |          |          |       V  |
22+10      2.1133      0.40  Q          |          |          |       V  |
22+15      2.1161      0.40  Q          |          |          |       V  |
22+20      2.1188      0.40  Q          |          |          |       V  |
22+25      2.1215      0.39  Q          |          |          |       V  |
22+30      2.1242      0.39  Q          |          |          |        V |
22+35      2.1268      0.39  Q          |          |          |        V |
22+40      2.1294      0.38  Q          |          |          |        V |
22+45      2.1320      0.38  Q          |          |          |        V |
22+50      2.1346      0.38  Q          |          |          |        V |
22+55      2.1372      0.37  Q          |          |          |        V |
23+ 0      2.1397      0.37  Q          |          |          |        V |
23+ 5      2.1423      0.37  Q          |          |          |        V |
23+10      2.1448      0.36  Q          |          |          |        V |
23+15      2.1473      0.36  Q          |          |          |        V |
23+20      2.1497      0.36  Q          |          |          |        V |
23+25      2.1522      0.36  Q          |          |          |        V |
23+30      2.1546      0.35  Q          |          |          |        V |
23+35      2.1571      0.35  Q          |          |          |        V |
23+40      2.1595      0.35  Q          |          |          |        V |
23+45      2.1618      0.35  Q          |          |          |        V |
23+50      2.1642      0.34  Q          |          |          |        V |
23+55      2.1666      0.34  Q          |          |          |        V |
24+ 0      2.1689      0.34  Q          |          |          |        V |
24+ 5      2.1711      0.33  Q          |          |          |        V |
24+10      2.1731      0.28  Q          |          |          |        V |
24+15      2.1742      0.16  Q          |          |          |        V |
24+20      2.1749      0.10  Q          |          |          |        V |
24+25      2.1753      0.07  Q          |          |          |        V |
```

```
   24+30       2.1756      0.04  Q         |         |         |         V|
   24+35       2.1758      0.03  Q         |         |         |         V|
   24+40       2.1759      0.02  Q         |         |         |         V|
   24+45       2.1760      0.01  Q         |         |         |         V|
   24+50       2.1761      0.01  Q         |         |         |         V|
   24+55       2.1761      0.01  Q         |         |         |         V|
   25+ 0       2.1761      0.00  Q         |         |         |         V|
   25+ 5       2.1762      0.00  Q         |         |         |         V|
   25+10       2.1762      0.00  Q         |         |         |         V|
   25+15       2.1762      0.00  Q         |         |         |         V|
   25+20       2.1762      0.00  Q         |         |         |         V|
-------------------------------------------------------------------------
```

- 5 Year 3 Hour Post-Development Unit Hydrograph – Area 'A'

```
        U n i t   H y d r o g r a p h   A n a l y s i s

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        Study date  10/03/16   File Name PRA00503.out


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------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'A' - 5 YEAR 3 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

        Storm Event Year = 5

        Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 70.6      27.4          1.00     C     0.250     0.581    0.145

Area-averaged adjusted loss rate Fm (In/Hr) =  0.145

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
    15.91   0.581         70.6      51.7       9.33     0.043
    11.48   0.419         98.0      98.0       0.20     0.923

Area-averaged catchment yield fraction, Y =  0.412
Area-averaged low loss fraction, Yb =  0.588
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.314 (hours)
Watershed area =      27.39(Ac.)
Catchment Lag time =   0.251 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 33.1635
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.145(In/Hr)
Average low loss rate fraction (Yb) = 0.588 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.260(In)
Computed peak 30-minute rainfall =  0.590(In)
Specified peak 1-hour rainfall =  0.780(In)
Computed peak 3-hour rainfall =  1.310(In)
Specified peak 6-hour rainfall =  1.810(In)
Specified peak 24-hour rainfall =  3.030(In)


Rainfall depth area reduction factors:
Using a total area of      27.39(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.260(In)
```

```
30-minute factor = 0.999    Adjusted rainfall =  0.589(In)
1-hour factor = 0.999       Adjusted rainfall =  0.779(In)
3-hour factor = 1.000       Adjusted rainfall =  1.310(In)
6-hour factor = 1.000       Adjusted rainfall =  1.810(In)
24-hour factor = 1.000 Adjusted rainfall =  3.030(In)
------------------------------------------------------------------------

                      U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
------------------------------------------------------------------------
               (K =       331.25 (CFS))

  1                2.446                   8.101
  2               10.652                  27.183
  3               29.614                  62.811
  4               59.208                  98.029
  5               71.429                  40.482
  6               79.095                  25.396
  7               84.622                  18.307
  8               88.762                  13.715
  9               91.929                  10.488
 10               94.352                   8.028
 11               96.088                   5.750
 12               97.360                   4.213
 13               98.074                   2.364
 14               98.466                   1.301
 15               98.809                   1.134
 16               99.084                   0.911
 17               99.289                   0.679
 18               99.543                   0.841
 19               99.754                   0.698
 20               99.881                   0.424
 21               99.960                   0.259
 22              100.000                   0.133
------------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.2597               0.2597
  2              0.3565               0.0969
  3              0.4292               0.0726
  4              0.4895               0.0603
  5              0.5421               0.0526
  6              0.5892               0.0471
  7              0.6270               0.0377
  8              0.6616               0.0346
  9              0.6938               0.0321
 10              0.7238               0.0301
 11              0.7522               0.0283
 12              0.7790               0.0268
 13              0.8091               0.0301
 14              0.8379               0.0289
 15              0.8657               0.0278
 16              0.8925               0.0268
 17              0.9185               0.0260
 18              0.9437               0.0252
 19              0.9681               0.0244
 20              0.9919               0.0238
 21              1.0150               0.0232
 22              1.0376               0.0226
 23              1.0597               0.0220
 24              1.0812               0.0215
 25              1.1023               0.0211
 26              1.1229               0.0206
 27              1.1432               0.0202
 28              1.1630               0.0198
 29              1.1825               0.0195
 30              1.2016               0.0191
 31              1.2204               0.0188
 32              1.2388               0.0185
```

```
 33              1.2570              0.0182
 34              1.2749              0.0179
 35              1.2925              0.0176
 36              1.3098              0.0173
--------------------------------------------------------------------
Unit              Unit            Unit              Effective
Period            Rainfall        Soil-Loss         Rainfall
(number)            (In)          (In)                (In)
--------------------------------------------------------------------
  1              0.0173           0.0102              0.0071
  2              0.0176           0.0104              0.0072
  3              0.0182           0.0107              0.0075
  4              0.0185           0.0109              0.0076
  5              0.0191           0.0112              0.0079
  6              0.0195           0.0115              0.0080
  7              0.0202           0.0119              0.0083
  8              0.0206           0.0121              0.0085
  9              0.0215           0.0121              0.0094
 10              0.0220           0.0121              0.0099
 11              0.0232           0.0121              0.0111
 12              0.0238           0.0121              0.0117
 13              0.0252           0.0121              0.0131
 14              0.0260           0.0121              0.0139
 15              0.0278           0.0121              0.0157
 16              0.0289           0.0121              0.0168
 17              0.0268           0.0121              0.0147
 18              0.0283           0.0121              0.0162
 19              0.0321           0.0121              0.0200
 20              0.0346           0.0121              0.0225
 21              0.0471           0.0121              0.0350
 22              0.0526           0.0121              0.0405
 23              0.0726           0.0121              0.0605
 24              0.0969           0.0121              0.0848
 25              0.2597           0.0121              0.2476
 26              0.0603           0.0121              0.0482
 27              0.0377           0.0121              0.0256
 28              0.0301           0.0121              0.0180
 29              0.0301           0.0121              0.0180
 30              0.0268           0.0121              0.0147
 31              0.0244           0.0121              0.0123
 32              0.0226           0.0121              0.0105
 33              0.0211           0.0121              0.0090
 34              0.0198           0.0117              0.0082
 35              0.0188           0.0110              0.0077
 36              0.0179           0.0105              0.0074
--------------------------------------------------------------------
--------------------------------------------------------------------
Total soil rain loss =      0.42(In)
Total effective rainfall =      0.89(In)
Peak flow rate in flood hydrograph =     35.00(CFS)
--------------------------------------------------------------------
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                  3 - H O U R    S T O R M
               R u n o f f      H y d r o g r a p h
--------------------------------------------------------------------
            Hydrograph in   5   Minute intervals ((CFS))

--------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0       10.0      20.0      30.0      40.0
--------------------------------------------------------------------
  0+ 5       0.0004      0.06  Q         |         |         |         |
  0+10       0.0021      0.25  Q         |         |         |         |
  0+15       0.0070      0.71  Q         |         |         |         |
  0+20       0.0168      1.42  VQ        |         |         |         |
  0+25       0.0288      1.74  VQ        |         |         |         |
  0+30       0.0423      1.96  VQ        |         |         |         |
  0+35       0.0570      2.14  |VQ       |         |         |         |
  0+40       0.0729      2.30  |VQ       |         |         |         |
  0+45       0.0897      2.44  |VQ       |         |         |         |
  0+50       0.1075      2.59  | Q       |         |         |         |
  0+55       0.1265      2.76  | Q       |         |         |         |
```

```
   1+ 0       0.1469      2.97  | Q       |         |         |         |
   1+ 5       0.1688      3.19  |  Q      |         |         |         |
   1+10       0.1926      3.45  |  Q      |         |         |         |
   1+15       0.2182      3.72  |  QV     |         |         |         |
   1+20       0.2461      4.06  |   Q     |         |         |         |
   1+25       0.2763      4.38  |   QV    |         |         |         |
   1+30       0.3087      4.70  |   Q V   |         |         |         |
   1+35       0.3425      4.91  |   Q V   |         |         |         |
   1+40       0.3774      5.07  |    Q V  |         |         |         |
   1+45       0.4163      5.65  |    Q  V |         |         |         |
   1+50       0.4622      6.65  |     Q  V|         |         |         |
   1+55       0.5187      8.21  |       Q V         |         |         |
   2+ 0       0.5927     10.75  |         QV        |         |         |
   2+ 5       0.6974     15.19  |          |  V Q   |         |         |
   2+10       0.8499     22.15  |          |     V  | Q       |         |
   2+15       1.0593     30.41  |          |        V         Q         |
   2+20       1.3004     35.00  |          |          |    V     |    Q    |
   2+25       1.4496     21.66  |          |          |Q       V |         |
   2+30       1.5592     15.92  |          |    Q     |          V         |
   2+35       1.6470     12.74  |          | Q        |          | V       |
   2+40       1.7205     10.67  |         Q          |          |   V     |
   2+45       1.7817      8.88  |       Q  |         |          |    V    |
   2+50       1.8325      7.38  |      Q   |         |          |     V   |
   2+55       1.8743      6.07  |     Q    |         |          |      V  |
   3+ 0       1.9090      5.04  |    Q     |         |          |      V  |
   3+ 5       1.9372      4.10  |   Q      |         |          |       V |
   3+10       1.9601      3.32  |  Q       |         |          |       V |
   3+15       1.9778      2.57  | Q        |         |          |        V|
   3+20       1.9892      1.65  |Q         |         |          |        V|
   3+25       1.9975      1.20  |Q         |         |          |        V|
   3+30       2.0041      0.95  Q          |         |          |        V|
   3+35       2.0090      0.72  Q          |         |          |        V|
   3+40       2.0124      0.50  Q          |         |          |        V|
   3+45       2.0148      0.34  Q          |         |          |        V|
   3+50       2.0163      0.22  Q          |         |          |        V|
   3+55       2.0172      0.13  Q          |         |          |        V|
   4+ 0       2.0179      0.09  Q          |         |          |        V|
   4+ 5       2.0183      0.06  Q          |         |          |        V|
   4+10       2.0186      0.05  Q          |         |          |        V|
   4+15       2.0188      0.03  Q          |         |          |        V|
   4+20       2.0190      0.03  Q          |         |          |        V|
   4+25       2.0192      0.02  Q          |         |          |        V|
   4+30       2.0192      0.01  Q          |         |          |        V|
   4+35       2.0193      0.01  Q          |         |          |        V|
   4+40       2.0193      0.00  Q          |         |          |        V|
   4+45       2.0193      0.00  Q          |         |          |        V|
-------------------------------------------------------------------------
```

- 5 Year 6 Hour Post-Development Unit Hydrograph – Area 'A'

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        U n i t   H y d r o g r a p h   A n a l y s i s

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        Study date  10/03/16   File Name PRA00506.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

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RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'A' - 5 YEAR 6 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

        Storm Event Year = 5

        Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 70.6      27.4          1.00     C     0.250     0.581    0.145

Area-averaged adjusted loss rate Fm (In/Hr) =  0.145

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
    15.91   0.581         70.6      51.7       9.33     0.043
    11.48   0.419         98.0      98.0       0.20     0.923

Area-averaged catchment yield fraction, Y =  0.412
Area-averaged low loss fraction, Yb =  0.588
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.314 (hours)
Watershed area =      27.39(Ac.)
Catchment Lag time =   0.251 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 33.1635
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.145(In/Hr)
Average low loss rate fraction (Yb) = 0.588 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.260(In)
Computed peak 30-minute rainfall =  0.590(In)
Specified peak 1-hour rainfall =  0.780(In)
Computed peak 3-hour rainfall =  1.310(In)
Specified peak 6-hour rainfall =  1.810(In)
Specified peak 24-hour rainfall =  3.030(In)


Rainfall depth area reduction factors:
Using a total area of      27.39(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.260(In)
```

```
30-minute factor = 0.999    Adjusted rainfall =  0.589(In)
1-hour factor = 0.999       Adjusted rainfall =  0.779(In)
3-hour factor = 1.000       Adjusted rainfall =  1.310(In)
6-hour factor = 1.000       Adjusted rainfall =  1.810(In)
24-hour factor = 1.000 Adjusted rainfall =  3.030(In)
------------------------------------------------------------------------

                      U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
------------------------------------------------------------------------
               (K =       331.25 (CFS))

  1                2.446                   8.101
  2               10.652                  27.183
  3               29.614                  62.811
  4               59.208                  98.029
  5               71.429                  40.482
  6               79.095                  25.396
  7               84.622                  18.307
  8               88.762                  13.715
  9               91.929                  10.488
 10               94.352                   8.028
 11               96.088                   5.750
 12               97.360                   4.213
 13               98.074                   2.364
 14               98.466                   1.301
 15               98.809                   1.134
 16               99.084                   0.911
 17               99.289                   0.679
 18               99.543                   0.841
 19               99.754                   0.698
 20               99.881                   0.424
 21               99.960                   0.259
 22              100.000                   0.133
------------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.2597               0.2597
  2              0.3565               0.0969
  3              0.4292               0.0726
  4              0.4895               0.0603
  5              0.5421               0.0526
  6              0.5892               0.0471
  7              0.6270               0.0377
  8              0.6616               0.0346
  9              0.6938               0.0321
 10              0.7238               0.0301
 11              0.7522               0.0283
 12              0.7790               0.0268
 13              0.8091               0.0301
 14              0.8379               0.0289
 15              0.8657               0.0278
 16              0.8925               0.0268
 17              0.9185               0.0260
 18              0.9437               0.0252
 19              0.9681               0.0244
 20              0.9919               0.0238
 21              1.0150               0.0232
 22              1.0376               0.0226
 23              1.0597               0.0220
 24              1.0812               0.0215
 25              1.1023               0.0211
 26              1.1229               0.0206
 27              1.1432               0.0202
 28              1.1630               0.0198
 29              1.1825               0.0195
 30              1.2016               0.0191
 31              1.2204               0.0188
 32              1.2388               0.0185
```

33	1.2570	0.0182
34	1.2749	0.0179
35	1.2925	0.0176
36	1.3098	0.0173
37	1.3266	0.0168
38	1.3432	0.0166
39	1.3596	0.0164
40	1.3758	0.0162
41	1.3917	0.0159
42	1.4075	0.0157
43	1.4230	0.0155
44	1.4383	0.0153
45	1.4535	0.0152
46	1.4685	0.0150
47	1.4833	0.0148
48	1.4979	0.0146
49	1.5124	0.0145
50	1.5267	0.0143
51	1.5409	0.0142
52	1.5549	0.0140
53	1.5688	0.0139
54	1.5825	0.0137
55	1.5961	0.0136
56	1.6096	0.0135
57	1.6230	0.0133
58	1.6362	0.0132
59	1.6493	0.0131
60	1.6623	0.0130
61	1.6751	0.0129
62	1.6879	0.0128
63	1.7005	0.0126
64	1.7131	0.0125
65	1.7255	0.0124
66	1.7378	0.0123
67	1.7501	0.0122
68	1.7622	0.0121
69	1.7743	0.0120
70	1.7862	0.0120
71	1.7981	0.0119
72	1.8098	0.0118

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0118	0.0069	0.0048
2	0.0119	0.0070	0.0049
3	0.0120	0.0071	0.0050
4	0.0121	0.0071	0.0050
5	0.0123	0.0073	0.0051
6	0.0124	0.0073	0.0051
7	0.0126	0.0074	0.0052
8	0.0128	0.0075	0.0053
9	0.0130	0.0076	0.0053
10	0.0131	0.0077	0.0054
11	0.0133	0.0079	0.0055
12	0.0135	0.0079	0.0055
13	0.0137	0.0081	0.0057
14	0.0139	0.0082	0.0057
15	0.0142	0.0083	0.0058
16	0.0143	0.0084	0.0059
17	0.0146	0.0086	0.0060
18	0.0148	0.0087	0.0061
19	0.0152	0.0089	0.0062
20	0.0153	0.0090	0.0063
21	0.0157	0.0093	0.0065
22	0.0159	0.0094	0.0066
23	0.0164	0.0096	0.0067
24	0.0166	0.0098	0.0068
25	0.0173	0.0102	0.0071
26	0.0176	0.0104	0.0072

```
 27              0.0182          0.0107              0.0075
 28              0.0185          0.0109              0.0076
 29              0.0191          0.0112              0.0079
 30              0.0195          0.0115              0.0080
 31              0.0202          0.0119              0.0083
 32              0.0206          0.0121              0.0085
 33              0.0215          0.0121              0.0094
 34              0.0220          0.0121              0.0099
 35              0.0232          0.0121              0.0111
 36              0.0238          0.0121              0.0117
 37              0.0252          0.0121              0.0131
 38              0.0260          0.0121              0.0139
 39              0.0278          0.0121              0.0157
 40              0.0289          0.0121              0.0168
 41              0.0268          0.0121              0.0147
 42              0.0283          0.0121              0.0162
 43              0.0321          0.0121              0.0200
 44              0.0346          0.0121              0.0225
 45              0.0471          0.0121              0.0350
 46              0.0526          0.0121              0.0405
 47              0.0726          0.0121              0.0605
 48              0.0969          0.0121              0.0848
 49              0.2597          0.0121              0.2476
 50              0.0603          0.0121              0.0482
 51              0.0377          0.0121              0.0256
 52              0.0301          0.0121              0.0180
 53              0.0301          0.0121              0.0180
 54              0.0268          0.0121              0.0147
 55              0.0244          0.0121              0.0123
 56              0.0226          0.0121              0.0105
 57              0.0211          0.0121              0.0090
 58              0.0198          0.0117              0.0082
 59              0.0188          0.0110              0.0077
 60              0.0179          0.0105              0.0074
 61              0.0168          0.0099              0.0069
 62              0.0162          0.0095              0.0066
 63              0.0155          0.0091              0.0064
 64              0.0150          0.0088              0.0062
 65              0.0145          0.0085              0.0060
 66              0.0140          0.0083              0.0058
 67              0.0136          0.0080              0.0056
 68              0.0132          0.0078              0.0054
 69              0.0129          0.0076              0.0053
 70              0.0125          0.0074              0.0052
 71              0.0122          0.0072              0.0050
 72              0.0120          0.0070              0.0049
-------------------------------------------------------------------
-------------------------------------------------------------------
Total soil rain loss =      0.72(In)
Total effective rainfall =      1.09(In)
Peak flow rate in flood hydrograph =     35.00(CFS)
-------------------------------------------------------------------
+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                    6 - H O U R    S T O R M
                R u n o f f      H y d r o g r a p h
-------------------------------------------------------------------
            Hydrograph in   5   Minute intervals ((CFS))

-------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0       10.0      20.0      30.0      40.0
-------------------------------------------------------------------
  0+ 5       0.0003      0.04  Q         |         |         |         |
  0+10       0.0014      0.17  Q         |         |         |         |
  0+15       0.0047      0.48  Q         |         |         |         |
  0+20       0.0113      0.96  Q         |         |         |         |
  0+25       0.0193      1.16  VQ        |         |         |         |
  0+30       0.0283      1.30  VQ        |         |         |         |
  0+35       0.0380      1.40  VQ        |         |         |         |
  0+40       0.0482      1.49  VQ        |         |         |         |
  0+45       0.0589      1.56  VQ        |         |         |         |
  0+50       0.0700      1.61  |Q        |         |         |         |
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0+55      0.0815     1.66  |Q        |         |         |         |
1+ 0      0.0932     1.71  |Q        |         |         |         |
1+ 5      0.1052     1.74  |Q        |         |         |         |
1+10      0.1174     1.77  |Q        |         |         |         |
1+15      0.1298     1.80  |QV       |         |         |         |
1+20      0.1424     1.83  |QV       |         |         |         |
1+25      0.1552     1.86  |QV       |         |         |         |
1+30      0.1683     1.90  |QV       |         |         |         |
1+35      0.1816     1.93  |QV       |         |         |         |
1+40      0.1951     1.96  |Q V      |         |         |         |
1+45      0.2088     2.00  |Q V      |         |         |         |
1+50      0.2228     2.03  | QV      |         |         |         |
1+55      0.2370     2.07  | QV      |         |         |         |
2+ 0      0.2516     2.11  | Q V     |         |         |         |
2+ 5      0.2663     2.15  | Q V     |         |         |         |
2+10      0.2814     2.19  | Q V     |         |         |         |
2+15      0.2969     2.24  | Q V     |         |         |         |
2+20      0.3127     2.30  | Q  V    |         |         |         |
2+25      0.3290     2.36  | Q  V    |         |         |         |
2+30      0.3456     2.42  | Q  V    |         |         |         |
2+35      0.3627     2.47  | Q  V    |         |         |         |
2+40      0.3802     2.54  | Q   V   |         |         |         |
2+45      0.3982     2.61  | Q   V   |         |         |         |
2+50      0.4168     2.71  | Q   V   |         |         |         |
2+55      0.4364     2.84  | Q    V  |         |         |         |
3+ 0      0.4572     3.02  |  Q   V  |         |         |         |
3+ 5      0.4795     3.23  |  Q   V  |         |         |         |
3+10      0.5034     3.48  |  Q    V |         |         |         |
3+15      0.5292     3.75  |  Q    V |         |         |         |
3+20      0.5573     4.08  |   Q   V |         |         |         |
3+25      0.5876     4.40  |   Q    V|         |         |         |
3+30      0.6200     4.71  |   Q    V|         |         |         |
3+35      0.6539     4.91  |   Q     V         |         |         |
3+40      0.6888     5.08  |    Q    |V        |         |         |
3+45      0.7278     5.65  |    Q    |V        |         |         |
3+50      0.7736     6.65  |     Q   | V       |         |         |
3+55      0.8301     8.21  |       Q | V       |         |         |
4+ 0      0.9041    10.75  |         Q   V     |         |         |
4+ 5      1.0088    15.19  |           |   QV  |         |         |
4+10      1.1613    22.15  |           |      V| Q       |         |
4+15      1.3707    30.41  |           |       | V       Q         |
4+20      1.6118    35.00  |           |       |    V    |    Q    |
4+25      1.7610    21.66  |           |       |Q      V |         |
4+30      1.8706    15.92  |           |   Q   |         V         |
4+35      1.9584    12.74  |           | Q     |         |V        |
4+40      2.0319    10.67  |          Q        |         | V       |
4+45      2.0931     8.88  |        Q  |       |         |  V      |
4+50      2.1439     7.38  |      Q    |       |         |   V     |
4+55      2.1857     6.07  |     Q     |       |         |    V    |
5+ 0      2.2204     5.04  |    Q      |       |         |    V    |
5+ 5      2.2490     4.15  |   Q       |       |         |     V   |
5+10      2.2736     3.57  |  Q        |       |         |     V   |
5+15      2.2959     3.24  |  Q        |       |         |     V   |
5+20      2.3164     2.97  | Q         |       |         |      V  |
5+25      2.3353     2.75  | Q         |       |         |      V  |
5+30      2.3534     2.62  | Q         |       |         |      V  |
5+35      2.3703     2.45  | Q         |       |         |       V |
5+40      2.3859     2.27  | Q         |       |         |       V |
5+45      2.4006     2.13  | Q         |       |         |       V |
5+50      2.4144     2.01  | Q         |       |         |       V |
5+55      2.4276     1.91  |Q          |       |         |        V|
6+ 0      2.4403     1.84  |Q          |       |         |        V|
6+ 5      2.4523     1.75  |Q          |       |         |        V|
6+10      2.4631     1.57  |Q          |       |         |        V|
6+15      2.4715     1.22  |Q          |       |         |        V|
6+20      2.4764     0.72  Q           |       |         |        V|
6+25      2.4799     0.50  Q           |       |         |        V|
6+30      2.4824     0.37  Q           |       |         |        V|
6+35      2.4843     0.27  Q           |       |         |        V|
6+40      2.4856     0.20  Q           |       |         |        V|
6+45      2.4866     0.14  Q           |       |         |        V|
```

```
    6+50       2.4873      0.10  Q         |         |         |        V|
    6+55       2.4877      0.07  Q         |         |         |        V|
    7+ 0       2.4881      0.05  Q         |         |         |        V|
    7+ 5       2.4883      0.03  Q         |         |         |        V|
    7+10       2.4885      0.03  Q         |         |         |        V|
    7+15       2.4886      0.02  Q         |         |         |        V|
    7+20       2.4887      0.02  Q         |         |         |        V|
    7+25       2.4888      0.01  Q         |         |         |        V|
    7+30       2.4889      0.01  Q         |         |         |        V|
    7+35       2.4889      0.00  Q         |         |         |        V|
    7+40       2.4889      0.00  Q         |         |         |        V|
    7+45       2.4889      0.00  Q         |         |         |         V
--------------------------------------------------------------------------
```

- 5 Year 12 Hour Post-Development Unit Hydrograph – Area 'A'

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       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/03/16   File Name PRA00512.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

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RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'A' - 5 YEAR 12 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 5

       Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 70.6      27.4          1.00     C     0.250     0.581    0.145

Area-averaged adjusted loss rate Fm (In/Hr) =  0.145

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
    15.91   0.581         70.6      51.7       9.33     0.043
    11.48   0.419         98.0      98.0       0.20     0.923

Area-averaged catchment yield fraction, Y =  0.412
Area-averaged low loss fraction, Yb =  0.588
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Watershed area =      27.39(Ac.)
Catchment Lag time =   0.251 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 33.1635
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.145(In/Hr)
Average low loss rate fraction (Yb) = 0.588 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.260(In)
Computed peak 30-minute rainfall =  0.590(In)
Specified peak 1-hour rainfall =  0.780(In)
Computed peak 3-hour rainfall =  1.310(In)
Specified peak 6-hour rainfall =  1.810(In)
Specified peak 24-hour rainfall =  3.030(In)


Rainfall depth area reduction factors:
Using a total area of      27.39(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.260(In)
```

```
30-minute factor = 0.999    Adjusted rainfall =  0.589(In)
1-hour factor = 0.999       Adjusted rainfall =  0.779(In)
3-hour factor = 1.000       Adjusted rainfall =  1.310(In)
6-hour factor = 1.000       Adjusted rainfall =  1.810(In)
24-hour factor = 1.000 Adjusted rainfall =  3.030(In)
------------------------------------------------------------------------

                      U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
------------------------------------------------------------------------
               (K =       331.25 (CFS))

  1                2.446                   8.101
  2               10.652                  27.183
  3               29.614                  62.811
  4               59.208                  98.029
  5               71.429                  40.482
  6               79.095                  25.396
  7               84.622                  18.307
  8               88.762                  13.715
  9               91.929                  10.488
 10               94.352                   8.028
 11               96.088                   5.750
 12               97.360                   4.213
 13               98.074                   2.364
 14               98.466                   1.301
 15               98.809                   1.134
 16               99.084                   0.911
 17               99.289                   0.679
 18               99.543                   0.841
 19               99.754                   0.698
 20               99.881                   0.424
 21               99.960                   0.259
 22              100.000                   0.133
------------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.2597               0.2597
  2              0.3565               0.0969
  3              0.4292               0.0726
  4              0.4895               0.0603
  5              0.5421               0.0526
  6              0.5892               0.0471
  7              0.6270               0.0377
  8              0.6616               0.0346
  9              0.6938               0.0321
 10              0.7238               0.0301
 11              0.7522               0.0283
 12              0.7790               0.0268
 13              0.8091               0.0301
 14              0.8379               0.0289
 15              0.8657               0.0278
 16              0.8925               0.0268
 17              0.9185               0.0260
 18              0.9437               0.0252
 19              0.9681               0.0244
 20              0.9919               0.0238
 21              1.0150               0.0232
 22              1.0376               0.0226
 23              1.0597               0.0220
 24              1.0812               0.0215
 25              1.1023               0.0211
 26              1.1229               0.0206
 27              1.1432               0.0202
 28              1.1630               0.0198
 29              1.1825               0.0195
 30              1.2016               0.0191
 31              1.2204               0.0188
 32              1.2388               0.0185
```

33	1.2570	0.0182
34	1.2749	0.0179
35	1.2925	0.0176
36	1.3098	0.0173
37	1.3266	0.0168
38	1.3432	0.0166
39	1.3596	0.0164
40	1.3758	0.0162
41	1.3917	0.0159
42	1.4075	0.0157
43	1.4230	0.0155
44	1.4383	0.0153
45	1.4535	0.0152
46	1.4685	0.0150
47	1.4833	0.0148
48	1.4979	0.0146
49	1.5124	0.0145
50	1.5267	0.0143
51	1.5409	0.0142
52	1.5549	0.0140
53	1.5688	0.0139
54	1.5825	0.0137
55	1.5961	0.0136
56	1.6096	0.0135
57	1.6230	0.0133
58	1.6362	0.0132
59	1.6493	0.0131
60	1.6623	0.0130
61	1.6751	0.0129
62	1.6879	0.0128
63	1.7005	0.0126
64	1.7131	0.0125
65	1.7255	0.0124
66	1.7378	0.0123
67	1.7501	0.0122
68	1.7622	0.0121
69	1.7743	0.0120
70	1.7862	0.0120
71	1.7981	0.0119
72	1.8098	0.0118
73	1.8191	0.0093
74	1.8284	0.0092
75	1.8375	0.0091
76	1.8466	0.0091
77	1.8556	0.0090
78	1.8645	0.0089
79	1.8734	0.0088
80	1.8821	0.0088
81	1.8908	0.0087
82	1.8995	0.0086
83	1.9081	0.0086
84	1.9166	0.0085
85	1.9250	0.0084
86	1.9334	0.0084
87	1.9417	0.0083
88	1.9500	0.0083
89	1.9582	0.0082
90	1.9664	0.0081
91	1.9745	0.0081
92	1.9825	0.0080
93	1.9905	0.0080
94	1.9984	0.0079
95	2.0063	0.0079
96	2.0141	0.0078
97	2.0219	0.0078
98	2.0296	0.0077
99	2.0373	0.0077
100	2.0449	0.0076
101	2.0525	0.0076
102	2.0600	0.0075
103	2.0675	0.0075

104	2.0749	0.0074
105	2.0823	0.0074
106	2.0897	0.0073
107	2.0970	0.0073
108	2.1042	0.0073
109	2.1115	0.0072
110	2.1186	0.0072
111	2.1258	0.0071
112	2.1329	0.0071
113	2.1399	0.0071
114	2.1470	0.0070
115	2.1539	0.0070
116	2.1609	0.0069
117	2.1678	0.0069
118	2.1747	0.0069
119	2.1815	0.0068
120	2.1883	0.0068
121	2.1950	0.0068
122	2.2018	0.0067
123	2.2085	0.0067
124	2.2151	0.0067
125	2.2217	0.0066
126	2.2283	0.0066
127	2.2349	0.0066
128	2.2414	0.0065
129	2.2479	0.0065
130	2.2544	0.0065
131	2.2608	0.0064
132	2.2672	0.0064
133	2.2736	0.0064
134	2.2799	0.0063
135	2.2862	0.0063
136	2.2925	0.0063
137	2.2987	0.0063
138	2.3050	0.0062
139	2.3112	0.0062
140	2.3173	0.0062
141	2.3235	0.0061
142	2.3296	0.0061
143	2.3357	0.0061
144	2.3417	0.0061

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0061	0.0036	0.0025
2	0.0061	0.0036	0.0025
3	0.0061	0.0036	0.0025
4	0.0062	0.0036	0.0025
5	0.0062	0.0037	0.0026
6	0.0063	0.0037	0.0026
7	0.0063	0.0037	0.0026
8	0.0063	0.0037	0.0026
9	0.0064	0.0038	0.0026
10	0.0064	0.0038	0.0026
11	0.0065	0.0038	0.0027
12	0.0065	0.0038	0.0027
13	0.0066	0.0039	0.0027
14	0.0066	0.0039	0.0027
15	0.0067	0.0039	0.0028
16	0.0067	0.0040	0.0028
17	0.0068	0.0040	0.0028
18	0.0068	0.0040	0.0028
19	0.0069	0.0041	0.0028
20	0.0069	0.0041	0.0029
21	0.0070	0.0041	0.0029
22	0.0071	0.0042	0.0029
23	0.0071	0.0042	0.0029
24	0.0072	0.0042	0.0030
25	0.0073	0.0043	0.0030

26	0.0073	0.0043	0.0030
27	0.0074	0.0044	0.0030
28	0.0074	0.0044	0.0031
29	0.0075	0.0044	0.0031
30	0.0076	0.0045	0.0031
31	0.0077	0.0045	0.0032
32	0.0077	0.0045	0.0032
33	0.0078	0.0046	0.0032
34	0.0079	0.0046	0.0032
35	0.0080	0.0047	0.0033
36	0.0080	0.0047	0.0033
37	0.0081	0.0048	0.0034
38	0.0082	0.0048	0.0034
39	0.0083	0.0049	0.0034
40	0.0084	0.0049	0.0035
41	0.0085	0.0050	0.0035
42	0.0086	0.0050	0.0035
43	0.0087	0.0051	0.0036
44	0.0088	0.0052	0.0036
45	0.0089	0.0052	0.0037
46	0.0090	0.0053	0.0037
47	0.0091	0.0054	0.0038
48	0.0092	0.0054	0.0038
49	0.0118	0.0069	0.0048
50	0.0119	0.0070	0.0049
51	0.0120	0.0071	0.0050
52	0.0121	0.0071	0.0050
53	0.0123	0.0073	0.0051
54	0.0124	0.0073	0.0051
55	0.0126	0.0074	0.0052
56	0.0128	0.0075	0.0053
57	0.0130	0.0076	0.0053
58	0.0131	0.0077	0.0054
59	0.0133	0.0079	0.0055
60	0.0135	0.0079	0.0055
61	0.0137	0.0081	0.0057
62	0.0139	0.0082	0.0057
63	0.0142	0.0083	0.0058
64	0.0143	0.0084	0.0059
65	0.0146	0.0086	0.0060
66	0.0148	0.0087	0.0061
67	0.0152	0.0089	0.0062
68	0.0153	0.0090	0.0063
69	0.0157	0.0093	0.0065
70	0.0159	0.0094	0.0066
71	0.0164	0.0096	0.0067
72	0.0166	0.0098	0.0068
73	0.0173	0.0102	0.0071
74	0.0176	0.0104	0.0072
75	0.0182	0.0107	0.0075
76	0.0185	0.0109	0.0076
77	0.0191	0.0112	0.0079
78	0.0195	0.0115	0.0080
79	0.0202	0.0119	0.0083
80	0.0206	0.0121	0.0085
81	0.0215	0.0121	0.0094
82	0.0220	0.0121	0.0099
83	0.0232	0.0121	0.0111
84	0.0238	0.0121	0.0117
85	0.0252	0.0121	0.0131
86	0.0260	0.0121	0.0139
87	0.0278	0.0121	0.0157
88	0.0289	0.0121	0.0168
89	0.0268	0.0121	0.0147
90	0.0283	0.0121	0.0162
91	0.0321	0.0121	0.0200
92	0.0346	0.0121	0.0225
93	0.0471	0.0121	0.0350
94	0.0526	0.0121	0.0405
95	0.0726	0.0121	0.0605
96	0.0969	0.0121	0.0848

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        97              0.2597          0.0121              0.2476
        98              0.0603          0.0121              0.0482
        99              0.0377          0.0121              0.0256
       100              0.0301          0.0121              0.0180
       101              0.0301          0.0121              0.0180
       102              0.0268          0.0121              0.0147
       103              0.0244          0.0121              0.0123
       104              0.0226          0.0121              0.0105
       105              0.0211          0.0121              0.0090
       106              0.0198          0.0117              0.0082
       107              0.0188          0.0110              0.0077
       108              0.0179          0.0105              0.0074
       109              0.0168          0.0099              0.0069
       110              0.0162          0.0095              0.0066
       111              0.0155          0.0091              0.0064
       112              0.0150          0.0088              0.0062
       113              0.0145          0.0085              0.0060
       114              0.0140          0.0083              0.0058
       115              0.0136          0.0080              0.0056
       116              0.0132          0.0078              0.0054
       117              0.0129          0.0076              0.0053
       118              0.0125          0.0074              0.0052
       119              0.0122          0.0072              0.0050
       120              0.0120          0.0070              0.0049
       121              0.0093          0.0055              0.0038
       122              0.0091          0.0053              0.0037
       123              0.0088          0.0052              0.0036
       124              0.0086          0.0051              0.0036
       125              0.0084          0.0050              0.0035
       126              0.0083          0.0049              0.0034
       127              0.0081          0.0048              0.0033
       128              0.0079          0.0047              0.0033
       129              0.0078          0.0046              0.0032
       130              0.0076          0.0045              0.0031
       131              0.0075          0.0044              0.0031
       132              0.0073          0.0043              0.0030
       133              0.0072          0.0042              0.0030
       134              0.0071          0.0042              0.0029
       135              0.0070          0.0041              0.0029
       136              0.0069          0.0040              0.0028
       137              0.0068          0.0040              0.0028
       138              0.0067          0.0039              0.0027
       139              0.0066          0.0039              0.0027
       140              0.0065          0.0038              0.0027
       141              0.0064          0.0037              0.0026
       142              0.0063          0.0037              0.0026
       143              0.0062          0.0036              0.0025
       144              0.0061          0.0036              0.0025
      ------------------------------------------------------------------------
      ------------------------------------------------------------------------
      Total soil rain loss =      1.03(In)
      Total effective rainfall =      1.31(In)
      Peak flow rate in flood hydrograph =     35.00(CFS)
      ------------------------------------------------------------------------
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                         12 - H O U R    S T O R M
                    R u n o f f      H y d r o g r a p h
      ------------------------------------------------------------------------
                 Hydrograph in   5   Minute intervals ((CFS))

      ------------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0       10.0      20.0      30.0      40.0
----------------------------------------------------------------------------
  0+ 5       0.0001      0.02  Q         |         |         |         |
  0+10       0.0007      0.09  Q         |         |         |         |
  0+15       0.0024      0.25  Q         |         |         |         |
  0+20       0.0058      0.49  Q         |         |         |         |
  0+25       0.0099      0.59  Q         |         |         |         |
  0+30       0.0145      0.66  Q         |         |         |         |
  0+35       0.0194      0.71  Q         |         |         |         |
  0+40       0.0246      0.75  Q         |         |         |         |
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0+45      0.0299      0.78  Q          |          |          |          |
0+50      0.0355      0.81  Q          |          |          |          |
0+55      0.0412      0.83  Q          |          |          |          |
1+ 0      0.0470      0.84  Q          |          |          |          |
1+ 5      0.0529      0.86  Q          |          |          |          |
1+10      0.0589      0.87  Q          |          |          |          |
1+15      0.0649      0.87  Q          |          |          |          |
1+20      0.0710      0.88  Q          |          |          |          |
1+25      0.0771      0.89  QV         |          |          |          |
1+30      0.0834      0.90  QV         |          |          |          |
1+35      0.0896      0.91  QV         |          |          |          |
1+40      0.0959      0.92  QV         |          |          |          |
1+45      0.1023      0.93  QV         |          |          |          |
1+50      0.1087      0.93  QV         |          |          |          |
1+55      0.1152      0.94  QV         |          |          |          |
2+ 0      0.1218      0.95  QV         |          |          |          |
2+ 5      0.1283      0.96  QV         |          |          |          |
2+10      0.1350      0.96  QV         |          |          |          |
2+15      0.1417      0.97  QV         |          |          |          |
2+20      0.1484      0.98  QV         |          |          |          |
2+25      0.1553      0.99  Q V        |          |          |          |
2+30      0.1621      1.00  Q V        |          |          |          |
2+35      0.1691      1.01  |QV        |          |          |          |
2+40      0.1761      1.02  |QV        |          |          |          |
2+45      0.1831      1.03  |QV        |          |          |          |
2+50      0.1903      1.04  |QV        |          |          |          |
2+55      0.1975      1.05  |QV        |          |          |          |
3+ 0      0.2047      1.06  |QV        |          |          |          |
3+ 5      0.2121      1.07  |QV        |          |          |          |
3+10      0.2195      1.08  |QV        |          |          |          |
3+15      0.2270      1.09  |Q V       |          |          |          |
3+20      0.2346      1.10  |Q V       |          |          |          |
3+25      0.2422      1.11  |Q V       |          |          |          |
3+30      0.2499      1.12  |Q V       |          |          |          |
3+35      0.2577      1.13  |Q V       |          |          |          |
3+40      0.2656      1.15  |Q V       |          |          |          |
3+45      0.2736      1.16  |Q V       |          |          |          |
3+50      0.2817      1.17  |Q V       |          |          |          |
3+55      0.2899      1.19  |Q V       |          |          |          |
4+ 0      0.2982      1.20  |Q V       |          |          |          |
4+ 5      0.3066      1.22  |Q  V      |          |          |          |
4+10      0.3153      1.27  |Q  V      |          |          |          |
4+15      0.3245      1.34  |Q  V      |          |          |          |
4+20      0.3346      1.46  |Q  V      |          |          |          |
4+25      0.3450      1.51  |Q  V      |          |          |          |
4+30      0.3557      1.56  |Q  V      |          |          |          |
4+35      0.3666      1.59  |Q  V      |          |          |          |
4+40      0.3778      1.62  |Q   V     |          |          |          |
4+45      0.3892      1.65  |Q   V     |          |          |          |
4+50      0.4008      1.68  |Q   V     |          |          |          |
4+55      0.4126      1.71  |Q   V     |          |          |          |
5+ 0      0.4246      1.74  |Q   V     |          |          |          |
5+ 5      0.4367      1.76  |Q   V     |          |          |          |
5+10      0.4490      1.79  |Q    V    |          |          |          |
5+15      0.4615      1.81  |Q    V    |          |          |          |
5+20      0.4742      1.84  |Q    V    |          |          |          |
5+25      0.4871      1.87  |Q    V    |          |          |          |
5+30      0.5002      1.90  |Q    V    |          |          |          |
5+35      0.5135      1.93  |Q    V    |          |          |          |
5+40      0.5270      1.96  |Q     V   |          |          |          |
5+45      0.5408      2.00  |Q     V   |          |          |          |
5+50      0.5548      2.03  | Q    V   |          |          |          |
5+55      0.5690      2.07  | Q    V   |          |          |          |
6+ 0      0.5835      2.11  | Q    V   |          |          |          |
6+ 5      0.5983      2.15  | Q     V  |          |          |          |
6+10      0.6134      2.19  | Q     V  |          |          |          |
6+15      0.6288      2.24  | Q     V  |          |          |          |
6+20      0.6447      2.30  | Q     V  |          |          |          |
6+25      0.6609      2.36  | Q     V  |          |          |          |
6+30      0.6776      2.42  | Q      V |          |          |          |
6+35      0.6946      2.47  | Q      V |          |          |          |
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 6+40      0.7121     2.54  | Q      V|         |         |         |
 6+45      0.7301     2.61  | Q      V|         |         |         |
 6+50      0.7488     2.71  | Q       V         |         |         |
 6+55      0.7684     2.84  | Q       V         |         |         |
 7+ 0      0.7892     3.02  |  Q      V         |         |         |
 7+ 5      0.8114     3.23  |  Q      V         |         |         |
 7+10      0.8354     3.48  |  Q      |V        |         |         |
 7+15      0.8612     3.75  |  Q      |V        |         |         |
 7+20      0.8893     4.08  |   Q     |V        |         |         |
 7+25      0.9195     4.40  |   Q     | V       |         |         |
 7+30      0.9520     4.71  |   Q     | V       |         |         |
 7+35      0.9858     4.91  |   Q     |  V      |         |         |
 7+40      1.0208     5.08  |    Q    |  V      |         |         |
 7+45      1.0597     5.65  |    Q    |   V     |         |         |
 7+50      1.1055     6.65  |     Q   |   V     |         |         |
 7+55      1.1620     8.21  |       Q |    V    |         |         |
 8+ 0      1.2361    10.75  |         Q     V   |         |         |
 8+ 5      1.3407    15.19  |         |    Q V  |         |         |
 8+10      1.4932    22.15  |         |        V| Q       |         |
 8+15      1.7027    30.41  |         |         | V       Q         |
 8+20      1.9437    35.00  |         |         |     V   |    Q    |
 8+25      2.0930    21.66  |         |         |Q      V |         |
 8+30      2.2026    15.92  |         |    Q    |        V|         |
 8+35      2.2904    12.74  |         | Q       |         V         |
 8+40      2.3639    10.67  |         Q         |         |V        |
 8+45      2.4250     8.88  |       Q |         |         | V       |
 8+50      2.4758     7.38  |      Q  |         |         |  V      |
 8+55      2.5176     6.07  |     Q   |         |         |  V      |
 9+ 0      2.5524     5.04  |    Q    |         |         |   V     |
 9+ 5      2.5810     4.15  |   Q     |         |         |   V     |
 9+10      2.6055     3.57  |  Q      |         |         |   V     |
 9+15      2.6279     3.24  |  Q      |         |         |    V    |
 9+20      2.6483     2.97  | Q       |         |         |    V    |
 9+25      2.6673     2.75  | Q       |         |         |    V    |
 9+30      2.6854     2.62  | Q       |         |         |    V    |
 9+35      2.7022     2.45  | Q       |         |         |     V   |
 9+40      2.7179     2.27  | Q       |         |         |     V   |
 9+45      2.7326     2.13  | Q       |         |         |     V   |
 9+50      2.7464     2.01  | Q       |         |         |     V   |
 9+55      2.7595     1.91  |Q        |         |         |     V   |
10+ 0      2.7722     1.84  |Q        |         |         |      V  |
10+ 5      2.7845     1.78  |Q        |         |         |      V  |
10+10      2.7962     1.70  |Q        |         |         |      V  |
10+15      2.8071     1.59  |Q        |         |         |      V  |
10+20      2.8172     1.45  |Q        |         |         |      V  |
10+25      2.8266     1.38  |Q        |         |         |      V  |
10+30      2.8357     1.32  |Q        |         |         |      V  |
10+35      2.8445     1.27  |Q        |         |         |       V |
10+40      2.8529     1.23  |Q        |         |         |       V |
10+45      2.8611     1.19  |Q        |         |         |       V |
10+50      2.8690     1.15  |Q        |         |         |       V |
10+55      2.8768     1.12  |Q        |         |         |       V |
11+ 0      2.8843     1.10  |Q        |         |         |       V |
11+ 5      2.8917     1.07  |Q        |         |         |       V |
11+10      2.8989     1.05  |Q        |         |         |       V |
11+15      2.9060     1.03  |Q        |         |         |       V |
11+20      2.9130     1.01  |Q        |         |         |       V |
11+25      2.9198     0.99  Q         |         |         |        V|
11+30      2.9265     0.97  Q         |         |         |        V|
11+35      2.9331     0.96  Q         |         |         |        V|
11+40      2.9396     0.94  Q         |         |         |        V|
11+45      2.9459     0.93  Q         |         |         |        V|
11+50      2.9522     0.91  Q         |         |         |        V|
11+55      2.9584     0.90  Q         |         |         |        V|
12+ 0      2.9645     0.88  Q         |         |         |        V|
12+ 5      2.9703     0.85  Q         |         |         |        V|
12+10      2.9756     0.77  Q         |         |         |        V|
12+15      2.9798     0.60  Q         |         |         |        V|
12+20      2.9822     0.35  Q         |         |         |        V|
12+25      2.9839     0.25  Q         |         |         |        V|
12+30      2.9852     0.18  Q         |         |         |        V|
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   12+35       2.9861      0.13  Q         |         |         |         V|
   12+40       2.9868      0.10  Q         |         |         |         V|
   12+45       2.9872      0.07  Q         |         |         |         V|
   12+50       2.9876      0.05  Q         |         |         |         V|
   12+55       2.9878      0.03  Q         |         |         |         V|
   13+ 0       2.9880      0.02  Q         |         |         |         V|
   13+ 5       2.9881      0.02  Q         |         |         |         V|
   13+10       2.9882      0.01  Q         |         |         |         V|
   13+15       2.9882      0.01  Q         |         |         |         V|
   13+20       2.9883      0.01  Q         |         |         |         V|
   13+25       2.9883      0.01  Q         |         |         |         V|
   13+30       2.9884      0.00  Q         |         |         |         V|
   13+35       2.9884      0.00  Q         |         |         |         V|
   13+40       2.9884      0.00  Q         |         |         |         V|
   13+45       2.9884      0.00  Q         |         |         |          V
------------------------------------------------------------------------
```

- 5 Year 24 Hour Post-Development Unit Hydrograph – Area 'A'

```
        U n i t   H y d r o g r a p h   A n a l y s i s

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        Study date  10/03/16   File Name PRA00524.out


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'A' - 5 YEAR 24 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

        Storm Event Year = 5

        Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 70.6      27.4          1.00     C     0.250     0.581    0.145

Area-averaged adjusted loss rate Fm (In/Hr) =  0.145

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
    15.91   0.581         70.6      51.7       9.33     0.043
    11.48   0.419         98.0      98.0       0.20     0.923

Area-averaged catchment yield fraction, Y =  0.412
Area-averaged low loss fraction, Yb =  0.588
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.314 (hours)
Watershed area =      27.39(Ac.)
Catchment Lag time =   0.251 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 33.1635
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.145(In/Hr)
Average low loss rate fraction (Yb) = 0.588 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.260(In)
Computed peak 30-minute rainfall =  0.590(In)
Specified peak 1-hour rainfall =  0.780(In)
Computed peak 3-hour rainfall =  1.310(In)
Specified peak 6-hour rainfall =  1.810(In)
Specified peak 24-hour rainfall =  3.030(In)


Rainfall depth area reduction factors:
Using a total area of      27.39(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.260(In)
```

```
30-minute factor = 0.999    Adjusted rainfall =  0.589(In)
1-hour factor = 0.999       Adjusted rainfall =  0.779(In)
3-hour factor = 1.000       Adjusted rainfall =  1.310(In)
6-hour factor = 1.000       Adjusted rainfall =  1.810(In)
24-hour factor = 1.000 Adjusted rainfall =  3.030(In)
--------------------------------------------------------------------

                     U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------
               (K =       331.25 (CFS))

  1                2.446                   8.101
  2               10.652                  27.183
  3               29.614                  62.811
  4               59.208                  98.029
  5               71.429                  40.482
  6               79.095                  25.396
  7               84.622                  18.307
  8               88.762                  13.715
  9               91.929                  10.488
 10               94.352                   8.028
 11               96.088                   5.750
 12               97.360                   4.213
 13               98.074                   2.364
 14               98.466                   1.301
 15               98.809                   1.134
 16               99.084                   0.911
 17               99.289                   0.679
 18               99.543                   0.841
 19               99.754                   0.698
 20               99.881                   0.424
 21               99.960                   0.259
 22              100.000                   0.133
--------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.2597               0.2597
  2              0.3565               0.0969
  3              0.4292               0.0726
  4              0.4895               0.0603
  5              0.5421               0.0526
  6              0.5892               0.0471
  7              0.6270               0.0377
  8              0.6616               0.0346
  9              0.6938               0.0321
 10              0.7238               0.0301
 11              0.7522               0.0283
 12              0.7790               0.0268
 13              0.8091               0.0301
 14              0.8379               0.0289
 15              0.8657               0.0278
 16              0.8925               0.0268
 17              0.9185               0.0260
 18              0.9437               0.0252
 19              0.9681               0.0244
 20              0.9919               0.0238
 21              1.0150               0.0232
 22              1.0376               0.0226
 23              1.0597               0.0220
 24              1.0812               0.0215
 25              1.1023               0.0211
 26              1.1229               0.0206
 27              1.1432               0.0202
 28              1.1630               0.0198
 29              1.1825               0.0195
 30              1.2016               0.0191
 31              1.2204               0.0188
 32              1.2388               0.0185
```

33	1.2570	0.0182
34	1.2749	0.0179
35	1.2925	0.0176
36	1.3098	0.0173
37	1.3266	0.0168
38	1.3432	0.0166
39	1.3596	0.0164
40	1.3758	0.0162
41	1.3917	0.0159
42	1.4075	0.0157
43	1.4230	0.0155
44	1.4383	0.0153
45	1.4535	0.0152
46	1.4685	0.0150
47	1.4833	0.0148
48	1.4979	0.0146
49	1.5124	0.0145
50	1.5267	0.0143
51	1.5409	0.0142
52	1.5549	0.0140
53	1.5688	0.0139
54	1.5825	0.0137
55	1.5961	0.0136
56	1.6096	0.0135
57	1.6230	0.0133
58	1.6362	0.0132
59	1.6493	0.0131
60	1.6623	0.0130
61	1.6751	0.0129
62	1.6879	0.0128
63	1.7005	0.0126
64	1.7131	0.0125
65	1.7255	0.0124
66	1.7378	0.0123
67	1.7501	0.0122
68	1.7622	0.0121
69	1.7743	0.0120
70	1.7862	0.0120
71	1.7981	0.0119
72	1.8098	0.0118
73	1.8191	0.0093
74	1.8284	0.0092
75	1.8375	0.0091
76	1.8466	0.0091
77	1.8556	0.0090
78	1.8645	0.0089
79	1.8734	0.0088
80	1.8821	0.0088
81	1.8908	0.0087
82	1.8995	0.0086
83	1.9081	0.0086
84	1.9166	0.0085
85	1.9250	0.0084
86	1.9334	0.0084
87	1.9417	0.0083
88	1.9500	0.0083
89	1.9582	0.0082
90	1.9664	0.0081
91	1.9745	0.0081
92	1.9825	0.0080
93	1.9905	0.0080
94	1.9984	0.0079
95	2.0063	0.0079
96	2.0141	0.0078
97	2.0219	0.0078
98	2.0296	0.0077
99	2.0373	0.0077
100	2.0449	0.0076
101	2.0525	0.0076
102	2.0600	0.0075
103	2.0675	0.0075

104	2.0749	0.0074
105	2.0823	0.0074
106	2.0897	0.0073
107	2.0970	0.0073
108	2.1042	0.0073
109	2.1115	0.0072
110	2.1186	0.0072
111	2.1258	0.0071
112	2.1329	0.0071
113	2.1399	0.0071
114	2.1470	0.0070
115	2.1539	0.0070
116	2.1609	0.0069
117	2.1678	0.0069
118	2.1747	0.0069
119	2.1815	0.0068
120	2.1883	0.0068
121	2.1950	0.0068
122	2.2018	0.0067
123	2.2085	0.0067
124	2.2151	0.0067
125	2.2217	0.0066
126	2.2283	0.0066
127	2.2349	0.0066
128	2.2414	0.0065
129	2.2479	0.0065
130	2.2544	0.0065
131	2.2608	0.0064
132	2.2672	0.0064
133	2.2736	0.0064
134	2.2799	0.0063
135	2.2862	0.0063
136	2.2925	0.0063
137	2.2987	0.0063
138	2.3050	0.0062
139	2.3112	0.0062
140	2.3173	0.0062
141	2.3235	0.0061
142	2.3296	0.0061
143	2.3357	0.0061
144	2.3417	0.0061
145	2.3477	0.0060
146	2.3538	0.0060
147	2.3597	0.0060
148	2.3657	0.0060
149	2.3716	0.0059
150	2.3775	0.0059
151	2.3834	0.0059
152	2.3893	0.0059
153	2.3951	0.0058
154	2.4009	0.0058
155	2.4067	0.0058
156	2.4124	0.0058
157	2.4182	0.0057
158	2.4239	0.0057
159	2.4296	0.0057
160	2.4352	0.0057
161	2.4409	0.0056
162	2.4465	0.0056
163	2.4521	0.0056
164	2.4577	0.0056
165	2.4633	0.0056
166	2.4688	0.0055
167	2.4743	0.0055
168	2.4798	0.0055
169	2.4853	0.0055
170	2.4907	0.0055
171	2.4962	0.0054
172	2.5016	0.0054
173	2.5070	0.0054
174	2.5124	0.0054

175	2.5177	0.0054
176	2.5231	0.0053
177	2.5284	0.0053
178	2.5337	0.0053
179	2.5390	0.0053
180	2.5442	0.0053
181	2.5495	0.0052
182	2.5547	0.0052
183	2.5599	0.0052
184	2.5651	0.0052
185	2.5703	0.0052
186	2.5754	0.0052
187	2.5806	0.0051
188	2.5857	0.0051
189	2.5908	0.0051
190	2.5959	0.0051
191	2.6009	0.0051
192	2.6060	0.0051
193	2.6110	0.0050
194	2.6161	0.0050
195	2.6211	0.0050
196	2.6260	0.0050
197	2.6310	0.0050
198	2.6360	0.0050
199	2.6409	0.0049
200	2.6458	0.0049
201	2.6508	0.0049
202	2.6556	0.0049
203	2.6605	0.0049
204	2.6654	0.0049
205	2.6702	0.0048
206	2.6751	0.0048
207	2.6799	0.0048
208	2.6847	0.0048
209	2.6895	0.0048
210	2.6943	0.0048
211	2.6990	0.0048
212	2.7038	0.0047
213	2.7085	0.0047
214	2.7132	0.0047
215	2.7179	0.0047
216	2.7226	0.0047
217	2.7273	0.0047
218	2.7320	0.0047
219	2.7366	0.0047
220	2.7413	0.0046
221	2.7459	0.0046
222	2.7505	0.0046
223	2.7551	0.0046
224	2.7597	0.0046
225	2.7643	0.0046
226	2.7688	0.0046
227	2.7734	0.0045
228	2.7779	0.0045
229	2.7824	0.0045
230	2.7869	0.0045
231	2.7914	0.0045
232	2.7959	0.0045
233	2.8004	0.0045
234	2.8048	0.0045
235	2.8093	0.0044
236	2.8137	0.0044
237	2.8182	0.0044
238	2.8226	0.0044
239	2.8270	0.0044
240	2.8314	0.0044
241	2.8357	0.0044
242	2.8401	0.0044
243	2.8445	0.0044
244	2.8488	0.0043
245	2.8531	0.0043

246	2.8575	0.0043
247	2.8618	0.0043
248	2.8661	0.0043
249	2.8704	0.0043
250	2.8747	0.0043
251	2.8789	0.0043
252	2.8832	0.0043
253	2.8874	0.0042
254	2.8917	0.0042
255	2.8959	0.0042
256	2.9001	0.0042
257	2.9043	0.0042
258	2.9085	0.0042
259	2.9127	0.0042
260	2.9169	0.0042
261	2.9210	0.0042
262	2.9252	0.0042
263	2.9293	0.0041
264	2.9335	0.0041
265	2.9376	0.0041
266	2.9417	0.0041
267	2.9458	0.0041
268	2.9499	0.0041
269	2.9540	0.0041
270	2.9581	0.0041
271	2.9621	0.0041
272	2.9662	0.0041
273	2.9703	0.0040
274	2.9743	0.0040
275	2.9783	0.0040
276	2.9823	0.0040
277	2.9864	0.0040
278	2.9904	0.0040
279	2.9944	0.0040
280	2.9983	0.0040
281	3.0023	0.0040
282	3.0063	0.0040
283	3.0102	0.0040
284	3.0142	0.0039
285	3.0181	0.0039
286	3.0221	0.0039
287	3.0260	0.0039
288	3.0299	0.0039

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0039	0.0023	0.0016
2	0.0039	0.0023	0.0016
3	0.0039	0.0023	0.0016
4	0.0039	0.0023	0.0016
5	0.0040	0.0023	0.0016
6	0.0040	0.0023	0.0016
7	0.0040	0.0023	0.0016
8	0.0040	0.0024	0.0016
9	0.0040	0.0024	0.0017
10	0.0040	0.0024	0.0017
11	0.0040	0.0024	0.0017
12	0.0041	0.0024	0.0017
13	0.0041	0.0024	0.0017
14	0.0041	0.0024	0.0017
15	0.0041	0.0024	0.0017
16	0.0041	0.0024	0.0017
17	0.0041	0.0024	0.0017
18	0.0041	0.0024	0.0017
19	0.0042	0.0025	0.0017
20	0.0042	0.0025	0.0017
21	0.0042	0.0025	0.0017
22	0.0042	0.0025	0.0017
23	0.0042	0.0025	0.0017

24	0.0042	0.0025	0.0017
25	0.0043	0.0025	0.0018
26	0.0043	0.0025	0.0018
27	0.0043	0.0025	0.0018
28	0.0043	0.0025	0.0018
29	0.0043	0.0025	0.0018
30	0.0043	0.0026	0.0018
31	0.0044	0.0026	0.0018
32	0.0044	0.0026	0.0018
33	0.0044	0.0026	0.0018
34	0.0044	0.0026	0.0018
35	0.0044	0.0026	0.0018
36	0.0044	0.0026	0.0018
37	0.0045	0.0026	0.0018
38	0.0045	0.0026	0.0018
39	0.0045	0.0026	0.0019
40	0.0045	0.0027	0.0019
41	0.0045	0.0027	0.0019
42	0.0045	0.0027	0.0019
43	0.0046	0.0027	0.0019
44	0.0046	0.0027	0.0019
45	0.0046	0.0027	0.0019
46	0.0046	0.0027	0.0019
47	0.0047	0.0027	0.0019
48	0.0047	0.0027	0.0019
49	0.0047	0.0028	0.0019
50	0.0047	0.0028	0.0019
51	0.0047	0.0028	0.0019
52	0.0047	0.0028	0.0020
53	0.0048	0.0028	0.0020
54	0.0048	0.0028	0.0020
55	0.0048	0.0028	0.0020
56	0.0048	0.0028	0.0020
57	0.0049	0.0029	0.0020
58	0.0049	0.0029	0.0020
59	0.0049	0.0029	0.0020
60	0.0049	0.0029	0.0020
61	0.0050	0.0029	0.0020
62	0.0050	0.0029	0.0020
63	0.0050	0.0029	0.0021
64	0.0050	0.0030	0.0021
65	0.0051	0.0030	0.0021
66	0.0051	0.0030	0.0021
67	0.0051	0.0030	0.0021
68	0.0051	0.0030	0.0021
69	0.0052	0.0030	0.0021
70	0.0052	0.0030	0.0021
71	0.0052	0.0031	0.0021
72	0.0052	0.0031	0.0022
73	0.0053	0.0031	0.0022
74	0.0053	0.0031	0.0022
75	0.0053	0.0031	0.0022
76	0.0053	0.0031	0.0022
77	0.0054	0.0032	0.0022
78	0.0054	0.0032	0.0022
79	0.0054	0.0032	0.0022
80	0.0055	0.0032	0.0022
81	0.0055	0.0032	0.0023
82	0.0055	0.0032	0.0023
83	0.0056	0.0033	0.0023
84	0.0056	0.0033	0.0023
85	0.0056	0.0033	0.0023
86	0.0056	0.0033	0.0023
87	0.0057	0.0033	0.0023
88	0.0057	0.0034	0.0024
89	0.0058	0.0034	0.0024
90	0.0058	0.0034	0.0024
91	0.0058	0.0034	0.0024
92	0.0059	0.0034	0.0024
93	0.0059	0.0035	0.0024
94	0.0059	0.0035	0.0024

95	0.0060	0.0035	0.0025
96	0.0060	0.0035	0.0025
97	0.0061	0.0036	0.0025
98	0.0061	0.0036	0.0025
99	0.0061	0.0036	0.0025
100	0.0062	0.0036	0.0025
101	0.0062	0.0037	0.0026
102	0.0063	0.0037	0.0026
103	0.0063	0.0037	0.0026
104	0.0063	0.0037	0.0026
105	0.0064	0.0038	0.0026
106	0.0064	0.0038	0.0026
107	0.0065	0.0038	0.0027
108	0.0065	0.0038	0.0027
109	0.0066	0.0039	0.0027
110	0.0066	0.0039	0.0027
111	0.0067	0.0039	0.0028
112	0.0067	0.0040	0.0028
113	0.0068	0.0040	0.0028
114	0.0068	0.0040	0.0028
115	0.0069	0.0041	0.0028
116	0.0069	0.0041	0.0029
117	0.0070	0.0041	0.0029
118	0.0071	0.0042	0.0029
119	0.0071	0.0042	0.0029
120	0.0072	0.0042	0.0030
121	0.0073	0.0043	0.0030
122	0.0073	0.0043	0.0030
123	0.0074	0.0044	0.0030
124	0.0074	0.0044	0.0031
125	0.0075	0.0044	0.0031
126	0.0076	0.0045	0.0031
127	0.0077	0.0045	0.0032
128	0.0077	0.0045	0.0032
129	0.0078	0.0046	0.0032
130	0.0079	0.0046	0.0032
131	0.0080	0.0047	0.0033
132	0.0080	0.0047	0.0033
133	0.0081	0.0048	0.0034
134	0.0082	0.0048	0.0034
135	0.0083	0.0049	0.0034
136	0.0084	0.0049	0.0035
137	0.0085	0.0050	0.0035
138	0.0086	0.0050	0.0035
139	0.0087	0.0051	0.0036
140	0.0088	0.0052	0.0036
141	0.0089	0.0052	0.0037
142	0.0090	0.0053	0.0037
143	0.0091	0.0054	0.0038
144	0.0092	0.0054	0.0038
145	0.0118	0.0069	0.0048
146	0.0119	0.0070	0.0049
147	0.0120	0.0071	0.0050
148	0.0121	0.0071	0.0050
149	0.0123	0.0073	0.0051
150	0.0124	0.0073	0.0051
151	0.0126	0.0074	0.0052
152	0.0128	0.0075	0.0053
153	0.0130	0.0076	0.0053
154	0.0131	0.0077	0.0054
155	0.0133	0.0079	0.0055
156	0.0135	0.0079	0.0055
157	0.0137	0.0081	0.0057
158	0.0139	0.0082	0.0057
159	0.0142	0.0083	0.0058
160	0.0143	0.0084	0.0059
161	0.0146	0.0086	0.0060
162	0.0148	0.0087	0.0061
163	0.0152	0.0089	0.0062
164	0.0153	0.0090	0.0063
165	0.0157	0.0093	0.0065

166	0.0159	0.0094	0.0066
167	0.0164	0.0096	0.0067
168	0.0166	0.0098	0.0068
169	0.0173	0.0102	0.0071
170	0.0176	0.0104	0.0072
171	0.0182	0.0107	0.0075
172	0.0185	0.0109	0.0076
173	0.0191	0.0112	0.0079
174	0.0195	0.0115	0.0080
175	0.0202	0.0119	0.0083
176	0.0206	0.0121	0.0085
177	0.0215	0.0121	0.0094
178	0.0220	0.0121	0.0099
179	0.0232	0.0121	0.0111
180	0.0238	0.0121	0.0117
181	0.0252	0.0121	0.0131
182	0.0260	0.0121	0.0139
183	0.0278	0.0121	0.0157
184	0.0289	0.0121	0.0168
185	0.0268	0.0121	0.0147
186	0.0283	0.0121	0.0162
187	0.0321	0.0121	0.0200
188	0.0346	0.0121	0.0225
189	0.0471	0.0121	0.0350
190	0.0526	0.0121	0.0405
191	0.0726	0.0121	0.0605
192	0.0969	0.0121	0.0848
193	0.2597	0.0121	0.2476
194	0.0603	0.0121	0.0482
195	0.0377	0.0121	0.0256
196	0.0301	0.0121	0.0180
197	0.0301	0.0121	0.0180
198	0.0268	0.0121	0.0147
199	0.0244	0.0121	0.0123
200	0.0226	0.0121	0.0105
201	0.0211	0.0121	0.0090
202	0.0198	0.0117	0.0082
203	0.0188	0.0110	0.0077
204	0.0179	0.0105	0.0074
205	0.0168	0.0099	0.0069
206	0.0162	0.0095	0.0066
207	0.0155	0.0091	0.0064
208	0.0150	0.0088	0.0062
209	0.0145	0.0085	0.0060
210	0.0140	0.0083	0.0058
211	0.0136	0.0080	0.0056
212	0.0132	0.0078	0.0054
213	0.0129	0.0076	0.0053
214	0.0125	0.0074	0.0052
215	0.0122	0.0072	0.0050
216	0.0120	0.0070	0.0049
217	0.0093	0.0055	0.0038
218	0.0091	0.0053	0.0037
219	0.0088	0.0052	0.0036
220	0.0086	0.0051	0.0036
221	0.0084	0.0050	0.0035
222	0.0083	0.0049	0.0034
223	0.0081	0.0048	0.0033
224	0.0079	0.0047	0.0033
225	0.0078	0.0046	0.0032
226	0.0076	0.0045	0.0031
227	0.0075	0.0044	0.0031
228	0.0073	0.0043	0.0030
229	0.0072	0.0042	0.0030
230	0.0071	0.0042	0.0029
231	0.0070	0.0041	0.0029
232	0.0069	0.0040	0.0028
233	0.0068	0.0040	0.0028
234	0.0067	0.0039	0.0027
235	0.0066	0.0039	0.0027
236	0.0065	0.0038	0.0027

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      237              0.0064           0.0037              0.0026
      238              0.0063           0.0037              0.0026
      239              0.0062           0.0036              0.0025
      240              0.0061           0.0036              0.0025
      241              0.0060           0.0035              0.0025
      242              0.0060           0.0035              0.0025
      243              0.0059           0.0035              0.0024
      244              0.0058           0.0034              0.0024
      245              0.0057           0.0034              0.0024
      246              0.0057           0.0033              0.0023
      247              0.0056           0.0033              0.0023
      248              0.0055           0.0033              0.0023
      249              0.0055           0.0032              0.0023
      250              0.0054           0.0032              0.0022
      251              0.0054           0.0032              0.0022
      252              0.0053           0.0031              0.0022
      253              0.0052           0.0031              0.0022
      254              0.0052           0.0031              0.0021
      255              0.0051           0.0030              0.0021
      256              0.0051           0.0030              0.0021
      257              0.0050           0.0030              0.0021
      258              0.0050           0.0029              0.0021
      259              0.0049           0.0029              0.0020
      260              0.0049           0.0029              0.0020
      261              0.0048           0.0029              0.0020
      262              0.0048           0.0028              0.0020
      263              0.0048           0.0028              0.0020
      264              0.0047           0.0028              0.0019
      265              0.0047           0.0028              0.0019
      266              0.0046           0.0027              0.0019
      267              0.0046           0.0027              0.0019
      268              0.0046           0.0027              0.0019
      269              0.0045           0.0027              0.0019
      270              0.0045           0.0026              0.0018
      271              0.0044           0.0026              0.0018
      272              0.0044           0.0026              0.0018
      273              0.0044           0.0026              0.0018
      274              0.0043           0.0026              0.0018
      275              0.0043           0.0025              0.0018
      276              0.0043           0.0025              0.0018
      277              0.0042           0.0025              0.0017
      278              0.0042           0.0025              0.0017
      279              0.0042           0.0025              0.0017
      280              0.0042           0.0024              0.0017
      281              0.0041           0.0024              0.0017
      282              0.0041           0.0024              0.0017
      283              0.0041           0.0024              0.0017
      284              0.0040           0.0024              0.0017
      285              0.0040           0.0024              0.0017
      286              0.0040           0.0023              0.0016
      287              0.0040           0.0023              0.0016
      288              0.0039           0.0023              0.0016
      ------------------------------------------------------------------
      ------------------------------------------------------------------
      Total soil rain loss =      1.44(In)
      Total effective rainfall =      1.59(In)
      Peak flow rate in flood hydrograph =     35.00(CFS)
      ------------------------------------------------------------------
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                        24 - H O U R    S T O R M
                   R u n o f f      H y d r o g r a p h
      ------------------------------------------------------------------
                Hydrograph in   5   Minute intervals ((CFS))

      ------------------------------------------------------------------
 Time(h+m) Volume Ac.Ft   Q(CFS)  0       10.0      20.0      30.0      40.0
 ------------------------------------------------------------------------
   0+ 5       0.0001      0.01  Q         |         |         |         |
   0+10       0.0005      0.06  Q         |         |         |         |
   0+15       0.0016      0.16  Q         |         |         |         |
   0+20       0.0038      0.32  Q         |         |         |         |
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0+25       0.0064      0.38  Q          |          |          |          |
0+30       0.0093      0.43  Q          |          |          |          |
0+35       0.0125      0.46  Q          |          |          |          |
0+40       0.0158      0.48  Q          |          |          |          |
0+45       0.0192      0.50  Q          |          |          |          |
0+50       0.0227      0.51  Q          |          |          |          |
0+55       0.0263      0.52  Q          |          |          |          |
1+ 0       0.0300      0.53  Q          |          |          |          |
1+ 5       0.0337      0.54  Q          |          |          |          |
1+10       0.0374      0.54  Q          |          |          |          |
1+15       0.0412      0.55  Q          |          |          |          |
1+20       0.0450      0.55  Q          |          |          |          |
1+25       0.0488      0.55  Q          |          |          |          |
1+30       0.0526      0.56  Q          |          |          |          |
1+35       0.0564      0.56  Q          |          |          |          |
1+40       0.0603      0.56  Q          |          |          |          |
1+45       0.0642      0.56  Q          |          |          |          |
1+50       0.0681      0.57  Q          |          |          |          |
1+55       0.0720      0.57  Q          |          |          |          |
2+ 0       0.0759      0.57  Q          |          |          |          |
2+ 5       0.0798      0.57  Q          |          |          |          |
2+10       0.0838      0.57  Q          |          |          |          |
2+15       0.0878      0.58  Q          |          |          |          |
2+20       0.0917      0.58  QV         |          |          |          |
2+25       0.0957      0.58  QV         |          |          |          |
2+30       0.0998      0.58  QV         |          |          |          |
2+35       0.1038      0.58  QV         |          |          |          |
2+40       0.1078      0.59  QV         |          |          |          |
2+45       0.1119      0.59  QV         |          |          |          |
2+50       0.1160      0.59  QV         |          |          |          |
2+55       0.1200      0.59  QV         |          |          |          |
3+ 0       0.1241      0.60  QV         |          |          |          |
3+ 5       0.1283      0.60  QV         |          |          |          |
3+10       0.1324      0.60  QV         |          |          |          |
3+15       0.1366      0.60  QV         |          |          |          |
3+20       0.1407      0.61  QV         |          |          |          |
3+25       0.1449      0.61  QV         |          |          |          |
3+30       0.1491      0.61  QV         |          |          |          |
3+35       0.1533      0.61  QV         |          |          |          |
3+40       0.1576      0.62  QV         |          |          |          |
3+45       0.1618      0.62  QV         |          |          |          |
3+50       0.1661      0.62  QV         |          |          |          |
3+55       0.1704      0.62  QV         |          |          |          |
4+ 0       0.1747      0.63  QV         |          |          |          |
4+ 5       0.1790      0.63  QV         |          |          |          |
4+10       0.1834      0.63  Q V        |          |          |          |
4+15       0.1878      0.63  Q V        |          |          |          |
4+20       0.1921      0.64  Q V        |          |          |          |
4+25       0.1965      0.64  Q V        |          |          |          |
4+30       0.2010      0.64  Q V        |          |          |          |
4+35       0.2054      0.65  Q V        |          |          |          |
4+40       0.2099      0.65  Q V        |          |          |          |
4+45       0.2144      0.65  Q V        |          |          |          |
4+50       0.2189      0.65  Q V        |          |          |          |
4+55       0.2234      0.66  Q V        |          |          |          |
5+ 0       0.2279      0.66  Q V        |          |          |          |
5+ 5       0.2325      0.66  Q V        |          |          |          |
5+10       0.2371      0.67  Q V        |          |          |          |
5+15       0.2417      0.67  Q V        |          |          |          |
5+20       0.2463      0.67  Q V        |          |          |          |
5+25       0.2510      0.68  Q V        |          |          |          |
5+30       0.2556      0.68  Q V        |          |          |          |
5+35       0.2603      0.68  Q V        |          |          |          |
5+40       0.2651      0.69  Q V        |          |          |          |
5+45       0.2698      0.69  Q V        |          |          |          |
5+50       0.2746      0.69  Q  V       |          |          |          |
5+55       0.2793      0.70  Q  V       |          |          |          |
6+ 0       0.2842      0.70  Q  V       |          |          |          |
6+ 5       0.2890      0.70  Q  V       |          |          |          |
6+10       0.2939      0.71  Q  V       |          |          |          |
6+15       0.2988      0.71  Q  V       |          |          |          |
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 6+20       0.3037      0.71  Q  V      |          |          |          |
 6+25       0.3086      0.72  Q  V      |          |          |          |
 6+30       0.3136      0.72  Q  V      |          |          |          |
 6+35       0.3186      0.72  Q  V      |          |          |          |
 6+40       0.3236      0.73  Q  V      |          |          |          |
 6+45       0.3286      0.73  Q  V      |          |          |          |
 6+50       0.3337      0.74  Q  V      |          |          |          |
 6+55       0.3388      0.74  Q  V      |          |          |          |
 7+ 0       0.3439      0.74  Q  V      |          |          |          |
 7+ 5       0.3491      0.75  Q  V      |          |          |          |
 7+10       0.3543      0.75  Q  V      |          |          |          |
 7+15       0.3595      0.76  Q  V      |          |          |          |
 7+20       0.3647      0.76  Q   V     |          |          |          |
 7+25       0.3700      0.77  Q   V     |          |          |          |
 7+30       0.3753      0.77  Q   V     |          |          |          |
 7+35       0.3807      0.78  Q   V     |          |          |          |
 7+40       0.3860      0.78  Q   V     |          |          |          |
 7+45       0.3914      0.78  Q   V     |          |          |          |
 7+50       0.3969      0.79  Q   V     |          |          |          |
 7+55       0.4024      0.79  Q   V     |          |          |          |
 8+ 0       0.4079      0.80  Q   V     |          |          |          |
 8+ 5       0.4134      0.80  Q   V     |          |          |          |
 8+10       0.4190      0.81  Q   V     |          |          |          |
 8+15       0.4246      0.81  Q   V     |          |          |          |
 8+20       0.4302      0.82  Q   V     |          |          |          |
 8+25       0.4359      0.83  Q   V     |          |          |          |
 8+30       0.4416      0.83  Q   V     |          |          |          |
 8+35       0.4474      0.84  Q   V     |          |          |          |
 8+40       0.4532      0.84  Q   V     |          |          |          |
 8+45       0.4590      0.85  Q    V    |          |          |          |
 8+50       0.4649      0.85  Q    V    |          |          |          |
 8+55       0.4708      0.86  Q    V    |          |          |          |
 9+ 0       0.4768      0.87  Q    V    |          |          |          |
 9+ 5       0.4828      0.87  Q    V    |          |          |          |
 9+10       0.4889      0.88  Q    V    |          |          |          |
 9+15       0.4950      0.88  Q    V    |          |          |          |
 9+20       0.5011      0.89  Q    V    |          |          |          |
 9+25       0.5073      0.90  Q    V    |          |          |          |
 9+30       0.5135      0.90  Q    V    |          |          |          |
 9+35       0.5198      0.91  Q    V    |          |          |          |
 9+40       0.5261      0.92  Q    V    |          |          |          |
 9+45       0.5325      0.93  Q    V    |          |          |          |
 9+50       0.5389      0.93  Q    V    |          |          |          |
 9+55       0.5454      0.94  Q     V   |          |          |          |
10+ 0       0.5519      0.95  Q     V   |          |          |          |
10+ 5       0.5585      0.96  Q     V   |          |          |          |
10+10       0.5652      0.96  Q     V   |          |          |          |
10+15       0.5719      0.97  Q     V   |          |          |          |
10+20       0.5786      0.98  Q     V   |          |          |          |
10+25       0.5854      0.99  Q     V   |          |          |          |
10+30       0.5923      1.00  Q     V   |          |          |          |
10+35       0.5992      1.01  |Q    V   |          |          |          |
10+40       0.6062      1.02  |Q    V   |          |          |          |
10+45       0.6133      1.03  |Q    V   |          |          |          |
10+50       0.6204      1.04  |Q    V   |          |          |          |
10+55       0.6276      1.05  |Q    V   |          |          |          |
11+ 0       0.6349      1.06  |Q    V   |          |          |          |
11+ 5       0.6423      1.07  |Q     V  |          |          |          |
11+10       0.6497      1.08  |Q     V  |          |          |          |
11+15       0.6572      1.09  |Q     V  |          |          |          |
11+20       0.6647      1.10  |Q     V  |          |          |          |
11+25       0.6724      1.11  |Q     V  |          |          |          |
11+30       0.6801      1.12  |Q     V  |          |          |          |
11+35       0.6879      1.13  |Q     V  |          |          |          |
11+40       0.6958      1.15  |Q     V  |          |          |          |
11+45       0.7038      1.16  |Q     V  |          |          |          |
11+50       0.7119      1.17  |Q     V  |          |          |          |
11+55       0.7201      1.19  |Q     V  |          |          |          |
12+ 0       0.7283      1.20  |Q      V |          |          |          |
12+ 5       0.7368      1.22  |Q      V |          |          |          |
12+10       0.7455      1.27  |Q      V |          |          |          |
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12+15       0.7547      1.34  |Q      V |          |          |          |
12+20       0.7647      1.46  |Q      V |          |          |          |
12+25       0.7751      1.51  |Q      V |          |          |          |
12+30       0.7859      1.56  |Q      V |          |          |          |
12+35       0.7968      1.59  |Q      V |          |          |          |
12+40       0.8080      1.62  |Q      V |          |          |          |
12+45       0.8194      1.65  |Q       V|          |          |          |
12+50       0.8310      1.68  |Q       V|          |          |          |
12+55       0.8428      1.71  |Q       V|          |          |          |
13+ 0       0.8548      1.74  |Q       V|          |          |          |
13+ 5       0.8669      1.76  |Q       V|          |          |          |
13+10       0.8792      1.79  |Q       V|          |          |          |
13+15       0.8917      1.81  |Q       V|          |          |          |
13+20       0.9044      1.84  |Q       V|          |          |          |
13+25       0.9173      1.87  |Q        V          |          |          |
13+30       0.9304      1.90  |Q        V          |          |          |
13+35       0.9437      1.93  |Q        V          |          |          |
13+40       0.9572      1.96  |Q        V          |          |          |
13+45       0.9709      2.00  |Q        V          |          |          |
13+50       0.9849      2.03  | Q       V          |          |          |
13+55       0.9992      2.07  | Q       V          |          |          |
14+ 0       1.0137      2.11  | Q       |V         |          |          |
14+ 5       1.0285      2.15  | Q       |V         |          |          |
14+10       1.0436      2.19  | Q       |V         |          |          |
14+15       1.0590      2.24  | Q       |V         |          |          |
14+20       1.0749      2.30  | Q       |V         |          |          |
14+25       1.0911      2.36  | Q       | V        |          |          |
14+30       1.1077      2.42  | Q       | V        |          |          |
14+35       1.1248      2.47  | Q       | V        |          |          |
14+40       1.1423      2.54  | Q       | V        |          |          |
14+45       1.1603      2.61  | Q       | V        |          |          |
14+50       1.1790      2.71  | Q       | V        |          |          |
14+55       1.1985      2.84  | Q       |  V       |          |          |
15+ 0       1.2194      3.02  |  Q      |  V       |          |          |
15+ 5       1.2416      3.23  |  Q      |  V       |          |          |
15+10       1.2656      3.48  |  Q      |  V       |          |          |
15+15       1.2914      3.75  |  Q      |   V      |          |          |
15+20       1.3194      4.08  |   Q     |   V      |          |          |
15+25       1.3497      4.40  |   Q     |   V      |          |          |
15+30       1.3822      4.71  |   Q     |    V     |          |          |
15+35       1.4160      4.91  |   Q     |    V     |          |          |
15+40       1.4509      5.08  |    Q    |    V     |          |          |
15+45       1.4899      5.65  |    Q    |     V    |          |          |
15+50       1.5357      6.65  |     Q   |     V    |          |          |
15+55       1.5922      8.21  |       Q |      V   |          |          |
16+ 0       1.6663     10.75  |         Q       V  |          |          |
16+ 5       1.7709     15.19  |         |    Q   V|          |          |
16+10       1.9234     22.15  |         |         |VQ        |          |
16+15       2.1329     30.41  |         |         |  V       Q          |
16+20       2.3739     35.00  |         |         |      V   |    Q     |
16+25       2.5231     21.66  |         |         |Q     V   |          |
16+30       2.6328     15.92  |         |    Q    |       V  |          |
16+35       2.7205     12.74  |         | Q       |        V|          |
16+40       2.7940     10.67  |         Q         |         V          |
16+45       2.8552      8.88  |       Q |         |          |V         |
16+50       2.9060      7.38  |      Q  |         |          |V         |
16+55       2.9478      6.07  |     Q   |         |          | V        |
17+ 0       2.9825      5.04  |    Q    |         |          | V        |
17+ 5       3.0111      4.15  |   Q     |         |          |  V       |
17+10       3.0357      3.57  |  Q      |         |          |  V       |
17+15       3.0580      3.24  |  Q      |         |          |  V       |
17+20       3.0785      2.97  | Q       |         |          |  V       |
17+25       3.0975      2.75  | Q       |         |          |   V      |
17+30       3.1155      2.62  | Q       |         |          |   V      |
17+35       3.1324      2.45  | Q       |         |          |   V      |
17+40       3.1481      2.27  | Q       |         |          |   V      |
17+45       3.1627      2.13  | Q       |         |          |   V      |
17+50       3.1766      2.01  | Q       |         |          |   V      |
17+55       3.1897      1.91  |Q        |         |          |    V     |
18+ 0       3.2024      1.84  |Q        |         |          |    V     |
18+ 5       3.2146      1.78  |Q        |         |          |    V     |
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18+10	3.2263	1.70	|Q	|	|	|	V |
18+15	3.2373	1.59	|Q	|	|	|	V |
18+20	3.2473	1.45	|Q	|	|	|	V |
18+25	3.2568	1.38	|Q	|	|	|	V |
18+30	3.2659	1.32	|Q	|	|	|	V |
18+35	3.2746	1.27	|Q	|	|	|	V |
18+40	3.2831	1.23	|Q	|	|	|	V |
18+45	3.2912	1.19	|Q	|	|	|	V |
18+50	3.2992	1.15	|Q	|	|	|	V |
18+55	3.3069	1.12	|Q	|	|	|	V |
19+ 0	3.3145	1.10	|Q	|	|	|	V |
19+ 5	3.3219	1.07	|Q	|	|	|	V |
19+10	3.3291	1.05	|Q	|	|	|	V |
19+15	3.3362	1.03	|Q	|	|	|	V |
19+20	3.3431	1.01	|Q	|	|	|	V |
19+25	3.3500	0.99	Q	|	|	|	V |
19+30	3.3567	0.97	Q	|	|	|	V |
19+35	3.3632	0.96	Q	|	|	|	V |
19+40	3.3697	0.94	Q	|	|	|	V |
19+45	3.3761	0.93	Q	|	|	|	V |
19+50	3.3824	0.91	Q	|	|	|	V |
19+55	3.3885	0.90	Q	|	|	|	V |
20+ 0	3.3946	0.88	Q	|	|	|	V |
20+ 5	3.4006	0.87	Q	|	|	|	V |
20+10	3.4065	0.86	Q	|	|	|	V |
20+15	3.4124	0.85	Q	|	|	|	V |
20+20	3.4181	0.84	Q	|	|	|	V |
20+25	3.4238	0.82	Q	|	|	|	V |
20+30	3.4294	0.81	Q	|	|	|	V |
20+35	3.4349	0.80	Q	|	|	|	V |
20+40	3.4404	0.79	Q	|	|	|	V |
20+45	3.4458	0.78	Q	|	|	|	V |
20+50	3.4511	0.77	Q	|	|	|	V |
20+55	3.4564	0.77	Q	|	|	|	V |
21+ 0	3.4616	0.76	Q	|	|	|	V |
21+ 5	3.4668	0.75	Q	|	|	|	V |
21+10	3.4719	0.74	Q	|	|	|	V |
21+15	3.4769	0.73	Q	|	|	|	V |
21+20	3.4819	0.72	Q	|	|	|	V |
21+25	3.4868	0.72	Q	|	|	|	V |
21+30	3.4917	0.71	Q	|	|	|	V |
21+35	3.4965	0.70	Q	|	|	|	V |
21+40	3.5013	0.69	Q	|	|	|	V |
21+45	3.5060	0.69	Q	|	|	|	V |
21+50	3.5107	0.68	Q	|	|	|	V |
21+55	3.5154	0.67	Q	|	|	|	V |
22+ 0	3.5200	0.67	Q	|	|	|	V |
22+ 5	3.5245	0.66	Q	|	|	|	V |
22+10	3.5291	0.66	Q	|	|	|	V |
22+15	3.5335	0.65	Q	|	|	|	V |
22+20	3.5380	0.64	Q	|	|	|	V |
22+25	3.5424	0.64	Q	|	|	|	V |
22+30	3.5467	0.63	Q	|	|	|	V|
22+35	3.5511	0.63	Q	|	|	|	V|
22+40	3.5553	0.62	Q	|	|	|	V|
22+45	3.5596	0.62	Q	|	|	|	V|
22+50	3.5638	0.61	Q	|	|	|	V|
22+55	3.5680	0.61	Q	|	|	|	V|
23+ 0	3.5721	0.60	Q	|	|	|	V|
23+ 5	3.5763	0.60	Q	|	|	|	V|
23+10	3.5803	0.59	Q	|	|	|	V|
23+15	3.5844	0.59	Q	|	|	|	V|
23+20	3.5884	0.58	Q	|	|	|	V|
23+25	3.5924	0.58	Q	|	|	|	V|
23+30	3.5964	0.58	Q	|	|	|	V|
23+35	3.6003	0.57	Q	|	|	|	V|
23+40	3.6042	0.57	Q	|	|	|	V|
23+45	3.6081	0.56	Q	|	|	|	V|
23+50	3.6119	0.56	Q	|	|	|	V|
23+55	3.6158	0.56	Q	|	|	|	V|
24+ 0	3.6196	0.55	Q	|	|	|	V|

```
   24+ 5       3.6232      0.53  Q         |         |         |         V|
   24+10       3.6266      0.49  Q         |         |         |         V|
   24+15       3.6292      0.38  Q         |         |         |         V|
   24+20       3.6308      0.22  Q         |         |         |         V|
   24+25       3.6318      0.16  Q         |         |         |         V|
   24+30       3.6326      0.11  Q         |         |         |         V|
   24+35       3.6332      0.08  Q         |         |         |         V|
   24+40       3.6336      0.06  Q         |         |         |         V|
   24+45       3.6339      0.04  Q         |         |         |         V|
   24+50       3.6341      0.03  Q         |         |         |         V|
   24+55       3.6343      0.02  Q         |         |         |         V|
   25+ 0       3.6344      0.01  Q         |         |         |         V|
   25+ 5       3.6344      0.01  Q         |         |         |         V|
   25+10       3.6345      0.01  Q         |         |         |         V|
   25+15       3.6346      0.01  Q         |         |         |         V|
   25+20       3.6346      0.00  Q         |         |         |         V|
   25+25       3.6346      0.00  Q         |         |         |         V|
   25+30       3.6346      0.00  Q         |         |         |         V|
   25+35       3.6346      0.00  Q         |         |         |         V|
   25+40       3.6346      0.00  Q         |         |         |         V|
   25+45       3.6346      0.00  Q         |         |         |          V
------------------------------------------------------------------------
```

- 25 Year 3 Hour Post-Development Unit Hydrograph – Area 'A'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/03/16   File Name PRA02503.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'A' - 25 YEAR 3 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 25

       Antecedent Moisture Condition = 2

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 70.6      27.4          1.00     C     0.250     0.581    0.145

Area-averaged adjusted loss rate Fm (In/Hr) =  0.145

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC2)          Yield Fr
    15.91   0.581         70.6      70.6       4.16     0.381
    11.48   0.419         98.0      98.0       0.20     0.947

Area-averaged catchment yield fraction, Y =  0.618
Area-averaged low loss fraction, Yb =  0.382
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.311 (hours)
Watershed area =      27.39(Ac.)
Catchment Lag time =   0.249 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 33.5264
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.145(In/Hr)
Average low loss rate fraction (Yb) = 0.382 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.400(In)
Computed peak 30-minute rainfall =  0.870(In)
Specified peak 1-hour rainfall =  1.150(In)
Computed peak 3-hour rainfall =  1.940(In)
Specified peak 6-hour rainfall =  2.710(In)
Specified peak 24-hour rainfall =  4.490(In)


Rainfall depth area reduction factors:
Using a total area of      27.39(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.399(In)
```

```
30-minute factor = 0.999    Adjusted rainfall =  0.869(In)
1-hour factor = 0.999       Adjusted rainfall =  1.149(In)
3-hour factor = 1.000       Adjusted rainfall =  1.940(In)
6-hour factor = 1.000       Adjusted rainfall =  2.710(In)
24-hour factor = 1.000 Adjusted rainfall =  4.490(In)
------------------------------------------------------------------------

                      U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
------------------------------------------------------------------------
               (K =       331.25 (CFS))

  1                2.480                   8.215
  2               10.853                  27.735
  3               30.538                  65.206
  4               59.833                  97.040
  5               71.872                  39.880
  6               79.486                  25.220
  7               84.947                  18.090
  8               89.055                  13.607
  9               92.186                  10.372
 10               94.559                   7.859
 11               96.255                   5.619
 12               97.487                   4.081
 13               98.129                   2.125
 14               98.520                   1.296
 15               98.861                   1.129
 16               99.118                   0.852
 17               99.331                   0.706
 18               99.593                   0.868
 19               99.781                   0.623
 20               99.902                   0.403
 21              100.000                   0.323
------------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.3995              0.3995
  2              0.5396              0.1401
  3              0.6433              0.1037
  4              0.7288              0.0855
  5              0.8028              0.0740
  6              0.8689              0.0661
  7              0.9245              0.0556
  8              0.9756              0.0511
  9              1.0229              0.0474
 10              1.0672              0.0443
 11              1.1090              0.0417
 12              1.1485              0.0395
 13              1.1932              0.0447
 14              1.2362              0.0429
 15              1.2775              0.0414
 16              1.3175              0.0399
 17              1.3561              0.0387
 18              1.3936              0.0375
 19              1.4300              0.0364
 20              1.4654              0.0354
 21              1.4999              0.0345
 22              1.5336              0.0337
 23              1.5665              0.0329
 24              1.5986              0.0321
 25              1.6300              0.0314
 26              1.6608              0.0308
 27              1.6910              0.0302
 28              1.7206              0.0296
 29              1.7496              0.0290
 30              1.7781              0.0285
 31              1.8061              0.0280
 32              1.8337              0.0276
 33              1.8608              0.0271
```

```
 34              1.8875              0.0267
 35              1.9138              0.0263
 36              1.9397              0.0259
---------------------------------------------------------------------
Unit              Unit            Unit              Effective
Period            Rainfall        Soil-Loss         Rainfall
(number)            (In)          (In)                (In)
---------------------------------------------------------------------
  1              0.0259           0.0099              0.0160
  2              0.0263           0.0100              0.0162
  3              0.0271           0.0104              0.0168
  4              0.0276           0.0105              0.0170
  5              0.0285           0.0109              0.0176
  6              0.0290           0.0111              0.0180
  7              0.0302           0.0115              0.0187
  8              0.0308           0.0118              0.0190
  9              0.0321           0.0121              0.0200
 10              0.0329           0.0121              0.0208
 11              0.0345           0.0121              0.0224
 12              0.0354           0.0121              0.0233
 13              0.0375           0.0121              0.0254
 14              0.0387           0.0121              0.0266
 15              0.0414           0.0121              0.0293
 16              0.0429           0.0121              0.0308
 17              0.0395           0.0121              0.0274
 18              0.0417           0.0121              0.0296
 19              0.0474           0.0121              0.0353
 20              0.0511           0.0121              0.0390
 21              0.0661           0.0121              0.0540
 22              0.0740           0.0121              0.0619
 23              0.1037           0.0121              0.0916
 24              0.1401           0.0121              0.1280
 25              0.3995           0.0121              0.3874
 26              0.0855           0.0121              0.0734
 27              0.0556           0.0121              0.0435
 28              0.0443           0.0121              0.0322
 29              0.0447           0.0121              0.0326
 30              0.0399           0.0121              0.0278
 31              0.0364           0.0121              0.0243
 32              0.0337           0.0121              0.0216
 33              0.0314           0.0120              0.0194
 34              0.0296           0.0113              0.0183
 35              0.0280           0.0107              0.0173
 36              0.0267           0.0102              0.0165
---------------------------------------------------------------------
---------------------------------------------------------------------
Total soil rain loss =      0.42(In)
Total effective rainfall =      1.52(In)
Peak flow rate in flood hydrograph =     54.29(CFS)
---------------------------------------------------------------------
+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                    3 - H O U R    S T O R M
                R u n o f f      H y d r o g r a p h
---------------------------------------------------------------------
            Hydrograph in   5   Minute intervals ((CFS))

---------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0       15.0      30.0      45.0      60.0
---------------------------------------------------------------------
  0+ 5       0.0009      0.13  Q         |         |         |         |
  0+10       0.0049      0.58  Q         |         |         |         |
  0+15       0.0161      1.63  VQ        |         |         |         |
  0+20       0.0383      3.22  V Q       |         |         |         |
  0+25       0.0653      3.93  V Q       |         |         |         |
  0+30       0.0958      4.43  |VQ       |         |         |         |
  0+35       0.1290      4.82  |V Q      |         |         |         |
  0+40       0.1646      5.17  |V Q      |         |         |         |
  0+45       0.2023      5.47  | VQ      |         |         |         |
  0+50       0.2420      5.77  | VQ      |         |         |         |
  0+55       0.2837      6.05  |  VQ     |         |         |         |
  1+ 0       0.3276      6.37  |  VQ     |         |         |         |
```

```
   1+ 5       0.3737      6.70  |   Q     |         |         |         |
   1+10       0.4226      7.09  |   Q     |         |         |         |
   1+15       0.4743      7.51  |    Q    |         |         |         |
   1+20       0.5295      8.01  |    QV   |         |         |         |
   1+25       0.5879      8.49  |    QV   |         |         |         |
   1+30       0.6496      8.95  |    Q V  |         |         |         |
   1+35       0.7131      9.22  |     Q V |         |         |         |
   1+40       0.7782      9.44  |     Q V |         |         |         |
   1+45       0.8489     10.27  |     Q  V|         |         |         |
   1+50       0.9292     11.65  |      Q  V         |         |         |
   1+55       1.0239     13.75  |        Q|V        |         |         |
   2+ 0       1.1423     17.19  |         |Q V      |         |         |
   2+ 5       1.3067     23.87  |         |    Q    |         |         |
   2+10       1.5451     34.61  |         |      V  |  Q      |         |
   2+15       1.8748     47.88  |         |         |V        |Q        |
   2+20       2.2487     54.29  |         |         |    V    |     Q   |
   2+25       2.4808     33.70  |         |         | Q     V |         |
   2+30       2.6556     25.37  |         |     Q   |         V         |
   2+35       2.7982     20.70  |         |  Q      |         | V       |
   2+40       2.9200     17.69  |         |Q        |         |  V      |
   2+45       3.0236     15.05  |         Q         |         |   V     |
   2+50       3.1119     12.82  |       Q |         |         |    V    |
   2+55       3.1869     10.89  |      Q  |         |         |     V   |
   3+ 0       3.2516      9.39  |     Q   |         |         |      V  |
   3+ 5       3.3060      7.90  |    Q    |         |         |       V |
   3+10       3.3516      6.62  |   Q     |         |         |       V |
   3+15       3.3867      5.10  |  Q      |         |         |        V|
   3+20       3.4085      3.17  | Q       |         |         |        V|
   3+25       3.4244      2.31  |Q        |         |         |        V|
   3+30       3.4368      1.80  |Q        |         |         |        V|
   3+35       3.4458      1.31  Q         |         |         |        V|
   3+40       3.4522      0.93  Q         |         |         |        V|
   3+45       3.4568      0.65  Q         |         |         |        V|
   3+50       3.4594      0.38  Q         |         |         |        V|
   3+55       3.4611      0.26  Q         |         |         |        V|
   4+ 0       3.4623      0.17  Q         |         |         |        V|
   4+ 5       3.4632      0.13  Q         |         |         |        V|
   4+10       3.4639      0.10  Q         |         |         |        V|
   4+15       3.4643      0.07  Q         |         |         |        V|
   4+20       3.4647      0.05  Q         |         |         |        V|
   4+25       3.4650      0.04  Q         |         |         |        V|
   4+30       3.4651      0.02  Q         |         |         |        V|
   4+35       3.4652      0.01  Q         |         |         |        V|
   4+40       3.4653      0.01  Q         |         |         |         V
-------------------------------------------------------------------------
```

- 25 Year 6 Hour Post-Development Unit Hydrograph – Area 'A'

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        U n i t   H y d r o g r a p h   A n a l y s i s

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        Study date  10/03/16   File Name PRA02506.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'A' - 25 YEAR 6 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

        Storm Event Year = 25

        Antecedent Moisture Condition = 2

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 70.6      27.4          1.00     C     0.250     0.581    0.145

Area-averaged adjusted loss rate Fm (In/Hr) =  0.145

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC2)           Yield Fr
    15.91   0.581         70.6      70.6       4.16     0.381
    11.48   0.419         98.0      98.0       0.20     0.947

Area-averaged catchment yield fraction, Y =  0.618
Area-averaged low loss fraction, Yb =  0.382
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.311 (hours)
Watershed area =      27.39(Ac.)
Catchment Lag time =   0.249 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 33.5264
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.145(In/Hr)
Average low loss rate fraction (Yb) = 0.382 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.400(In)
Computed peak 30-minute rainfall =  0.870(In)
Specified peak 1-hour rainfall =  1.150(In)
Computed peak 3-hour rainfall =  1.940(In)
Specified peak 6-hour rainfall =  2.710(In)
Specified peak 24-hour rainfall =  4.490(In)


Rainfall depth area reduction factors:
Using a total area of      27.39(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.399(In)
```

```
30-minute factor = 0.999    Adjusted rainfall =  0.869(In)
1-hour factor = 0.999       Adjusted rainfall =  1.149(In)
3-hour factor = 1.000       Adjusted rainfall =  1.940(In)
6-hour factor = 1.000       Adjusted rainfall =  2.710(In)
24-hour factor = 1.000 Adjusted rainfall =  4.490(In)
--------------------------------------------------------------------

                     U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------
               (K =       331.25 (CFS))

  1                2.480                   8.215
  2               10.853                  27.735
  3               30.538                  65.206
  4               59.833                  97.040
  5               71.872                  39.880
  6               79.486                  25.220
  7               84.947                  18.090
  8               89.055                  13.607
  9               92.186                  10.372
 10               94.559                   7.859
 11               96.255                   5.619
 12               97.487                   4.081
 13               98.129                   2.125
 14               98.520                   1.296
 15               98.861                   1.129
 16               99.118                   0.852
 17               99.331                   0.706
 18               99.593                   0.868
 19               99.781                   0.623
 20               99.902                   0.403
 21              100.000                   0.323
--------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.3995              0.3995
  2              0.5396              0.1401
  3              0.6433              0.1037
  4              0.7288              0.0855
  5              0.8028              0.0740
  6              0.8689              0.0661
  7              0.9245              0.0556
  8              0.9756              0.0511
  9              1.0229              0.0474
 10              1.0672              0.0443
 11              1.1090              0.0417
 12              1.1485              0.0395
 13              1.1932              0.0447
 14              1.2362              0.0429
 15              1.2775              0.0414
 16              1.3175              0.0399
 17              1.3561              0.0387
 18              1.3936              0.0375
 19              1.4300              0.0364
 20              1.4654              0.0354
 21              1.4999              0.0345
 22              1.5336              0.0337
 23              1.5665              0.0329
 24              1.5986              0.0321
 25              1.6300              0.0314
 26              1.6608              0.0308
 27              1.6910              0.0302
 28              1.7206              0.0296
 29              1.7496              0.0290
 30              1.7781              0.0285
 31              1.8061              0.0280
 32              1.8337              0.0276
 33              1.8608              0.0271
```

34	1.8875	0.0267
35	1.9138	0.0263
36	1.9397	0.0259
37	1.9655	0.0258
38	1.9909	0.0254
39	2.0160	0.0251
40	2.0408	0.0248
41	2.0653	0.0245
42	2.0894	0.0241
43	2.1133	0.0238
44	2.1368	0.0236
45	2.1601	0.0233
46	2.1831	0.0230
47	2.2059	0.0228
48	2.2284	0.0225
49	2.2507	0.0223
50	2.2727	0.0220
51	2.2945	0.0218
52	2.3161	0.0216
53	2.3375	0.0214
54	2.3587	0.0212
55	2.3796	0.0210
56	2.4004	0.0208
57	2.4210	0.0206
58	2.4414	0.0204
59	2.4616	0.0202
60	2.4816	0.0200
61	2.5015	0.0199
62	2.5212	0.0197
63	2.5407	0.0195
64	2.5601	0.0194
65	2.5793	0.0192
66	2.5984	0.0191
67	2.6173	0.0189
68	2.6361	0.0188
69	2.6547	0.0186
70	2.6732	0.0185
71	2.6915	0.0184
72	2.7098	0.0182

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0182	0.0070	0.0113
2	0.0184	0.0070	0.0113
3	0.0186	0.0071	0.0115
4	0.0188	0.0072	0.0116
5	0.0191	0.0073	0.0118
6	0.0192	0.0073	0.0119
7	0.0195	0.0075	0.0121
8	0.0197	0.0075	0.0122
9	0.0200	0.0076	0.0124
10	0.0202	0.0077	0.0125
11	0.0206	0.0079	0.0127
12	0.0208	0.0079	0.0128
13	0.0212	0.0081	0.0131
14	0.0214	0.0082	0.0132
15	0.0218	0.0083	0.0135
16	0.0220	0.0084	0.0136
17	0.0225	0.0086	0.0139
18	0.0228	0.0087	0.0141
19	0.0233	0.0089	0.0144
20	0.0236	0.0090	0.0146
21	0.0241	0.0092	0.0149
22	0.0245	0.0093	0.0151
23	0.0251	0.0096	0.0155
24	0.0254	0.0097	0.0157
25	0.0259	0.0099	0.0160
26	0.0263	0.0100	0.0162
27	0.0271	0.0104	0.0168

```
 28              0.0276          0.0105              0.0170
 29              0.0285          0.0109              0.0176
 30              0.0290          0.0111              0.0180
 31              0.0302          0.0115              0.0187
 32              0.0308          0.0118              0.0190
 33              0.0321          0.0121              0.0200
 34              0.0329          0.0121              0.0208
 35              0.0345          0.0121              0.0224
 36              0.0354          0.0121              0.0233
 37              0.0375          0.0121              0.0254
 38              0.0387          0.0121              0.0266
 39              0.0414          0.0121              0.0293
 40              0.0429          0.0121              0.0308
 41              0.0395          0.0121              0.0274
 42              0.0417          0.0121              0.0296
 43              0.0474          0.0121              0.0353
 44              0.0511          0.0121              0.0390
 45              0.0661          0.0121              0.0540
 46              0.0740          0.0121              0.0619
 47              0.1037          0.0121              0.0916
 48              0.1401          0.0121              0.1280
 49              0.3995          0.0121              0.3874
 50              0.0855          0.0121              0.0734
 51              0.0556          0.0121              0.0435
 52              0.0443          0.0121              0.0322
 53              0.0447          0.0121              0.0326
 54              0.0399          0.0121              0.0278
 55              0.0364          0.0121              0.0243
 56              0.0337          0.0121              0.0216
 57              0.0314          0.0120              0.0194
 58              0.0296          0.0113              0.0183
 59              0.0280          0.0107              0.0173
 60              0.0267          0.0102              0.0165
 61              0.0258          0.0099              0.0160
 62              0.0248          0.0095              0.0153
 63              0.0238          0.0091              0.0147
 64              0.0230          0.0088              0.0142
 65              0.0223          0.0085              0.0138
 66              0.0216          0.0082              0.0133
 67              0.0210          0.0080              0.0130
 68              0.0204          0.0078              0.0126
 69              0.0199          0.0076              0.0123
 70              0.0194          0.0074              0.0120
 71              0.0189          0.0072              0.0117
 72              0.0185          0.0071              0.0114
-------------------------------------------------------------------------
-------------------------------------------------------------------------
Total soil rain loss =      0.71(In)
Total effective rainfall =      2.00(In)
Peak flow rate in flood hydrograph =     54.29(CFS)
-------------------------------------------------------------------------
+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                    6 - H O U R    S T O R M
                R u n o f f      H y d r o g r a p h
-------------------------------------------------------------------------
            Hydrograph in   5   Minute intervals ((CFS))

-------------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0       15.0      30.0      45.0      60.0
-------------------------------------------------------------------------
  0+ 5       0.0006      0.09  Q         |         |         |         |
  0+10       0.0034      0.41  Q         |         |         |         |
  0+15       0.0113      1.14  Q         |         |         |         |
  0+20       0.0268      2.25  VQ        |         |         |         |
  0+25       0.0455      2.72  VQ        |         |         |         |
  0+30       0.0664      3.04  V Q       |         |         |         |
  0+35       0.0890      3.27  V Q       |         |         |         |
  0+40       0.1128      3.47  V Q       |         |         |         |
  0+45       0.1378      3.62  |VQ       |         |         |         |
  0+50       0.1636      3.76  |VQ       |         |         |         |
  0+55       0.1903      3.86  |VQ       |         |         |         |
```

```
1+ 0       0.2175      3.96  |VQ       |         |         |         |
1+ 5       0.2453      4.04  | Q       |         |         |         |
1+10       0.2736      4.11  | Q       |         |         |         |
1+15       0.3024      4.17  | Q       |         |         |         |
1+20       0.3316      4.24  | Q       |         |         |         |
1+25       0.3613      4.31  | QV      |         |         |         |
1+30       0.3915      4.39  | QV      |         |         |         |
1+35       0.4222      4.46  | QV      |         |         |         |
1+40       0.4535      4.54  |  Q      |         |         |         |
1+45       0.4852      4.61  |  QV     |         |         |         |
1+50       0.5175      4.69  |  QV     |         |         |         |
1+55       0.5504      4.77  |  QV     |         |         |         |
2+ 0       0.5839      4.86  |  Q V    |         |         |         |
2+ 5       0.6180      4.95  |  Q V    |         |         |         |
2+10       0.6527      5.04  |  Q V    |         |         |         |
2+15       0.6880      5.13  |  Q  V   |         |         |         |
2+20       0.7240      5.22  |  Q  V   |         |         |         |
2+25       0.7607      5.33  |  Q  V   |         |         |         |
2+30       0.7982      5.45  |  Q   V  |         |         |         |
2+35       0.8366      5.57  |  Q   V  |         |         |         |
2+40       0.8760      5.72  |  Q   V  |         |         |         |
2+45       0.9164      5.87  |  Q    V |         |         |         |
2+50       0.9580      6.04  |   Q   V |         |         |         |
2+55       1.0009      6.24  |   Q   V |         |         |         |
3+ 0       1.0456      6.49  |   Q    V|         |         |         |
3+ 5       1.0924      6.80  |   Q    V|         |         |         |
3+10       1.1418      7.17  |   Q     V         |         |         |
3+15       1.1939      7.57  |    Q    V         |         |         |
3+20       1.2494      8.05  |    Q    V         |         |         |
3+25       1.3081      8.53  |    Q    |V        |         |         |
3+30       1.3699      8.98  |    Q    | V       |         |         |
3+35       1.4335      9.23  |     Q   | V       |         |         |
3+40       1.4986      9.45  |     Q   |  V      |         |         |
3+45       1.5693     10.27  |     Q   |  V      |         |         |
3+50       1.6496     11.65  |      Q  |   V     |         |         |
3+55       1.7443     13.75  |        Q|    V    |         |         |
4+ 0       1.8627     17.19  |         |Q    V   |         |         |
4+ 5       2.0271     23.87  |         |    Q V  |         |         |
4+10       2.2655     34.61  |         |        V|  Q      |         |
4+15       2.5952     47.88  |         |         | V       |Q        |
4+20       2.9691     54.29  |         |         |    V    |    Q    |
4+25       3.2012     33.70  |         |         | Q    V  |         |
4+30       3.3760     25.37  |         |    Q    |       V|         |
4+35       3.5186     20.70  |         |  Q      |        V|        |
4+40       3.6404     17.69  |         |Q        |         |V        |
4+45       3.7440     15.05  |         |Q        |         | V       |
4+50       3.8323     12.82  |       Q |         |         |  V      |
4+55       3.9073     10.89  |      Q  |         |         |   V     |
5+ 0       3.9720      9.39  |     Q   |         |         |   V     |
5+ 5       4.0273      8.03  |    Q    |         |         |    V    |
5+10       4.0768      7.19  |   Q     |         |         |    V    |
5+15       4.1228      6.68  |   Q     |         |         |     V   |
5+20       4.1658      6.25  |   Q     |         |         |     V   |
5+25       4.2065      5.90  |  Q      |         |         |     V   |
5+30       4.2454      5.66  |  Q      |         |         |      V  |
5+35       4.2822      5.33  |  Q      |         |         |      V  |
5+40       4.3168      5.03  |  Q      |         |         |      V  |
5+45       4.3499      4.79  |  Q      |         |         |       V |
5+50       4.3810      4.52  |  Q      |         |         |       V |
5+55       4.4111      4.37  | Q       |         |         |       V |
6+ 0       4.4403      4.24  | Q       |         |         |        V|
6+ 5       4.4680      4.03  | Q       |         |         |        V|
6+10       4.4928      3.61  | Q       |         |         |        V|
6+15       4.5120      2.79  |Q        |         |         |        V|
6+20       4.5233      1.63  |Q        |         |         |        V|
6+25       4.5311      1.14  Q         |         |         |        V|
6+30       4.5369      0.83  Q         |         |         |        V|
6+35       4.5411      0.61  Q         |         |         |        V|
6+40       4.5441      0.44  Q         |         |         |        V|
6+45       4.5463      0.32  Q         |         |         |        V|
6+50       4.5478      0.22  Q         |         |         |        V|
```

```
    6+55       4.5489      0.15  Q         |         |         |        V|
    7+ 0       4.5496      0.10  Q         |         |         |        V|
    7+ 5       4.5501      0.08  Q         |         |         |        V|
    7+10       4.5505      0.06  Q         |         |         |        V|
    7+15       4.5508      0.05  Q         |         |         |        V|
    7+20       4.5510      0.03  Q         |         |         |        V|
    7+25       4.5512      0.03  Q         |         |         |        V|
    7+30       4.5513      0.02  Q         |         |         |        V|
    7+35       4.5514      0.01  Q         |         |         |        V|
    7+40       4.5514      0.00  Q         |         |         |        V|
-------------------------------------------------------------------------
```

- 25 Year 12 Hour Post-Development Unit Hydrograph – Area 'A'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989-2012, Version 7.2

       Study date  10/03/16   File Name PRA02512.out


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------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'A' - 25 YEAR 12 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 25

       Antecedent Moisture Condition = 2

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 70.6      27.4          1.00     C     0.250     0.581    0.145

Area-averaged adjusted loss rate Fm (In/Hr) =  0.145

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC2)          Yield Fr
    15.91   0.581         70.6      70.6       4.16     0.381
    11.48   0.419         98.0      98.0       0.20     0.947

Area-averaged catchment yield fraction, Y =  0.618
Area-averaged low loss fraction, Yb =  0.382
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.311 (hours)
Watershed area =      27.39(Ac.)
Catchment Lag time =   0.249 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 33.5264
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.145(In/Hr)
Average low loss rate fraction (Yb) = 0.382 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.400(In)
Computed peak 30-minute rainfall =  0.870(In)
Specified peak 1-hour rainfall =  1.150(In)
Computed peak 3-hour rainfall =  1.940(In)
Specified peak 6-hour rainfall =  2.710(In)
Specified peak 24-hour rainfall =  4.490(In)


Rainfall depth area reduction factors:
Using a total area of      27.39(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.399(In)
```

```
30-minute factor = 0.999    Adjusted rainfall =  0.869(In)
1-hour factor = 0.999       Adjusted rainfall =  1.149(In)
3-hour factor = 1.000       Adjusted rainfall =  1.940(In)
6-hour factor = 1.000       Adjusted rainfall =  2.710(In)
24-hour factor = 1.000 Adjusted rainfall =  4.490(In)
--------------------------------------------------------------------

                     U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------
               (K =       331.25 (CFS))

  1                2.480                   8.215
  2               10.853                  27.735
  3               30.538                  65.206
  4               59.833                  97.040
  5               71.872                  39.880
  6               79.486                  25.220
  7               84.947                  18.090
  8               89.055                  13.607
  9               92.186                  10.372
 10               94.559                   7.859
 11               96.255                   5.619
 12               97.487                   4.081
 13               98.129                   2.125
 14               98.520                   1.296
 15               98.861                   1.129
 16               99.118                   0.852
 17               99.331                   0.706
 18               99.593                   0.868
 19               99.781                   0.623
 20               99.902                   0.403
 21              100.000                   0.323
--------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.3995              0.3995
  2              0.5396              0.1401
  3              0.6433              0.1037
  4              0.7288              0.0855
  5              0.8028              0.0740
  6              0.8689              0.0661
  7              0.9245              0.0556
  8              0.9756              0.0511
  9              1.0229              0.0474
 10              1.0672              0.0443
 11              1.1090              0.0417
 12              1.1485              0.0395
 13              1.1932              0.0447
 14              1.2362              0.0429
 15              1.2775              0.0414
 16              1.3175              0.0399
 17              1.3561              0.0387
 18              1.3936              0.0375
 19              1.4300              0.0364
 20              1.4654              0.0354
 21              1.4999              0.0345
 22              1.5336              0.0337
 23              1.5665              0.0329
 24              1.5986              0.0321
 25              1.6300              0.0314
 26              1.6608              0.0308
 27              1.6910              0.0302
 28              1.7206              0.0296
 29              1.7496              0.0290
 30              1.7781              0.0285
 31              1.8061              0.0280
 32              1.8337              0.0276
 33              1.8608              0.0271
```

34	1.8875	0.0267
35	1.9138	0.0263
36	1.9397	0.0259
37	1.9655	0.0258
38	1.9909	0.0254
39	2.0160	0.0251
40	2.0408	0.0248
41	2.0653	0.0245
42	2.0894	0.0241
43	2.1133	0.0238
44	2.1368	0.0236
45	2.1601	0.0233
46	2.1831	0.0230
47	2.2059	0.0228
48	2.2284	0.0225
49	2.2507	0.0223
50	2.2727	0.0220
51	2.2945	0.0218
52	2.3161	0.0216
53	2.3375	0.0214
54	2.3587	0.0212
55	2.3796	0.0210
56	2.4004	0.0208
57	2.4210	0.0206
58	2.4414	0.0204
59	2.4616	0.0202
60	2.4816	0.0200
61	2.5015	0.0199
62	2.5212	0.0197
63	2.5407	0.0195
64	2.5601	0.0194
65	2.5793	0.0192
66	2.5984	0.0191
67	2.6173	0.0189
68	2.6361	0.0188
69	2.6547	0.0186
70	2.6732	0.0185
71	2.6915	0.0184
72	2.7098	0.0182
73	2.7234	0.0136
74	2.7369	0.0135
75	2.7504	0.0134
76	2.7637	0.0133
77	2.7769	0.0132
78	2.7899	0.0131
79	2.8029	0.0130
80	2.8158	0.0129
81	2.8286	0.0128
82	2.8412	0.0127
83	2.8538	0.0126
84	2.8663	0.0125
85	2.8787	0.0124
86	2.8909	0.0123
87	2.9031	0.0122
88	2.9153	0.0121
89	2.9273	0.0120
90	2.9392	0.0119
91	2.9511	0.0119
92	2.9628	0.0118
93	2.9745	0.0117
94	2.9861	0.0116
95	2.9977	0.0115
96	3.0091	0.0115
97	3.0205	0.0114
98	3.0318	0.0113
99	3.0430	0.0112
100	3.0542	0.0112
101	3.0653	0.0111
102	3.0763	0.0110
103	3.0873	0.0110
104	3.0982	0.0109

105	3.1090	0.0108
106	3.1197	0.0108
107	3.1304	0.0107
108	3.1410	0.0106
109	3.1516	0.0106
110	3.1621	0.0105
111	3.1725	0.0104
112	3.1829	0.0104
113	3.1932	0.0103
114	3.2035	0.0103
115	3.2137	0.0102
116	3.2239	0.0102
117	3.2340	0.0101
118	3.2440	0.0100
119	3.2540	0.0100
120	3.2639	0.0099
121	3.2738	0.0099
122	3.2836	0.0098
123	3.2934	0.0098
124	3.3031	0.0097
125	3.3128	0.0097
126	3.3224	0.0096
127	3.3320	0.0096
128	3.3416	0.0095
129	3.3510	0.0095
130	3.3605	0.0094
131	3.3699	0.0094
132	3.3792	0.0093
133	3.3885	0.0093
134	3.3978	0.0093
135	3.4070	0.0092
136	3.4162	0.0092
137	3.4253	0.0091
138	3.4344	0.0091
139	3.4434	0.0090
140	3.4524	0.0090
141	3.4614	0.0090
142	3.4703	0.0089
143	3.4792	0.0089
144	3.4880	0.0088

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0088	0.0034	0.0055
2	0.0089	0.0034	0.0055
3	0.0090	0.0034	0.0055
4	0.0090	0.0034	0.0056
5	0.0091	0.0035	0.0056
6	0.0091	0.0035	0.0056
7	0.0092	0.0035	0.0057
8	0.0093	0.0035	0.0057
9	0.0093	0.0036	0.0058
10	0.0094	0.0036	0.0058
11	0.0095	0.0036	0.0059
12	0.0095	0.0036	0.0059
13	0.0096	0.0037	0.0060
14	0.0097	0.0037	0.0060
15	0.0098	0.0037	0.0060
16	0.0098	0.0038	0.0061
17	0.0099	0.0038	0.0061
18	0.0100	0.0038	0.0062
19	0.0101	0.0039	0.0062
20	0.0102	0.0039	0.0063
21	0.0103	0.0039	0.0063
22	0.0103	0.0039	0.0064
23	0.0104	0.0040	0.0065
24	0.0105	0.0040	0.0065
25	0.0106	0.0041	0.0066
26	0.0107	0.0041	0.0066

27	0.0108	0.0041	0.0067
28	0.0109	0.0042	0.0067
29	0.0110	0.0042	0.0068
30	0.0111	0.0042	0.0069
31	0.0112	0.0043	0.0069
32	0.0113	0.0043	0.0070
33	0.0115	0.0044	0.0071
34	0.0115	0.0044	0.0071
35	0.0117	0.0045	0.0072
36	0.0118	0.0045	0.0073
37	0.0119	0.0046	0.0074
38	0.0120	0.0046	0.0074
39	0.0122	0.0047	0.0075
40	0.0123	0.0047	0.0076
41	0.0125	0.0048	0.0077
42	0.0126	0.0048	0.0078
43	0.0128	0.0049	0.0079
44	0.0129	0.0049	0.0080
45	0.0131	0.0050	0.0081
46	0.0132	0.0050	0.0082
47	0.0134	0.0051	0.0083
48	0.0135	0.0052	0.0084
49	0.0182	0.0070	0.0113
50	0.0184	0.0070	0.0113
51	0.0186	0.0071	0.0115
52	0.0188	0.0072	0.0116
53	0.0191	0.0073	0.0118
54	0.0192	0.0073	0.0119
55	0.0195	0.0075	0.0121
56	0.0197	0.0075	0.0122
57	0.0200	0.0076	0.0124
58	0.0202	0.0077	0.0125
59	0.0206	0.0079	0.0127
60	0.0208	0.0079	0.0128
61	0.0212	0.0081	0.0131
62	0.0214	0.0082	0.0132
63	0.0218	0.0083	0.0135
64	0.0220	0.0084	0.0136
65	0.0225	0.0086	0.0139
66	0.0228	0.0087	0.0141
67	0.0233	0.0089	0.0144
68	0.0236	0.0090	0.0146
69	0.0241	0.0092	0.0149
70	0.0245	0.0093	0.0151
71	0.0251	0.0096	0.0155
72	0.0254	0.0097	0.0157
73	0.0259	0.0099	0.0160
74	0.0263	0.0100	0.0162
75	0.0271	0.0104	0.0168
76	0.0276	0.0105	0.0170
77	0.0285	0.0109	0.0176
78	0.0290	0.0111	0.0180
79	0.0302	0.0115	0.0187
80	0.0308	0.0118	0.0190
81	0.0321	0.0121	0.0200
82	0.0329	0.0121	0.0208
83	0.0345	0.0121	0.0224
84	0.0354	0.0121	0.0233
85	0.0375	0.0121	0.0254
86	0.0387	0.0121	0.0266
87	0.0414	0.0121	0.0293
88	0.0429	0.0121	0.0308
89	0.0395	0.0121	0.0274
90	0.0417	0.0121	0.0296
91	0.0474	0.0121	0.0353
92	0.0511	0.0121	0.0390
93	0.0661	0.0121	0.0540
94	0.0740	0.0121	0.0619
95	0.1037	0.0121	0.0916
96	0.1401	0.0121	0.1280
97	0.3995	0.0121	0.3874

```
        98              0.0855          0.0121              0.0734
        99              0.0556          0.0121              0.0435
       100              0.0443          0.0121              0.0322
       101              0.0447          0.0121              0.0326
       102              0.0399          0.0121              0.0278
       103              0.0364          0.0121              0.0243
       104              0.0337          0.0121              0.0216
       105              0.0314          0.0120              0.0194
       106              0.0296          0.0113              0.0183
       107              0.0280          0.0107              0.0173
       108              0.0267          0.0102              0.0165
       109              0.0258          0.0099              0.0160
       110              0.0248          0.0095              0.0153
       111              0.0238          0.0091              0.0147
       112              0.0230          0.0088              0.0142
       113              0.0223          0.0085              0.0138
       114              0.0216          0.0082              0.0133
       115              0.0210          0.0080              0.0130
       116              0.0204          0.0078              0.0126
       117              0.0199          0.0076              0.0123
       118              0.0194          0.0074              0.0120
       119              0.0189          0.0072              0.0117
       120              0.0185          0.0071              0.0114
       121              0.0136          0.0052              0.0084
       122              0.0133          0.0051              0.0082
       123              0.0130          0.0050              0.0080
       124              0.0127          0.0048              0.0078
       125              0.0124          0.0047              0.0077
       126              0.0121          0.0046              0.0075
       127              0.0119          0.0045              0.0073
       128              0.0116          0.0044              0.0072
       129              0.0114          0.0043              0.0070
       130              0.0112          0.0043              0.0069
       131              0.0110          0.0042              0.0068
       132              0.0108          0.0041              0.0066
       133              0.0106          0.0040              0.0065
       134              0.0104          0.0040              0.0064
       135              0.0102          0.0039              0.0063
       136              0.0100          0.0038              0.0062
       137              0.0099          0.0038              0.0061
       138              0.0097          0.0037              0.0060
       139              0.0096          0.0037              0.0059
       140              0.0094          0.0036              0.0058
       141              0.0093          0.0036              0.0058
       142              0.0092          0.0035              0.0057
       143              0.0090          0.0035              0.0056
       144              0.0089          0.0034              0.0055
      ---------------------------------------------------------------------
      ---------------------------------------------------------------------
      Total soil rain loss =      1.01(In)
      Total effective rainfall =      2.48(In)
      Peak flow rate in flood hydrograph =     54.29(CFS)
      ---------------------------------------------------------------------
      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          12 - H O U R    S T O R M
                    R u n o f f      H y d r o g r a p h
      ---------------------------------------------------------------------
                 Hydrograph in   5   Minute intervals ((CFS))

      ---------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0       15.0      30.0      45.0      60.0
---------------------------------------------------------------------------
  0+ 5       0.0003      0.04  Q         |         |         |         |
  0+10       0.0017      0.20  Q         |         |         |         |
  0+15       0.0055      0.55  Q         |         |         |         |
  0+20       0.0130      1.09  Q         |         |         |         |
  0+25       0.0220      1.31  Q         |         |         |         |
  0+30       0.0321      1.46  Q         |         |         |         |
  0+35       0.0429      1.57  VQ        |         |         |         |
  0+40       0.0543      1.65  VQ        |         |         |         |
  0+45       0.0661      1.72  VQ        |         |         |         |
```

```
0+50       0.0783      1.78  VQ        |         |         |         |
0+55       0.0909      1.82  VQ        |         |         |         |
1+ 0       0.1037      1.86  VQ        |         |         |         |
1+ 5       0.1166      1.88  VQ        |         |         |         |
1+10       0.1297      1.90  VQ        |         |         |         |
1+15       0.1429      1.92  |Q        |         |         |         |
1+20       0.1563      1.94  |Q        |         |         |         |
1+25       0.1698      1.96  |Q        |         |         |         |
1+30       0.1834      1.98  |Q        |         |         |         |
1+35       0.1972      2.00  |Q        |         |         |         |
1+40       0.2111      2.02  |Q        |         |         |         |
1+45       0.2251      2.03  |Q        |         |         |         |
1+50       0.2392      2.05  |Q        |         |         |         |
1+55       0.2534      2.07  |Q        |         |         |         |
2+ 0       0.2678      2.08  |Q        |         |         |         |
2+ 5       0.2822      2.10  |Q        |         |         |         |
2+10       0.2968      2.12  |QV       |         |         |         |
2+15       0.3115      2.14  |QV       |         |         |         |
2+20       0.3264      2.16  |QV       |         |         |         |
2+25       0.3414      2.17  |QV       |         |         |         |
2+30       0.3565      2.19  |QV       |         |         |         |
2+35       0.3717      2.21  |QV       |         |         |         |
2+40       0.3871      2.24  |QV       |         |         |         |
2+45       0.4027      2.26  |QV       |         |         |         |
2+50       0.4184      2.28  |QV       |         |         |         |
2+55       0.4342      2.30  |Q V      |         |         |         |
3+ 0       0.4502      2.32  |Q V      |         |         |         |
3+ 5       0.4663      2.34  |Q V      |         |         |         |
3+10       0.4826      2.37  |Q V      |         |         |         |
3+15       0.4991      2.39  |Q V      |         |         |         |
3+20       0.5158      2.42  |Q V      |         |         |         |
3+25       0.5326      2.44  |Q V      |         |         |         |
3+30       0.5496      2.47  |Q V      |         |         |         |
3+35       0.5668      2.50  |Q  V     |         |         |         |
3+40       0.5842      2.53  |Q  V     |         |         |         |
3+45       0.6018      2.55  |Q  V     |         |         |         |
3+50       0.6196      2.58  |Q  V     |         |         |         |
3+55       0.6376      2.61  |Q  V     |         |         |         |
4+ 0       0.6558      2.65  |Q  V     |         |         |         |
4+ 5       0.6744      2.70  |Q  V     |         |         |         |
4+10       0.6938      2.81  |Q  V     |         |         |         |
4+15       0.7146      3.02  | Q  V    |         |         |         |
4+20       0.7376      3.33  | Q  V    |         |         |         |
4+25       0.7615      3.48  | Q  V    |         |         |         |
4+30       0.7862      3.59  | Q  V    |         |         |         |
4+35       0.8115      3.68  | Q  V    |         |         |         |
4+40       0.8374      3.76  | Q  V    |         |         |         |
4+45       0.8638      3.83  | Q   V   |         |         |         |
4+50       0.8907      3.90  | Q   V   |         |         |         |
4+55       0.9180      3.97  | Q   V   |         |         |         |
5+ 0       0.9458      4.03  | Q   V   |         |         |         |
5+ 5       0.9739      4.09  | Q   V   |         |         |         |
5+10       1.0025      4.15  | Q    V  |         |         |         |
5+15       1.0314      4.20  | Q    V  |         |         |         |
5+20       1.0608      4.27  | Q    V  |         |         |         |
5+25       1.0906      4.33  | Q    V  |         |         |         |
5+30       1.1209      4.40  | Q    V  |         |         |         |
5+35       1.1517      4.47  | Q     V |         |         |         |
5+40       1.1830      4.54  |  Q    V |         |         |         |
5+45       1.2147      4.61  |  Q    V |         |         |         |
5+50       1.2470      4.69  |  Q    V |         |         |         |
5+55       1.2799      4.77  |  Q     V|         |         |         |
6+ 0       1.3134      4.86  |  Q     V|         |         |         |
6+ 5       1.3475      4.95  |  Q     V|         |         |         |
6+10       1.3822      5.04  |  Q     V|         |         |         |
6+15       1.4175      5.13  |  Q      V         |         |         |
6+20       1.4535      5.22  |  Q      V         |         |         |
6+25       1.4902      5.33  |  Q      V         |         |         |
6+30       1.5277      5.45  |  Q      V         |         |         |
6+35       1.5661      5.57  |  Q      |V        |         |         |
6+40       1.6055      5.72  |  Q      |V        |         |         |
```

```
 6+45      1.6459      5.87  |  Q      |V        |         |         |
 6+50      1.6875      6.04  |   Q     |V        |         |         |
 6+55      1.7304      6.24  |   Q     | V       |         |         |
 7+ 0      1.7751      6.49  |   Q     | V       |         |         |
 7+ 5      1.8219      6.80  |   Q     | V       |         |         |
 7+10      1.8713      7.17  |   Q     |  V      |         |         |
 7+15      1.9234      7.57  |    Q    |  V      |         |         |
 7+20      1.9789      8.05  |    Q    |   V     |         |         |
 7+25      2.0376      8.53  |    Q    |   V     |         |         |
 7+30      2.0994      8.98  |    Q    |   V     |         |         |
 7+35      2.1630      9.23  |     Q   |    V    |         |         |
 7+40      2.2281      9.45  |     Q   |    V    |         |         |
 7+45      2.2988     10.27  |     Q   |     V   |         |         |
 7+50      2.3791     11.65  |      Q  |     V   |         |         |
 7+55      2.4738     13.75  |        Q|      V  |         |         |
 8+ 0      2.5922     17.19  |         |Q      V |         |         |
 8+ 5      2.7566     23.87  |         |    Q   V|         |         |
 8+10      2.9950     34.61  |         |         |V Q      |         |
 8+15      3.3247     47.88  |         |         |  V      |Q        |
 8+20      3.6986     54.29  |         |         |     V   |     Q   |
 8+25      3.9307     33.70  |         |         | Q    V  |         |
 8+30      4.1055     25.37  |         |     Q   |        V|         |
 8+35      4.2481     20.70  |         |  Q      |         V         |
 8+40      4.3699     17.69  |         |Q        |         V         |
 8+45      4.4735     15.05  |         Q         |         |V        |
 8+50      4.5618     12.82  |       Q |         |         | V       |
 8+55      4.6368     10.89  |      Q  |         |         | V       |
 9+ 0      4.7015      9.39  |     Q   |         |         |  V      |
 9+ 5      4.7568      8.03  |    Q    |         |         |  V      |
 9+10      4.8063      7.19  |   Q     |         |         |   V     |
 9+15      4.8523      6.68  |   Q     |         |         |   V     |
 9+20      4.8953      6.25  |   Q     |         |         |   V     |
 9+25      4.9360      5.90  |  Q      |         |         |   V     |
 9+30      4.9749      5.66  |  Q      |         |         |    V    |
 9+35      5.0117      5.33  |  Q      |         |         |    V    |
 9+40      5.0463      5.03  |  Q      |         |         |    V    |
 9+45      5.0794      4.79  |  Q      |         |         |    V    |
 9+50      5.1105      4.52  |  Q      |         |         |     V   |
 9+55      5.1406      4.37  | Q       |         |         |     V   |
10+ 0      5.1698      4.24  | Q       |         |         |     V   |
10+ 5      5.1980      4.09  | Q       |         |         |     V   |
10+10      5.2249      3.91  | Q       |         |         |     V   |
10+15      5.2499      3.63  | Q       |         |         |      V  |
10+20      5.2724      3.27  | Q       |         |         |      V  |
10+25      5.2937      3.08  | Q       |         |         |      V  |
10+30      5.3139      2.94  |Q        |         |         |      V  |
10+35      5.3333      2.82  |Q        |         |         |      V  |
10+40      5.3520      2.71  |Q        |         |         |      V  |
10+45      5.3701      2.62  |Q        |         |         |       V |
10+50      5.3876      2.54  |Q        |         |         |       V |
10+55      5.4046      2.48  |Q        |         |         |       V |
11+ 0      5.4212      2.41  |Q        |         |         |       V |
11+ 5      5.4375      2.36  |Q        |         |         |       V |
11+10      5.4534      2.31  |Q        |         |         |       V |
11+15      5.4690      2.26  |Q        |         |         |       V |
11+20      5.4842      2.22  |Q        |         |         |       V |
11+25      5.4992      2.18  |Q        |         |         |       V |
11+30      5.5140      2.14  |Q        |         |         |        V|
11+35      5.5284      2.10  |Q        |         |         |        V|
11+40      5.5426      2.06  |Q        |         |         |        V|
11+45      5.5566      2.03  |Q        |         |         |        V|
11+50      5.5703      2.00  |Q        |         |         |        V|
11+55      5.5839      1.97  |Q        |         |         |        V|
12+ 0      5.5972      1.94  |Q        |         |         |        V|
12+ 5      5.6101      1.86  |Q        |         |         |        V|
12+10      5.6217      1.69  |Q        |         |         |        V|
12+15      5.6307      1.31  Q         |         |         |        V|
12+20      5.6359      0.76  Q         |         |         |        V|
12+25      5.6396      0.53  Q         |         |         |        V|
12+30      5.6423      0.39  Q         |         |         |        V|
12+35      5.6443      0.29  Q         |         |         |        V|
```

```
   12+40       5.6457      0.21  Q         |         |         |        V|
   12+45       5.6467      0.15  Q         |         |         |        V|
   12+50       5.6474      0.10  Q         |         |         |        V|
   12+55       5.6479      0.07  Q         |         |         |        V|
   13+ 0       5.6482      0.05  Q         |         |         |        V|
   13+ 5       5.6485      0.04  Q         |         |         |        V|
   13+10       5.6487      0.03  Q         |         |         |        V|
   13+15       5.6488      0.02  Q         |         |         |        V|
   13+20       5.6489      0.02  Q         |         |         |        V|
   13+25       5.6490      0.01  Q         |         |         |        V|
   13+30       5.6491      0.01  Q         |         |         |        V|
   13+35       5.6491      0.00  Q         |         |         |        V|
   13+40       5.6491      0.00  Q         |         |         |         V
-------------------------------------------------------------------------
```

- 25 Year 24 Hour Post-Development Unit Hydrograph – Area 'A'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/03/16   File Name PRA02524.out


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'A' - 25 YEAR 24 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 25

       Antecedent Moisture Condition = 2

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 70.6      27.4          1.00     C     0.250     0.581    0.145

Area-averaged adjusted loss rate Fm (In/Hr) =  0.145

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC2)          Yield Fr
    15.91   0.581         70.6      70.6       4.16     0.381
    11.48   0.419         98.0      98.0       0.20     0.947

Area-averaged catchment yield fraction, Y =  0.618
Area-averaged low loss fraction, Yb =  0.382
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.311 (hours)
Watershed area =      27.39(Ac.)
Catchment Lag time =   0.249 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 33.5264
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.145(In/Hr)
Average low loss rate fraction (Yb) = 0.382 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.400(In)
Computed peak 30-minute rainfall =  0.870(In)
Specified peak 1-hour rainfall =  1.150(In)
Computed peak 3-hour rainfall =  1.940(In)
Specified peak 6-hour rainfall =  2.710(In)
Specified peak 24-hour rainfall =  4.490(In)


Rainfall depth area reduction factors:
Using a total area of      27.39(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.399(In)
```

```
30-minute factor = 0.999    Adjusted rainfall =  0.869(In)
1-hour factor = 0.999       Adjusted rainfall =  1.149(In)
3-hour factor = 1.000       Adjusted rainfall =  1.940(In)
6-hour factor = 1.000       Adjusted rainfall =  2.710(In)
24-hour factor = 1.000 Adjusted rainfall =  4.490(In)
------------------------------------------------------------------------

                      U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
------------------------------------------------------------------------
               (K =       331.25 (CFS))

  1                2.480                   8.215
  2               10.853                  27.735
  3               30.538                  65.206
  4               59.833                  97.040
  5               71.872                  39.880
  6               79.486                  25.220
  7               84.947                  18.090
  8               89.055                  13.607
  9               92.186                  10.372
 10               94.559                   7.859
 11               96.255                   5.619
 12               97.487                   4.081
 13               98.129                   2.125
 14               98.520                   1.296
 15               98.861                   1.129
 16               99.118                   0.852
 17               99.331                   0.706
 18               99.593                   0.868
 19               99.781                   0.623
 20               99.902                   0.403
 21              100.000                   0.323
------------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.3995              0.3995
  2              0.5396              0.1401
  3              0.6433              0.1037
  4              0.7288              0.0855
  5              0.8028              0.0740
  6              0.8689              0.0661
  7              0.9245              0.0556
  8              0.9756              0.0511
  9              1.0229              0.0474
 10              1.0672              0.0443
 11              1.1090              0.0417
 12              1.1485              0.0395
 13              1.1932              0.0447
 14              1.2362              0.0429
 15              1.2775              0.0414
 16              1.3175              0.0399
 17              1.3561              0.0387
 18              1.3936              0.0375
 19              1.4300              0.0364
 20              1.4654              0.0354
 21              1.4999              0.0345
 22              1.5336              0.0337
 23              1.5665              0.0329
 24              1.5986              0.0321
 25              1.6300              0.0314
 26              1.6608              0.0308
 27              1.6910              0.0302
 28              1.7206              0.0296
 29              1.7496              0.0290
 30              1.7781              0.0285
 31              1.8061              0.0280
 32              1.8337              0.0276
 33              1.8608              0.0271
```

34	1.8875	0.0267
35	1.9138	0.0263
36	1.9397	0.0259
37	1.9655	0.0258
38	1.9909	0.0254
39	2.0160	0.0251
40	2.0408	0.0248
41	2.0653	0.0245
42	2.0894	0.0241
43	2.1133	0.0238
44	2.1368	0.0236
45	2.1601	0.0233
46	2.1831	0.0230
47	2.2059	0.0228
48	2.2284	0.0225
49	2.2507	0.0223
50	2.2727	0.0220
51	2.2945	0.0218
52	2.3161	0.0216
53	2.3375	0.0214
54	2.3587	0.0212
55	2.3796	0.0210
56	2.4004	0.0208
57	2.4210	0.0206
58	2.4414	0.0204
59	2.4616	0.0202
60	2.4816	0.0200
61	2.5015	0.0199
62	2.5212	0.0197
63	2.5407	0.0195
64	2.5601	0.0194
65	2.5793	0.0192
66	2.5984	0.0191
67	2.6173	0.0189
68	2.6361	0.0188
69	2.6547	0.0186
70	2.6732	0.0185
71	2.6915	0.0184
72	2.7098	0.0182
73	2.7234	0.0136
74	2.7369	0.0135
75	2.7504	0.0134
76	2.7637	0.0133
77	2.7769	0.0132
78	2.7899	0.0131
79	2.8029	0.0130
80	2.8158	0.0129
81	2.8286	0.0128
82	2.8412	0.0127
83	2.8538	0.0126
84	2.8663	0.0125
85	2.8787	0.0124
86	2.8909	0.0123
87	2.9031	0.0122
88	2.9153	0.0121
89	2.9273	0.0120
90	2.9392	0.0119
91	2.9511	0.0119
92	2.9628	0.0118
93	2.9745	0.0117
94	2.9861	0.0116
95	2.9977	0.0115
96	3.0091	0.0115
97	3.0205	0.0114
98	3.0318	0.0113
99	3.0430	0.0112
100	3.0542	0.0112
101	3.0653	0.0111
102	3.0763	0.0110
103	3.0873	0.0110
104	3.0982	0.0109

105	3.1090	0.0108
106	3.1197	0.0108
107	3.1304	0.0107
108	3.1410	0.0106
109	3.1516	0.0106
110	3.1621	0.0105
111	3.1725	0.0104
112	3.1829	0.0104
113	3.1932	0.0103
114	3.2035	0.0103
115	3.2137	0.0102
116	3.2239	0.0102
117	3.2340	0.0101
118	3.2440	0.0100
119	3.2540	0.0100
120	3.2639	0.0099
121	3.2738	0.0099
122	3.2836	0.0098
123	3.2934	0.0098
124	3.3031	0.0097
125	3.3128	0.0097
126	3.3224	0.0096
127	3.3320	0.0096
128	3.3416	0.0095
129	3.3510	0.0095
130	3.3605	0.0094
131	3.3699	0.0094
132	3.3792	0.0093
133	3.3885	0.0093
134	3.3978	0.0093
135	3.4070	0.0092
136	3.4162	0.0092
137	3.4253	0.0091
138	3.4344	0.0091
139	3.4434	0.0090
140	3.4524	0.0090
141	3.4614	0.0090
142	3.4703	0.0089
143	3.4792	0.0089
144	3.4880	0.0088
145	3.4968	0.0088
146	3.5056	0.0088
147	3.5143	0.0087
148	3.5230	0.0087
149	3.5317	0.0087
150	3.5403	0.0086
151	3.5489	0.0086
152	3.5574	0.0085
153	3.5659	0.0085
154	3.5744	0.0085
155	3.5828	0.0084
156	3.5912	0.0084
157	3.5996	0.0084
158	3.6079	0.0083
159	3.6162	0.0083
160	3.6245	0.0083
161	3.6327	0.0082
162	3.6409	0.0082
163	3.6491	0.0082
164	3.6573	0.0081
165	3.6654	0.0081
166	3.6734	0.0081
167	3.6815	0.0080
168	3.6895	0.0080
169	3.6975	0.0080
170	3.7054	0.0080
171	3.7134	0.0079
172	3.7213	0.0079
173	3.7291	0.0079
174	3.7370	0.0078
175	3.7448	0.0078

176	3.7525	0.0078
177	3.7603	0.0078
178	3.7680	0.0077
179	3.7757	0.0077
180	3.7834	0.0077
181	3.7910	0.0076
182	3.7986	0.0076
183	3.8062	0.0076
184	3.8138	0.0076
185	3.8213	0.0075
186	3.8288	0.0075
187	3.8363	0.0075
188	3.8438	0.0075
189	3.8512	0.0074
190	3.8586	0.0074
191	3.8660	0.0074
192	3.8734	0.0074
193	3.8807	0.0073
194	3.8880	0.0073
195	3.8953	0.0073
196	3.9026	0.0073
197	3.9098	0.0072
198	3.9170	0.0072
199	3.9242	0.0072
200	3.9314	0.0072
201	3.9386	0.0071
202	3.9457	0.0071
203	3.9528	0.0071
204	3.9599	0.0071
205	3.9669	0.0071
206	3.9740	0.0070
207	3.9810	0.0070
208	3.9880	0.0070
209	3.9949	0.0070
210	4.0019	0.0070
211	4.0088	0.0069
212	4.0157	0.0069
213	4.0226	0.0069
214	4.0295	0.0069
215	4.0363	0.0068
216	4.0432	0.0068
217	4.0500	0.0068
218	4.0568	0.0068
219	4.0635	0.0068
220	4.0703	0.0067
221	4.0770	0.0067
222	4.0837	0.0067
223	4.0904	0.0067
224	4.0971	0.0067
225	4.1037	0.0067
226	4.1104	0.0066
227	4.1170	0.0066
228	4.1236	0.0066
229	4.1302	0.0066
230	4.1367	0.0066
231	4.1433	0.0065
232	4.1498	0.0065
233	4.1563	0.0065
234	4.1628	0.0065
235	4.1693	0.0065
236	4.1757	0.0065
237	4.1822	0.0064
238	4.1886	0.0064
239	4.1950	0.0064
240	4.2014	0.0064
241	4.2077	0.0064
242	4.2141	0.0064
243	4.2204	0.0063
244	4.2267	0.0063
245	4.2330	0.0063
246	4.2393	0.0063

247	4.2456	0.0063
248	4.2518	0.0063
249	4.2581	0.0062
250	4.2643	0.0062
251	4.2705	0.0062
252	4.2767	0.0062
253	4.2829	0.0062
254	4.2890	0.0062
255	4.2952	0.0061
256	4.3013	0.0061
257	4.3074	0.0061
258	4.3135	0.0061
259	4.3196	0.0061
260	4.3257	0.0061
261	4.3317	0.0061
262	4.3377	0.0060
263	4.3438	0.0060
264	4.3498	0.0060
265	4.3558	0.0060
266	4.3618	0.0060
267	4.3677	0.0060
268	4.3737	0.0060
269	4.3796	0.0059
270	4.3855	0.0059
271	4.3914	0.0059
272	4.3973	0.0059
273	4.4032	0.0059
274	4.4091	0.0059
275	4.4149	0.0059
276	4.4208	0.0058
277	4.4266	0.0058
278	4.4324	0.0058
279	4.4382	0.0058
280	4.4440	0.0058
281	4.4498	0.0058
282	4.4555	0.0058
283	4.4613	0.0057
284	4.4670	0.0057
285	4.4728	0.0057
286	4.4785	0.0057
287	4.4842	0.0057
288	4.4898	0.0057

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0057	0.0022	0.0035
2	0.0057	0.0022	0.0035
3	0.0057	0.0022	0.0035
4	0.0057	0.0022	0.0035
5	0.0058	0.0022	0.0036
6	0.0058	0.0022	0.0036
7	0.0058	0.0022	0.0036
8	0.0058	0.0022	0.0036
9	0.0058	0.0022	0.0036
10	0.0059	0.0022	0.0036
11	0.0059	0.0022	0.0036
12	0.0059	0.0023	0.0036
13	0.0059	0.0023	0.0037
14	0.0059	0.0023	0.0037
15	0.0060	0.0023	0.0037
16	0.0060	0.0023	0.0037
17	0.0060	0.0023	0.0037
18	0.0060	0.0023	0.0037
19	0.0061	0.0023	0.0037
20	0.0061	0.0023	0.0038
21	0.0061	0.0023	0.0038
22	0.0061	0.0023	0.0038
23	0.0061	0.0023	0.0038
24	0.0062	0.0024	0.0038

25	0.0062	0.0024	0.0038
26	0.0062	0.0024	0.0038
27	0.0062	0.0024	0.0039
28	0.0063	0.0024	0.0039
29	0.0063	0.0024	0.0039
30	0.0063	0.0024	0.0039
31	0.0063	0.0024	0.0039
32	0.0064	0.0024	0.0039
33	0.0064	0.0024	0.0039
34	0.0064	0.0024	0.0040
35	0.0064	0.0025	0.0040
36	0.0065	0.0025	0.0040
37	0.0065	0.0025	0.0040
38	0.0065	0.0025	0.0040
39	0.0065	0.0025	0.0040
40	0.0066	0.0025	0.0041
41	0.0066	0.0025	0.0041
42	0.0066	0.0025	0.0041
43	0.0067	0.0025	0.0041
44	0.0067	0.0025	0.0041
45	0.0067	0.0026	0.0041
46	0.0067	0.0026	0.0042
47	0.0068	0.0026	0.0042
48	0.0068	0.0026	0.0042
49	0.0068	0.0026	0.0042
50	0.0068	0.0026	0.0042
51	0.0069	0.0026	0.0043
52	0.0069	0.0026	0.0043
53	0.0070	0.0027	0.0043
54	0.0070	0.0027	0.0043
55	0.0070	0.0027	0.0043
56	0.0070	0.0027	0.0044
57	0.0071	0.0027	0.0044
58	0.0071	0.0027	0.0044
59	0.0071	0.0027	0.0044
60	0.0072	0.0027	0.0044
61	0.0072	0.0028	0.0045
62	0.0072	0.0028	0.0045
63	0.0073	0.0028	0.0045
64	0.0073	0.0028	0.0045
65	0.0074	0.0028	0.0046
66	0.0074	0.0028	0.0046
67	0.0074	0.0028	0.0046
68	0.0075	0.0028	0.0046
69	0.0075	0.0029	0.0046
70	0.0075	0.0029	0.0047
71	0.0076	0.0029	0.0047
72	0.0076	0.0029	0.0047
73	0.0077	0.0029	0.0047
74	0.0077	0.0029	0.0048
75	0.0078	0.0030	0.0048
76	0.0078	0.0030	0.0048
77	0.0078	0.0030	0.0048
78	0.0079	0.0030	0.0049
79	0.0079	0.0030	0.0049
80	0.0080	0.0030	0.0049
81	0.0080	0.0031	0.0050
82	0.0080	0.0031	0.0050
83	0.0081	0.0031	0.0050
84	0.0081	0.0031	0.0050
85	0.0082	0.0031	0.0051
86	0.0082	0.0031	0.0051
87	0.0083	0.0032	0.0051
88	0.0083	0.0032	0.0052
89	0.0084	0.0032	0.0052
90	0.0084	0.0032	0.0052
91	0.0085	0.0032	0.0053
92	0.0085	0.0033	0.0053
93	0.0086	0.0033	0.0053
94	0.0087	0.0033	0.0053
95	0.0087	0.0033	0.0054

96	0.0088	0.0033	0.0054
97	0.0088	0.0034	0.0055
98	0.0089	0.0034	0.0055
99	0.0090	0.0034	0.0055
100	0.0090	0.0034	0.0056
101	0.0091	0.0035	0.0056
102	0.0091	0.0035	0.0056
103	0.0092	0.0035	0.0057
104	0.0093	0.0035	0.0057
105	0.0093	0.0036	0.0058
106	0.0094	0.0036	0.0058
107	0.0095	0.0036	0.0059
108	0.0095	0.0036	0.0059
109	0.0096	0.0037	0.0060
110	0.0097	0.0037	0.0060
111	0.0098	0.0037	0.0060
112	0.0098	0.0038	0.0061
113	0.0099	0.0038	0.0061
114	0.0100	0.0038	0.0062
115	0.0101	0.0039	0.0062
116	0.0102	0.0039	0.0063
117	0.0103	0.0039	0.0063
118	0.0103	0.0039	0.0064
119	0.0104	0.0040	0.0065
120	0.0105	0.0040	0.0065
121	0.0106	0.0041	0.0066
122	0.0107	0.0041	0.0066
123	0.0108	0.0041	0.0067
124	0.0109	0.0042	0.0067
125	0.0110	0.0042	0.0068
126	0.0111	0.0042	0.0069
127	0.0112	0.0043	0.0069
128	0.0113	0.0043	0.0070
129	0.0115	0.0044	0.0071
130	0.0115	0.0044	0.0071
131	0.0117	0.0045	0.0072
132	0.0118	0.0045	0.0073
133	0.0119	0.0046	0.0074
134	0.0120	0.0046	0.0074
135	0.0122	0.0047	0.0075
136	0.0123	0.0047	0.0076
137	0.0125	0.0048	0.0077
138	0.0126	0.0048	0.0078
139	0.0128	0.0049	0.0079
140	0.0129	0.0049	0.0080
141	0.0131	0.0050	0.0081
142	0.0132	0.0050	0.0082
143	0.0134	0.0051	0.0083
144	0.0135	0.0052	0.0084
145	0.0182	0.0070	0.0113
146	0.0184	0.0070	0.0113
147	0.0186	0.0071	0.0115
148	0.0188	0.0072	0.0116
149	0.0191	0.0073	0.0118
150	0.0192	0.0073	0.0119
151	0.0195	0.0075	0.0121
152	0.0197	0.0075	0.0122
153	0.0200	0.0076	0.0124
154	0.0202	0.0077	0.0125
155	0.0206	0.0079	0.0127
156	0.0208	0.0079	0.0128
157	0.0212	0.0081	0.0131
158	0.0214	0.0082	0.0132
159	0.0218	0.0083	0.0135
160	0.0220	0.0084	0.0136
161	0.0225	0.0086	0.0139
162	0.0228	0.0087	0.0141
163	0.0233	0.0089	0.0144
164	0.0236	0.0090	0.0146
165	0.0241	0.0092	0.0149
166	0.0245	0.0093	0.0151

167	0.0251	0.0096	0.0155
168	0.0254	0.0097	0.0157
169	0.0259	0.0099	0.0160
170	0.0263	0.0100	0.0162
171	0.0271	0.0104	0.0168
172	0.0276	0.0105	0.0170
173	0.0285	0.0109	0.0176
174	0.0290	0.0111	0.0180
175	0.0302	0.0115	0.0187
176	0.0308	0.0118	0.0190
177	0.0321	0.0121	0.0200
178	0.0329	0.0121	0.0208
179	0.0345	0.0121	0.0224
180	0.0354	0.0121	0.0233
181	0.0375	0.0121	0.0254
182	0.0387	0.0121	0.0266
183	0.0414	0.0121	0.0293
184	0.0429	0.0121	0.0308
185	0.0395	0.0121	0.0274
186	0.0417	0.0121	0.0296
187	0.0474	0.0121	0.0353
188	0.0511	0.0121	0.0390
189	0.0661	0.0121	0.0540
190	0.0740	0.0121	0.0619
191	0.1037	0.0121	0.0916
192	0.1401	0.0121	0.1280
193	0.3995	0.0121	0.3874
194	0.0855	0.0121	0.0734
195	0.0556	0.0121	0.0435
196	0.0443	0.0121	0.0322
197	0.0447	0.0121	0.0326
198	0.0399	0.0121	0.0278
199	0.0364	0.0121	0.0243
200	0.0337	0.0121	0.0216
201	0.0314	0.0120	0.0194
202	0.0296	0.0113	0.0183
203	0.0280	0.0107	0.0173
204	0.0267	0.0102	0.0165
205	0.0258	0.0099	0.0160
206	0.0248	0.0095	0.0153
207	0.0238	0.0091	0.0147
208	0.0230	0.0088	0.0142
209	0.0223	0.0085	0.0138
210	0.0216	0.0082	0.0133
211	0.0210	0.0080	0.0130
212	0.0204	0.0078	0.0126
213	0.0199	0.0076	0.0123
214	0.0194	0.0074	0.0120
215	0.0189	0.0072	0.0117
216	0.0185	0.0071	0.0114
217	0.0136	0.0052	0.0084
218	0.0133	0.0051	0.0082
219	0.0130	0.0050	0.0080
220	0.0127	0.0048	0.0078
221	0.0124	0.0047	0.0077
222	0.0121	0.0046	0.0075
223	0.0119	0.0045	0.0073
224	0.0116	0.0044	0.0072
225	0.0114	0.0043	0.0070
226	0.0112	0.0043	0.0069
227	0.0110	0.0042	0.0068
228	0.0108	0.0041	0.0066
229	0.0106	0.0040	0.0065
230	0.0104	0.0040	0.0064
231	0.0102	0.0039	0.0063
232	0.0100	0.0038	0.0062
233	0.0099	0.0038	0.0061
234	0.0097	0.0037	0.0060
235	0.0096	0.0037	0.0059
236	0.0094	0.0036	0.0058
237	0.0093	0.0036	0.0058

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      238              0.0092          0.0035              0.0057
      239              0.0090          0.0035              0.0056
      240              0.0089          0.0034              0.0055
      241              0.0088          0.0034              0.0054
      242              0.0087          0.0033              0.0054
      243              0.0086          0.0033              0.0053
      244              0.0085          0.0032              0.0052
      245              0.0084          0.0032              0.0052
      246              0.0083          0.0032              0.0051
      247              0.0082          0.0031              0.0051
      248              0.0081          0.0031              0.0050
      249              0.0080          0.0030              0.0049
      250              0.0079          0.0030              0.0049
      251              0.0078          0.0030              0.0048
      252              0.0077          0.0029              0.0048
      253              0.0076          0.0029              0.0047
      254              0.0076          0.0029              0.0047
      255              0.0075          0.0029              0.0046
      256              0.0074          0.0028              0.0046
      257              0.0073          0.0028              0.0045
      258              0.0073          0.0028              0.0045
      259              0.0072          0.0027              0.0044
      260              0.0071          0.0027              0.0044
      261              0.0071          0.0027              0.0044
      262              0.0070          0.0027              0.0043
      263              0.0069          0.0026              0.0043
      264              0.0069          0.0026              0.0042
      265              0.0068          0.0026              0.0042
      266              0.0067          0.0026              0.0042
      267              0.0067          0.0026              0.0041
      268              0.0066          0.0025              0.0041
      269              0.0066          0.0025              0.0041
      270              0.0065          0.0025              0.0040
      271              0.0065          0.0025              0.0040
      272              0.0064          0.0025              0.0040
      273              0.0064          0.0024              0.0039
      274              0.0063          0.0024              0.0039
      275              0.0063          0.0024              0.0039
      276              0.0062          0.0024              0.0038
      277              0.0062          0.0024              0.0038
      278              0.0061          0.0023              0.0038
      279              0.0061          0.0023              0.0038
      280              0.0060          0.0023              0.0037
      281              0.0060          0.0023              0.0037
      282              0.0060          0.0023              0.0037
      283              0.0059          0.0023              0.0037
      284              0.0059          0.0022              0.0036
      285              0.0058          0.0022              0.0036
      286              0.0058          0.0022              0.0036
      287              0.0057          0.0022              0.0036
      288              0.0057          0.0022              0.0035
      ---------------------------------------------------------------------
      ---------------------------------------------------------------------
      Total soil rain loss =      1.39(In)
      Total effective rainfall =      3.10(In)
      Peak flow rate in flood hydrograph =     54.29(CFS)
      ---------------------------------------------------------------------
      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                        24 - H O U R    S T O R M
                   R u n o f f      H y d r o g r a p h
      ---------------------------------------------------------------------
                Hydrograph in   5   Minute intervals ((CFS))

      ---------------------------------------------------------------------
 Time(h+m) Volume Ac.Ft   Q(CFS)  0       15.0      30.0      45.0      60.0
 ------------------------------------------------------------------------
   0+ 5       0.0002      0.03  Q         |         |         |         |
   0+10       0.0011      0.13  Q         |         |         |         |
   0+15       0.0035      0.36  Q         |         |         |         |
   0+20       0.0083      0.70  Q         |         |         |         |
   0+25       0.0141      0.84  Q         |         |         |         |
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0+30      0.0205      0.93  Q          |          |          |          |
0+35      0.0274      1.00  Q          |          |          |          |
0+40      0.0346      1.05  Q          |          |          |          |
0+45      0.0421      1.09  Q          |          |          |          |
0+50      0.0499      1.12  Q          |          |          |          |
0+55      0.0577      1.14  Q          |          |          |          |
1+ 0      0.0658      1.16  Q          |          |          |          |
1+ 5      0.0738      1.17  Q          |          |          |          |
1+10      0.0820      1.18  Q          |          |          |          |
1+15      0.0902      1.19  Q          |          |          |          |
1+20      0.0984      1.20  Q          |          |          |          |
1+25      0.1067      1.20  Q          |          |          |          |
1+30      0.1151      1.21  Q          |          |          |          |
1+35      0.1235      1.22  Q          |          |          |          |
1+40      0.1319      1.22  Q          |          |          |          |
1+45      0.1404      1.23  Q          |          |          |          |
1+50      0.1489      1.23  Q          |          |          |          |
1+55      0.1574      1.24  Q          |          |          |          |
2+ 0      0.1660      1.24  Q          |          |          |          |
2+ 5      0.1746      1.25  Q          |          |          |          |
2+10      0.1832      1.25  QV         |          |          |          |
2+15      0.1919      1.26  QV         |          |          |          |
2+20      0.2006      1.26  QV         |          |          |          |
2+25      0.2093      1.27  QV         |          |          |          |
2+30      0.2181      1.27  QV         |          |          |          |
2+35      0.2268      1.28  QV         |          |          |          |
2+40      0.2357      1.28  QV         |          |          |          |
2+45      0.2445      1.29  QV         |          |          |          |
2+50      0.2534      1.29  QV         |          |          |          |
2+55      0.2624      1.30  QV         |          |          |          |
3+ 0      0.2713      1.30  QV         |          |          |          |
3+ 5      0.2803      1.31  QV         |          |          |          |
3+10      0.2894      1.31  QV         |          |          |          |
3+15      0.2984      1.32  QV         |          |          |          |
3+20      0.3076      1.32  QV         |          |          |          |
3+25      0.3167      1.33  QV         |          |          |          |
3+30      0.3259      1.33  QV         |          |          |          |
3+35      0.3351      1.34  QV         |          |          |          |
3+40      0.3444      1.34  QV         |          |          |          |
3+45      0.3537      1.35  Q V        |          |          |          |
3+50      0.3630      1.36  Q V        |          |          |          |
3+55      0.3724      1.36  Q V        |          |          |          |
4+ 0      0.3818      1.37  Q V        |          |          |          |
4+ 5      0.3913      1.37  Q V        |          |          |          |
4+10      0.4008      1.38  Q V        |          |          |          |
4+15      0.4103      1.39  Q V        |          |          |          |
4+20      0.4199      1.39  Q V        |          |          |          |
4+25      0.4295      1.40  Q V        |          |          |          |
4+30      0.4392      1.40  Q V        |          |          |          |
4+35      0.4489      1.41  Q V        |          |          |          |
4+40      0.4587      1.42  Q V        |          |          |          |
4+45      0.4685      1.42  Q V        |          |          |          |
4+50      0.4783      1.43  Q V        |          |          |          |
4+55      0.4882      1.44  Q V        |          |          |          |
5+ 0      0.4981      1.44  Q V        |          |          |          |
5+ 5      0.5081      1.45  Q V        |          |          |          |
5+10      0.5182      1.46  Q V        |          |          |          |
5+15      0.5282      1.46  Q V        |          |          |          |
5+20      0.5384      1.47  Q  V       |          |          |          |
5+25      0.5485      1.48  Q  V       |          |          |          |
5+30      0.5588      1.48  Q  V       |          |          |          |
5+35      0.5690      1.49  Q  V       |          |          |          |
5+40      0.5794      1.50  Q  V       |          |          |          |
5+45      0.5897      1.51  |Q V       |          |          |          |
5+50      0.6002      1.51  |Q V       |          |          |          |
5+55      0.6107      1.52  |Q V       |          |          |          |
6+ 0      0.6212      1.53  |Q V       |          |          |          |
6+ 5      0.6318      1.54  |Q V       |          |          |          |
6+10      0.6424      1.55  |Q V       |          |          |          |
6+15      0.6531      1.55  |Q V       |          |          |          |
6+20      0.6639      1.56  |Q V       |          |          |          |
```

```
 6+25      0.6747      1.57  |Q V      |         |         |         |
 6+30      0.6856      1.58  |Q V      |         |         |         |
 6+35      0.6965      1.59  |Q V      |         |         |         |
 6+40      0.7075      1.60  |Q  V     |         |         |         |
 6+45      0.7185      1.60  |Q  V     |         |         |         |
 6+50      0.7296      1.61  |Q  V     |         |         |         |
 6+55      0.7408      1.62  |Q  V     |         |         |         |
 7+ 0      0.7520      1.63  |Q  V     |         |         |         |
 7+ 5      0.7633      1.64  |Q  V     |         |         |         |
 7+10      0.7747      1.65  |Q  V     |         |         |         |
 7+15      0.7861      1.66  |Q  V     |         |         |         |
 7+20      0.7976      1.67  |Q  V     |         |         |         |
 7+25      0.8092      1.68  |Q  V     |         |         |         |
 7+30      0.8208      1.69  |Q  V     |         |         |         |
 7+35      0.8325      1.70  |Q  V     |         |         |         |
 7+40      0.8443      1.71  |Q  V     |         |         |         |
 7+45      0.8561      1.72  |Q  V     |         |         |         |
 7+50      0.8681      1.73  |Q  V     |         |         |         |
 7+55      0.8801      1.74  |Q  V     |         |         |         |
 8+ 0      0.8921      1.75  |Q   V    |         |         |         |
 8+ 5      0.9043      1.76  |Q   V    |         |         |         |
 8+10      0.9165      1.78  |Q   V    |         |         |         |
 8+15      0.9288      1.79  |Q   V    |         |         |         |
 8+20      0.9412      1.80  |Q   V    |         |         |         |
 8+25      0.9537      1.81  |Q   V    |         |         |         |
 8+30      0.9662      1.82  |Q   V    |         |         |         |
 8+35      0.9788      1.83  |Q   V    |         |         |         |
 8+40      0.9916      1.85  |Q   V    |         |         |         |
 8+45      1.0044      1.86  |Q   V    |         |         |         |
 8+50      1.0173      1.87  |Q   V    |         |         |         |
 8+55      1.0303      1.89  |Q   V    |         |         |         |
 9+ 0      1.0433      1.90  |Q   V    |         |         |         |
 9+ 5      1.0565      1.91  |Q   V    |         |         |         |
 9+10      1.0698      1.93  |Q    V   |         |         |         |
 9+15      1.0832      1.94  |Q    V   |         |         |         |
 9+20      1.0966      1.96  |Q    V   |         |         |         |
 9+25      1.1102      1.97  |Q    V   |         |         |         |
 9+30      1.1239      1.99  |Q    V   |         |         |         |
 9+35      1.1377      2.00  |Q    V   |         |         |         |
 9+40      1.1516      2.02  |Q    V   |         |         |         |
 9+45      1.1656      2.03  |Q    V   |         |         |         |
 9+50      1.1797      2.05  |Q    V   |         |         |         |
 9+55      1.1939      2.07  |Q    V   |         |         |         |
10+ 0      1.2083      2.08  |Q    V   |         |         |         |
10+ 5      1.2227      2.10  |Q    V   |         |         |         |
10+10      1.2373      2.12  |Q     V  |         |         |         |
10+15      1.2521      2.14  |Q     V  |         |         |         |
10+20      1.2669      2.16  |Q     V  |         |         |         |
10+25      1.2819      2.17  |Q     V  |         |         |         |
10+30      1.2970      2.19  |Q     V  |         |         |         |
10+35      1.3122      2.21  |Q     V  |         |         |         |
10+40      1.3276      2.24  |Q     V  |         |         |         |
10+45      1.3432      2.26  |Q     V  |         |         |         |
10+50      1.3589      2.28  |Q     V  |         |         |         |
10+55      1.3747      2.30  |Q     V  |         |         |         |
11+ 0      1.3907      2.32  |Q     V  |         |         |         |
11+ 5      1.4068      2.34  |Q     V  |         |         |         |
11+10      1.4232      2.37  |Q      V |         |         |         |
11+15      1.4396      2.39  |Q      V |         |         |         |
11+20      1.4563      2.42  |Q      V |         |         |         |
11+25      1.4731      2.44  |Q      V |         |         |         |
11+30      1.4901      2.47  |Q      V |         |         |         |
11+35      1.5073      2.50  |Q      V |         |         |         |
11+40      1.5247      2.53  |Q      V |         |         |         |
11+45      1.5423      2.55  |Q      V |         |         |         |
11+50      1.5601      2.58  |Q      V |         |         |         |
11+55      1.5781      2.61  |Q      V |         |         |         |
12+ 0      1.5963      2.65  |Q       V|         |         |         |
12+ 5      1.6149      2.70  |Q       V|         |         |         |
12+10      1.6343      2.81  |Q       V|         |         |         |
12+15      1.6551      3.02  | Q      V|         |         |         |
```

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12+20      1.6781     3.33  | Q      V|         |         |         |
12+25      1.7020     3.48  | Q      V|         |         |         |
12+30      1.7267     3.59  | Q      V|         |         |         |
12+35      1.7521     3.68  | Q      V|         |         |         |
12+40      1.7780     3.76  | Q       V         |         |         |
12+45      1.8043     3.83  | Q       V         |         |         |
12+50      1.8312     3.90  | Q       V         |         |         |
12+55      1.8585     3.97  | Q       V         |         |         |
13+ 0      1.8863     4.03  | Q       V         |         |         |
13+ 5      1.9144     4.09  | Q       V         |         |         |
13+10      1.9430     4.15  | Q       |V        |         |         |
13+15      1.9719     4.20  | Q       |V        |         |         |
13+20      2.0013     4.27  | Q       |V        |         |         |
13+25      2.0312     4.33  | Q       |V        |         |         |
13+30      2.0614     4.40  | Q       |V        |         |         |
13+35      2.0922     4.47  | Q       |V        |         |         |
13+40      2.1235     4.54  |  Q      | V       |         |         |
13+45      2.1552     4.61  |  Q      | V       |         |         |
13+50      2.1876     4.69  |  Q      | V       |         |         |
13+55      2.2204     4.77  |  Q      | V       |         |         |
14+ 0      2.2539     4.86  |  Q      | V       |         |         |
14+ 5      2.2880     4.95  |  Q      | V       |         |         |
14+10      2.3227     5.04  |  Q      |  V      |         |         |
14+15      2.3580     5.13  |  Q      |  V      |         |         |
14+20      2.3940     5.22  |  Q      |  V      |         |         |
14+25      2.4307     5.33  |  Q      |  V      |         |         |
14+30      2.4682     5.45  |  Q      |  V      |         |         |
14+35      2.5066     5.57  |  Q      |   V     |         |         |
14+40      2.5460     5.72  |  Q      |   V     |         |         |
14+45      2.5864     5.87  |  Q      |   V     |         |         |
14+50      2.6280     6.04  |   Q     |   V     |         |         |
14+55      2.6709     6.24  |   Q     |    V    |         |         |
15+ 0      2.7156     6.49  |   Q     |    V    |         |         |
15+ 5      2.7624     6.80  |   Q     |    V    |         |         |
15+10      2.8118     7.17  |   Q     |    V    |         |         |
15+15      2.8639     7.57  |    Q    |     V   |         |         |
15+20      2.9194     8.05  |    Q    |     V   |         |         |
15+25      2.9781     8.53  |    Q    |     V   |         |         |
15+30      3.0399     8.98  |    Q    |      V  |         |         |
15+35      3.1035     9.23  |     Q   |      V  |         |         |
15+40      3.1686     9.45  |     Q   |      V  |         |         |
15+45      3.2393    10.27  |     Q   |       V |         |         |
15+50      3.3196    11.65  |      Q  |       V |         |         |
15+55      3.4143    13.75  |       Q |        V|         |         |
16+ 0      3.5327    17.19  |        |Q         V         |         |
16+ 5      3.6971    23.87  |        |    Q    V         |         |
16+10      3.9355    34.61  |        |         | VQ      |         |
16+15      4.2652    47.88  |        |         |   V     |Q        |
16+20      4.6391    54.29  |        |         |     V   |     Q   |
16+25      4.8712    33.70  |        |         | Q    V  |         |
16+30      5.0460    25.37  |        |    Q    |       V |         |
16+35      5.1886    20.70  |        |  Q      |        V|         |
16+40      5.3104    17.69  |        |Q        |         V         |
16+45      5.4140    15.05  |        Q         |         V         |
16+50      5.5023    12.82  |       Q |        |         |V        |
16+55      5.5773    10.89  |      Q  |        |         |V        |
17+ 0      5.6420     9.39  |     Q   |        |         |V        |
17+ 5      5.6973     8.03  |    Q    |        |         | V       |
17+10      5.7468     7.19  |   Q     |        |         | V       |
17+15      5.7928     6.68  |   Q     |        |         | V       |
17+20      5.8358     6.25  |   Q     |        |         |  V      |
17+25      5.8765     5.90  |  Q      |        |         |  V      |
17+30      5.9154     5.66  |  Q      |        |         |  V      |
17+35      5.9522     5.33  |  Q      |        |         |  V      |
17+40      5.9868     5.03  |  Q      |        |         |  V      |
17+45      6.0199     4.79  |  Q      |        |         |   V     |
17+50      6.0510     4.52  |  Q      |        |         |   V     |
17+55      6.0811     4.37  | Q       |        |         |   V     |
18+ 0      6.1103     4.24  | Q       |        |         |   V     |
18+ 5      6.1385     4.09  | Q       |        |         |   V     |
18+10      6.1654     3.91  | Q       |        |         |   V     |
```

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18+15       6.1904      3.63  | Q       |         |         |    V    |
18+20       6.2129      3.27  | Q       |         |         |    V    |
18+25       6.2342      3.08  | Q       |         |         |    V    |
18+30       6.2544      2.94  |Q        |         |         |    V    |
18+35       6.2738      2.82  |Q        |         |         |    V    |
18+40       6.2925      2.71  |Q        |         |         |    V    |
18+45       6.3106      2.62  |Q        |         |         |    V    |
18+50       6.3281      2.54  |Q        |         |         |    V    |
18+55       6.3451      2.48  |Q        |         |         |    V    |
19+ 0       6.3618      2.41  |Q        |         |         |     V   |
19+ 5       6.3780      2.36  |Q        |         |         |     V   |
19+10       6.3939      2.31  |Q        |         |         |     V   |
19+15       6.4095      2.26  |Q        |         |         |     V   |
19+20       6.4248      2.22  |Q        |         |         |     V   |
19+25       6.4397      2.18  |Q        |         |         |     V   |
19+30       6.4545      2.14  |Q        |         |         |     V   |
19+35       6.4689      2.10  |Q        |         |         |     V   |
19+40       6.4831      2.06  |Q        |         |         |     V   |
19+45       6.4971      2.03  |Q        |         |         |     V   |
19+50       6.5108      2.00  |Q        |         |         |     V   |
19+55       6.5244      1.97  |Q        |         |         |     V   |
20+ 0       6.5377      1.94  |Q        |         |         |      V  |
20+ 5       6.5509      1.91  |Q        |         |         |      V  |
20+10       6.5638      1.88  |Q        |         |         |      V  |
20+15       6.5766      1.86  |Q        |         |         |      V  |
20+20       6.5892      1.83  |Q        |         |         |      V  |
20+25       6.6017      1.81  |Q        |         |         |      V  |
20+30       6.6139      1.78  |Q        |         |         |      V  |
20+35       6.6261      1.76  |Q        |         |         |      V  |
20+40       6.6380      1.74  |Q        |         |         |      V  |
20+45       6.6498      1.72  |Q        |         |         |      V  |
20+50       6.6615      1.70  |Q        |         |         |      V  |
20+55       6.6731      1.68  |Q        |         |         |      V  |
21+ 0       6.6845      1.66  |Q        |         |         |      V  |
21+ 5       6.6957      1.64  |Q        |         |         |      V  |
21+10       6.7069      1.62  |Q        |         |         |      V  |
21+15       6.7179      1.60  |Q        |         |         |       V |
21+20       6.7288      1.58  |Q        |         |         |       V |
21+25       6.7396      1.57  |Q        |         |         |       V |
21+30       6.7503      1.55  |Q        |         |         |       V |
21+35       6.7609      1.53  |Q        |         |         |       V |
21+40       6.7713      1.52  |Q        |         |         |       V |
21+45       6.7817      1.50  |Q        |         |         |       V |
21+50       6.7919      1.49  Q         |         |         |       V |
21+55       6.8021      1.47  Q         |         |         |       V |
22+ 0       6.8121      1.46  Q         |         |         |       V |
22+ 5       6.8221      1.45  Q         |         |         |       V |
22+10       6.8320      1.43  Q         |         |         |       V |
22+15       6.8418      1.42  Q         |         |         |       V |
22+20       6.8515      1.41  Q         |         |         |       V |
22+25       6.8611      1.40  Q         |         |         |       V |
22+30       6.8706      1.38  Q         |         |         |       V |
22+35       6.8800      1.37  Q         |         |         |       V |
22+40       6.8894      1.36  Q         |         |         |        V|
22+45       6.8987      1.35  Q         |         |         |        V|
22+50       6.9079      1.34  Q         |         |         |        V|
22+55       6.9170      1.33  Q         |         |         |        V|
23+ 0       6.9261      1.32  Q         |         |         |        V|
23+ 5       6.9351      1.30  Q         |         |         |        V|
23+10       6.9440      1.29  Q         |         |         |        V|
23+15       6.9528      1.28  Q         |         |         |        V|
23+20       6.9616      1.27  Q         |         |         |        V|
23+25       6.9703      1.26  Q         |         |         |        V|
23+30       6.9790      1.26  Q         |         |         |        V|
23+35       6.9875      1.25  Q         |         |         |        V|
23+40       6.9961      1.24  Q         |         |         |        V|
23+45       7.0045      1.23  Q         |         |         |        V|
23+50       7.0129      1.22  Q         |         |         |        V|
23+55       7.0213      1.21  Q         |         |         |        V|
24+ 0       7.0295      1.20  Q         |         |         |        V|
24+ 5       7.0376      1.17  Q         |         |         |        V|
```

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   24+10       7.0449      1.06  Q         |         |         |         V|
   24+15       7.0505      0.82  Q         |         |         |         V|
   24+20       7.0538      0.48  Q         |         |         |         V|
   24+25       7.0561      0.33  Q         |         |         |         V|
   24+30       7.0578      0.24  Q         |         |         |         V|
   24+35       7.0590      0.18  Q         |         |         |         V|
   24+40       7.0599      0.13  Q         |         |         |         V|
   24+45       7.0606      0.09  Q         |         |         |         V|
   24+50       7.0610      0.06  Q         |         |         |         V|
   24+55       7.0613      0.04  Q         |         |         |         V|
   25+ 0       7.0615      0.03  Q         |         |         |         V|
   25+ 5       7.0617      0.02  Q         |         |         |         V|
   25+10       7.0618      0.02  Q         |         |         |         V|
   25+15       7.0619      0.01  Q         |         |         |         V|
   25+20       7.0620      0.01  Q         |         |         |         V|
   25+25       7.0620      0.01  Q         |         |         |         V|
   25+30       7.0621      0.00  Q         |         |         |         V|
   25+35       7.0621      0.00  Q         |         |         |         V|
   25+40       7.0621      0.00  Q         |         |         |         V|
-------------------------------------------------------------------------
```

- 100 Year 3 Hour Post-Development Unit Hydrograph – Area 'A'

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       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/03/16   File Name PRA10003.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

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RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'A' - 100 YEAR 3 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 100

       Antecedent Moisture Condition = 3

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 70.6      27.4          1.00     C     0.250     0.581    0.145

Area-averaged adjusted loss rate Fm (In/Hr) =  0.145

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC3)          Yield Fr
    15.91   0.581         70.6      87.5       1.43     0.749
    11.48   0.419         98.0      98.0       0.20     0.958

Area-averaged catchment yield fraction, Y =  0.836
Area-averaged low loss fraction, Yb =  0.164
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.306 (hours)
Watershed area =      27.39(Ac.)
Catchment Lag time =   0.245 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 34.0637
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.145(In/Hr)
Average low loss rate fraction (Yb) = 0.164 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.520(In)
Computed peak 30-minute rainfall =  1.090(In)
Specified peak 1-hour rainfall =  1.450(In)
Computed peak 3-hour rainfall =  2.430(In)
Specified peak 6-hour rainfall =  3.360(In)
Specified peak 24-hour rainfall =  5.630(In)


Rainfall depth area reduction factors:
Using a total area of      27.39(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.519(In)
```

```
30-minute factor = 0.999    Adjusted rainfall =  1.089(In)
1-hour factor = 0.999       Adjusted rainfall =  1.448(In)
3-hour factor = 1.000       Adjusted rainfall =  2.430(In)
6-hour factor = 1.000       Adjusted rainfall =  3.360(In)
24-hour factor = 1.000 Adjusted rainfall =  5.630(In)
--------------------------------------------------------------------------

                      U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------------
               (K =       331.25 (CFS))

  1                2.531                   8.385
  2               11.156                  28.568
  3               31.903                  68.723
  4               60.726                  95.477
  5               72.514                  39.048
  6               80.044                  24.944
  7               85.420                  17.806
  8               89.479                  13.445
  9               92.552                  10.179
 10               94.853                   7.624
 11               96.496                   5.443
 12               97.650                   3.823
 13               98.210                   1.852
 14               98.597                   1.284
 15               98.932                   1.110
 16               99.168                   0.781
 17               99.397                   0.759
 18               99.659                   0.867
 19               99.821                   0.536
 20               99.928                   0.356
 21              100.000                   0.238
--------------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.5193              0.5193
  2              0.6915              0.1722
  3              0.8176              0.1261
  4              0.9207              0.1032
  5              1.0096              0.0889
  6              1.0886              0.0790
  7              1.1599              0.0713
  8              1.2255              0.0656
  9              1.2864              0.0609
 10              1.3434              0.0570
 11              1.3972              0.0538
 12              1.4481              0.0510
 13              1.5038              0.0556
 14              1.5572              0.0534
 15              1.6086              0.0514
 16              1.6583              0.0496
 17              1.7063              0.0480
 18              1.7529              0.0466
 19              1.7981              0.0452
 20              1.8421              0.0440
 21              1.8849              0.0428
 22              1.9266              0.0418
 23              1.9674              0.0408
 24              2.0072              0.0398
 25              2.0462              0.0390
 26              2.0843              0.0382
 27              2.1217              0.0374
 28              2.1584              0.0367
 29              2.1944              0.0360
 30              2.2297              0.0353
 31              2.2644              0.0347
 32              2.2985              0.0341
 33              2.3320              0.0336
```

```
 34              2.3651              0.0330
 35              2.3976              0.0325
 36              2.4296              0.0320
---------------------------------------------------------------------
Unit              Unit            Unit              Effective
Period            Rainfall        Soil-Loss         Rainfall
(number)            (In)          (In)                (In)
---------------------------------------------------------------------
  1              0.0320           0.0052              0.0268
  2              0.0325           0.0053              0.0272
  3              0.0336           0.0055              0.0281
  4              0.0341           0.0056              0.0285
  5              0.0353           0.0058              0.0295
  6              0.0360           0.0059              0.0301
  7              0.0374           0.0061              0.0313
  8              0.0382           0.0062              0.0319
  9              0.0398           0.0065              0.0333
 10              0.0408           0.0067              0.0341
 11              0.0428           0.0070              0.0358
 12              0.0440           0.0072              0.0368
 13              0.0466           0.0076              0.0389
 14              0.0480           0.0079              0.0402
 15              0.0514           0.0084              0.0430
 16              0.0534           0.0087              0.0447
 17              0.0510           0.0083              0.0426
 18              0.0538           0.0088              0.0450
 19              0.0609           0.0100              0.0509
 20              0.0656           0.0107              0.0548
 21              0.0790           0.0121              0.0669
 22              0.0889           0.0121              0.0768
 23              0.1261           0.0121              0.1140
 24              0.1722           0.0121              0.1601
 25              0.5193           0.0121              0.5072
 26              0.1032           0.0121              0.0911
 27              0.0713           0.0117              0.0597
 28              0.0570           0.0093              0.0477
 29              0.0556           0.0091              0.0465
 30              0.0496           0.0081              0.0415
 31              0.0452           0.0074              0.0378
 32              0.0418           0.0068              0.0349
 33              0.0390           0.0064              0.0326
 34              0.0367           0.0060              0.0307
 35              0.0347           0.0057              0.0290
 36              0.0330           0.0054              0.0276
---------------------------------------------------------------------
---------------------------------------------------------------------
Total soil rain loss =      0.29(In)
Total effective rainfall =      2.14(In)
Peak flow rate in flood hydrograph =     69.81(CFS)
---------------------------------------------------------------------
+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                    3 - H O U R    S T O R M
                R u n o f f      H y d r o g r a p h
---------------------------------------------------------------------
            Hydrograph in   5   Minute intervals ((CFS))

---------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0       17.5      35.0      52.5      70.0
---------------------------------------------------------------------
  0+ 5       0.0015      0.22  Q         |         |         |         |
  0+10       0.0084      0.99  Q         |         |         |         |
  0+15       0.0280      2.85  VQ        |         |         |         |
  0+20       0.0657      5.47  V  Q      |         |         |         |
  0+25       0.1114      6.63  V  Q      |         |         |         |
  0+30       0.1628      7.47  |V  Q     |         |         |         |
  0+35       0.2187      8.13  |V  Q     |         |         |         |
  0+40       0.2787      8.71  | V Q     |         |         |         |
  0+45       0.3422      9.21  | V  Q    |         |         |         |
  0+50       0.4089      9.69  |  V Q    |         |         |         |
  0+55       0.4787     10.13  |  V Q    |         |         |         |
  1+ 0       0.5515     10.57  |   V Q   |         |         |         |
```

```
   1+ 5       0.6270     10.97  |    VQ   |         |         |         |
   1+10       0.7057     11.42  |    VQ   |         |         |         |
   1+15       0.7877     11.90  |     Q   |         |         |         |
   1+20       0.8734     12.45  |      Q  |         |         |         |
   1+25       0.9628     12.99  |      Q  |         |         |         |
   1+30       1.0560     13.53  |      QV |         |         |         |
   1+35       1.1519     13.91  |      Q V|         |         |         |
   1+40       1.2505     14.32  |       Q V         |         |         |
   1+45       1.3554     15.24  |       Q |V        |         |         |
   1+50       1.4702     16.67  |         Q| V      |         |         |
   1+55       1.5997     18.80  |          Q  V     |         |         |
   2+ 0       1.7544     22.46  |          | Q V    |         |         |
   2+ 5       1.9673     30.92  |          |     VQ |         |         |
   2+10       2.2768     44.94  |          |       V|    Q    |         |
   2+15       2.7113     63.10  |          |        | V       |     Q   |
   2+20       3.1921     69.81  |          |        |    V    |        Q|
   2+25       3.4901     43.27  |          |        |   Q   V |         |
   2+30       3.7198     33.35  |          |        Q|        V         |
   2+35       3.9106     27.70  |          |    Q    |         | V       |
   2+40       4.0759     24.00  |          |  Q      |         |  V      |
   2+45       4.2193     20.83  |          |Q        |         |   V     |
   2+50       4.3445     18.18  |          Q         |         |    V    |
   2+55       4.4540     15.90  |         Q|         |         |     V   |
   3+ 0       4.5507     14.04  |        Q |         |         |      V  |
   3+ 5       4.6339     12.08  |     Q    |         |         |       V |
   3+10       4.7051     10.33  |    Q     |         |         |       V |
   3+15       4.7592      7.86  |   Q      |         |         |        V|
   3+20       4.7922      4.79  | Q        |         |         |        V|
   3+25       4.8163      3.49  |Q         |         |         |        V|
   3+30       4.8346      2.67  |Q         |         |         |        V|
   3+35       4.8477      1.90  |Q         |         |         |        V|
   3+40       4.8570      1.34  Q          |         |         |        V|
   3+45       4.8634      0.93  Q          |         |         |        V|
   3+50       4.8673      0.57  Q          |         |         |        V|
   3+55       4.8699      0.38  Q          |         |         |        V|
   4+ 0       4.8717      0.26  Q          |         |         |        V|
   4+ 5       4.8730      0.19  Q          |         |         |        V|
   4+10       4.8740      0.15  Q          |         |         |        V|
   4+15       4.8748      0.11  Q          |         |         |        V|
   4+20       4.8754      0.08  Q          |         |         |        V|
   4+25       4.8758      0.06  Q          |         |         |        V|
   4+30       4.8760      0.03  Q          |         |         |        V|
   4+35       4.8761      0.02  Q          |         |         |        V|
   4+40       4.8762      0.01  Q          |         |         |         V
-------------------------------------------------------------------------
```

- 100 Year 6 Hour Post-Development Unit Hydrograph – Area 'A'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/03/16   File Name PRA10006.out


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------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'A' - 100 YEAR 6 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 100

       Antecedent Moisture Condition = 3

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 70.6      27.4          1.00     C     0.250     0.581    0.145

Area-averaged adjusted loss rate Fm (In/Hr) =  0.145

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC3)          Yield Fr
    15.91   0.581         70.6      87.5       1.43     0.749
    11.48   0.419         98.0      98.0       0.20     0.958

Area-averaged catchment yield fraction, Y =  0.836
Area-averaged low loss fraction, Yb =  0.164
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.306 (hours)
Watershed area =      27.39(Ac.)
Catchment Lag time =   0.245 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 34.0637
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.145(In/Hr)
Average low loss rate fraction (Yb) = 0.164 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.520(In)
Computed peak 30-minute rainfall =  1.090(In)
Specified peak 1-hour rainfall =  1.450(In)
Computed peak 3-hour rainfall =  2.430(In)
Specified peak 6-hour rainfall =  3.360(In)
Specified peak 24-hour rainfall =  5.630(In)


Rainfall depth area reduction factors:
Using a total area of      27.39(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.519(In)
```

```
30-minute factor = 0.999    Adjusted rainfall =  1.089(In)
1-hour factor = 0.999       Adjusted rainfall =  1.448(In)
3-hour factor = 1.000       Adjusted rainfall =  2.430(In)
6-hour factor = 1.000       Adjusted rainfall =  3.360(In)
24-hour factor = 1.000 Adjusted rainfall =  5.630(In)
--------------------------------------------------------------------------

                      U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------------
               (K =       331.25 (CFS))

  1                2.531                   8.385
  2               11.156                  28.568
  3               31.903                  68.723
  4               60.726                  95.477
  5               72.514                  39.048
  6               80.044                  24.944
  7               85.420                  17.806
  8               89.479                  13.445
  9               92.552                  10.179
 10               94.853                   7.624
 11               96.496                   5.443
 12               97.650                   3.823
 13               98.210                   1.852
 14               98.597                   1.284
 15               98.932                   1.110
 16               99.168                   0.781
 17               99.397                   0.759
 18               99.659                   0.867
 19               99.821                   0.536
 20               99.928                   0.356
 21              100.000                   0.238
--------------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.5193              0.5193
  2              0.6915              0.1722
  3              0.8176              0.1261
  4              0.9207              0.1032
  5              1.0096              0.0889
  6              1.0886              0.0790
  7              1.1599              0.0713
  8              1.2255              0.0656
  9              1.2864              0.0609
 10              1.3434              0.0570
 11              1.3972              0.0538
 12              1.4481              0.0510
 13              1.5038              0.0556
 14              1.5572              0.0534
 15              1.6086              0.0514
 16              1.6583              0.0496
 17              1.7063              0.0480
 18              1.7529              0.0466
 19              1.7981              0.0452
 20              1.8421              0.0440
 21              1.8849              0.0428
 22              1.9266              0.0418
 23              1.9674              0.0408
 24              2.0072              0.0398
 25              2.0462              0.0390
 26              2.0843              0.0382
 27              2.1217              0.0374
 28              2.1584              0.0367
 29              2.1944              0.0360
 30              2.2297              0.0353
 31              2.2644              0.0347
 32              2.2985              0.0341
 33              2.3320              0.0336
```

34	2.3651	0.0330
35	2.3976	0.0325
36	2.4296	0.0320
37	2.4609	0.0313
38	2.4918	0.0309
39	2.5223	0.0305
40	2.5523	0.0300
41	2.5819	0.0296
42	2.6112	0.0293
43	2.6401	0.0289
44	2.6686	0.0285
45	2.6968	0.0282
46	2.7247	0.0279
47	2.7522	0.0275
48	2.7795	0.0272
49	2.8064	0.0269
50	2.8330	0.0266
51	2.8594	0.0264
52	2.8855	0.0261
53	2.9113	0.0258
54	2.9368	0.0256
55	2.9621	0.0253
56	2.9872	0.0251
57	3.0120	0.0248
58	3.0366	0.0246
59	3.0610	0.0244
60	3.0851	0.0242
61	3.1091	0.0239
62	3.1328	0.0237
63	3.1563	0.0235
64	3.1797	0.0233
65	3.2028	0.0231
66	3.2258	0.0229
67	3.2485	0.0228
68	3.2711	0.0226
69	3.2935	0.0224
70	3.3157	0.0222
71	3.3378	0.0221
72	3.3597	0.0219

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0219	0.0036	0.0183
2	0.0221	0.0036	0.0185
3	0.0224	0.0037	0.0187
4	0.0226	0.0037	0.0189
5	0.0229	0.0038	0.0192
6	0.0231	0.0038	0.0193
7	0.0235	0.0039	0.0197
8	0.0237	0.0039	0.0198
9	0.0242	0.0040	0.0202
10	0.0244	0.0040	0.0204
11	0.0248	0.0041	0.0208
12	0.0251	0.0041	0.0210
13	0.0256	0.0042	0.0214
14	0.0258	0.0042	0.0216
15	0.0264	0.0043	0.0220
16	0.0266	0.0044	0.0223
17	0.0272	0.0045	0.0228
18	0.0275	0.0045	0.0230
19	0.0282	0.0046	0.0236
20	0.0285	0.0047	0.0239
21	0.0293	0.0048	0.0245
22	0.0296	0.0049	0.0248
23	0.0305	0.0050	0.0255
24	0.0309	0.0051	0.0258
25	0.0320	0.0052	0.0268
26	0.0325	0.0053	0.0272
27	0.0336	0.0055	0.0281

```
 28              0.0341          0.0056              0.0285
 29              0.0353          0.0058              0.0295
 30              0.0360          0.0059              0.0301
 31              0.0374          0.0061              0.0313
 32              0.0382          0.0062              0.0319
 33              0.0398          0.0065              0.0333
 34              0.0408          0.0067              0.0341
 35              0.0428          0.0070              0.0358
 36              0.0440          0.0072              0.0368
 37              0.0466          0.0076              0.0389
 38              0.0480          0.0079              0.0402
 39              0.0514          0.0084              0.0430
 40              0.0534          0.0087              0.0447
 41              0.0510          0.0083              0.0426
 42              0.0538          0.0088              0.0450
 43              0.0609          0.0100              0.0509
 44              0.0656          0.0107              0.0548
 45              0.0790          0.0121              0.0669
 46              0.0889          0.0121              0.0768
 47              0.1261          0.0121              0.1140
 48              0.1722          0.0121              0.1601
 49              0.5193          0.0121              0.5072
 50              0.1032          0.0121              0.0911
 51              0.0713          0.0117              0.0597
 52              0.0570          0.0093              0.0477
 53              0.0556          0.0091              0.0465
 54              0.0496          0.0081              0.0415
 55              0.0452          0.0074              0.0378
 56              0.0418          0.0068              0.0349
 57              0.0390          0.0064              0.0326
 58              0.0367          0.0060              0.0307
 59              0.0347          0.0057              0.0290
 60              0.0330          0.0054              0.0276
 61              0.0313          0.0051              0.0262
 62              0.0300          0.0049              0.0251
 63              0.0289          0.0047              0.0242
 64              0.0279          0.0046              0.0233
 65              0.0269          0.0044              0.0225
 66              0.0261          0.0043              0.0218
 67              0.0253          0.0041              0.0212
 68              0.0246          0.0040              0.0206
 69              0.0239          0.0039              0.0200
 70              0.0233          0.0038              0.0195
 71              0.0228          0.0037              0.0190
 72              0.0222          0.0036              0.0186
--------------------------------------------------------------------
--------------------------------------------------------------------
Total soil rain loss =      0.44(In)
Total effective rainfall =      2.92(In)
Peak flow rate in flood hydrograph =     69.81(CFS)
--------------------------------------------------------------------
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                  6 - H O U R    S T O R M
               R u n o f f      H y d r o g r a p h
--------------------------------------------------------------------
            Hydrograph in   5   Minute intervals ((CFS))

--------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0       17.5      35.0      52.5      70.0
--------------------------------------------------------------------
  0+ 5       0.0011      0.15  Q         |         |         |         |
  0+10       0.0057      0.68  Q         |         |         |         |
  0+15       0.0191      1.94  VQ        |         |         |         |
  0+20       0.0447      3.71  V Q       |         |         |         |
  0+25       0.0754      4.47  V Q       |         |         |         |
  0+30       0.1097      4.97  V Q       |         |         |         |
  0+35       0.1466      5.36  V  Q      |         |         |         |
  0+40       0.1856      5.67  |V Q      |         |         |         |
  0+45       0.2264      5.92  |V Q      |         |         |         |
  0+50       0.2687      6.14  |V Q      |         |         |         |
  0+55       0.3122      6.32  |V Q      |         |         |         |
```

```
1+ 0       0.3568      6.47  | VQ      |         |         |         |
1+ 5       0.4022      6.59  | VQ      |         |         |         |
1+10       0.4484      6.71  | VQ      |         |         |         |
1+15       0.4954      6.82  | VQ      |         |         |         |
1+20       0.5431      6.94  |  Q      |         |         |         |
1+25       0.5917      7.05  |  VQ     |         |         |         |
1+30       0.6411      7.18  |  VQ     |         |         |         |
1+35       0.6914      7.30  |   Q     |         |         |         |
1+40       0.7425      7.43  |   Q     |         |         |         |
1+45       0.7946      7.55  |   Q     |         |         |         |
1+50       0.8475      7.69  |   QV    |         |         |         |
1+55       0.9014      7.82  |   QV    |         |         |         |
2+ 0       0.9563      7.97  |   QV    |         |         |         |
2+ 5       1.0122      8.12  |   Q V   |         |         |         |
2+10       1.0694      8.30  |   Q V   |         |         |         |
2+15       1.1277      8.48  |   Q V   |         |         |         |
2+20       1.1875      8.68  |   Q  V  |         |         |         |
2+25       1.2487      8.88  |    Q V  |         |         |         |
2+30       1.3114      9.10  |    Q V  |         |         |         |
2+35       1.3756      9.32  |    Q  V |         |         |         |
2+40       1.4415      9.57  |    Q  V |         |         |         |
2+45       1.5091      9.83  |    Q   V|         |         |         |
2+50       1.5788     10.11  |    Q   V|         |         |         |
2+55       1.6505     10.42  |    Q   V|         |         |         |
3+ 0       1.7246     10.76  |     Q   V         |         |         |
3+ 5       1.8012     11.12  |     Q   V         |         |         |
3+10       1.8807     11.54  |     Q   |V        |         |         |
3+15       1.9633     11.99  |     Q   |V        |         |         |
3+20       2.0494     12.51  |      Q  | V       |         |         |
3+25       2.1393     13.04  |      Q  | V       |         |         |
3+30       2.2327     13.56  |      Q  |  V      |         |         |
3+35       2.3286     13.93  |      Q  |   V     |         |         |
3+40       2.4272     14.32  |       Q |   V     |         |         |
3+45       2.5322     15.24  |       Q |    V    |         |         |
3+50       2.6470     16.67  |        Q|    V    |         |         |
3+55       2.7765     18.80  |         Q     V   |         |         |
4+ 0       2.9311     22.46  |         | Q    V  |         |         |
4+ 5       3.1440     30.92  |         |      QV |         |         |
4+10       3.4535     44.94  |         |         V    Q    |         |
4+15       3.8881     63.10  |         |          |  V      |     Q   |
4+20       4.3689     69.81  |         |          |    V    |        Q|
4+25       4.6669     43.27  |         |          |   Q   V |         |
4+30       4.8966     33.35  |         |         Q|       V|         |
4+35       5.0873     27.70  |         |    Q     |        V|         |
4+40       5.2526     24.00  |         |  Q       |         |V        |
4+45       5.3961     20.83  |         |Q         |         | V       |
4+50       5.5213     18.18  |         Q          |         |  V      |
4+55       5.6308     15.90  |        Q|          |         |  V      |
5+ 0       5.7275     14.04  |       Q |          |         |   V     |
5+ 5       5.8122     12.30  |      Q  |          |         |   V     |
5+10       5.8900     11.29  |     Q   |          |         |    V    |
5+15       5.9628     10.58  |     Q   |          |         |    V    |
5+20       6.0310      9.91  |    Q    |          |         |     V   |
5+25       6.0960      9.43  |    Q    |          |         |     V   |
5+30       6.1582      9.04  |    Q    |          |         |      V  |
5+35       6.2168      8.51  |   Q     |          |         |      V  |
5+40       6.2725      8.08  |   Q     |          |         |      V  |
5+45       6.3256      7.71  |   Q     |          |         |       V |
5+50       6.3762      7.35  |   Q     |          |         |       V |
5+55       6.4252      7.10  |   Q     |          |         |       V |
6+ 0       6.4726      6.89  |  Q      |          |         |       V |
6+ 5       6.5177      6.54  |  Q      |          |         |        V|
6+10       6.5579      5.85  |  Q      |          |         |        V|
6+15       6.5886      4.45  | Q       |          |         |        V|
6+20       6.6065      2.60  |Q        |          |         |        V|
6+25       6.6190      1.82  |Q        |          |         |        V|
6+30       6.6281      1.32  Q         |          |         |        V|
6+35       6.6347      0.96  Q         |          |         |        V|
6+40       6.6395      0.69  Q         |          |         |        V|
6+45       6.6428      0.49  Q         |          |         |        V|
6+50       6.6452      0.34  Q         |          |         |        V|
```

```
    6+55       6.6468      0.23  Q         |         |         |        V|
    7+ 0       6.6478      0.16  Q         |         |         |        V|
    7+ 5       6.6486      0.12  Q         |         |         |        V|
    7+10       6.6493      0.09  Q         |         |         |        V|
    7+15       6.6497      0.07  Q         |         |         |        V|
    7+20       6.6501      0.05  Q         |         |         |        V|
    7+25       6.6504      0.04  Q         |         |         |        V|
    7+30       6.6505      0.02  Q         |         |         |        V|
    7+35       6.6506      0.01  Q         |         |         |        V|
    7+40       6.6506      0.00  Q         |         |         |        V|
--------------------------------------------------------------------------
```

- 100 Year 12 Hour Post-Development Unit Hydrograph – Area 'A'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/03/16   File Name PRA10012.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'A' - 100 YEAR 12 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 100

       Antecedent Moisture Condition = 3

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 70.6      27.4          1.00     C     0.250     0.581    0.145

Area-averaged adjusted loss rate Fm (In/Hr) =  0.145

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC3)          Yield Fr
    15.91   0.581         70.6      87.5       1.43     0.749
    11.48   0.419         98.0      98.0       0.20     0.958

Area-averaged catchment yield fraction, Y =  0.836
Area-averaged low loss fraction, Yb =  0.164
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.306 (hours)
Watershed area =      27.39(Ac.)
Catchment Lag time =   0.245 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 34.0637
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.145(In/Hr)
Average low loss rate fraction (Yb) = 0.164 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.520(In)
Computed peak 30-minute rainfall =  1.090(In)
Specified peak 1-hour rainfall =  1.450(In)
Computed peak 3-hour rainfall =  2.430(In)
Specified peak 6-hour rainfall =  3.360(In)
Specified peak 24-hour rainfall =  5.630(In)


Rainfall depth area reduction factors:
Using a total area of      27.39(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.519(In)
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30-minute factor = 0.999 Adjusted rainfall = 1.089(In)
1-hour factor = 0.999 Adjusted rainfall = 1.448(In)
3-hour factor = 1.000 Adjusted rainfall = 2.430(In)
6-hour factor = 1.000 Adjusted rainfall = 3.360(In)
24-hour factor = 1.000 Adjusted rainfall = 5.630(In)

U n i t H y d r o g r a p h

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 331.25 (CFS))	
1	2.531	8.385
2	11.156	28.568
3	31.903	68.723
4	60.726	95.477
5	72.514	39.048
6	80.044	24.944
7	85.420	17.806
8	89.479	13.445
9	92.552	10.179
10	94.853	7.624
11	96.496	5.443
12	97.650	3.823
13	98.210	1.852
14	98.597	1.284
15	98.932	1.110
16	99.168	0.781
17	99.397	0.759
18	99.659	0.867
19	99.821	0.536
20	99.928	0.356
21	100.000	0.238

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.5193	0.5193
2	0.6915	0.1722
3	0.8176	0.1261
4	0.9207	0.1032
5	1.0096	0.0889
6	1.0886	0.0790
7	1.1599	0.0713
8	1.2255	0.0656
9	1.2864	0.0609
10	1.3434	0.0570
11	1.3972	0.0538
12	1.4481	0.0510
13	1.5038	0.0556
14	1.5572	0.0534
15	1.6086	0.0514
16	1.6583	0.0496
17	1.7063	0.0480
18	1.7529	0.0466
19	1.7981	0.0452
20	1.8421	0.0440
21	1.8849	0.0428
22	1.9266	0.0418
23	1.9674	0.0408
24	2.0072	0.0398
25	2.0462	0.0390
26	2.0843	0.0382
27	2.1217	0.0374
28	2.1584	0.0367
29	2.1944	0.0360
30	2.2297	0.0353
31	2.2644	0.0347
32	2.2985	0.0341
33	2.3320	0.0336

34	2.3651	0.0330
35	2.3976	0.0325
36	2.4296	0.0320
37	2.4609	0.0313
38	2.4918	0.0309
39	2.5223	0.0305
40	2.5523	0.0300
41	2.5819	0.0296
42	2.6112	0.0293
43	2.6401	0.0289
44	2.6686	0.0285
45	2.6968	0.0282
46	2.7247	0.0279
47	2.7522	0.0275
48	2.7795	0.0272
49	2.8064	0.0269
50	2.8330	0.0266
51	2.8594	0.0264
52	2.8855	0.0261
53	2.9113	0.0258
54	2.9368	0.0256
55	2.9621	0.0253
56	2.9872	0.0251
57	3.0120	0.0248
58	3.0366	0.0246
59	3.0610	0.0244
60	3.0851	0.0242
61	3.1091	0.0239
62	3.1328	0.0237
63	3.1563	0.0235
64	3.1797	0.0233
65	3.2028	0.0231
66	3.2258	0.0229
67	3.2485	0.0228
68	3.2711	0.0226
69	3.2935	0.0224
70	3.3157	0.0222
71	3.3378	0.0221
72	3.3597	0.0219
73	3.3770	0.0173
74	3.3942	0.0172
75	3.4112	0.0170
76	3.4280	0.0169
77	3.4448	0.0167
78	3.4614	0.0166
79	3.4778	0.0165
80	3.4941	0.0163
81	3.5103	0.0162
82	3.5264	0.0161
83	3.5424	0.0160
84	3.5582	0.0158
85	3.5739	0.0157
86	3.5895	0.0156
87	3.6050	0.0155
88	3.6204	0.0154
89	3.6356	0.0153
90	3.6508	0.0152
91	3.6659	0.0151
92	3.6808	0.0149
93	3.6957	0.0148
94	3.7104	0.0147
95	3.7251	0.0146
96	3.7396	0.0146
97	3.7541	0.0145
98	3.7684	0.0144
99	3.7827	0.0143
100	3.7969	0.0142
101	3.8110	0.0141
102	3.8250	0.0140
103	3.8389	0.0139
104	3.8527	0.0138

105	3.8665	0.0138
106	3.8802	0.0137
107	3.8938	0.0136
108	3.9073	0.0135
109	3.9207	0.0134
110	3.9341	0.0134
111	3.9473	0.0133
112	3.9605	0.0132
113	3.9737	0.0131
114	3.9867	0.0131
115	3.9997	0.0130
116	4.0126	0.0129
117	4.0255	0.0128
118	4.0383	0.0128
119	4.0510	0.0127
120	4.0636	0.0126
121	4.0762	0.0126
122	4.0887	0.0125
123	4.1012	0.0124
124	4.1135	0.0124
125	4.1259	0.0123
126	4.1381	0.0123
127	4.1503	0.0122
128	4.1625	0.0121
129	4.1745	0.0121
130	4.1866	0.0120
131	4.1985	0.0120
132	4.2104	0.0119
133	4.2223	0.0118
134	4.2341	0.0118
135	4.2458	0.0117
136	4.2575	0.0117
137	4.2691	0.0116
138	4.2807	0.0116
139	4.2922	0.0115
140	4.3037	0.0115
141	4.3151	0.0114
142	4.3265	0.0114
143	4.3378	0.0113
144	4.3491	0.0113

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0113	0.0018	0.0094
2	0.0113	0.0019	0.0095
3	0.0114	0.0019	0.0096
4	0.0115	0.0019	0.0096
5	0.0116	0.0019	0.0097
6	0.0116	0.0019	0.0097
7	0.0117	0.0019	0.0098
8	0.0118	0.0019	0.0099
9	0.0119	0.0019	0.0100
10	0.0120	0.0020	0.0100
11	0.0121	0.0020	0.0101
12	0.0121	0.0020	0.0102
13	0.0123	0.0020	0.0103
14	0.0123	0.0020	0.0103
15	0.0124	0.0020	0.0104
16	0.0125	0.0020	0.0105
17	0.0126	0.0021	0.0106
18	0.0127	0.0021	0.0106
19	0.0128	0.0021	0.0107
20	0.0129	0.0021	0.0108
21	0.0131	0.0021	0.0109
22	0.0131	0.0021	0.0110
23	0.0133	0.0022	0.0111
24	0.0134	0.0022	0.0112
25	0.0135	0.0022	0.0113
26	0.0136	0.0022	0.0114

27	0.0138	0.0023	0.0115
28	0.0138	0.0023	0.0116
29	0.0140	0.0023	0.0117
30	0.0141	0.0023	0.0118
31	0.0143	0.0023	0.0119
32	0.0144	0.0024	0.0120
33	0.0146	0.0024	0.0122
34	0.0146	0.0024	0.0123
35	0.0148	0.0024	0.0124
36	0.0149	0.0024	0.0125
37	0.0152	0.0025	0.0127
38	0.0153	0.0025	0.0128
39	0.0155	0.0025	0.0130
40	0.0156	0.0026	0.0130
41	0.0158	0.0026	0.0132
42	0.0160	0.0026	0.0133
43	0.0162	0.0027	0.0135
44	0.0163	0.0027	0.0137
45	0.0166	0.0027	0.0139
46	0.0167	0.0027	0.0140
47	0.0170	0.0028	0.0142
48	0.0172	0.0028	0.0143
49	0.0219	0.0036	0.0183
50	0.0221	0.0036	0.0185
51	0.0224	0.0037	0.0187
52	0.0226	0.0037	0.0189
53	0.0229	0.0038	0.0192
54	0.0231	0.0038	0.0193
55	0.0235	0.0039	0.0197
56	0.0237	0.0039	0.0198
57	0.0242	0.0040	0.0202
58	0.0244	0.0040	0.0204
59	0.0248	0.0041	0.0208
60	0.0251	0.0041	0.0210
61	0.0256	0.0042	0.0214
62	0.0258	0.0042	0.0216
63	0.0264	0.0043	0.0220
64	0.0266	0.0044	0.0223
65	0.0272	0.0045	0.0228
66	0.0275	0.0045	0.0230
67	0.0282	0.0046	0.0236
68	0.0285	0.0047	0.0239
69	0.0293	0.0048	0.0245
70	0.0296	0.0049	0.0248
71	0.0305	0.0050	0.0255
72	0.0309	0.0051	0.0258
73	0.0320	0.0052	0.0268
74	0.0325	0.0053	0.0272
75	0.0336	0.0055	0.0281
76	0.0341	0.0056	0.0285
77	0.0353	0.0058	0.0295
78	0.0360	0.0059	0.0301
79	0.0374	0.0061	0.0313
80	0.0382	0.0062	0.0319
81	0.0398	0.0065	0.0333
82	0.0408	0.0067	0.0341
83	0.0428	0.0070	0.0358
84	0.0440	0.0072	0.0368
85	0.0466	0.0076	0.0389
86	0.0480	0.0079	0.0402
87	0.0514	0.0084	0.0430
88	0.0534	0.0087	0.0447
89	0.0510	0.0083	0.0426
90	0.0538	0.0088	0.0450
91	0.0609	0.0100	0.0509
92	0.0656	0.0107	0.0548
93	0.0790	0.0121	0.0669
94	0.0889	0.0121	0.0768
95	0.1261	0.0121	0.1140
96	0.1722	0.0121	0.1601
97	0.5193	0.0121	0.5072

```
 98              0.1032          0.0121              0.0911
 99              0.0713          0.0117              0.0597
100              0.0570          0.0093              0.0477
101              0.0556          0.0091              0.0465
102              0.0496          0.0081              0.0415
103              0.0452          0.0074              0.0378
104              0.0418          0.0068              0.0349
105              0.0390          0.0064              0.0326
106              0.0367          0.0060              0.0307
107              0.0347          0.0057              0.0290
108              0.0330          0.0054              0.0276
109              0.0313          0.0051              0.0262
110              0.0300          0.0049              0.0251
111              0.0289          0.0047              0.0242
112              0.0279          0.0046              0.0233
113              0.0269          0.0044              0.0225
114              0.0261          0.0043              0.0218
115              0.0253          0.0041              0.0212
116              0.0246          0.0040              0.0206
117              0.0239          0.0039              0.0200
118              0.0233          0.0038              0.0195
119              0.0228          0.0037              0.0190
120              0.0222          0.0036              0.0186
121              0.0173          0.0028              0.0145
122              0.0169          0.0028              0.0141
123              0.0165          0.0027              0.0138
124              0.0161          0.0026              0.0134
125              0.0157          0.0026              0.0131
126              0.0154          0.0025              0.0129
127              0.0151          0.0025              0.0126
128              0.0147          0.0024              0.0123
129              0.0145          0.0024              0.0121
130              0.0142          0.0023              0.0119
131              0.0139          0.0023              0.0116
132              0.0137          0.0022              0.0114
133              0.0134          0.0022              0.0112
134              0.0132          0.0022              0.0110
135              0.0130          0.0021              0.0109
136              0.0128          0.0021              0.0107
137              0.0126          0.0021              0.0105
138              0.0124          0.0020              0.0104
139              0.0122          0.0020              0.0102
140              0.0120          0.0020              0.0101
141              0.0118          0.0019              0.0099
142              0.0117          0.0019              0.0098
143              0.0115          0.0019              0.0096
144              0.0114          0.0019              0.0095
-------------------------------------------------------------------------
-------------------------------------------------------------------------
Total soil rain loss =      0.61(In)
Total effective rainfall =      3.74(In)
Peak flow rate in flood hydrograph =     69.81(CFS)
-------------------------------------------------------------------------
+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                    12 - H O U R    S T O R M
                R u n o f f      H y d r o g r a p h
-------------------------------------------------------------------------
            Hydrograph in   5   Minute intervals ((CFS))

-------------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0       17.5      35.0      52.5      70.0
-------------------------------------------------------------------------
  0+ 5       0.0005      0.08  Q         |         |         |         |
  0+10       0.0029      0.35  Q         |         |         |         |
  0+15       0.0098      1.00  Q         |         |         |         |
  0+20       0.0229      1.90  VQ        |         |         |         |
  0+25       0.0387      2.28  VQ        |         |         |         |
  0+30       0.0561      2.53  VQ        |         |         |         |
  0+35       0.0748      2.72  VQ        |         |         |         |
  0+40       0.0946      2.86  VQ        |         |         |         |
  0+45       0.1151      2.98  VQ        |         |         |         |
```

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0+50       0.1362      3.07  VQ        |         |         |         |
0+55       0.1579      3.14  VQ        |         |         |         |
1+ 0       0.1800      3.20  VQ        |         |         |         |
1+ 5       0.2023      3.24  VQ        |         |         |         |
1+10       0.2249      3.28  |Q        |         |         |         |
1+15       0.2477      3.31  |Q        |         |         |         |
1+20       0.2707      3.35  |Q        |         |         |         |
1+25       0.2940      3.38  |Q        |         |         |         |
1+30       0.3175      3.41  |Q        |         |         |         |
1+35       0.3412      3.44  |Q        |         |         |         |
1+40       0.3651      3.47  |Q        |         |         |         |
1+45       0.3892      3.50  |VQ       |         |         |         |
1+50       0.4136      3.53  |VQ       |         |         |         |
1+55       0.4381      3.56  | Q       |         |         |         |
2+ 0       0.4628      3.59  | Q       |         |         |         |
2+ 5       0.4877      3.62  | Q       |         |         |         |
2+10       0.5128      3.65  | Q       |         |         |         |
2+15       0.5381      3.68  | Q       |         |         |         |
2+20       0.5637      3.71  | Q       |         |         |         |
2+25       0.5895      3.74  | Q       |         |         |         |
2+30       0.6155      3.78  | Q       |         |         |         |
2+35       0.6417      3.81  | QV      |         |         |         |
2+40       0.6682      3.85  | QV      |         |         |         |
2+45       0.6949      3.88  | QV      |         |         |         |
2+50       0.7219      3.92  | QV      |         |         |         |
2+55       0.7491      3.95  | QV      |         |         |         |
3+ 0       0.7767      3.99  | QV      |         |         |         |
3+ 5       0.8044      4.03  | QV      |         |         |         |
3+10       0.8325      4.07  | QV      |         |         |         |
3+15       0.8608      4.11  | Q V     |         |         |         |
3+20       0.8894      4.16  | Q V     |         |         |         |
3+25       0.9184      4.20  | Q V     |         |         |         |
3+30       0.9476      4.25  | Q V     |         |         |         |
3+35       0.9771      4.29  | Q V     |         |         |         |
3+40       1.0070      4.34  | Q V     |         |         |         |
3+45       1.0372      4.39  | Q V     |         |         |         |
3+50       1.0678      4.44  | Q  V    |         |         |         |
3+55       1.0987      4.49  | Q  V    |         |         |         |
4+ 0       1.1300      4.54  | Q  V    |         |         |         |
4+ 5       1.1619      4.63  | Q  V    |         |         |         |
4+10       1.1949      4.79  | Q  V    |         |         |         |
4+15       1.2301      5.11  | Q  V    |         |         |         |
4+20       1.2681      5.53  |  Q V    |         |         |         |
4+25       1.3076      5.73  |  Q  V   |         |         |         |
4+30       1.3482      5.90  |  Q  V   |         |         |         |
4+35       1.3898      6.03  |  Q  V   |         |         |         |
4+40       1.4322      6.16  |  Q  V   |         |         |         |
4+45       1.4754      6.27  |  Q  V   |         |         |         |
4+50       1.5193      6.38  |  Q   V  |         |         |         |
4+55       1.5639      6.48  |  Q   V  |         |         |         |
5+ 0       1.6092      6.58  |  Q   V  |         |         |         |
5+ 5       1.6552      6.67  |  Q   V  |         |         |         |
5+10       1.7018      6.77  |  Q   V  |         |         |         |
5+15       1.7491      6.87  |  Q    V |         |         |         |
5+20       1.7972      6.98  |  Q    V |         |         |         |
5+25       1.8459      7.08  |   Q   V |         |         |         |
5+30       1.8955      7.19  |   Q   V |         |         |         |
5+35       1.9458      7.31  |   Q    V|         |         |         |
5+40       1.9970      7.43  |   Q    V|         |         |         |
5+45       2.0490      7.55  |   Q    V|         |         |         |
5+50       2.1020      7.69  |   Q    V|         |         |         |
5+55       2.1558      7.82  |   Q     V         |         |         |
6+ 0       2.2107      7.97  |   Q     V         |         |         |
6+ 5       2.2667      8.12  |   Q     V         |         |         |
6+10       2.3238      8.30  |   Q     V         |         |         |
6+15       2.3822      8.48  |   Q      |V       |         |         |
6+20       2.4420      8.68  |   Q      |V       |         |         |
6+25       2.5031      8.88  |    Q     |V       |         |         |
6+30       2.5658      9.10  |    Q     | V      |         |         |
6+35       2.6300      9.32  |    Q     | V      |         |         |
6+40       2.6959      9.57  |    Q     | V      |         |         |
```

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 6+45      2.7636      9.83  |    Q    | V       |         |         |
 6+50      2.8332     10.11  |    Q    |  V      |         |         |
 6+55      2.9050     10.42  |    Q    |  V      |         |         |
 7+ 0      2.9791     10.76  |     Q   |  V      |         |         |
 7+ 5      3.0557     11.12  |     Q   |   V     |         |         |
 7+10      3.1351     11.54  |     Q   |   V     |         |         |
 7+15      3.2177     11.99  |     Q   |    V    |         |         |
 7+20      3.3039     12.51  |      Q  |    V    |         |         |
 7+25      3.3937     13.04  |      Q  |    V    |         |         |
 7+30      3.4871     13.56  |      Q  |     V   |         |         |
 7+35      3.5830     13.93  |      Q  |     V   |         |         |
 7+40      3.6817     14.32  |       Q |      V  |         |         |
 7+45      3.7867     15.24  |       Q |      V  |         |         |
 7+50      3.9014     16.67  |        Q|       V |         |         |
 7+55      4.0309     18.80  |         Q       V |         |         |
 8+ 0      4.1856     22.46  |          | Q      V|         |         |
 8+ 5      4.3985     30.92  |          |      Q  V         |         |
 8+10      4.7080     44.94  |          |         | V  Q    |         |
 8+15      5.1425     63.10  |          |         |   V     |     Q   |
 8+20      5.6233     69.81  |          |         |     V   |        Q|
 8+25      5.9213     43.27  |          |         |   Q  V  |         |
 8+30      6.1510     33.35  |          |         Q|       V |         |
 8+35      6.3418     27.70  |          |    Q    |         V|         |
 8+40      6.5071     24.00  |          |  Q      |          V         |
 8+45      6.6505     20.83  |          |Q        |          |V        |
 8+50      6.7757     18.18  |          Q         |          |V        |
 8+55      6.8852     15.90  |         Q|         |          | V       |
 9+ 0      6.9819     14.04  |        Q |         |          | V       |
 9+ 5      7.0666     12.30  |       Q  |         |          |  V      |
 9+10      7.1444     11.29  |      Q   |         |          |  V      |
 9+15      7.2173     10.58  |      Q   |         |          |  V      |
 9+20      7.2855      9.91  |     Q    |         |          |   V     |
 9+25      7.3504      9.43  |     Q    |         |          |   V     |
 9+30      7.4127      9.04  |     Q    |         |          |   V     |
 9+35      7.4713      8.51  |    Q     |         |          |    V    |
 9+40      7.5270      8.08  |    Q     |         |          |    V    |
 9+45      7.5801      7.71  |    Q     |         |          |    V    |
 9+50      7.6307      7.35  |    Q     |         |          |    V    |
 9+55      7.6796      7.10  |    Q     |         |          |    V    |
10+ 0      7.7271      6.89  |  Q       |         |          |     V   |
10+ 5      7.7730      6.66  |  Q       |         |          |     V   |
10+10      7.8169      6.38  |  Q       |         |          |     V   |
10+15      7.8579      5.96  |  Q       |         |          |     V   |
10+20      7.8955      5.45  |  Q       |         |          |     V   |
10+25      7.9311      5.17  | Q        |         |          |      V  |
10+30      7.9652      4.95  | Q        |         |          |      V  |
10+35      7.9981      4.77  | Q        |         |          |      V  |
10+40      8.0298      4.61  | Q        |         |          |      V  |
10+45      8.0606      4.47  | Q        |         |          |      V  |
10+50      8.0904      4.34  | Q        |         |          |      V  |
10+55      8.1196      4.23  | Q        |         |          |       V |
11+ 0      8.1480      4.13  | Q        |         |          |       V |
11+ 5      8.1758      4.04  | Q        |         |          |       V |
11+10      8.2031      3.96  | Q        |         |          |       V |
11+15      8.2298      3.88  | Q        |         |          |       V |
11+20      8.2560      3.81  | Q        |         |          |       V |
11+25      8.2817      3.74  | Q        |         |          |       V |
11+30      8.3070      3.67  | Q        |         |          |       V |
11+35      8.3319      3.61  | Q        |         |          |        V|
11+40      8.3563      3.55  | Q        |         |          |        V|
11+45      8.3803      3.49  |Q         |         |          |        V|
11+50      8.4040      3.44  |Q         |         |          |        V|
11+55      8.4273      3.38  |Q         |         |          |        V|
12+ 0      8.4502      3.33  |Q         |         |          |        V|
12+ 5      8.4723      3.21  |Q         |         |          |        V|
12+10      8.4923      2.89  |Q         |         |          |        V|
12+15      8.5075      2.21  |Q         |         |          |        V|
12+20      8.5163      1.28  Q          |         |          |        V|
12+25      8.5225      0.90  Q          |         |          |        V|
12+30      8.5270      0.65  Q          |         |          |        V|
12+35      8.5303      0.48  Q          |         |          |        V|
```

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   12+40       8.5326      0.34  Q         |         |         |        V|
   12+45       8.5343      0.24  Q         |         |         |        V|
   12+50       8.5354      0.17  Q         |         |         |        V|
   12+55       8.5362      0.11  Q         |         |         |        V|
   13+ 0       8.5368      0.08  Q         |         |         |        V|
   13+ 5       8.5372      0.06  Q         |         |         |        V|
   13+10       8.5375      0.05  Q         |         |         |        V|
   13+15       8.5377      0.03  Q         |         |         |        V|
   13+20       8.5379      0.03  Q         |         |         |        V|
   13+25       8.5380      0.02  Q         |         |         |        V|
   13+30       8.5381      0.01  Q         |         |         |        V|
   13+35       8.5381      0.01  Q         |         |         |        V|
   13+40       8.5382      0.00  Q         |         |         |         V
-------------------------------------------------------------------------
```

- 100 Year 24 Hour Post-Development Unit Hydrograph – Area 'A'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/03/16   File Name PRA10024.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'A' - 100 YEAR 24 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 100

       Antecedent Moisture Condition = 3

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 70.6      27.4          1.00     C     0.250     0.581    0.145

Area-averaged adjusted loss rate Fm (In/Hr) =  0.145

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC3)          Yield Fr
    15.91   0.581         70.6      87.5       1.43     0.749
    11.48   0.419         98.0      98.0       0.20     0.958

Area-averaged catchment yield fraction, Y =  0.836
Area-averaged low loss fraction, Yb =  0.164
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.306 (hours)
Watershed area =      27.39(Ac.)
Catchment Lag time =   0.245 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 34.0637
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.145(In/Hr)
Average low loss rate fraction (Yb) = 0.164 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.520(In)
Computed peak 30-minute rainfall =  1.090(In)
Specified peak 1-hour rainfall =  1.450(In)
Computed peak 3-hour rainfall =  2.430(In)
Specified peak 6-hour rainfall =  3.360(In)
Specified peak 24-hour rainfall =  5.630(In)


Rainfall depth area reduction factors:
Using a total area of      27.39(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.519(In)
```

```
30-minute factor = 0.999    Adjusted rainfall =  1.089(In)
1-hour factor = 0.999       Adjusted rainfall =  1.448(In)
3-hour factor = 1.000       Adjusted rainfall =  2.430(In)
6-hour factor = 1.000       Adjusted rainfall =  3.360(In)
24-hour factor = 1.000 Adjusted rainfall =  5.630(In)
--------------------------------------------------------------------------

                      U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------------
               (K =       331.25 (CFS))

  1                2.531                   8.385
  2               11.156                  28.568
  3               31.903                  68.723
  4               60.726                  95.477
  5               72.514                  39.048
  6               80.044                  24.944
  7               85.420                  17.806
  8               89.479                  13.445
  9               92.552                  10.179
 10               94.853                   7.624
 11               96.496                   5.443
 12               97.650                   3.823
 13               98.210                   1.852
 14               98.597                   1.284
 15               98.932                   1.110
 16               99.168                   0.781
 17               99.397                   0.759
 18               99.659                   0.867
 19               99.821                   0.536
 20               99.928                   0.356
 21              100.000                   0.238
--------------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.5193              0.5193
  2              0.6915              0.1722
  3              0.8176              0.1261
  4              0.9207              0.1032
  5              1.0096              0.0889
  6              1.0886              0.0790
  7              1.1599              0.0713
  8              1.2255              0.0656
  9              1.2864              0.0609
 10              1.3434              0.0570
 11              1.3972              0.0538
 12              1.4481              0.0510
 13              1.5038              0.0556
 14              1.5572              0.0534
 15              1.6086              0.0514
 16              1.6583              0.0496
 17              1.7063              0.0480
 18              1.7529              0.0466
 19              1.7981              0.0452
 20              1.8421              0.0440
 21              1.8849              0.0428
 22              1.9266              0.0418
 23              1.9674              0.0408
 24              2.0072              0.0398
 25              2.0462              0.0390
 26              2.0843              0.0382
 27              2.1217              0.0374
 28              2.1584              0.0367
 29              2.1944              0.0360
 30              2.2297              0.0353
 31              2.2644              0.0347
 32              2.2985              0.0341
 33              2.3320              0.0336
```

34	2.3651	0.0330
35	2.3976	0.0325
36	2.4296	0.0320
37	2.4609	0.0313
38	2.4918	0.0309
39	2.5223	0.0305
40	2.5523	0.0300
41	2.5819	0.0296
42	2.6112	0.0293
43	2.6401	0.0289
44	2.6686	0.0285
45	2.6968	0.0282
46	2.7247	0.0279
47	2.7522	0.0275
48	2.7795	0.0272
49	2.8064	0.0269
50	2.8330	0.0266
51	2.8594	0.0264
52	2.8855	0.0261
53	2.9113	0.0258
54	2.9368	0.0256
55	2.9621	0.0253
56	2.9872	0.0251
57	3.0120	0.0248
58	3.0366	0.0246
59	3.0610	0.0244
60	3.0851	0.0242
61	3.1091	0.0239
62	3.1328	0.0237
63	3.1563	0.0235
64	3.1797	0.0233
65	3.2028	0.0231
66	3.2258	0.0229
67	3.2485	0.0228
68	3.2711	0.0226
69	3.2935	0.0224
70	3.3157	0.0222
71	3.3378	0.0221
72	3.3597	0.0219
73	3.3770	0.0173
74	3.3942	0.0172
75	3.4112	0.0170
76	3.4280	0.0169
77	3.4448	0.0167
78	3.4614	0.0166
79	3.4778	0.0165
80	3.4941	0.0163
81	3.5103	0.0162
82	3.5264	0.0161
83	3.5424	0.0160
84	3.5582	0.0158
85	3.5739	0.0157
86	3.5895	0.0156
87	3.6050	0.0155
88	3.6204	0.0154
89	3.6356	0.0153
90	3.6508	0.0152
91	3.6659	0.0151
92	3.6808	0.0149
93	3.6957	0.0148
94	3.7104	0.0147
95	3.7251	0.0146
96	3.7396	0.0146
97	3.7541	0.0145
98	3.7684	0.0144
99	3.7827	0.0143
100	3.7969	0.0142
101	3.8110	0.0141
102	3.8250	0.0140
103	3.8389	0.0139
104	3.8527	0.0138

105	3.8665	0.0138
106	3.8802	0.0137
107	3.8938	0.0136
108	3.9073	0.0135
109	3.9207	0.0134
110	3.9341	0.0134
111	3.9473	0.0133
112	3.9605	0.0132
113	3.9737	0.0131
114	3.9867	0.0131
115	3.9997	0.0130
116	4.0126	0.0129
117	4.0255	0.0128
118	4.0383	0.0128
119	4.0510	0.0127
120	4.0636	0.0126
121	4.0762	0.0126
122	4.0887	0.0125
123	4.1012	0.0124
124	4.1135	0.0124
125	4.1259	0.0123
126	4.1381	0.0123
127	4.1503	0.0122
128	4.1625	0.0121
129	4.1745	0.0121
130	4.1866	0.0120
131	4.1985	0.0120
132	4.2104	0.0119
133	4.2223	0.0118
134	4.2341	0.0118
135	4.2458	0.0117
136	4.2575	0.0117
137	4.2691	0.0116
138	4.2807	0.0116
139	4.2922	0.0115
140	4.3037	0.0115
141	4.3151	0.0114
142	4.3265	0.0114
143	4.3378	0.0113
144	4.3491	0.0113
145	4.3603	0.0112
146	4.3715	0.0112
147	4.3826	0.0111
148	4.3937	0.0111
149	4.4047	0.0110
150	4.4157	0.0110
151	4.4266	0.0109
152	4.4375	0.0109
153	4.4484	0.0108
154	4.4592	0.0108
155	4.4699	0.0108
156	4.4807	0.0107
157	4.4913	0.0107
158	4.5020	0.0106
159	4.5126	0.0106
160	4.5231	0.0105
161	4.5336	0.0105
162	4.5441	0.0105
163	4.5545	0.0104
164	4.5649	0.0104
165	4.5752	0.0103
166	4.5855	0.0103
167	4.5958	0.0103
168	4.6060	0.0102
169	4.6162	0.0102
170	4.6264	0.0102
171	4.6365	0.0101
172	4.6466	0.0101
173	4.6566	0.0100
174	4.6666	0.0100
175	4.6766	0.0100

176	4.6865	0.0099
177	4.6964	0.0099
178	4.7063	0.0099
179	4.7161	0.0098
180	4.7259	0.0098
181	4.7357	0.0098
182	4.7454	0.0097
183	4.7551	0.0097
184	4.7647	0.0097
185	4.7744	0.0096
186	4.7840	0.0096
187	4.7935	0.0096
188	4.8030	0.0095
189	4.8125	0.0095
190	4.8220	0.0095
191	4.8314	0.0094
192	4.8409	0.0094
193	4.8502	0.0094
194	4.8596	0.0093
195	4.8689	0.0093
196	4.8782	0.0093
197	4.8874	0.0093
198	4.8966	0.0092
199	4.9058	0.0092
200	4.9150	0.0092
201	4.9241	0.0091
202	4.9332	0.0091
203	4.9423	0.0091
204	4.9514	0.0091
205	4.9604	0.0090
206	4.9694	0.0090
207	4.9784	0.0090
208	4.9873	0.0089
209	4.9962	0.0089
210	5.0051	0.0089
211	5.0140	0.0089
212	5.0228	0.0088
213	5.0316	0.0088
214	5.0404	0.0088
215	5.0492	0.0088
216	5.0579	0.0087
217	5.0666	0.0087
218	5.0753	0.0087
219	5.0839	0.0087
220	5.0926	0.0086
221	5.1012	0.0086
222	5.1098	0.0086
223	5.1183	0.0086
224	5.1269	0.0085
225	5.1354	0.0085
226	5.1439	0.0085
227	5.1523	0.0085
228	5.1608	0.0084
229	5.1692	0.0084
230	5.1776	0.0084
231	5.1859	0.0084
232	5.1943	0.0083
233	5.2026	0.0083
234	5.2109	0.0083
235	5.2192	0.0083
236	5.2275	0.0083
237	5.2357	0.0082
238	5.2439	0.0082
239	5.2521	0.0082
240	5.2603	0.0082
241	5.2684	0.0082
242	5.2766	0.0081
243	5.2847	0.0081
244	5.2928	0.0081
245	5.3008	0.0081
246	5.3089	0.0080

247	5.3169	0.0080
248	5.3249	0.0080
249	5.3329	0.0080
250	5.3408	0.0080
251	5.3488	0.0079
252	5.3567	0.0079
253	5.3646	0.0079
254	5.3725	0.0079
255	5.3804	0.0079
256	5.3882	0.0078
257	5.3961	0.0078
258	5.4039	0.0078
259	5.4117	0.0078
260	5.4194	0.0078
261	5.4272	0.0078
262	5.4349	0.0077
263	5.4426	0.0077
264	5.4503	0.0077
265	5.4580	0.0077
266	5.4657	0.0077
267	5.4733	0.0076
268	5.4809	0.0076
269	5.4885	0.0076
270	5.4961	0.0076
271	5.5037	0.0076
272	5.5112	0.0076
273	5.5188	0.0075
274	5.5263	0.0075
275	5.5338	0.0075
276	5.5413	0.0075
277	5.5488	0.0075
278	5.5562	0.0075
279	5.5636	0.0074
280	5.5711	0.0074
281	5.5785	0.0074
282	5.5858	0.0074
283	5.5932	0.0074
284	5.6006	0.0074
285	5.6079	0.0073
286	5.6152	0.0073
287	5.6225	0.0073
288	5.6298	0.0073

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0073	0.0012	0.0061
2	0.0073	0.0012	0.0061
3	0.0073	0.0012	0.0061
4	0.0074	0.0012	0.0061
5	0.0074	0.0012	0.0062
6	0.0074	0.0012	0.0062
7	0.0074	0.0012	0.0062
8	0.0075	0.0012	0.0062
9	0.0075	0.0012	0.0063
10	0.0075	0.0012	0.0063
11	0.0075	0.0012	0.0063
12	0.0076	0.0012	0.0063
13	0.0076	0.0012	0.0063
14	0.0076	0.0012	0.0064
15	0.0076	0.0013	0.0064
16	0.0077	0.0013	0.0064
17	0.0077	0.0013	0.0064
18	0.0077	0.0013	0.0065
19	0.0078	0.0013	0.0065
20	0.0078	0.0013	0.0065
21	0.0078	0.0013	0.0065
22	0.0078	0.0013	0.0065
23	0.0079	0.0013	0.0066
24	0.0079	0.0013	0.0066

25	0.0079	0.0013	0.0066
26	0.0079	0.0013	0.0066
27	0.0080	0.0013	0.0067
28	0.0080	0.0013	0.0067
29	0.0080	0.0013	0.0067
30	0.0081	0.0013	0.0067
31	0.0081	0.0013	0.0068
32	0.0081	0.0013	0.0068
33	0.0082	0.0013	0.0068
34	0.0082	0.0013	0.0069
35	0.0082	0.0013	0.0069
36	0.0083	0.0014	0.0069
37	0.0083	0.0014	0.0069
38	0.0083	0.0014	0.0070
39	0.0084	0.0014	0.0070
40	0.0084	0.0014	0.0070
41	0.0084	0.0014	0.0071
42	0.0085	0.0014	0.0071
43	0.0085	0.0014	0.0071
44	0.0085	0.0014	0.0071
45	0.0086	0.0014	0.0072
46	0.0086	0.0014	0.0072
47	0.0087	0.0014	0.0072
48	0.0087	0.0014	0.0073
49	0.0087	0.0014	0.0073
50	0.0088	0.0014	0.0073
51	0.0088	0.0014	0.0074
52	0.0088	0.0014	0.0074
53	0.0089	0.0015	0.0074
54	0.0089	0.0015	0.0075
55	0.0090	0.0015	0.0075
56	0.0090	0.0015	0.0075
57	0.0091	0.0015	0.0076
58	0.0091	0.0015	0.0076
59	0.0091	0.0015	0.0076
60	0.0092	0.0015	0.0077
61	0.0092	0.0015	0.0077
62	0.0093	0.0015	0.0077
63	0.0093	0.0015	0.0078
64	0.0093	0.0015	0.0078
65	0.0094	0.0015	0.0079
66	0.0094	0.0015	0.0079
67	0.0095	0.0016	0.0079
68	0.0095	0.0016	0.0080
69	0.0096	0.0016	0.0080
70	0.0096	0.0016	0.0081
71	0.0097	0.0016	0.0081
72	0.0097	0.0016	0.0081
73	0.0098	0.0016	0.0082
74	0.0098	0.0016	0.0082
75	0.0099	0.0016	0.0083
76	0.0099	0.0016	0.0083
77	0.0100	0.0016	0.0084
78	0.0100	0.0016	0.0084
79	0.0101	0.0017	0.0085
80	0.0102	0.0017	0.0085
81	0.0102	0.0017	0.0086
82	0.0103	0.0017	0.0086
83	0.0103	0.0017	0.0087
84	0.0104	0.0017	0.0087
85	0.0105	0.0017	0.0088
86	0.0105	0.0017	0.0088
87	0.0106	0.0017	0.0089
88	0.0106	0.0017	0.0089
89	0.0107	0.0018	0.0090
90	0.0108	0.0018	0.0090
91	0.0108	0.0018	0.0091
92	0.0109	0.0018	0.0091
93	0.0110	0.0018	0.0092
94	0.0110	0.0018	0.0092
95	0.0111	0.0018	0.0093

96	0.0112	0.0018	0.0093
97	0.0113	0.0018	0.0094
98	0.0113	0.0019	0.0095
99	0.0114	0.0019	0.0096
100	0.0115	0.0019	0.0096
101	0.0116	0.0019	0.0097
102	0.0116	0.0019	0.0097
103	0.0117	0.0019	0.0098
104	0.0118	0.0019	0.0099
105	0.0119	0.0019	0.0100
106	0.0120	0.0020	0.0100
107	0.0121	0.0020	0.0101
108	0.0121	0.0020	0.0102
109	0.0123	0.0020	0.0103
110	0.0123	0.0020	0.0103
111	0.0124	0.0020	0.0104
112	0.0125	0.0020	0.0105
113	0.0126	0.0021	0.0106
114	0.0127	0.0021	0.0106
115	0.0128	0.0021	0.0107
116	0.0129	0.0021	0.0108
117	0.0131	0.0021	0.0109
118	0.0131	0.0021	0.0110
119	0.0133	0.0022	0.0111
120	0.0134	0.0022	0.0112
121	0.0135	0.0022	0.0113
122	0.0136	0.0022	0.0114
123	0.0138	0.0023	0.0115
124	0.0138	0.0023	0.0116
125	0.0140	0.0023	0.0117
126	0.0141	0.0023	0.0118
127	0.0143	0.0023	0.0119
128	0.0144	0.0024	0.0120
129	0.0146	0.0024	0.0122
130	0.0146	0.0024	0.0123
131	0.0148	0.0024	0.0124
132	0.0149	0.0024	0.0125
133	0.0152	0.0025	0.0127
134	0.0153	0.0025	0.0128
135	0.0155	0.0025	0.0130
136	0.0156	0.0026	0.0130
137	0.0158	0.0026	0.0132
138	0.0160	0.0026	0.0133
139	0.0162	0.0027	0.0135
140	0.0163	0.0027	0.0137
141	0.0166	0.0027	0.0139
142	0.0167	0.0027	0.0140
143	0.0170	0.0028	0.0142
144	0.0172	0.0028	0.0143
145	0.0219	0.0036	0.0183
146	0.0221	0.0036	0.0185
147	0.0224	0.0037	0.0187
148	0.0226	0.0037	0.0189
149	0.0229	0.0038	0.0192
150	0.0231	0.0038	0.0193
151	0.0235	0.0039	0.0197
152	0.0237	0.0039	0.0198
153	0.0242	0.0040	0.0202
154	0.0244	0.0040	0.0204
155	0.0248	0.0041	0.0208
156	0.0251	0.0041	0.0210
157	0.0256	0.0042	0.0214
158	0.0258	0.0042	0.0216
159	0.0264	0.0043	0.0220
160	0.0266	0.0044	0.0223
161	0.0272	0.0045	0.0228
162	0.0275	0.0045	0.0230
163	0.0282	0.0046	0.0236
164	0.0285	0.0047	0.0239
165	0.0293	0.0048	0.0245
166	0.0296	0.0049	0.0248

167	0.0305	0.0050	0.0255
168	0.0309	0.0051	0.0258
169	0.0320	0.0052	0.0268
170	0.0325	0.0053	0.0272
171	0.0336	0.0055	0.0281
172	0.0341	0.0056	0.0285
173	0.0353	0.0058	0.0295
174	0.0360	0.0059	0.0301
175	0.0374	0.0061	0.0313
176	0.0382	0.0062	0.0319
177	0.0398	0.0065	0.0333
178	0.0408	0.0067	0.0341
179	0.0428	0.0070	0.0358
180	0.0440	0.0072	0.0368
181	0.0466	0.0076	0.0389
182	0.0480	0.0079	0.0402
183	0.0514	0.0084	0.0430
184	0.0534	0.0087	0.0447
185	0.0510	0.0083	0.0426
186	0.0538	0.0088	0.0450
187	0.0609	0.0100	0.0509
188	0.0656	0.0107	0.0548
189	0.0790	0.0121	0.0669
190	0.0889	0.0121	0.0768
191	0.1261	0.0121	0.1140
192	0.1722	0.0121	0.1601
193	0.5193	0.0121	0.5072
194	0.1032	0.0121	0.0911
195	0.0713	0.0117	0.0597
196	0.0570	0.0093	0.0477
197	0.0556	0.0091	0.0465
198	0.0496	0.0081	0.0415
199	0.0452	0.0074	0.0378
200	0.0418	0.0068	0.0349
201	0.0390	0.0064	0.0326
202	0.0367	0.0060	0.0307
203	0.0347	0.0057	0.0290
204	0.0330	0.0054	0.0276
205	0.0313	0.0051	0.0262
206	0.0300	0.0049	0.0251
207	0.0289	0.0047	0.0242
208	0.0279	0.0046	0.0233
209	0.0269	0.0044	0.0225
210	0.0261	0.0043	0.0218
211	0.0253	0.0041	0.0212
212	0.0246	0.0040	0.0206
213	0.0239	0.0039	0.0200
214	0.0233	0.0038	0.0195
215	0.0228	0.0037	0.0190
216	0.0222	0.0036	0.0186
217	0.0173	0.0028	0.0145
218	0.0169	0.0028	0.0141
219	0.0165	0.0027	0.0138
220	0.0161	0.0026	0.0134
221	0.0157	0.0026	0.0131
222	0.0154	0.0025	0.0129
223	0.0151	0.0025	0.0126
224	0.0147	0.0024	0.0123
225	0.0145	0.0024	0.0121
226	0.0142	0.0023	0.0119
227	0.0139	0.0023	0.0116
228	0.0137	0.0022	0.0114
229	0.0134	0.0022	0.0112
230	0.0132	0.0022	0.0110
231	0.0130	0.0021	0.0109
232	0.0128	0.0021	0.0107
233	0.0126	0.0021	0.0105
234	0.0124	0.0020	0.0104
235	0.0122	0.0020	0.0102
236	0.0120	0.0020	0.0101
237	0.0118	0.0019	0.0099

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      238              0.0117          0.0019              0.0098
      239              0.0115          0.0019              0.0096
      240              0.0114          0.0019              0.0095
      241              0.0112          0.0018              0.0094
      242              0.0111          0.0018              0.0093
      243              0.0109          0.0018              0.0091
      244              0.0108          0.0018              0.0090
      245              0.0107          0.0017              0.0089
      246              0.0105          0.0017              0.0088
      247              0.0104          0.0017              0.0087
      248              0.0103          0.0017              0.0086
      249              0.0102          0.0017              0.0085
      250              0.0101          0.0017              0.0084
      251              0.0100          0.0016              0.0083
      252              0.0099          0.0016              0.0082
      253              0.0098          0.0016              0.0082
      254              0.0097          0.0016              0.0081
      255              0.0096          0.0016              0.0080
      256              0.0095          0.0015              0.0079
      257              0.0094          0.0015              0.0078
      258              0.0093          0.0015              0.0078
      259              0.0092          0.0015              0.0077
      260              0.0091          0.0015              0.0076
      261              0.0090          0.0015              0.0075
      262              0.0089          0.0015              0.0075
      263              0.0089          0.0015              0.0074
      264              0.0088          0.0014              0.0073
      265              0.0087          0.0014              0.0073
      266              0.0086          0.0014              0.0072
      267              0.0086          0.0014              0.0072
      268              0.0085          0.0014              0.0071
      269              0.0084          0.0014              0.0070
      270              0.0083          0.0014              0.0070
      271              0.0083          0.0014              0.0069
      272              0.0082          0.0013              0.0069
      273              0.0082          0.0013              0.0068
      274              0.0081          0.0013              0.0068
      275              0.0080          0.0013              0.0067
      276              0.0080          0.0013              0.0067
      277              0.0079          0.0013              0.0066
      278              0.0078          0.0013              0.0066
      279              0.0078          0.0013              0.0065
      280              0.0077          0.0013              0.0065
      281              0.0077          0.0013              0.0064
      282              0.0076          0.0012              0.0064
      283              0.0076          0.0012              0.0063
      284              0.0075          0.0012              0.0063
      285              0.0075          0.0012              0.0062
      286              0.0074          0.0012              0.0062
      287              0.0074          0.0012              0.0062
      288              0.0073          0.0012              0.0061
      ------------------------------------------------------------------
      ------------------------------------------------------------------
      Total soil rain loss =      0.82(In)
      Total effective rainfall =      4.81(In)
      Peak flow rate in flood hydrograph =     69.81(CFS)
      ------------------------------------------------------------------
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                        24 - H O U R    S T O R M
                  R u n o f f      H y d r o g r a p h
      ------------------------------------------------------------------
                Hydrograph in   5   Minute intervals ((CFS))

      ------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0       17.5      35.0      52.5      70.0
-------------------------------------------------------------------------
  0+ 5       0.0004      0.05  Q         |         |         |         |
  0+10       0.0019      0.23  Q         |         |         |         |
  0+15       0.0063      0.64  Q         |         |         |         |
  0+20       0.0148      1.23  Q         |         |         |         |
  0+25       0.0249      1.47  Q         |         |         |         |
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0+30       0.0361      1.63  Q          |          |          |          |
0+35       0.0481      1.74  Q          |          |          |          |
0+40       0.0607      1.83  VQ         |          |          |          |
0+45       0.0738      1.90  VQ         |          |          |          |
0+50       0.0872      1.95  VQ         |          |          |          |
0+55       0.1009      1.99  VQ         |          |          |          |
1+ 0       0.1148      2.02  VQ         |          |          |          |
1+ 5       0.1288      2.04  VQ         |          |          |          |
1+10       0.1430      2.05  VQ         |          |          |          |
1+15       0.1572      2.07  VQ         |          |          |          |
1+20       0.1715      2.08  VQ         |          |          |          |
1+25       0.1859      2.09  VQ         |          |          |          |
1+30       0.2004      2.10  VQ         |          |          |          |
1+35       0.2149      2.11  VQ         |          |          |          |
1+40       0.2296      2.12  VQ         |          |          |          |
1+45       0.2442      2.13  VQ         |          |          |          |
1+50       0.2590      2.14  VQ         |          |          |          |
1+55       0.2738      2.15  VQ         |          |          |          |
2+ 0       0.2886      2.16  |Q         |          |          |          |
2+ 5       0.3035      2.16  |Q         |          |          |          |
2+10       0.3185      2.17  |Q         |          |          |          |
2+15       0.3335      2.18  |Q         |          |          |          |
2+20       0.3485      2.19  |Q         |          |          |          |
2+25       0.3636      2.20  |Q         |          |          |          |
2+30       0.3788      2.20  |Q         |          |          |          |
2+35       0.3940      2.21  |Q         |          |          |          |
2+40       0.4093      2.22  |Q         |          |          |          |
2+45       0.4247      2.23  |Q         |          |          |          |
2+50       0.4401      2.24  |Q         |          |          |          |
2+55       0.4556      2.25  |Q         |          |          |          |
3+ 0       0.4711      2.25  |Q         |          |          |          |
3+ 5       0.4867      2.26  |Q         |          |          |          |
3+10       0.5023      2.27  |Q         |          |          |          |
3+15       0.5180      2.28  |Q         |          |          |          |
3+20       0.5338      2.29  |Q         |          |          |          |
3+25       0.5497      2.30  |QV        |          |          |          |
3+30       0.5656      2.31  |QV        |          |          |          |
3+35       0.5815      2.32  |QV        |          |          |          |
3+40       0.5976      2.33  |QV        |          |          |          |
3+45       0.6137      2.34  |QV        |          |          |          |
3+50       0.6298      2.35  |QV        |          |          |          |
3+55       0.6461      2.36  |QV        |          |          |          |
4+ 0       0.6624      2.37  |QV        |          |          |          |
4+ 5       0.6787      2.38  |QV        |          |          |          |
4+10       0.6952      2.39  |QV        |          |          |          |
4+15       0.7117      2.40  |QV        |          |          |          |
4+20       0.7283      2.41  |QV        |          |          |          |
4+25       0.7449      2.42  |QV        |          |          |          |
4+30       0.7617      2.43  |QV        |          |          |          |
4+35       0.7785      2.44  |QV        |          |          |          |
4+40       0.7953      2.45  |QV        |          |          |          |
4+45       0.8123      2.46  |QV        |          |          |          |
4+50       0.8293      2.47  |Q V       |          |          |          |
4+55       0.8464      2.48  |Q V       |          |          |          |
5+ 0       0.8636      2.50  |Q V       |          |          |          |
5+ 5       0.8809      2.51  |Q V       |          |          |          |
5+10       0.8982      2.52  |Q V       |          |          |          |
5+15       0.9157      2.53  |Q V       |          |          |          |
5+20       0.9332      2.54  |Q V       |          |          |          |
5+25       0.9508      2.55  |Q V       |          |          |          |
5+30       0.9685      2.57  |Q V       |          |          |          |
5+35       0.9862      2.58  |Q V       |          |          |          |
5+40       1.0041      2.59  |Q V       |          |          |          |
5+45       1.0220      2.60  |Q V       |          |          |          |
5+50       1.0400      2.62  |Q V       |          |          |          |
5+55       1.0582      2.63  |Q V       |          |          |          |
6+ 0       1.0764      2.64  |Q V       |          |          |          |
6+ 5       1.0947      2.66  |Q V       |          |          |          |
6+10       1.1131      2.67  |Q  V      |          |          |          |
6+15       1.1316      2.68  |Q  V      |          |          |          |
6+20       1.1501      2.70  |Q  V      |          |          |          |
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 6+25      1.1688      2.71  |Q  V     |         |         |         |
 6+30      1.1876      2.73  |Q  V     |         |         |         |
 6+35      1.2065      2.74  |Q  V     |         |         |         |
 6+40      1.2255      2.76  |Q  V     |         |         |         |
 6+45      1.2445      2.77  |Q  V     |         |         |         |
 6+50      1.2637      2.79  |Q  V     |         |         |         |
 6+55      1.2830      2.80  |Q  V     |         |         |         |
 7+ 0      1.3024      2.82  |Q  V     |         |         |         |
 7+ 5      1.3219      2.83  |Q  V     |         |         |         |
 7+10      1.3416      2.85  |Q  V     |         |         |         |
 7+15      1.3613      2.87  |Q  V     |         |         |         |
 7+20      1.3812      2.88  |Q   V    |         |         |         |
 7+25      1.4011      2.90  |Q   V    |         |         |         |
 7+30      1.4212      2.92  |Q   V    |         |         |         |
 7+35      1.4414      2.93  |Q   V    |         |         |         |
 7+40      1.4617      2.95  |Q   V    |         |         |         |
 7+45      1.4822      2.97  |Q   V    |         |         |         |
 7+50      1.5027      2.99  |Q   V    |         |         |         |
 7+55      1.5234      3.00  |Q   V    |         |         |         |
 8+ 0      1.5443      3.02  |Q   V    |         |         |         |
 8+ 5      1.5652      3.04  |Q   V    |         |         |         |
 8+10      1.5863      3.06  |Q   V    |         |         |         |
 8+15      1.6075      3.08  |Q   V    |         |         |         |
 8+20      1.6289      3.10  |Q   V    |         |         |         |
 8+25      1.6504      3.12  |Q    V   |         |         |         |
 8+30      1.6720      3.14  |Q    V   |         |         |         |
 8+35      1.6938      3.16  |Q    V   |         |         |         |
 8+40      1.7158      3.19  |Q    V   |         |         |         |
 8+45      1.7378      3.21  |Q    V   |         |         |         |
 8+50      1.7601      3.23  |Q    V   |         |         |         |
 8+55      1.7825      3.25  |Q    V   |         |         |         |
 9+ 0      1.8050      3.27  |Q    V   |         |         |         |
 9+ 5      1.8277      3.30  |Q    V   |         |         |         |
 9+10      1.8506      3.32  |Q    V   |         |         |         |
 9+15      1.8737      3.35  |Q    V   |         |         |         |
 9+20      1.8969      3.37  |Q    V   |         |         |         |
 9+25      1.9203      3.40  |Q    V   |         |         |         |
 9+30      1.9438      3.42  |Q     V  |         |         |         |
 9+35      1.9676      3.45  |Q     V  |         |         |         |
 9+40      1.9915      3.48  |Q     V  |         |         |         |
 9+45      2.0156      3.50  | Q    V  |         |         |         |
 9+50      2.0399      3.53  | Q    V  |         |         |         |
 9+55      2.0645      3.56  | Q    V  |         |         |         |
10+ 0      2.0892      3.59  | Q    V  |         |         |         |
10+ 5      2.1141      3.62  | Q    V  |         |         |         |
10+10      2.1392      3.65  | Q    V  |         |         |         |
10+15      2.1645      3.68  | Q    V  |         |         |         |
10+20      2.1901      3.71  | Q    V  |         |         |         |
10+25      2.2159      3.74  | Q     V |         |         |         |
10+30      2.2419      3.78  | Q     V |         |         |         |
10+35      2.2681      3.81  | Q     V |         |         |         |
10+40      2.2946      3.85  | Q     V |         |         |         |
10+45      2.3213      3.88  | Q     V |         |         |         |
10+50      2.3483      3.92  | Q     V |         |         |         |
10+55      2.3755      3.95  | Q     V |         |         |         |
11+ 0      2.4030      3.99  | Q     V |         |         |         |
11+ 5      2.4308      4.03  | Q     V |         |         |         |
11+10      2.4589      4.07  | Q     V |         |         |         |
11+15      2.4872      4.11  | Q      V|         |         |         |
11+20      2.5158      4.16  | Q      V|         |         |         |
11+25      2.5447      4.20  | Q      V|         |         |         |
11+30      2.5740      4.25  | Q      V|         |         |         |
11+35      2.6035      4.29  | Q      V|         |         |         |
11+40      2.6334      4.34  | Q      V|         |         |         |
11+45      2.6636      4.39  | Q      V|         |         |         |
11+50      2.6942      4.44  | Q      V|         |         |         |
11+55      2.7251      4.49  | Q      V|         |         |         |
12+ 0      2.7564      4.54  | Q       V         |         |         |
12+ 5      2.7883      4.63  | Q       V         |         |         |
12+10      2.8213      4.79  | Q       V         |         |         |
12+15      2.8565      5.11  | Q       V         |         |         |
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12+20      2.8945     5.53  |  Q      V         |         |         |
12+25      2.9340     5.73  |  Q      V         |         |         |
12+30      2.9746     5.90  |  Q      V         |         |         |
12+35      3.0162     6.03  |  Q      V         |         |         |
12+40      3.0586     6.16  |  Q      |V        |         |         |
12+45      3.1018     6.27  |  Q      |V        |         |         |
12+50      3.1457     6.38  |  Q      |V        |         |         |
12+55      3.1903     6.48  |  Q      |V        |         |         |
13+ 0      3.2356     6.58  |  Q      |V        |         |         |
13+ 5      3.2816     6.67  |  Q      |V        |         |         |
13+10      3.3282     6.77  |  Q      | V       |         |         |
13+15      3.3755     6.87  |  Q      | V       |         |         |
13+20      3.4236     6.98  |  Q      | V       |         |         |
13+25      3.4723     7.08  |   Q     | V       |         |         |
13+30      3.5219     7.19  |   Q     | V       |         |         |
13+35      3.5722     7.31  |   Q     |  V      |         |         |
13+40      3.6234     7.43  |   Q     |  V      |         |         |
13+45      3.6754     7.55  |   Q     |  V      |         |         |
13+50      3.7284     7.69  |   Q     |  V      |         |         |
13+55      3.7822     7.82  |   Q     |  V      |         |         |
14+ 0      3.8371     7.97  |   Q     |  V      |         |         |
14+ 5      3.8931     8.12  |   Q     |   V     |         |         |
14+10      3.9502     8.30  |   Q     |   V     |         |         |
14+15      4.0086     8.48  |   Q     |   V     |         |         |
14+20      4.0684     8.68  |   Q     |   V     |         |         |
14+25      4.1295     8.88  |    Q    |    V    |         |         |
14+30      4.1922     9.10  |    Q    |    V    |         |         |
14+35      4.2564     9.32  |    Q    |    V    |         |         |
14+40      4.3223     9.57  |    Q    |    V    |         |         |
14+45      4.3900     9.83  |    Q    |    V    |         |         |
14+50      4.4596    10.11  |    Q    |     V   |         |         |
14+55      4.5314    10.42  |    Q    |     V   |         |         |
15+ 0      4.6055    10.76  |     Q   |     V   |         |         |
15+ 5      4.6821    11.12  |     Q   |      V  |         |         |
15+10      4.7615    11.54  |     Q   |      V  |         |         |
15+15      4.8441    11.99  |     Q   |      V  |         |         |
15+20      4.9303    12.51  |      Q  |      V  |         |         |
15+25      5.0201    13.04  |      Q  |       V |         |         |
15+30      5.1135    13.56  |      Q  |       V |         |         |
15+35      5.2094    13.93  |      Q  |       V |         |         |
15+40      5.3081    14.32  |       Q |        V|         |         |
15+45      5.4130    15.24  |       Q |        V|         |         |
15+50      5.5278    16.67  |        Q|         V         |         |
15+55      5.6573    18.80  |         Q         V         |         |
16+ 0      5.8120    22.46  |         | Q       |V        |         |
16+ 5      6.0249    30.92  |         |      Q  |V        |         |
16+10      6.3344    44.94  |         |         |  V Q    |         |
16+15      6.7689    63.10  |         |         |   V     |     Q   |
16+20      7.2497    69.81  |         |         |     V   |        Q|
16+25      7.5477    43.27  |         |         |   Q  V  |         |
16+30      7.7774    33.35  |         |         Q|       V |         |
16+35      7.9682    27.70  |         |    Q    |        V|         |
16+40      8.1335    24.00  |         |  Q      |        V|         |
16+45      8.2769    20.83  |         |Q        |         V         |
16+50      8.4021    18.18  |         Q         |         V         |
16+55      8.5116    15.90  |        Q|         |         |V        |
17+ 0      8.6083    14.04  |       Q |         |         |V        |
17+ 5      8.6930    12.30  |      Q  |         |         |V        |
17+10      8.7708    11.29  |     Q   |         |         |V        |
17+15      8.8436    10.58  |     Q   |         |         | V       |
17+20      8.9119     9.91  |    Q    |         |         | V       |
17+25      8.9768     9.43  |    Q    |         |         | V       |
17+30      9.0390     9.04  |    Q    |         |         | V       |
17+35      9.0977     8.51  |   Q     |         |         |  V      |
17+40      9.1533     8.08  |   Q     |         |         |  V      |
17+45      9.2065     7.71  |   Q     |         |         |  V      |
17+50      9.2571     7.35  |   Q     |         |         |  V      |
17+55      9.3060     7.10  |   Q     |         |         |  V      |
18+ 0      9.3535     6.89  |  Q      |         |         |   V     |
18+ 5      9.3993     6.66  |  Q      |         |         |   V     |
18+10      9.4433     6.38  |  Q      |         |         |   V     |
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18+15	9.4843	5.96	Q			V
18+20	9.5219	5.45	Q			V
18+25	9.5575	5.17	Q			V
18+30	9.5916	4.95	Q			V
18+35	9.6245	4.77	Q			V
18+40	9.6562	4.61	Q			V
18+45	9.6869	4.47	Q			V
18+50	9.7168	4.34	Q			V
18+55	9.7460	4.23	Q			V
19+ 0	9.7744	4.13	Q			V
19+ 5	9.8022	4.04	Q			V
19+10	9.8295	3.96	Q			V
19+15	9.8562	3.88	Q			V
19+20	9.8824	3.81	Q			V
19+25	9.9081	3.74	Q			V
19+30	9.9334	3.67	Q			V
19+35	9.9582	3.61	Q			V
19+40	9.9827	3.55	Q			V
19+45	10.0067	3.49	Q			V
19+50	10.0304	3.44	Q			V
19+55	10.0537	3.38	Q			V
20+ 0	10.0766	3.33	Q			V
20+ 5	10.0993	3.29	Q			V
20+10	10.1216	3.24	Q			V
20+15	10.1436	3.20	Q			V
20+20	10.1653	3.15	Q			V
20+25	10.1867	3.11	Q			V
20+30	10.2079	3.07	Q			V
20+35	10.2288	3.03	Q			V
20+40	10.2494	2.99	Q			V
20+45	10.2698	2.96	Q			V
20+50	10.2899	2.92	Q			V
20+55	10.3098	2.89	Q			V
21+ 0	10.3295	2.86	Q			V
21+ 5	10.3489	2.82	Q			V
21+10	10.3681	2.79	Q			V
21+15	10.3872	2.76	Q			V
21+20	10.4060	2.73	Q			V
21+25	10.4246	2.70	Q			V
21+30	10.4430	2.68	Q			V
21+35	10.4613	2.65	Q			V
21+40	10.4794	2.62	Q			V
21+45	10.4972	2.60	Q			V
21+50	10.5150	2.57	Q			V
21+55	10.5325	2.55	Q			V
22+ 0	10.5499	2.52	Q			V
22+ 5	10.5671	2.50	Q			V
22+10	10.5842	2.48	Q			V
22+15	10.6011	2.46	Q			V
22+20	10.6178	2.43	Q			V
22+25	10.6344	2.41	Q			V
22+30	10.6509	2.39	Q			V
22+35	10.6672	2.37	Q			V
22+40	10.6834	2.35	Q			V
22+45	10.6995	2.33	Q			V
22+50	10.7154	2.31	Q			V
22+55	10.7312	2.29	Q			V
23+ 0	10.7469	2.28	Q			V
23+ 5	10.7624	2.26	Q			V
23+10	10.7779	2.24	Q			V
23+15	10.7932	2.22	Q			V
23+20	10.8084	2.21	Q			V
23+25	10.8235	2.19	Q			V
23+30	10.8384	2.17	Q			V
23+35	10.8533	2.16	Q			V
23+40	10.8680	2.14	Q			V
23+45	10.8827	2.13	Q			V
23+50	10.8972	2.11	Q			V
23+55	10.9117	2.10	Q			V
24+ 0	10.9260	2.08	Q			V
24+ 5	10.9399	2.02	Q			V

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   24+10      10.9525      1.83  |Q        |         |         |        V|
   24+15      10.9622      1.40  Q         |         |         |        V|
   24+20      10.9677      0.81  Q         |         |         |        V|
   24+25      10.9716      0.57  Q         |         |         |        V|
   24+30      10.9745      0.41  Q         |         |         |        V|
   24+35      10.9765      0.30  Q         |         |         |        V|
   24+40      10.9780      0.22  Q         |         |         |        V|
   24+45      10.9791      0.15  Q         |         |         |        V|
   24+50      10.9798      0.11  Q         |         |         |        V|
   24+55      10.9803      0.07  Q         |         |         |        V|
   25+ 0      10.9807      0.05  Q         |         |         |        V|
   25+ 5      10.9809      0.04  Q         |         |         |        V|
   25+10      10.9811      0.03  Q         |         |         |        V|
   25+15      10.9813      0.02  Q         |         |         |        V|
   25+20      10.9814      0.02  Q         |         |         |        V|
   25+25      10.9815      0.01  Q         |         |         |        V|
   25+30      10.9815      0.01  Q         |         |         |        V|
   25+35      10.9815      0.00  Q         |         |         |        V|
   25+40      10.9815      0.00  Q         |         |         |        V|
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Area 'B' Calculations

- 2 Year Pre-Development Rational Method – Area 'B'

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                  Orange County Rational Hydrology Program

               (Hydrology Manual Date(s) October 1986 & November 1996)

 CIVILCADD/CIVILDESIGN  Engineering Software, (c) 1989-2012 Version 8.2
       Rational Hydrology Study, Date: 10/04/16  File Name: exb002.roc
--------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION RATIONAL METHOD - AREA 'B' - 2 YEAR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
--------------------------------------------------------------------------


Program License Serial Number 4094

--------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

--------------------------------------------------------------------------

Rational hydrology study storm event year is     2.0

Decimal fraction of study above 2000 ft., 600M  =     0.0000
English Units Used for input data


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      200.000 to Point/Station      201.000
**** INITIAL AREA EVALUATION ****
__________________________________________________________________________
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Initial subarea data:
Initial area flow distance =   221.000(Ft.)
Top (of initial area) elevation =   355.000(Ft.)
Bottom (of initial area) elevation =   306.000(Ft.)
Difference in elevation =    49.000(Ft.)
Slope =    0.22172  s(%)=      22.17
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.268 min.
Rainfall intensity =      1.696(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.767
Subarea runoff =      2.590(CFS)
Total initial stream area =        1.990(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      201.000 to Point/Station      202.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
__________________________________________________________________________
Estimated mean flow rate at midpoint of channel =      3.765(CFS)
Depth of flow =   0.162(Ft.), Average velocity =   2.869(Ft/s)
       ******* Irregular Channel Data ***********
--------------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2             50.00              0.00
       3            100.00              1.00
Manning's 'N' friction factor =   0.030
--------------------------------------------------------------------------
Sub-Channel flow  =      3.765(CFS)
  '     '       flow top width =     16.200(Ft.)
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  '     '    velocity=    2.869(Ft/s)
  '     '       area =      1.312(Sq.Ft)
  '     '       Froude number =     1.776

Upstream point elevation =   306.000(Ft.)
Downstream point elevation =   279.000(Ft.)
Flow length =   282.000(Ft.)
Travel time  =    1.64 min.
Time of concentration =    9.91 min.
Depth of flow =   0.162(Ft.)
Average velocity =   2.869(Ft/s)
Total irregular channel flow =     3.765(CFS)
Irregular channel normal depth above invert elev. =   0.162(Ft.)
Average velocity of channel(s) =   2.869(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Rainfall intensity =      1.529(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.753
Subarea runoff =      2.267(CFS) for    2.230(Ac.)
Total runoff =      4.857(CFS)       Total area =        4.22(Ac.)
Area averaged Fm value =    0.250(In/Hr)
Depth of flow =   0.178(Ft.), Average velocity =   3.058(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      202.000 to Point/Station      203.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =      6.007(CFS)
Depth of flow =   0.201(Ft.), Average velocity =   2.978(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2             50.00              0.00
       3            100.00              1.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =      6.007(CFS)
  '     '       flow top width =     20.086(Ft.)
  '     '    velocity=    2.978(Ft/s)
  '     '       area =      2.017(Sq.Ft)
  '     '       Froude number =     1.656

Upstream point elevation =   279.000(Ft.)
Downstream point elevation =   223.000(Ft.)
Flow length =   723.000(Ft.)
Travel time  =    4.05 min.
Time of concentration =   13.95 min.
Depth of flow =   0.201(Ft.)
Average velocity =   2.978(Ft/s)
Total irregular channel flow =     6.007(CFS)
Irregular channel normal depth above invert elev. =   0.201(Ft.)
Average velocity of channel(s) =   2.978(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
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Max Catchment Loss (Fm) =     0.250(In/Hr)
Rainfall intensity =      1.256(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.721
Subarea runoff =      2.232(CFS) for    3.610(Ac.)
Total runoff =      7.089(CFS)       Total area =        7.83(Ac.)
Area averaged Fm value =    0.250(In/Hr)
Depth of flow =   0.214(Ft.), Average velocity =   3.104(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      202.000 to Point/Station      203.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      7.830(Ac.)
Runoff from this stream =      7.089(CFS)
Time of concentration =   13.95 min.
Rainfall intensity =     1.256(In/Hr)
Area averaged loss rate (Fm) =    0.2500(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      204.000 to Point/Station      205.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.100
Decimal fraction soil group D = 0.900
SCS curve number for soil(AMC 2)  = 83.50
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.205(In/Hr)
Max Catchment Loss (Fm) =     0.205(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   295.000(Ft.)
Bottom (of initial area) elevation =   258.000(Ft.)
Difference in elevation =    37.000(Ft.)
Slope =    0.12333  s(%)=      12.33
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   10.506 min.
Rainfall intensity =      1.478(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.775
Subarea runoff =      1.604(CFS)
Total initial stream area =        1.400(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      205.000 to Point/Station      206.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =      4.033(CFS)
Depth of flow =   0.175(Ft.), Average velocity =   2.638(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1             0.00              1.00
       2            50.00              0.00
       3           100.00              1.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =      4.033(CFS)
  '     '       flow top width =     17.487(Ft.)
  '     '    velocity=    2.638(Ft/s)
  '     '       area =      1.529(Sq.Ft)
  '     '       Froude number =     1.572

Upstream point elevation =   258.000(Ft.)
```

```
Downstream point elevation =   233.000(Ft.)
Flow length =   342.000(Ft.)
Travel time  =    2.16 min.
Time of concentration =   12.67 min.
Depth of flow =   0.175(Ft.)
Average velocity =   2.638(Ft/s)
Total irregular channel flow =     4.033(CFS)
Irregular channel normal depth above invert elev. =   0.175(Ft.)
Average velocity of channel(s) =   2.638(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.300
Decimal fraction soil group D = 0.700
SCS curve number for soil(AMC 2)  = 82.50
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.215(In/Hr)
Max Catchment Loss (Fm) =     0.215(In/Hr)
Rainfall intensity =      1.328(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.756
Subarea runoff =      4.797(CFS) for    4.980(Ac.)
Total runoff =      6.402(CFS)       Total area =        6.38(Ac.)
Area averaged Fm value =    0.213(In/Hr)
Depth of flow =   0.208(Ft.), Average velocity =   2.961(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      206.000 to Point/Station      203.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =      8.107(CFS)
Depth of flow =   0.283(Ft.), Average velocity =   2.027(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2             50.00              0.00
       3            100.00              1.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =      8.107(CFS)
  '     '       flow top width =     28.284(Ft.)
  '     '    velocity=    2.027(Ft/s)
  '     '       area =      4.000(Sq.Ft)
  '     '       Froude number =     0.950

Upstream point elevation =   233.000(Ft.)
Downstream point elevation =   223.000(Ft.)
Flow length =   440.000(Ft.)
Travel time  =    3.62 min.
Time of concentration =   16.29 min.
Depth of flow =   0.283(Ft.)
Average velocity =   2.027(Ft/s)
Total irregular channel flow =     8.107(CFS)
Irregular channel normal depth above invert elev. =   0.283(Ft.)
Average velocity of channel(s) =   2.027(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Rainfall intensity =      1.149(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.720
Subarea runoff =      3.339(CFS) for    5.390(Ac.)
```

```
Total runoff =      9.741(CFS)        Total area =       11.77(Ac.)
Area averaged Fm value =    0.230(In/Hr)
Depth of flow =   0.303(Ft.), Average velocity =   2.122(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      206.000 to Point/Station      203.000
**** CONFLUENCE OF MINOR STREAMS ****
____________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =     11.770(Ac.)
Runoff from this stream =      9.741(CFS)
Time of concentration =   16.29 min.
Rainfall intensity =     1.149(In/Hr)
Area averaged loss rate (Fm) =    0.2298(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1      7.83     7.089     13.95    0.250      1.256
2     11.77     9.741     16.29    0.230      1.149
Qmax(1) =
          1.000 *    1.000 *     7.089) +
          1.116 *    0.857 *     9.741) + =      16.403
Qmax(2) =
          0.894 *    1.000 *     7.089) +
          1.000 *    1.000 *     9.741) + =      16.078

Total of 2 streams to confluence:
Flow rates before confluence point:
       7.089       9.741
Maximum flow rates at confluence using above data:
       16.403       16.078
Area of streams before confluence:
        7.830       11.770
Effective area values after confluence:
       17.914       19.600
Results of confluence:
Total flow rate =     16.403(CFS)
Time of concentration =    13.953 min.
Effective stream area after confluence =     17.914(Ac.)
Study area average Pervious fraction(Ap) =  1.000
Study area average soil loss rate(Fm) =    0.238(In/Hr)
Study area total (this main stream) =      19.60(Ac.)
End of computations, total study area =           19.60 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged SCS curve number (AMC 2) =  80.2
```

- 5 Year Pre-Development Rational Method – Area 'B'

```
                  Orange County Rational Hydrology Program

               (Hydrology Manual Date(s) October 1986 & November 1996)

 CIVILCADD/CIVILDESIGN  Engineering Software, (c) 1989-2012 Version 8.2
       Rational Hydrology Study, Date: 10/04/16  File Name: exb005.roc
--------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION RATIONAL METHOD - AREA 'B' - 5 YEAR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
--------------------------------------------------------------------------


Program License Serial Number 4094

--------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

--------------------------------------------------------------------------

Rational hydrology study storm event year is     5.0

Decimal fraction of study above 2000 ft., 600M  =     0.0000
English Units Used for input data


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      200.000 to Point/Station      201.000
**** INITIAL AREA EVALUATION ****
__________________________________________________________________________
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Initial subarea data:
Initial area flow distance =   221.000(Ft.)
Top (of initial area) elevation =   355.000(Ft.)
Bottom (of initial area) elevation =   306.000(Ft.)
Difference in elevation =    49.000(Ft.)
Slope =    0.22172  s(%)=      22.17
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.268 min.
Rainfall intensity =      2.401(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.806
Subarea runoff =      3.852(CFS)
Total initial stream area =        1.990(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      201.000 to Point/Station      202.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
__________________________________________________________________________
Estimated mean flow rate at midpoint of channel =      5.634(CFS)
Depth of flow =   0.188(Ft.), Average velocity =   3.173(Ft/s)
       ******* Irregular Channel Data **********
--------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2             50.00              0.00
       3            100.00              1.00
Manning's 'N' friction factor =   0.030
--------------------------------------------------------------------
Sub-Channel flow  =      5.634(CFS)
  '     '       flow top width =     18.844(Ft.)
```

```
  '     '    velocity=    3.173(Ft/s)
  '     '       area =      1.776(Sq.Ft)
  '     '       Froude number =     1.822

Upstream point elevation =   306.000(Ft.)
Downstream point elevation =   279.000(Ft.)
Flow length =   282.000(Ft.)
Travel time  =    1.48 min.
Time of concentration =    9.75 min.
Depth of flow =   0.188(Ft.)
Average velocity =   3.173(Ft/s)
Total irregular channel flow =     5.634(CFS)
Irregular channel normal depth above invert elev. =   0.188(Ft.)
Average velocity of channel(s) =   3.173(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Rainfall intensity =      2.189(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.797
Subarea runoff =      3.510(CFS) for    2.230(Ac.)
Total runoff =      7.363(CFS)       Total area =        4.22(Ac.)
Area averaged Fm value =    0.250(In/Hr)
Depth of flow =   0.208(Ft.), Average velocity =   3.393(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      202.000 to Point/Station      203.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =      9.300(CFS)
Depth of flow =   0.237(Ft.), Average velocity =   3.322(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2             50.00              0.00
       3            100.00              1.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =      9.300(CFS)
  '     '       flow top width =     23.662(Ft.)
  '     '    velocity=    3.322(Ft/s)
  '     '       area =      2.800(Sq.Ft)
  '     '       Froude number =     1.702

Upstream point elevation =   279.000(Ft.)
Downstream point elevation =   223.000(Ft.)
Flow length =   723.000(Ft.)
Travel time  =    3.63 min.
Time of concentration =   13.38 min.
Depth of flow =   0.237(Ft.)
Average velocity =   3.322(Ft/s)
Total irregular channel flow =     9.300(CFS)
Irregular channel normal depth above invert elev. =   0.237(Ft.)
Average velocity of channel(s) =   3.322(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
```

```
Max Catchment Loss (Fm) =     0.250(In/Hr)
Rainfall intensity =      1.832(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.777
Subarea runoff =      3.787(CFS) for    3.610(Ac.)
Total runoff =     11.150(CFS)       Total area =        7.83(Ac.)
Area averaged Fm value =    0.250(In/Hr)
Depth of flow =   0.253(Ft.), Average velocity =   3.476(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      202.000 to Point/Station      203.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      7.830(Ac.)
Runoff from this stream =     11.150(CFS)
Time of concentration =   13.38 min.
Rainfall intensity =     1.832(In/Hr)
Area averaged loss rate (Fm) =    0.2500(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      204.000 to Point/Station      205.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.100
Decimal fraction soil group D = 0.900
SCS curve number for soil(AMC 2)  = 83.50
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.205(In/Hr)
Max Catchment Loss (Fm) =     0.205(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   295.000(Ft.)
Bottom (of initial area) elevation =   258.000(Ft.)
Difference in elevation =    37.000(Ft.)
Slope =    0.12333  s(%)=      12.33
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   10.506 min.
Rainfall intensity =      2.099(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.812
Subarea runoff =      2.386(CFS)
Total initial stream area =        1.400(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      205.000 to Point/Station      206.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =      6.095(CFS)
Depth of flow =   0.204(Ft.), Average velocity =   2.925(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2             50.00              0.00
       3            100.00              1.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =      6.095(CFS)
  '     '       flow top width =     20.416(Ft.)
  '     '    velocity=    2.925(Ft/s)
  '     '       area =      2.084(Sq.Ft)
  '     '       Froude number =     1.613

Upstream point elevation =   258.000(Ft.)
```

```
Downstream point elevation =   233.000(Ft.)
Flow length =   342.000(Ft.)
Travel time  =    1.95 min.
Time of concentration =   12.45 min.
Depth of flow =   0.204(Ft.)
Average velocity =   2.925(Ft/s)
Total irregular channel flow =     6.095(CFS)
Irregular channel normal depth above invert elev. =   0.204(Ft.)
Average velocity of channel(s) =   2.925(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.300
Decimal fraction soil group D = 0.700
SCS curve number for soil(AMC 2)  = 82.50
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.215(In/Hr)
Max Catchment Loss (Fm) =     0.215(In/Hr)
Rainfall intensity =      1.907(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.800
Subarea runoff =      7.343(CFS) for    4.980(Ac.)
Total runoff =      9.729(CFS)       Total area =        6.38(Ac.)
Area averaged Fm value =    0.213(In/Hr)
Depth of flow =   0.243(Ft.), Average velocity =   3.287(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      206.000 to Point/Station      203.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =     12.561(CFS)
Depth of flow =   0.333(Ft.), Average velocity =   2.261(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2             50.00              0.00
       3            100.00              1.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =     12.562(CFS)
  '     '       flow top width =     33.332(Ft.)
  '     '    velocity=    2.261(Ft/s)
  '     '       area =      5.555(Sq.Ft)
  '     '       Froude number =     0.976

Upstream point elevation =   233.000(Ft.)
Downstream point elevation =   223.000(Ft.)
Flow length =   440.000(Ft.)
Travel time  =    3.24 min.
Time of concentration =   15.70 min.
Depth of flow =   0.333(Ft.)
Average velocity =   2.261(Ft/s)
Total irregular channel flow =    12.561(CFS)
Irregular channel normal depth above invert elev. =   0.333(Ft.)
Average velocity of channel(s) =   2.261(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Rainfall intensity =      1.675(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.776
Subarea runoff =      5.575(CFS) for    5.390(Ac.)
```

```
Total runoff =     15.304(CFS)        Total area =       11.77(Ac.)
Area averaged Fm value =    0.230(In/Hr)
Depth of flow =   0.359(Ft.), Average velocity =   2.376(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      206.000 to Point/Station      203.000
**** CONFLUENCE OF MINOR STREAMS ****
____________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =     11.770(Ac.)
Runoff from this stream =     15.304(CFS)
Time of concentration =   15.70 min.
Rainfall intensity =     1.675(In/Hr)
Area averaged loss rate (Fm) =    0.2298(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1      7.83    11.150     13.38    0.250      1.832
2     11.77    15.304     15.70    0.230      1.675
Qmax(1) =
          1.000 *    1.000 *    11.150) +
          1.109 *    0.852 *    15.304) + =      25.613
Qmax(2) =
          0.900 *    1.000 *    11.150) +
          1.000 *    1.000 *    15.304) + =      25.343

Total of 2 streams to confluence:
Flow rates before confluence point:
      11.150      15.304
Maximum flow rates at confluence using above data:
       25.613       25.343
Area of streams before confluence:
        7.830       11.770
Effective area values after confluence:
       17.859       19.600
Results of confluence:
Total flow rate =     25.613(CFS)
Time of concentration =    13.377 min.
Effective stream area after confluence =     17.859(Ac.)
Study area average Pervious fraction(Ap) =  1.000
Study area average soil loss rate(Fm) =    0.238(In/Hr)
Study area total (this main stream) =      19.60(Ac.)
End of computations, total study area =           19.60 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged SCS curve number (AMC 2) =  80.2
```

- 25 Year Pre-Development Rational Method – Area 'B'

```
                  Orange County Rational Hydrology Program

               (Hydrology Manual Date(s) October 1986 & November 1996)

 CIVILCADD/CIVILDESIGN  Engineering Software, (c) 1989-2012 Version 8.2
       Rational Hydrology Study, Date: 10/04/16  File Name: exb025.roc
------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION RATIONAL METHOD - AREA 'B' - 25 YEAR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------


Program License Serial Number 4094

------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

------------------------------------------------------------------------

Rational hydrology study storm event year is    25.0

Decimal fraction of study above 2000 ft., 600M  =     0.0000
English Units Used for input data


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      200.000 to Point/Station      201.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Initial subarea data:
Initial area flow distance =   221.000(Ft.)
Top (of initial area) elevation =   355.000(Ft.)
Bottom (of initial area) elevation =   306.000(Ft.)
Difference in elevation =    49.000(Ft.)
Slope =    0.22172  s(%)=      22.17
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.268 min.
Rainfall intensity =      3.629(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.838
Subarea runoff =      6.051(CFS)
Total initial stream area =        1.990(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      201.000 to Point/Station      202.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =      8.924(CFS)
Depth of flow =   0.224(Ft.), Average velocity =   3.560(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2             50.00              0.00
       3            100.00              1.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =      8.924(CFS)
  '     '       flow top width =     22.391(Ft.)
```

```
  '     '    velocity=    3.560(Ft/s)
  '     '       area =      2.507(Sq.Ft)
  '     '       Froude number =     1.875

Upstream point elevation =   306.000(Ft.)
Downstream point elevation =   279.000(Ft.)
Flow length =   282.000(Ft.)
Travel time  =    1.32 min.
Time of concentration =    9.59 min.
Depth of flow =   0.224(Ft.)
Average velocity =   3.560(Ft/s)
Total irregular channel flow =     8.924(CFS)
Irregular channel normal depth above invert elev. =   0.224(Ft.)
Average velocity of channel(s) =   3.560(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Rainfall intensity =      3.337(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.833
Subarea runoff =      5.673(CFS) for    2.230(Ac.)
Total runoff =     11.724(CFS)       Total area =        4.22(Ac.)
Area averaged Fm value =    0.250(In/Hr)
Depth of flow =   0.248(Ft.), Average velocity =   3.811(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      202.000 to Point/Station      203.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =     14.993(CFS)
Depth of flow =   0.283(Ft.), Average velocity =   3.743(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2             50.00              0.00
       3            100.00              1.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =     14.993(CFS)
  '     '       flow top width =     28.303(Ft.)
  '     '    velocity=    3.743(Ft/s)
  '     '       area =      4.005(Sq.Ft)
  '     '       Froude number =     1.753

Upstream point elevation =   279.000(Ft.)
Downstream point elevation =   223.000(Ft.)
Flow length =   723.000(Ft.)
Travel time  =    3.22 min.
Time of concentration =   12.81 min.
Depth of flow =   0.283(Ft.)
Average velocity =   3.743(Ft/s)
Total irregular channel flow =    14.993(CFS)
Irregular channel normal depth above invert elev. =   0.283(Ft.)
Average velocity of channel(s) =   3.743(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
```

```
Max Catchment Loss (Fm) =     0.250(In/Hr)
Rainfall intensity =      2.833(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.821
Subarea runoff =      6.475(CFS) for    3.610(Ac.)
Total runoff =     18.199(CFS)       Total area =        7.83(Ac.)
Area averaged Fm value =    0.250(In/Hr)
Depth of flow =   0.304(Ft.), Average velocity =   3.929(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      202.000 to Point/Station      203.000
**** CONFLUENCE OF MINOR STREAMS ****
____________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      7.830(Ac.)
Runoff from this stream =     18.199(CFS)
Time of concentration =   12.81 min.
Rainfall intensity =     2.833(In/Hr)
Area averaged loss rate (Fm) =    0.2500(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      204.000 to Point/Station      205.000
**** INITIAL AREA EVALUATION ****
____________________________________________________________________________
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.100
Decimal fraction soil group D = 0.900
SCS curve number for soil(AMC 2)  = 83.50
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.205(In/Hr)
Max Catchment Loss (Fm) =     0.205(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   295.000(Ft.)
Bottom (of initial area) elevation =   258.000(Ft.)
Difference in elevation =    37.000(Ft.)
Slope =    0.12333  s(%)=      12.33
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   10.506 min.
Rainfall intensity =      3.169(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.842
Subarea runoff =      3.734(CFS)
Total initial stream area =        1.400(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      205.000 to Point/Station      206.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
____________________________________________________________________________
Estimated mean flow rate at midpoint of channel =      9.624(CFS)
Depth of flow =   0.242(Ft.), Average velocity =   3.278(Ft/s)
       ******* Irregular Channel Data ***********
----------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1             0.00              1.00
       2            50.00              0.00
       3           100.00              1.00
Manning's 'N' friction factor =   0.030
----------------------------------------------------------------
Sub-Channel flow  =      9.624(CFS)
  '     '       flow top width =     24.230(Ft.)
  '     '    velocity=    3.279(Ft/s)
  '     '       area =      2.935(Sq.Ft)
  '     '       Froude number =     1.660

Upstream point elevation =   258.000(Ft.)
```

```
Downstream point elevation =   233.000(Ft.)
Flow length =   342.000(Ft.)
Travel time  =    1.74 min.
Time of concentration =   12.24 min.
Depth of flow =   0.242(Ft.)
Average velocity =   3.278(Ft/s)
Total irregular channel flow =     9.624(CFS)
Irregular channel normal depth above invert elev. =   0.242(Ft.)
Average velocity of channel(s) =   3.278(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.300
Decimal fraction soil group D = 0.700
SCS curve number for soil(AMC 2)  = 82.50
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.215(In/Hr)
Max Catchment Loss (Fm) =     0.215(In/Hr)
Rainfall intensity =      2.906(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.834
Subarea runoff =     11.727(CFS) for    4.980(Ac.)
Total runoff =     15.462(CFS)       Total area =        6.38(Ac.)
Area averaged Fm value =    0.213(In/Hr)
Depth of flow =   0.289(Ft.), Average velocity =   3.691(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      206.000 to Point/Station      203.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =     20.199(CFS)
Depth of flow =   0.398(Ft.), Average velocity =   2.546(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2             50.00              0.00
       3            100.00              1.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =     20.200(CFS)
  '     '       flow top width =     39.832(Ft.)
  '     '    velocity=    2.546(Ft/s)
  '     '       area =      7.933(Sq.Ft)
  '     '       Froude number =     1.006

Upstream point elevation =   233.000(Ft.)
Downstream point elevation =   223.000(Ft.)
Flow length =   440.000(Ft.)
Travel time  =    2.88 min.
Time of concentration =   15.12 min.
Depth of flow =   0.398(Ft.)
Average velocity =   2.546(Ft/s)
Total irregular channel flow =    20.199(CFS)
Irregular channel normal depth above invert elev. =   0.398(Ft.)
Average velocity of channel(s) =   2.546(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Rainfall intensity =      2.578(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.820
Subarea runoff =      9.414(CFS) for    5.390(Ac.)
```

```
Total runoff =     24.875(CFS)        Total area =       11.77(Ac.)
Area averaged Fm value =    0.230(In/Hr)
Depth of flow =   0.431(Ft.), Average velocity =   2.682(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      206.000 to Point/Station      203.000
**** CONFLUENCE OF MINOR STREAMS ****
____________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =     11.770(Ac.)
Runoff from this stream =     24.875(CFS)
Time of concentration =   15.12 min.
Rainfall intensity =     2.578(In/Hr)
Area averaged loss rate (Fm) =    0.2298(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1      7.83    18.199     12.81    0.250      2.833
2     11.77    24.875     15.12    0.230      2.578
Qmax(1) =
          1.000 *    1.000 *    18.199) +
          1.108 *    0.847 *    24.875) + =      41.546
Qmax(2) =
          0.901 *    1.000 *    18.199) +
          1.000 *    1.000 *    24.875) + =      41.281

Total of 2 streams to confluence:
Flow rates before confluence point:
      18.199      24.875
Maximum flow rates at confluence using above data:
       41.546       41.281
Area of streams before confluence:
        7.830       11.770
Effective area values after confluence:
       17.797       19.600
Results of confluence:
Total flow rate =     41.546(CFS)
Time of concentration =    12.808 min.
Effective stream area after confluence =     17.797(Ac.)
Study area average Pervious fraction(Ap) =  1.000
Study area average soil loss rate(Fm) =    0.238(In/Hr)
Study area total (this main stream) =      19.60(Ac.)
End of computations, total study area =           19.60 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged SCS curve number (AMC 2) =  80.2
```

- 100 Year Pre-Development Rational Method – Area 'B'

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                  Orange County Rational Hydrology Program

               (Hydrology Manual Date(s) October 1986 & November 1996)

 CIVILCADD/CIVILDESIGN  Engineering Software, (c) 1989-2012 Version 8.2
       Rational Hydrology Study, Date: 10/04/16  File Name: exb100.roc
------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION RATIONAL METHOD - AREA 'B' - 100 YEAR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------


Program License Serial Number 4094

------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

------------------------------------------------------------------------

Rational hydrology study storm event year is   100.0

Decimal fraction of study above 2000 ft., 600M  =     0.0000
English Units Used for input data


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      200.000 to Point/Station      201.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Initial subarea data:
Initial area flow distance =   221.000(Ft.)
Top (of initial area) elevation =   355.000(Ft.)
Bottom (of initial area) elevation =   306.000(Ft.)
Difference in elevation =    49.000(Ft.)
Slope =    0.22172  s(%)=      22.17
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.268 min.
Rainfall intensity =      4.638(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.851
Subarea runoff =      7.859(CFS)
Total initial stream area =        1.990(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      201.000 to Point/Station      202.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =     11.631(CFS)
Depth of flow =   0.247(Ft.), Average velocity =   3.804(Ft/s)
       ******* Irregular Channel Data **********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2             50.00              0.00
       3            100.00              1.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =     11.631(CFS)
  '     '       flow top width =     24.730(Ft.)
```

```
  '     '    velocity=    3.804(Ft/s)
  '     '       area =      3.058(Sq.Ft)
  '     '       Froude number =     1.906

Upstream point elevation =   306.000(Ft.)
Downstream point elevation =   279.000(Ft.)
Flow length =   282.000(Ft.)
Travel time  =    1.24 min.
Time of concentration =    9.50 min.
Depth of flow =   0.247(Ft.)
Average velocity =   3.804(Ft/s)
Total irregular channel flow =    11.631(CFS)
Irregular channel normal depth above invert elev. =   0.247(Ft.)
Average velocity of channel(s) =   3.804(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Rainfall intensity =      4.282(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.847
Subarea runoff =      7.456(CFS) for    2.230(Ac.)
Total runoff =     15.315(CFS)       Total area =        4.22(Ac.)
Area averaged Fm value =    0.250(In/Hr)
Depth of flow =   0.274(Ft.), Average velocity =   4.074(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      202.000 to Point/Station      203.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =     19.705(CFS)
Depth of flow =   0.314(Ft.), Average velocity =   4.008(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2             50.00              0.00
       3            100.00              1.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =     19.705(CFS)
  '     '       flow top width =     31.358(Ft.)
  '     '    velocity=    4.008(Ft/s)
  '     '       area =      4.917(Sq.Ft)
  '     '       Froude number =     1.784

Upstream point elevation =   279.000(Ft.)
Downstream point elevation =   223.000(Ft.)
Flow length =   723.000(Ft.)
Travel time  =    3.01 min.
Time of concentration =   12.51 min.
Depth of flow =   0.314(Ft.)
Average velocity =   4.008(Ft/s)
Total irregular channel flow =    19.705(CFS)
Irregular channel normal depth above invert elev. =   0.314(Ft.)
Average velocity of channel(s) =   4.008(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
```

```
Max Catchment Loss (Fm) =     0.250(In/Hr)
Rainfall intensity =      3.658(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.838
Subarea runoff =      8.703(CFS) for    3.610(Ac.)
Total runoff =     24.018(CFS)       Total area =        7.83(Ac.)
Area averaged Fm value =    0.250(In/Hr)
Depth of flow =   0.338(Ft.), Average velocity =   4.211(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      202.000 to Point/Station      203.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      7.830(Ac.)
Runoff from this stream =     24.018(CFS)
Time of concentration =   12.51 min.
Rainfall intensity =     3.658(In/Hr)
Area averaged loss rate (Fm) =    0.2500(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      204.000 to Point/Station      205.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.100
Decimal fraction soil group D = 0.900
SCS curve number for soil(AMC 2)  = 83.50
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.205(In/Hr)
Max Catchment Loss (Fm) =     0.205(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   295.000(Ft.)
Bottom (of initial area) elevation =   258.000(Ft.)
Difference in elevation =    37.000(Ft.)
Slope =    0.12333  s(%)=      12.33
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   10.506 min.
Rainfall intensity =      4.043(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.854
Subarea runoff =      4.836(CFS)
Total initial stream area =        1.400(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      205.000 to Point/Station      206.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =     12.527(CFS)
Depth of flow =   0.267(Ft.), Average velocity =   3.502(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1             0.00              1.00
       2            50.00              0.00
       3           100.00              1.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =     12.527(CFS)
  '     '       flow top width =     26.748(Ft.)
  '     '    velocity=    3.502(Ft/s)
  '     '       area =      3.577(Sq.Ft)
  '     '       Froude number =     1.688

Upstream point elevation =   258.000(Ft.)
```

```
Downstream point elevation =   233.000(Ft.)
Flow length =   342.000(Ft.)
Travel time  =    1.63 min.
Time of concentration =   12.13 min.
Depth of flow =   0.267(Ft.)
Average velocity =   3.502(Ft/s)
Total irregular channel flow =    12.527(CFS)
Irregular channel normal depth above invert elev. =   0.267(Ft.)
Average velocity of channel(s) =   3.502(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.300
Decimal fraction soil group D = 0.700
SCS curve number for soil(AMC 2)  = 82.50
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.215(In/Hr)
Max Catchment Loss (Fm) =     0.215(In/Hr)
Rainfall intensity =      3.723(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.849
Subarea runoff =     15.319(CFS) for    4.980(Ac.)
Total runoff =     20.155(CFS)       Total area =        6.38(Ac.)
Area averaged Fm value =    0.213(In/Hr)
Depth of flow =   0.320(Ft.), Average velocity =   3.944(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      206.000 to Point/Station      203.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =     26.478(CFS)
Depth of flow =   0.441(Ft.), Average velocity =   2.725(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2             50.00              0.00
       3            100.00              1.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =     26.478(CFS)
  '     '       flow top width =     44.087(Ft.)
  '     '    velocity=    2.725(Ft/s)
  '     '       area =      9.718(Sq.Ft)
  '     '       Froude number =     1.023

Upstream point elevation =   233.000(Ft.)
Downstream point elevation =   223.000(Ft.)
Flow length =   440.000(Ft.)
Travel time  =    2.69 min.
Time of concentration =   14.83 min.
Depth of flow =   0.441(Ft.)
Average velocity =   2.725(Ft/s)
Total irregular channel flow =    26.478(CFS)
Irregular channel normal depth above invert elev. =   0.441(Ft.)
Average velocity of channel(s) =   2.725(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Rainfall intensity =      3.319(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.838
Subarea runoff =     12.570(CFS) for    5.390(Ac.)
```

```
Total runoff =     32.725(CFS)        Total area =       11.77(Ac.)
Area averaged Fm value =    0.230(In/Hr)
Depth of flow =   0.477(Ft.), Average velocity =   2.873(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      206.000 to Point/Station      203.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =     11.770(Ac.)
Runoff from this stream =     32.725(CFS)
Time of concentration =   14.83 min.
Rainfall intensity =     3.319(In/Hr)
Area averaged loss rate (Fm) =    0.2298(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1      7.83    24.018     12.51    0.250      3.658
2     11.77    32.725     14.83    0.230      3.319
Qmax(1) =
          1.000 *    1.000 *    24.018) +
          1.110 *    0.844 *    32.725) + =      54.664
Qmax(2) =
          0.900 *    1.000 *    24.018) +
          1.000 *    1.000 *    32.725) + =      54.353

Total of 2 streams to confluence:
Flow rates before confluence point:
      24.018      32.725
Maximum flow rates at confluence using above data:
       54.664       54.353
Area of streams before confluence:
        7.830       11.770
Effective area values after confluence:
       17.762       19.600
Results of confluence:
Total flow rate =     54.664(CFS)
Time of concentration =    12.510 min.
Effective stream area after confluence =     17.762(Ac.)
Study area average Pervious fraction(Ap) =  1.000
Study area average soil loss rate(Fm) =    0.238(In/Hr)
Study area total (this main stream) =      19.60(Ac.)
End of computations, total study area =           19.60 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged SCS curve number (AMC 2) =  80.2
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- 2 Year Post-Development Rational Method – Area 'B'

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                    Orange County Rational Hydrology Program

                (Hydrology Manual Date(s) October 1986 & November 1996)

 CIVILCADD/CIVILDESIGN  Engineering Software, (c) 1989-2012 Version 8.2
       Rational Hydrology Study, Date: 10/13/16  File Name: prb002.roc
---------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION RATIONAL METHOD - AREA 'B' - 2 YEAR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
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Program License Serial Number 4094

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 *********   Hydrology Study Control Information **********

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Rational hydrology study storm event year is     2.0

Decimal fraction of study above 2000 ft., 600M  =     0.0000
English Units Used for input data


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Process from Point/Station      200.000 to Point/Station      201.000
**** INITIAL AREA EVALUATION ****
___________________________________________________________________________
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   230.000(Ft.)
Top (of initial area) elevation =   335.000(Ft.)
Bottom (of initial area) elevation =   305.200(Ft.)
Difference in elevation =    29.800(Ft.)
Slope =    0.12957  s(%)=      12.96
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.154 min.
Rainfall intensity =      2.225(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.849
Subarea runoff =      1.927(CFS)
Total initial stream area =        1.020(Ac.)


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Process from Point/Station      201.000 to Point/Station      202.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
___________________________________________________________________________
Top of street segment elevation =   305.200(Ft.)
End of street segment elevation =   282.000(Ft.)
Length of street segment  =     0.160(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
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 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      2.079(CFS)
Depth of flow =   0.057(Ft.), Average velocity = 105.624(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =   2.000(Ft.)
Flow velocity = 105.62(Ft/s)
Travel time =    0.00 min.     TC =    5.15  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      2.225(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.849
Subarea runoff =      0.302(CFS) for    0.160(Ac.)
Total runoff =      2.230(CFS)       Total area =        1.18(Ac.)
Area averaged Fm value =    0.125(In/Hr)
Street flow at end of street =      2.230(CFS)
Half street flow at end of street =      2.230(CFS)
Depth of flow =   0.059(Ft.), Average velocity = 107.494(Ft/s)
Flow width (from curb towards crown)=   2.000(Ft.)


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Process from Point/Station      201.000 to Point/Station      202.000
**** CONFLUENCE OF MINOR STREAMS ****
____________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      1.180(Ac.)
Runoff from this stream =      2.230(CFS)
Time of concentration =    5.15 min.
Rainfall intensity =     2.225(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000


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Process from Point/Station      203.000 to Point/Station      204.000
**** INITIAL AREA EVALUATION ****
____________________________________________________________________________
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.150
Decimal fraction soil group D = 0.850
SCS curve number for soil(AMC 2)  = 74.10
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.208(In/Hr)
Max Catchment Loss (Fm) =     0.104(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   302.500(Ft.)
Bottom (of initial area) elevation =   288.300(Ft.)
Difference in elevation =    14.200(Ft.)
Slope =    0.04733  s(%)=       4.73
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    7.011 min.
Rainfall intensity =      1.864(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.850
Subarea runoff =      3.074(CFS)
Total initial stream area =        1.940(Ac.)


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Process from Point/Station      204.000 to Point/Station      202.000
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**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
----------------------------------------------------------------------------
Top of street segment elevation =   288.300(Ft.)
End of street segment elevation =   282.000(Ft.)
Length of street segment  =   422.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [2] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      4.591(CFS)
Depth of flow =   0.301(Ft.), Average velocity =   2.580(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =   8.737(Ft.)
Flow velocity =   2.58(Ft/s)
Travel time =    2.73 min.     TC =    9.74  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.950
Decimal fraction soil group D = 0.050
SCS curve number for soil(AMC 2)  = 69.30
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.248(In/Hr)
Max Catchment Loss (Fm) =     0.124(In/Hr)
Rainfall intensity =      1.544(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.833
Subarea runoff =      2.854(CFS) for    2.670(Ac.)
Total runoff =      5.928(CFS)       Total area =        4.61(Ac.)
Area averaged Fm value =    0.115(In/Hr)
Street flow at end of street =      5.928(CFS)
Half street flow at end of street =      2.964(CFS)
Depth of flow =   0.322(Ft.), Average velocity =   2.732(Ft/s)
Flow width (from curb towards crown)=   9.789(Ft.)


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Process from Point/Station      204.000 to Point/Station      202.000
**** CONFLUENCE OF MINOR STREAMS ****
----------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      4.610(Ac.)
Runoff from this stream =      5.928(CFS)
Time of concentration =    9.74 min.
Rainfall intensity =     1.544(In/Hr)
Area averaged loss rate (Fm) =    0.1153(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1      1.18     2.230      5.15    0.125      2.225
2      4.61     5.928      9.74    0.115      1.544
Qmax(1) =
          1.000 *    1.000 *     2.230) +
          1.476 *    0.529 *     5.928) + =       6.862
Qmax(2) =
          0.676 *    1.000 *     2.230) +
          1.000 *    1.000 *     5.928) + =       7.435
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Total of 2 streams to confluence:
Flow rates before confluence point:
       2.230       5.928
Maximum flow rates at confluence using above data:
        6.862        7.435
Area of streams before confluence:
        1.180        4.610
Effective area values after confluence:
        3.620        5.790
Results of confluence:
Total flow rate =      7.435(CFS)
Time of concentration =     9.737 min.
Effective stream area after confluence =      5.790(Ac.)
Study area average Pervious fraction(Ap) =  0.500
Study area average soil loss rate(Fm) =    0.117(In/Hr)
Study area total (this main stream) =       5.79(Ac.)


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Process from Point/Station      202.000 to Point/Station      205.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of street segment elevation =   282.000(Ft.)
End of street segment elevation =   269.000(Ft.)
Length of street segment  =   176.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      7.636(CFS)
Depth of flow =   0.335(Ft.), Average velocity =   6.284(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  10.433(Ft.)
Flow velocity =   6.28(Ft/s)
Travel time =    0.47 min.     TC =   10.20  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      1.503(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.829
Subarea runoff =      0.345(CFS) for    0.450(Ac.)
Total runoff =      7.780(CFS)       Total area =        6.24(Ac.)
Area averaged Fm value =    0.118(In/Hr)
Street flow at end of street =      7.780(CFS)
Half street flow at end of street =      7.780(CFS)
Depth of flow =   0.337(Ft.), Average velocity =   6.311(Ft/s)
Flow width (from curb towards crown)=  10.517(Ft.)


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Process from Point/Station      205.000 to Point/Station      206.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
________________________________________________________________________
Upstream point/station elevation =   263.000(Ft.)
Downstream point/station elevation =   262.000(Ft.)
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Pipe length  =    27.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     7.780(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =     7.780(CFS)
Normal flow depth in pipe =    7.75(In.)
Flow top width inside pipe =   17.82(In.)
Critical Depth =   12.97(In.)
Pipe flow velocity =     10.69(Ft/s)
Travel time through pipe =    0.04 min.
Time of concentration (TC) =    10.25 min.


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Process from Point/Station      205.000 to Point/Station      206.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      6.240(Ac.)
Runoff from this stream =      7.780(CFS)
Time of concentration =   10.25 min.
Rainfall intensity =     1.500(In/Hr)
Area averaged loss rate (Fm) =    0.1179(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000


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Process from Point/Station      207.000 to Point/Station      208.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   356.000(Ft.)
Bottom (of initial area) elevation =   304.000(Ft.)
Difference in elevation =    52.000(Ft.)
Slope =    0.17333  s(%)=      17.33
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.408 min.
Rainfall intensity =      2.164(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.848
Subarea runoff =      2.257(CFS)
Total initial stream area =        1.230(Ac.)


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Process from Point/Station      208.000 to Point/Station      209.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------------
Top of street segment elevation =   304.000(Ft.)
End of street segment elevation =   269.000(Ft.)
Length of street segment  =   374.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
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Estimated mean flow rate at midpoint of street =      3.025(CFS)
Depth of flow =   0.255(Ft.), Average velocity =   5.648(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =   6.395(Ft.)
Flow velocity =   5.65(Ft/s)
Travel time =    1.10 min.     TC =    6.51  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      1.945(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.842
Subarea runoff =      1.478(CFS) for    1.050(Ac.)
Total runoff =      3.735(CFS)        Total area =        2.28(Ac.)
Area averaged Fm value =    0.125(In/Hr)
Street flow at end of street =      3.735(CFS)
Half street flow at end of street =      3.735(CFS)
Depth of flow =   0.269(Ft.), Average velocity =   5.890(Ft/s)
Flow width (from curb towards crown)=   7.124(Ft.)


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Process from Point/Station      209.000 to Point/Station      206.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
____________________________________________________________________________
Upstream point/station elevation =   263.000(Ft.)
Downstream point/station elevation =   262.000(Ft.)
Pipe length  =    17.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     3.735(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =     3.735(CFS)
Normal flow depth in pipe =    4.66(In.)
Flow top width inside pipe =   15.77(In.)
Critical Depth =    8.86(In.)
Pipe flow velocity =     10.30(Ft/s)
Travel time through pipe =    0.03 min.
Time of concentration (TC) =     6.54 min.


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Process from Point/Station      209.000 to Point/Station      206.000
**** CONFLUENCE OF MINOR STREAMS ****
____________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      2.280(Ac.)
Runoff from this stream =      3.735(CFS)
Time of concentration =    6.54 min.
Rainfall intensity =     1.941(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1      6.24     7.780     10.25    0.118      1.500
2      2.28     3.735      6.54    0.125      1.941
Qmax(1) =
          1.000 *    1.000 *     7.780) +
          0.757 *    1.000 *     3.735) + =      10.607
Qmax(2) =
          1.319 *    0.638 *     7.780) +
          1.000 *    1.000 *     3.735) + =      10.285
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Total of 2 streams to confluence:
Flow rates before confluence point:
       7.780       3.735
Maximum flow rates at confluence using above data:
       10.607       10.285
Area of streams before confluence:
        6.240        2.280
Effective area values after confluence:
        8.520        6.262
Results of confluence:
Total flow rate =     10.607(CFS)
Time of concentration =    10.246 min.
Effective stream area after confluence =      8.520(Ac.)
Study area average Pervious fraction(Ap) =  0.500
Study area average soil loss rate(Fm) =    0.120(In/Hr)
Study area total (this main stream) =       8.52(Ac.)


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Process from Point/Station      206.000 to Point/Station      210.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
________________________________________________________________________
Upstream point/station elevation =   262.000(Ft.)
Downstream point/station elevation =   250.000(Ft.)
Pipe length  =  1017.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    10.607(CFS)
Given pipe size =     36.00(In.)
Calculated individual pipe flow  =    10.607(CFS)
Normal flow depth in pipe =    9.31(In.)
Flow top width inside pipe =   31.52(In.)
Critical Depth =   12.38(In.)
Pipe flow velocity =      7.32(Ft/s)
Travel time through pipe =    2.32 min.
Time of concentration (TC) =    12.56 min.


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Process from Point/Station      206.000 to Point/Station      210.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      8.520(Ac.)
Runoff from this stream =     10.607(CFS)
Time of concentration =   12.56 min.
Rainfall intensity =     1.334(In/Hr)
Area averaged loss rate (Fm) =    0.1198(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000


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Process from Point/Station      209.000 to Point/Station      211.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   269.000(Ft.)
Bottom (of initial area) elevation =   263.000(Ft.)
Difference in elevation =     6.000(Ft.)
Slope =    0.02000  s(%)=       2.00
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.329 min.
Rainfall intensity =      1.689(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.833
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Subarea runoff =      1.422(CFS)
Total initial stream area =        1.010(Ac.)


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Process from Point/Station      211.000 to Point/Station      212.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of street segment elevation =   263.000(Ft.)
End of street segment elevation =   261.000(Ft.)
Length of street segment  =   313.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      1.756(CFS)
Depth of flow =   0.314(Ft.), Average velocity =   1.747(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =   9.371(Ft.)
Flow velocity =   1.75(Ft/s)
Travel time =    2.99 min.     TC =   11.31  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      1.417(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.821
Subarea runoff =      0.613(CFS) for    0.740(Ac.)
Total runoff =      2.034(CFS)       Total area =        1.75(Ac.)
Area averaged Fm value =    0.125(In/Hr)
Street flow at end of street =      2.034(CFS)
Half street flow at end of street =      2.034(CFS)
Depth of flow =   0.327(Ft.), Average velocity =   1.807(Ft/s)
Flow width (from curb towards crown)=   9.996(Ft.)


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Process from Point/Station      212.000 to Point/Station      213.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of street segment elevation =   261.000(Ft.)
End of street segment elevation =   256.000(Ft.)
Length of street segment  =   458.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
```

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Estimated mean flow rate at midpoint of street =      2.629(CFS)
Depth of flow =   0.335(Ft.), Average velocity =   2.161(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  10.439(Ft.)
Flow velocity =   2.16(Ft/s)
Travel time =    3.53 min.     TC =   14.85  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.400
Decimal fraction soil group D = 0.600
SCS curve number for soil(AMC 2)  = 72.60
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.220(In/Hr)
Max Catchment Loss (Fm) =     0.110(In/Hr)
Rainfall intensity =      1.212(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.812
Subarea runoff =      1.116(CFS) for    1.450(Ac.)
Total runoff =      3.150(CFS)       Total area =        3.20(Ac.)
Area averaged Fm value =    0.118(In/Hr)
Street flow at end of street =      3.150(CFS)
Half street flow at end of street =      3.150(CFS)
Depth of flow =   0.352(Ft.), Average velocity =   2.254(Ft/s)
Flow width (from curb towards crown)=  11.274(Ft.)


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Process from Point/Station      213.000 to Point/Station      210.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   251.000(Ft.)
Downstream point/station elevation =   250.000(Ft.)
Pipe length  =    10.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     3.150(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =     3.150(CFS)
Normal flow depth in pipe =    3.74(In.)
Flow top width inside pipe =   14.61(In.)
Critical Depth =    8.11(In.)
Pipe flow velocity =     11.83(Ft/s)
Travel time through pipe =    0.01 min.
Time of concentration (TC) =    14.86 min.


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Process from Point/Station      213.000 to Point/Station      210.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      3.200(Ac.)
Runoff from this stream =      3.150(CFS)
Time of concentration =   14.86 min.
Rainfall intensity =     1.211(In/Hr)
Area averaged loss rate (Fm) =    0.1182(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000


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Process from Point/Station      205.000 to Point/Station      214.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
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Initial area flow distance =   205.000(Ft.)
Top (of initial area) elevation =   269.000(Ft.)
Bottom (of initial area) elevation =   263.000(Ft.)
Difference in elevation =     6.000(Ft.)
Slope =    0.02927  s(%)=       2.93
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.628 min.
Rainfall intensity =      1.926(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.842
Subarea runoff =      0.600(CFS)
Total initial stream area =        0.370(Ac.)


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Process from Point/Station      214.000 to Point/Station      215.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
______________________________________________________________________________
Top of street segment elevation =   263.000(Ft.)
End of street segment elevation =   261.000(Ft.)
Length of street segment  =   303.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      1.179(CFS)
Depth of flow =   0.282(Ft.), Average velocity =   1.622(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =   7.749(Ft.)
Flow velocity =   1.62(Ft/s)
Travel time =    3.11 min.     TC =    9.74  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      1.544(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.827
Subarea runoff =      1.099(CFS) for    0.960(Ac.)
Total runoff =      1.698(CFS)       Total area =        1.33(Ac.)
Area averaged Fm value =    0.125(In/Hr)
Street flow at end of street =      1.698(CFS)
Half street flow at end of street =      1.698(CFS)
Depth of flow =   0.310(Ft.), Average velocity =   1.756(Ft/s)
Flow width (from curb towards crown)=   9.166(Ft.)


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Process from Point/Station      215.000 to Point/Station      216.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
______________________________________________________________________________
Top of street segment elevation =   261.000(Ft.)
End of street segment elevation =   256.000(Ft.)
Length of street segment  =   459.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
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Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      3.136(CFS)
Depth of flow =   0.341(Ft.), Average velocity =   2.451(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  10.737(Ft.)
Flow velocity =   2.45(Ft/s)
Travel time =    3.12 min.     TC =   12.86  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.400
Decimal fraction soil group D = 0.600
SCS curve number for soil(AMC 2)  = 72.60
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.220(In/Hr)
Max Catchment Loss (Fm) =     0.110(In/Hr)
Rainfall intensity =      1.316(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.822
Subarea runoff =      2.821(CFS) for    2.850(Ac.)
Total runoff =      4.519(CFS)       Total area =        4.18(Ac.)
Area averaged Fm value =    0.115(In/Hr)
Street flow at end of street =      4.519(CFS)
Half street flow at end of street =      4.519(CFS)
Depth of flow =   0.377(Ft.), Average velocity =   2.670(Ft/s)
Flow width (from curb towards crown)=  12.514(Ft.)


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Process from Point/Station      216.000 to Point/Station      210.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
____________________________________________________________________________
Upstream point/station elevation =   251.000(Ft.)
Downstream point/station elevation =   250.000(Ft.)
Pipe length  =    31.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     4.519(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =     4.519(CFS)
Normal flow depth in pipe =    6.00(In.)
Flow top width inside pipe =   16.97(In.)
Critical Depth =    9.80(In.)
Pipe flow velocity =      8.77(Ft/s)
Travel time through pipe =    0.06 min.
Time of concentration (TC) =    12.92 min.


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Process from Point/Station      216.000 to Point/Station      210.000
**** CONFLUENCE OF MINOR STREAMS ****
____________________________________________________________________________
Along Main Stream number: 1 in normal stream number 3
Stream flow area =      4.180(Ac.)
Runoff from this stream =      4.519(CFS)
Time of concentration =   12.92 min.
Rainfall intensity =     1.313(In/Hr)
Area averaged loss rate (Fm) =    0.1148(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)
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1      8.52    10.607     12.56    0.120      1.334
2      3.20     3.150     14.86    0.118      1.211
3      4.18     4.519     12.92    0.115      1.313
Qmax(1) =
          1.000 *    1.000 *    10.607) +
          1.112 *    0.845 *     3.150) +
          1.018 *    0.972 *     4.519) + =      18.041
Qmax(2) =
          0.899 *    1.000 *    10.607) +
          1.000 *    1.000 *     3.150) +
          0.916 *    1.000 *     4.519) + =      16.824
Qmax(3) =
          0.982 *    1.000 *    10.607) +
          1.093 *    0.870 *     3.150) +
          1.000 *    1.000 *     4.519) + =      17.932

Total of 3 streams to confluence:
Flow rates before confluence point:
      10.607       3.150       4.519
Maximum flow rates at confluence using above data:
       18.041       16.824       17.932
Area of streams before confluence:
        8.520        3.200        4.180
Effective area values after confluence:
       15.289       15.900       15.483
Results of confluence:
Total flow rate =     18.041(CFS)
Time of concentration =    12.562 min.
Effective stream area after confluence =     15.289(Ac.)
Study area average Pervious fraction(Ap) =  0.500
Study area average soil loss rate(Fm) =    0.118(In/Hr)
Study area total (this main stream) =      15.90(Ac.)


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Process from Point/Station      210.000 to Point/Station      217.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
________________________________________________________________________
Upstream point/station elevation =   250.000(Ft.)
Downstream point/station elevation =   214.000(Ft.)
Pipe length  =   878.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    18.041(CFS)
Given pipe size =     36.00(In.)
Calculated individual pipe flow  =    18.041(CFS)
Normal flow depth in pipe =    8.89(In.)
Flow top width inside pipe =   31.04(In.)
Critical Depth =   16.31(In.)
Pipe flow velocity =     13.29(Ft/s)
Travel time through pipe =    1.10 min.
Time of concentration (TC) =    13.66 min.


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Process from Point/Station      210.000 to Point/Station      217.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =     15.289(Ac.)
Runoff from this stream =     18.041(CFS)
Time of concentration =   13.66 min.
Rainfall intensity =     1.271(In/Hr)
Area averaged loss rate (Fm) =    0.1181(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000


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Process from Point/Station      508.000 to Point/Station      218.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
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Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
SCS curve number for soil(AMC 2)  = 75.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.200(In/Hr)
Max Catchment Loss (Fm) =     0.100(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   255.000(Ft.)
Bottom (of initial area) elevation =   237.000(Ft.)
Difference in elevation =    18.000(Ft.)
Slope =    0.06000  s(%)=       6.00
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.686 min.
Rainfall intensity =      1.916(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.853
Subarea runoff =      0.637(CFS)
Total initial stream area =        0.390(Ac.)


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Process from Point/Station      218.000 to Point/Station      219.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of street segment elevation =   237.000(Ft.)
End of street segment elevation =   223.000(Ft.)
Length of street segment  =   494.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      2.491(CFS)
Depth of flow =   0.283(Ft.), Average velocity =   3.374(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =   7.819(Ft.)
Flow velocity =   3.37(Ft/s)
Travel time =    2.44 min.     TC =    9.13  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      1.603(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.832
Subarea runoff =      3.640(CFS) for    2.820(Ac.)
Total runoff =      4.278(CFS)       Total area =        3.21(Ac.)
Area averaged Fm value =    0.122(In/Hr)
Street flow at end of street =      4.278(CFS)
Half street flow at end of street =      4.278(CFS)
Depth of flow =   0.326(Ft.), Average velocity =   3.804(Ft/s)
Flow width (from curb towards crown)=   9.989(Ft.)


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Process from Point/Station      219.000 to Point/Station      217.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
________________________________________________________________________
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Upstream point/station elevation =   215.000(Ft.)
Downstream point/station elevation =   214.000(Ft.)
Pipe length  =    22.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     4.278(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =     4.278(CFS)
Normal flow depth in pipe =    5.33(In.)
Flow top width inside pipe =   16.44(In.)
Critical Depth =    9.52(In.)
Pipe flow velocity =      9.77(Ft/s)
Travel time through pipe =    0.04 min.
Time of concentration (TC) =     9.16 min.


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Process from Point/Station      219.000 to Point/Station      217.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      3.210(Ac.)
Runoff from this stream =      4.278(CFS)
Time of concentration =    9.16 min.
Rainfall intensity =     1.599(In/Hr)
Area averaged loss rate (Fm) =    0.1220(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000


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Process from Point/Station      503.000 to Point/Station      220.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
SCS curve number for soil(AMC 2)  = 75.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.200(In/Hr)
Max Catchment Loss (Fm) =     0.100(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   256.000(Ft.)
Bottom (of initial area) elevation =   237.000(Ft.)
Difference in elevation =    19.000(Ft.)
Slope =    0.06333  s(%)=       6.33
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.614 min.
Rainfall intensity =      1.928(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.853
Subarea runoff =      0.345(CFS)
Total initial stream area =        0.210(Ac.)


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Process from Point/Station      220.000 to Point/Station      221.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------------
Top of street segment elevation =   237.000(Ft.)
End of street segment elevation =   223.000(Ft.)
Length of street segment  =   472.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
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 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      0.580(CFS)
Depth of flow =   0.182(Ft.), Average velocity =   2.866(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =   2.751(Ft.)
Flow velocity =   2.87(Ft/s)
Travel time =    2.75 min.     TC =    9.36  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.950
Decimal fraction soil group D = 0.050
SCS curve number for soil(AMC 2)  = 69.30
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.248(In/Hr)
Max Catchment Loss (Fm) =     0.124(In/Hr)
Rainfall intensity =      1.580(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.835
Subarea runoff =      0.380(CFS) for    0.340(Ac.)
Total runoff =      0.725(CFS)       Total area =        0.55(Ac.)
Area averaged Fm value =    0.115(In/Hr)
Street flow at end of street =      0.725(CFS)
Half street flow at end of street =      0.725(CFS)
Depth of flow =   0.199(Ft.), Average velocity =   2.824(Ft/s)
Flow width (from curb towards crown)=   3.607(Ft.)


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Process from Point/Station      221.000 to Point/Station      217.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
____________________________________________________________________________
Upstream point/station elevation =   215.000(Ft.)
Downstream point/station elevation =   214.000(Ft.)
Pipe length  =    33.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     0.725(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =     0.725(CFS)
Normal flow depth in pipe =    2.45(In.)
Flow top width inside pipe =   12.34(In.)
Critical Depth =    3.78(In.)
Pipe flow velocity =      5.03(Ft/s)
Travel time through pipe =    0.11 min.
Time of concentration (TC) =     9.47 min.


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Process from Point/Station      221.000 to Point/Station      217.000
**** CONFLUENCE OF MINOR STREAMS ****
____________________________________________________________________________
Along Main Stream number: 1 in normal stream number 3
Stream flow area =      0.550(Ac.)
Runoff from this stream =      0.725(CFS)
Time of concentration =    9.47 min.
Rainfall intensity =     1.569(In/Hr)
Area averaged loss rate (Fm) =    0.1147(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1     15.29    18.041     13.66    0.118      1.271
2      3.21     4.278      9.16    0.122      1.599
3      0.55     0.725      9.47    0.115      1.569
Qmax(1) =
          1.000 *    1.000 *    18.041) +
          0.778 *    1.000 *     4.278) +
          0.795 *    1.000 *     0.725) + =      21.947
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Qmax(2) =
          1.284 *    0.671 *    18.041) +
          1.000 *    1.000 *     4.278) +
          1.020 *    0.968 *     0.725) + =      20.532
Qmax(3) =
          1.258 *    0.693 *    18.041) +
          0.980 *    1.000 *     4.278) +
          1.000 *    1.000 *     0.725) + =      20.649

Total of 3 streams to confluence:
Flow rates before confluence point:
      18.041       4.278       0.725
Maximum flow rates at confluence using above data:
       21.947       20.532       20.649
Area of streams before confluence:
       15.289        3.210        0.550
Effective area values after confluence:
       19.049       13.996       14.355
Results of confluence:
Total flow rate =     21.947(CFS)
Time of concentration =    13.663 min.
Effective stream area after confluence =     19.049(Ac.)
Study area average Pervious fraction(Ap) =  0.500
Study area average soil loss rate(Fm) =    0.119(In/Hr)
Study area total (this main stream) =      19.05(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      217.000 to Point/Station      222.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
________________________________________________________________________
Upstream point/station elevation =   214.000(Ft.)
Downstream point/station elevation =   212.000(Ft.)
Pipe length  =    52.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    21.947(CFS)
Given pipe size =     36.00(In.)
Calculated individual pipe flow  =    21.947(CFS)
Normal flow depth in pipe =    9.98(In.)
Flow top width inside pipe =   32.22(In.)
Critical Depth =   18.08(In.)
Pipe flow velocity =     13.74(Ft/s)
Travel time through pipe =    0.06 min.
Time of concentration (TC) =    13.73 min.
End of computations, total study area =           19.66 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.500
Area averaged SCS curve number (AMC 2) =  70.5
```

- 5 Year Post-Development Rational Method – Area 'B'

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                    Orange County Rational Hydrology Program

                (Hydrology Manual Date(s) October 1986 & November 1996)

 CIVILCADD/CIVILDESIGN  Engineering Software, (c) 1989-2012 Version 8.2
       Rational Hydrology Study, Date: 10/13/16  File Name: prb005.roc
---------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION RATIONAL METHOD - AREA 'B' - 5 YEAR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
---------------------------------------------------------------------------


Program License Serial Number 4094

---------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

---------------------------------------------------------------------------

Rational hydrology study storm event year is     5.0

Decimal fraction of study above 2000 ft., 600M  =     0.0000
English Units Used for input data


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      200.000 to Point/Station      201.000
**** INITIAL AREA EVALUATION ****
___________________________________________________________________________
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   230.000(Ft.)
Top (of initial area) elevation =   335.000(Ft.)
Bottom (of initial area) elevation =   305.200(Ft.)
Difference in elevation =    29.800(Ft.)
Slope =    0.12957  s(%)=      12.96
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.154 min.
Rainfall intensity =      3.131(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.864
Subarea runoff =      2.760(CFS)
Total initial stream area =        1.020(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      201.000 to Point/Station      202.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
___________________________________________________________________________
Top of street segment elevation =   305.200(Ft.)
End of street segment elevation =   282.000(Ft.)
Length of street segment  =     0.160(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
```

```
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      2.976(CFS)
Depth of flow =   0.066(Ft.), Average velocity = 115.544(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =   2.000(Ft.)
Flow velocity = 115.54(Ft/s)
Travel time =    0.00 min.     TC =    5.15  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      3.131(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.864
Subarea runoff =      0.433(CFS) for    0.160(Ac.)
Total runoff =      3.193(CFS)       Total area =        1.18(Ac.)
Area averaged Fm value =    0.125(In/Hr)
Street flow at end of street =      3.193(CFS)
Half street flow at end of street =      3.193(CFS)
Depth of flow =   0.067(Ft.), Average velocity = 117.592(Ft/s)
Flow width (from curb towards crown)=   2.000(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      201.000 to Point/Station      202.000
**** CONFLUENCE OF MINOR STREAMS ****
____________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      1.180(Ac.)
Runoff from this stream =      3.193(CFS)
Time of concentration =    5.15 min.
Rainfall intensity =     3.131(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      203.000 to Point/Station      204.000
**** INITIAL AREA EVALUATION ****
____________________________________________________________________________
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.150
Decimal fraction soil group D = 0.850
SCS curve number for soil(AMC 2)  = 74.10
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.208(In/Hr)
Max Catchment Loss (Fm) =     0.104(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   302.500(Ft.)
Bottom (of initial area) elevation =   288.300(Ft.)
Difference in elevation =    14.200(Ft.)
Slope =    0.04733  s(%)=       4.73
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    7.011 min.
Rainfall intensity =      2.634(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.865
Subarea runoff =      4.418(CFS)
Total initial stream area =        1.940(Ac.)


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Process from Point/Station      204.000 to Point/Station      202.000
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**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
----------------------------------------------------------------------------
Top of street segment elevation =   288.300(Ft.)
End of street segment elevation =   282.000(Ft.)
Length of street segment  =   422.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [2] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      6.631(CFS)
Depth of flow =   0.332(Ft.), Average velocity =   2.802(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  10.278(Ft.)
Flow velocity =   2.80(Ft/s)
Travel time =    2.51 min.     TC =    9.52  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.950
Decimal fraction soil group D = 0.050
SCS curve number for soil(AMC 2)  = 69.30
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.248(In/Hr)
Max Catchment Loss (Fm) =     0.124(In/Hr)
Rainfall intensity =      2.218(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.853
Subarea runoff =      4.306(CFS) for    2.670(Ac.)
Total runoff =      8.724(CFS)       Total area =        4.61(Ac.)
Area averaged Fm value =    0.115(In/Hr)
Street flow at end of street =      8.724(CFS)
Half street flow at end of street =      4.362(CFS)
Depth of flow =   0.358(Ft.), Average velocity =   2.987(Ft/s)
Flow width (from curb towards crown)=  11.549(Ft.)


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Process from Point/Station      204.000 to Point/Station      202.000
**** CONFLUENCE OF MINOR STREAMS ****
----------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      4.610(Ac.)
Runoff from this stream =      8.724(CFS)
Time of concentration =    9.52 min.
Rainfall intensity =     2.218(In/Hr)
Area averaged loss rate (Fm) =    0.1153(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1      1.18     3.193      5.15    0.125      3.131
2      4.61     8.724      9.52    0.115      2.218
Qmax(1) =
          1.000 *    1.000 *     3.193) +
          1.434 *    0.541 *     8.724) + =       9.967
Qmax(2) =
          0.696 *    1.000 *     3.193) +
          1.000 *    1.000 *     8.724) + =      10.947
```

```
Total of 2 streams to confluence:
Flow rates before confluence point:
       3.193       8.724
Maximum flow rates at confluence using above data:
        9.967       10.947
Area of streams before confluence:
        1.180        4.610
Effective area values after confluence:
        3.676        5.790
Results of confluence:
Total flow rate =     10.947(CFS)
Time of concentration =     9.520 min.
Effective stream area after confluence =      5.790(Ac.)
Study area average Pervious fraction(Ap) =  0.500
Study area average soil loss rate(Fm) =    0.117(In/Hr)
Study area total (this main stream) =       5.79(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      202.000 to Point/Station      205.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of street segment elevation =   282.000(Ft.)
End of street segment elevation =   269.000(Ft.)
Length of street segment  =   176.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =     11.258(CFS)
Depth of flow =   0.372(Ft.), Average velocity =   6.880(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  12.287(Ft.)
Flow velocity =   6.88(Ft/s)
Travel time =    0.43 min.     TC =    9.95  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      2.164(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.851
Subarea runoff =      0.545(CFS) for    0.450(Ac.)
Total runoff =     11.492(CFS)       Total area =        6.24(Ac.)
Area averaged Fm value =    0.118(In/Hr)
Street flow at end of street =     11.492(CFS)
Half street flow at end of street =     11.492(CFS)
Depth of flow =   0.375(Ft.), Average velocity =   6.913(Ft/s)
Flow width (from curb towards crown)=  12.392(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      205.000 to Point/Station      206.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
________________________________________________________________________
Upstream point/station elevation =   263.000(Ft.)
Downstream point/station elevation =   262.000(Ft.)
```

```
Pipe length  =    27.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    11.492(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =    11.492(CFS)
Normal flow depth in pipe =    9.72(In.)
Flow top width inside pipe =   17.94(In.)
Critical Depth =   15.51(In.)
Pipe flow velocity =     11.81(Ft/s)
Travel time through pipe =    0.04 min.
Time of concentration (TC) =     9.98 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      205.000 to Point/Station      206.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      6.240(Ac.)
Runoff from this stream =     11.492(CFS)
Time of concentration =    9.98 min.
Rainfall intensity =     2.159(In/Hr)
Area averaged loss rate (Fm) =    0.1179(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      207.000 to Point/Station      208.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   356.000(Ft.)
Bottom (of initial area) elevation =   304.000(Ft.)
Difference in elevation =    52.000(Ft.)
Slope =    0.17333  s(%)=      17.33
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.408 min.
Rainfall intensity =      3.048(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.863
Subarea runoff =      3.236(CFS)
Total initial stream area =        1.230(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      208.000 to Point/Station      209.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------------
Top of street segment elevation =   304.000(Ft.)
End of street segment elevation =   269.000(Ft.)
Length of street segment  =   374.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
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Estimated mean flow rate at midpoint of street =      4.364(CFS)
Depth of flow =   0.280(Ft.), Average velocity =   6.084(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =   7.685(Ft.)
Flow velocity =   6.08(Ft/s)
Travel time =    1.02 min.     TC =    6.43  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      2.765(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.859
Subarea runoff =      2.181(CFS) for    1.050(Ac.)
Total runoff =      5.417(CFS)       Total area =        2.28(Ac.)
Area averaged Fm value =    0.125(In/Hr)
Street flow at end of street =      5.417(CFS)
Half street flow at end of street =      5.417(CFS)
Depth of flow =   0.297(Ft.), Average velocity =   6.375(Ft/s)
Flow width (from curb towards crown)=   8.503(Ft.)


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Process from Point/Station      209.000 to Point/Station      206.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   263.000(Ft.)
Downstream point/station elevation =   262.000(Ft.)
Pipe length  =    17.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     5.417(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =     5.417(CFS)
Normal flow depth in pipe =    5.64(In.)
Flow top width inside pipe =   16.69(In.)
Critical Depth =   10.76(In.)
Pipe flow velocity =     11.45(Ft/s)
Travel time through pipe =    0.02 min.
Time of concentration (TC) =     6.46 min.


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Process from Point/Station      209.000 to Point/Station      206.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      2.280(Ac.)
Runoff from this stream =      5.417(CFS)
Time of concentration =    6.46 min.
Rainfall intensity =     2.759(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1      6.24    11.492      9.98    0.118      2.159
2      2.28     5.417      6.46    0.125      2.759
Qmax(1) =
          1.000 *    1.000 *    11.492) +
          0.772 *    1.000 *     5.417) + =      15.676
Qmax(2) =
          1.294 *    0.647 *    11.492) +
          1.000 *    1.000 *     5.417) + =      15.030
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```
Total of 2 streams to confluence:
Flow rates before confluence point:
      11.492       5.417
Maximum flow rates at confluence using above data:
       15.676       15.030
Area of streams before confluence:
        6.240        2.280
Effective area values after confluence:
        8.520        6.315
Results of confluence:
Total flow rate =     15.676(CFS)
Time of concentration =     9.985 min.
Effective stream area after confluence =      8.520(Ac.)
Study area average Pervious fraction(Ap) =  0.500
Study area average soil loss rate(Fm) =    0.120(In/Hr)
Study area total (this main stream) =       8.52(Ac.)


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Process from Point/Station      206.000 to Point/Station      210.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
________________________________________________________________________
Upstream point/station elevation =   262.000(Ft.)
Downstream point/station elevation =   250.000(Ft.)
Pipe length  =  1017.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    15.676(CFS)
Given pipe size =     36.00(In.)
Calculated individual pipe flow  =    15.676(CFS)
Normal flow depth in pipe =   11.37(In.)
Flow top width inside pipe =   33.47(In.)
Critical Depth =   15.16(In.)
Pipe flow velocity =      8.18(Ft/s)
Travel time through pipe =    2.07 min.
Time of concentration (TC) =    12.06 min.


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Process from Point/Station      206.000 to Point/Station      210.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      8.520(Ac.)
Runoff from this stream =     15.676(CFS)
Time of concentration =   12.06 min.
Rainfall intensity =     1.942(In/Hr)
Area averaged loss rate (Fm) =    0.1198(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000


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Process from Point/Station      209.000 to Point/Station      211.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   269.000(Ft.)
Bottom (of initial area) elevation =   263.000(Ft.)
Difference in elevation =     6.000(Ft.)
Slope =    0.02000  s(%)=       2.00
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.329 min.
Rainfall intensity =      2.391(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.853
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Subarea runoff =      2.060(CFS)
Total initial stream area =        1.010(Ac.)


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Process from Point/Station      211.000 to Point/Station      212.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of street segment elevation =   263.000(Ft.)
End of street segment elevation =   261.000(Ft.)
Length of street segment  =   313.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      2.573(CFS)
Depth of flow =   0.348(Ft.), Average velocity =   1.907(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  11.056(Ft.)
Flow velocity =   1.91(Ft/s)
Travel time =    2.74 min.     TC =   11.06  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      2.038(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.845
Subarea runoff =      0.954(CFS) for    0.740(Ac.)
Total runoff =      3.014(CFS)       Total area =        1.75(Ac.)
Area averaged Fm value =    0.125(In/Hr)
Street flow at end of street =      3.014(CFS)
Half street flow at end of street =      3.014(CFS)
Depth of flow =   0.363(Ft.), Average velocity =   1.979(Ft/s)
Flow width (from curb towards crown)=  11.815(Ft.)


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Process from Point/Station      212.000 to Point/Station      213.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of street segment elevation =   261.000(Ft.)
End of street segment elevation =   256.000(Ft.)
Length of street segment  =   458.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
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Estimated mean flow rate at midpoint of street =      3.930(CFS)
Depth of flow =   0.374(Ft.), Average velocity =   2.374(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  12.363(Ft.)
Flow velocity =   2.37(Ft/s)
Travel time =    3.22 min.     TC =   14.28  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.400
Decimal fraction soil group D = 0.600
SCS curve number for soil(AMC 2)  = 72.60
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.220(In/Hr)
Max Catchment Loss (Fm) =     0.110(In/Hr)
Rainfall intensity =      1.766(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.840
Subarea runoff =      1.732(CFS) for    1.450(Ac.)
Total runoff =      4.746(CFS)       Total area =        3.20(Ac.)
Area averaged Fm value =    0.118(In/Hr)
Street flow at end of street =      4.746(CFS)
Half street flow at end of street =      4.746(CFS)
Depth of flow =   0.394(Ft.), Average velocity =   2.483(Ft/s)
Flow width (from curb towards crown)=  13.360(Ft.)


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Process from Point/Station      213.000 to Point/Station      210.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   251.000(Ft.)
Downstream point/station elevation =   250.000(Ft.)
Pipe length  =    10.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     4.746(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =     4.746(CFS)
Normal flow depth in pipe =    4.60(In.)
Flow top width inside pipe =   15.70(In.)
Critical Depth =   10.05(In.)
Pipe flow velocity =     13.33(Ft/s)
Travel time through pipe =    0.01 min.
Time of concentration (TC) =    14.29 min.


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Process from Point/Station      213.000 to Point/Station      210.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      3.200(Ac.)
Runoff from this stream =      4.746(CFS)
Time of concentration =   14.29 min.
Rainfall intensity =     1.765(In/Hr)
Area averaged loss rate (Fm) =    0.1182(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000


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Process from Point/Station      205.000 to Point/Station      214.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
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Initial area flow distance =   205.000(Ft.)
Top (of initial area) elevation =   269.000(Ft.)
Bottom (of initial area) elevation =   263.000(Ft.)
Difference in elevation =     6.000(Ft.)
Slope =    0.02927  s(%)=       2.93
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.628 min.
Rainfall intensity =      2.719(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.859
Subarea runoff =      0.864(CFS)
Total initial stream area =        0.370(Ac.)


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Process from Point/Station      214.000 to Point/Station      215.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of street segment elevation =   263.000(Ft.)
End of street segment elevation =   261.000(Ft.)
Length of street segment  =   303.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      1.726(CFS)
Depth of flow =   0.311(Ft.), Average velocity =   1.763(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =   9.233(Ft.)
Flow velocity =   1.76(Ft/s)
Travel time =    2.86 min.     TC =    9.49  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      2.222(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.849
Subarea runoff =      1.646(CFS) for    0.960(Ac.)
Total runoff =      2.510(CFS)       Total area =        1.33(Ac.)
Area averaged Fm value =    0.125(In/Hr)
Street flow at end of street =      2.510(CFS)
Half street flow at end of street =      2.510(CFS)
Depth of flow =   0.344(Ft.), Average velocity =   1.920(Ft/s)
Flow width (from curb towards crown)=  10.865(Ft.)


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Process from Point/Station      215.000 to Point/Station      216.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of street segment elevation =   261.000(Ft.)
End of street segment elevation =   256.000(Ft.)
Length of street segment  =   459.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
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Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      4.683(CFS)
Depth of flow =   0.381(Ft.), Average velocity =   2.693(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  12.699(Ft.)
Flow velocity =   2.69(Ft/s)
Travel time =    2.84 min.     TC =   12.33  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.400
Decimal fraction soil group D = 0.600
SCS curve number for soil(AMC 2)  = 72.60
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.220(In/Hr)
Max Catchment Loss (Fm) =     0.110(In/Hr)
Rainfall intensity =      1.918(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.846
Subarea runoff =      4.273(CFS) for    2.850(Ac.)
Total runoff =      6.783(CFS)       Total area =        4.18(Ac.)
Area averaged Fm value =    0.115(In/Hr)
Street flow at end of street =      6.783(CFS)
Half street flow at end of street =      6.783(CFS)
Depth of flow =   0.422(Ft.), Average velocity =   2.942(Ft/s)
Flow width (from curb towards crown)=  14.761(Ft.)


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Process from Point/Station      216.000 to Point/Station      210.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
____________________________________________________________________________
Upstream point/station elevation =   251.000(Ft.)
Downstream point/station elevation =   250.000(Ft.)
Pipe length  =    31.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     6.783(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =     6.783(CFS)
Normal flow depth in pipe =    7.46(In.)
Flow top width inside pipe =   17.73(In.)
Critical Depth =   12.09(In.)
Pipe flow velocity =      9.80(Ft/s)
Travel time through pipe =    0.05 min.
Time of concentration (TC) =    12.39 min.


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Process from Point/Station      216.000 to Point/Station      210.000
**** CONFLUENCE OF MINOR STREAMS ****
____________________________________________________________________________
Along Main Stream number: 1 in normal stream number 3
Stream flow area =      4.180(Ac.)
Runoff from this stream =      6.783(CFS)
Time of concentration =   12.39 min.
Rainfall intensity =     1.913(In/Hr)
Area averaged loss rate (Fm) =    0.1148(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)
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1      8.52    15.676     12.06    0.120      1.942
2      3.20     4.746     14.29    0.118      1.765
3      4.18     6.783     12.39    0.115      1.913
Qmax(1) =
          1.000 *    1.000 *    15.676) +
          1.108 *    0.844 *     4.746) +
          1.016 *    0.973 *     6.783) + =      26.819
Qmax(2) =
          0.903 *    1.000 *    15.676) +
          1.000 *    1.000 *     4.746) +
          0.918 *    1.000 *     6.783) + =      25.124
Qmax(3) =
          0.984 *    1.000 *    15.676) +
          1.090 *    0.867 *     4.746) +
          1.000 *    1.000 *     6.783) + =      26.689

Total of 3 streams to confluence:
Flow rates before confluence point:
      15.676       4.746       6.783
Maximum flow rates at confluence using above data:
       26.819       25.124       26.689
Area of streams before confluence:
        8.520        3.200        4.180
Effective area values after confluence:
       15.288       15.900       15.473
Results of confluence:
Total flow rate =     26.819(CFS)
Time of concentration =    12.056 min.
Effective stream area after confluence =     15.288(Ac.)
Study area average Pervious fraction(Ap) =  0.500
Study area average soil loss rate(Fm) =    0.118(In/Hr)
Study area total (this main stream) =      15.90(Ac.)


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Process from Point/Station      210.000 to Point/Station      217.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
________________________________________________________________________
Upstream point/station elevation =   250.000(Ft.)
Downstream point/station elevation =   214.000(Ft.)
Pipe length  =   878.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    26.819(CFS)
Given pipe size =     36.00(In.)
Calculated individual pipe flow  =    26.819(CFS)
Normal flow depth in pipe =   10.88(In.)
Flow top width inside pipe =   33.06(In.)
Critical Depth =   20.08(In.)
Pipe flow velocity =     14.89(Ft/s)
Travel time through pipe =    0.98 min.
Time of concentration (TC) =    13.04 min.


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Process from Point/Station      210.000 to Point/Station      217.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =     15.288(Ac.)
Runoff from this stream =     26.819(CFS)
Time of concentration =   13.04 min.
Rainfall intensity =     1.859(In/Hr)
Area averaged loss rate (Fm) =    0.1181(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000


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Process from Point/Station      508.000 to Point/Station      218.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
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Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
SCS curve number for soil(AMC 2)  = 75.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.200(In/Hr)
Max Catchment Loss (Fm) =     0.100(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   255.000(Ft.)
Bottom (of initial area) elevation =   237.000(Ft.)
Difference in elevation =    18.000(Ft.)
Slope =    0.06000  s(%)=       6.00
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.686 min.
Rainfall intensity =      2.705(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.867
Subarea runoff =      0.914(CFS)
Total initial stream area =        0.390(Ac.)


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Process from Point/Station      218.000 to Point/Station      219.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of street segment elevation =   237.000(Ft.)
End of street segment elevation =   223.000(Ft.)
Length of street segment  =   494.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      3.644(CFS)
Depth of flow =   0.313(Ft.), Average velocity =   3.668(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =   9.310(Ft.)
Flow velocity =   3.67(Ft/s)
Travel time =    2.24 min.     TC =    8.93  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      2.299(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.852
Subarea runoff =      5.376(CFS) for    2.820(Ac.)
Total runoff =      6.290(CFS)       Total area =        3.21(Ac.)
Area averaged Fm value =    0.122(In/Hr)
Street flow at end of street =      6.290(CFS)
Half street flow at end of street =      6.290(CFS)
Depth of flow =   0.362(Ft.), Average velocity =   4.159(Ft/s)
Flow width (from curb towards crown)=  11.771(Ft.)


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Process from Point/Station      219.000 to Point/Station      217.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
________________________________________________________________________
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Upstream point/station elevation =   215.000(Ft.)
Downstream point/station elevation =   214.000(Ft.)
Pipe length  =    22.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     6.290(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =     6.290(CFS)
Normal flow depth in pipe =    6.53(In.)
Flow top width inside pipe =   17.31(In.)
Critical Depth =   11.63(In.)
Pipe flow velocity =     10.88(Ft/s)
Travel time through pipe =    0.03 min.
Time of concentration (TC) =     8.96 min.


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Process from Point/Station      219.000 to Point/Station      217.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      3.210(Ac.)
Runoff from this stream =      6.290(CFS)
Time of concentration =    8.96 min.
Rainfall intensity =     2.294(In/Hr)
Area averaged loss rate (Fm) =    0.1220(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000


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Process from Point/Station      503.000 to Point/Station      220.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
SCS curve number for soil(AMC 2)  = 75.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.200(In/Hr)
Max Catchment Loss (Fm) =     0.100(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   256.000(Ft.)
Bottom (of initial area) elevation =   237.000(Ft.)
Difference in elevation =    19.000(Ft.)
Slope =    0.06333  s(%)=       6.33
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.614 min.
Rainfall intensity =      2.722(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.867
Subarea runoff =      0.496(CFS)
Total initial stream area =        0.210(Ac.)


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Process from Point/Station      220.000 to Point/Station      221.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
______________________________________________________________________________
Top of street segment elevation =   237.000(Ft.)
End of street segment elevation =   223.000(Ft.)
Length of street segment  =   472.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
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 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      0.804(CFS)
Depth of flow =   0.206(Ft.), Average velocity =   2.840(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =   3.956(Ft.)
Flow velocity =   2.84(Ft/s)
Travel time =    2.77 min.     TC =    9.38  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.950
Decimal fraction soil group D = 0.050
SCS curve number for soil(AMC 2)  = 69.30
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.248(In/Hr)
Max Catchment Loss (Fm) =     0.124(In/Hr)
Rainfall intensity =      2.236(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.854
Subarea runoff =      0.555(CFS) for    0.340(Ac.)
Total runoff =      1.050(CFS)       Total area =        0.55(Ac.)
Area averaged Fm value =    0.115(In/Hr)
Street flow at end of street =      1.050(CFS)
Half street flow at end of street =      1.050(CFS)
Depth of flow =   0.223(Ft.), Average velocity =   2.927(Ft/s)
Flow width (from curb towards crown)=   4.817(Ft.)


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Process from Point/Station      221.000 to Point/Station      217.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   215.000(Ft.)
Downstream point/station elevation =   214.000(Ft.)
Pipe length  =    33.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.050(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =     1.050(CFS)
Normal flow depth in pipe =    2.93(In.)
Flow top width inside pipe =   13.29(In.)
Critical Depth =    4.58(In.)
Pipe flow velocity =      5.62(Ft/s)
Travel time through pipe =    0.10 min.
Time of concentration (TC) =     9.48 min.


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Process from Point/Station      221.000 to Point/Station      217.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 3
Stream flow area =      0.550(Ac.)
Runoff from this stream =      1.050(CFS)
Time of concentration =    9.48 min.
Rainfall intensity =     2.223(In/Hr)
Area averaged loss rate (Fm) =    0.1147(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1     15.29    26.819     13.04    0.118      1.859
2      3.21     6.290      8.96    0.122      2.294
3      0.55     1.050      9.48    0.115      2.223
Qmax(1) =
          1.000 *    1.000 *    26.819) +
          0.799 *    1.000 *     6.290) +
          0.827 *    1.000 *     1.050) + =      32.716
```

```
Qmax(2) =
          1.250 *    0.687 *    26.819) +
          1.000 *    1.000 *     6.290) +
          1.034 *    0.945 *     1.050) + =      30.370
Qmax(3) =
          1.209 *    0.727 *    26.819) +
          0.967 *    1.000 *     6.290) +
          1.000 *    1.000 *     1.050) + =      30.720

Total of 3 streams to confluence:
Flow rates before confluence point:
      26.819       6.290       1.050
Maximum flow rates at confluence using above data:
       32.716       30.370       30.720
Area of streams before confluence:
       15.288        3.210        0.550
Effective area values after confluence:
       19.048       14.240       14.877
Results of confluence:
Total flow rate =     32.716(CFS)
Time of concentration =    13.039 min.
Effective stream area after confluence =     19.048(Ac.)
Study area average Pervious fraction(Ap) =  0.500
Study area average soil loss rate(Fm) =    0.119(In/Hr)
Study area total (this main stream) =      19.05(Ac.)


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Process from Point/Station      217.000 to Point/Station      222.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
________________________________________________________________________
Upstream point/station elevation =   214.000(Ft.)
Downstream point/station elevation =   212.000(Ft.)
Pipe length  =    52.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    32.716(CFS)
Given pipe size =     36.00(In.)
Calculated individual pipe flow  =    32.716(CFS)
Normal flow depth in pipe =   12.27(In.)
Flow top width inside pipe =   34.13(In.)
Critical Depth =   22.27(In.)
Pipe flow velocity =     15.38(Ft/s)
Travel time through pipe =    0.06 min.
Time of concentration (TC) =    13.10 min.
End of computations, total study area =           19.66 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.500
Area averaged SCS curve number (AMC 2) =  70.5
```

- 25 Year Post-Development Rational Method – Area 'B'

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                    Orange County Rational Hydrology Program

                (Hydrology Manual Date(s) October 1986 & November 1996)

 CIVILCADD/CIVILDESIGN  Engineering Software, (c) 1989-2012 Version 8.2
       Rational Hydrology Study, Date: 10/13/16  File Name: prb025.roc
---------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION RATIONAL METHOD - AREA 'B' - 25 YEAR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
---------------------------------------------------------------------------


Program License Serial Number 4094

---------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

---------------------------------------------------------------------------

Rational hydrology study storm event year is    25.0

Decimal fraction of study above 2000 ft., 600M  =     0.0000
English Units Used for input data


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      200.000 to Point/Station      201.000
**** INITIAL AREA EVALUATION ****
___________________________________________________________________________
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   230.000(Ft.)
Top (of initial area) elevation =   335.000(Ft.)
Bottom (of initial area) elevation =   305.200(Ft.)
Difference in elevation =    29.800(Ft.)
Slope =    0.12957  s(%)=      12.96
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.154 min.
Rainfall intensity =      4.742(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.876
Subarea runoff =      4.238(CFS)
Total initial stream area =        1.020(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      201.000 to Point/Station      202.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
___________________________________________________________________________
Top of street segment elevation =   305.200(Ft.)
End of street segment elevation =   282.000(Ft.)
Length of street segment  =     0.160(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
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```
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      4.570(CFS)
Depth of flow =   0.077(Ft.), Average velocity = 128.623(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =   2.000(Ft.)
Flow velocity = 128.62(Ft/s)
Travel time =    0.00 min.     TC =    5.15  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      4.742(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.876
Subarea runoff =      0.665(CFS) for    0.160(Ac.)
Total runoff =      4.903(CFS)       Total area =        1.18(Ac.)
Area averaged Fm value =    0.125(In/Hr)
Street flow at end of street =      4.903(CFS)
Half street flow at end of street =      4.903(CFS)
Depth of flow =   0.079(Ft.), Average velocity = 130.896(Ft/s)
Flow width (from curb towards crown)=   2.000(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      201.000 to Point/Station      202.000
**** CONFLUENCE OF MINOR STREAMS ****
____________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      1.180(Ac.)
Runoff from this stream =      4.903(CFS)
Time of concentration =    5.15 min.
Rainfall intensity =     4.742(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      203.000 to Point/Station      204.000
**** INITIAL AREA EVALUATION ****
____________________________________________________________________________
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.150
Decimal fraction soil group D = 0.850
SCS curve number for soil(AMC 2)  = 74.10
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.208(In/Hr)
Max Catchment Loss (Fm) =     0.104(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   302.500(Ft.)
Bottom (of initial area) elevation =   288.300(Ft.)
Difference in elevation =    14.200(Ft.)
Slope =    0.04733  s(%)=       4.73
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    7.011 min.
Rainfall intensity =      3.984(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.877
Subarea runoff =      6.775(CFS)
Total initial stream area =        1.940(Ac.)


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Process from Point/Station      204.000 to Point/Station      202.000
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**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
----------------------------------------------------------------------------
Top of street segment elevation =   288.300(Ft.)
End of street segment elevation =   282.000(Ft.)
Length of street segment  =   422.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [2] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =     10.284(CFS)
Depth of flow =   0.374(Ft.), Average velocity =   3.105(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  12.367(Ft.)
Flow velocity =   3.10(Ft/s)
Travel time =    2.27 min.     TC =    9.28  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.950
Decimal fraction soil group D = 0.050
SCS curve number for soil(AMC 2)  = 69.30
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.248(In/Hr)
Max Catchment Loss (Fm) =     0.124(In/Hr)
Rainfall intensity =      3.400(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.869
Subarea runoff =      6.853(CFS) for    2.670(Ac.)
Total runoff =     13.628(CFS)       Total area =        4.61(Ac.)
Area averaged Fm value =    0.115(In/Hr)
Street flow at end of street =     13.628(CFS)
Half street flow at end of street =      6.814(CFS)
Depth of flow =   0.404(Ft.), Average velocity =   3.320(Ft/s)
Flow width (from curb towards crown)=  13.878(Ft.)


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Process from Point/Station      204.000 to Point/Station      202.000
**** CONFLUENCE OF MINOR STREAMS ****
----------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      4.610(Ac.)
Runoff from this stream =     13.628(CFS)
Time of concentration =    9.28 min.
Rainfall intensity =     3.400(In/Hr)
Area averaged loss rate (Fm) =    0.1153(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1      1.18     4.903      5.15    0.125      4.742
2      4.61    13.628      9.28    0.115      3.400
Qmax(1) =
          1.000 *    1.000 *     4.903) +
          1.408 *    0.556 *    13.628) + =      15.568
Qmax(2) =
          0.709 *    1.000 *     4.903) +
          1.000 *    1.000 *    13.628) + =      17.106
```

```
Total of 2 streams to confluence:
Flow rates before confluence point:
       4.903      13.628
Maximum flow rates at confluence using above data:
       15.568       17.106
Area of streams before confluence:
        1.180        4.610
Effective area values after confluence:
        3.741        5.790
Results of confluence:
Total flow rate =     17.106(CFS)
Time of concentration =     9.276 min.
Effective stream area after confluence =      5.790(Ac.)
Study area average Pervious fraction(Ap) =  0.500
Study area average soil loss rate(Fm) =    0.117(In/Hr)
Study area total (this main stream) =       5.79(Ac.)


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Process from Point/Station      202.000 to Point/Station      205.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of street segment elevation =   282.000(Ft.)
End of street segment elevation =   269.000(Ft.)
Length of street segment  =   176.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =     17.580(CFS)
Depth of flow =   0.421(Ft.), Average velocity =   7.652(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  14.734(Ft.)
Flow velocity =   7.65(Ft/s)
Travel time =    0.38 min.     TC =    9.66  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      3.323(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.868
Subarea runoff =      0.894(CFS) for    0.450(Ac.)
Total runoff =     17.999(CFS)       Total area =        6.24(Ac.)
Area averaged Fm value =    0.118(In/Hr)
Street flow at end of street =     17.999(CFS)
Half street flow at end of street =     17.999(CFS)
Depth of flow =   0.424(Ft.), Average velocity =   7.695(Ft/s)
Flow width (from curb towards crown)=  14.874(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      205.000 to Point/Station      206.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
________________________________________________________________________
Upstream point/station elevation =   263.000(Ft.)
Downstream point/station elevation =   262.000(Ft.)
```

```
Pipe length  =    27.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    17.999(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =    17.999(CFS)
Normal flow depth in pipe =   13.23(In.)
Flow top width inside pipe =   15.89(In.)
Critical depth could not be calculated.
Pipe flow velocity =     12.93(Ft/s)
Travel time through pipe =    0.03 min.
Time of concentration (TC) =     9.69 min.


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Process from Point/Station      205.000 to Point/Station      206.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      6.240(Ac.)
Runoff from this stream =     17.999(CFS)
Time of concentration =    9.69 min.
Rainfall intensity =     3.316(In/Hr)
Area averaged loss rate (Fm) =    0.1179(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000


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Process from Point/Station      207.000 to Point/Station      208.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   356.000(Ft.)
Bottom (of initial area) elevation =   304.000(Ft.)
Difference in elevation =    52.000(Ft.)
Slope =    0.17333  s(%)=      17.33
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.408 min.
Rainfall intensity =      4.614(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.876
Subarea runoff =      4.970(CFS)
Total initial stream area =        1.230(Ac.)


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Process from Point/Station      208.000 to Point/Station      209.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------
Top of street segment elevation =   304.000(Ft.)
End of street segment elevation =   269.000(Ft.)
Length of street segment  =   374.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
```

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Estimated mean flow rate at midpoint of street =      6.710(CFS)
Depth of flow =   0.314(Ft.), Average velocity =   6.685(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =   9.365(Ft.)
Flow velocity =   6.69(Ft/s)
Travel time =    0.93 min.     TC =    6.34  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      4.217(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.873
Subarea runoff =      3.427(CFS) for    1.050(Ac.)
Total runoff =      8.397(CFS)       Total area =        2.28(Ac.)
Area averaged Fm value =    0.125(In/Hr)
Street flow at end of street =      8.397(CFS)
Half street flow at end of street =      8.397(CFS)
Depth of flow =   0.333(Ft.), Average velocity =   7.035(Ft/s)
Flow width (from curb towards crown)=  10.329(Ft.)


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Process from Point/Station      209.000 to Point/Station      206.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   263.000(Ft.)
Downstream point/station elevation =   262.000(Ft.)
Pipe length  =    17.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     8.397(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =     8.397(CFS)
Normal flow depth in pipe =    7.11(In.)
Flow top width inside pipe =   17.60(In.)
Critical Depth =   13.46(In.)
Pipe flow velocity =     12.93(Ft/s)
Travel time through pipe =    0.02 min.
Time of concentration (TC) =     6.36 min.


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Process from Point/Station      209.000 to Point/Station      206.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      2.280(Ac.)
Runoff from this stream =      8.397(CFS)
Time of concentration =    6.36 min.
Rainfall intensity =     4.209(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1      6.24    17.999      9.69    0.118      3.316
2      2.28     8.397      6.36    0.125      4.209
Qmax(1) =
          1.000 *    1.000 *    17.999) +
          0.781 *    1.000 *     8.397) + =      24.561
Qmax(2) =
          1.279 *    0.656 *    17.999) +
          1.000 *    1.000 *     8.397) + =      23.506
```

```
Total of 2 streams to confluence:
Flow rates before confluence point:
      17.999       8.397
Maximum flow rates at confluence using above data:
       24.561       23.506
Area of streams before confluence:
        6.240        2.280
Effective area values after confluence:
        8.520        6.375
Results of confluence:
Total flow rate =     24.561(CFS)
Time of concentration =     9.694 min.
Effective stream area after confluence =      8.520(Ac.)
Study area average Pervious fraction(Ap) =  0.500
Study area average soil loss rate(Fm) =    0.120(In/Hr)
Study area total (this main stream) =       8.52(Ac.)


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Process from Point/Station      206.000 to Point/Station      210.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
________________________________________________________________________
Upstream point/station elevation =   262.000(Ft.)
Downstream point/station elevation =   250.000(Ft.)
Pipe length  =  1017.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    24.561(CFS)
Given pipe size =     36.00(In.)
Calculated individual pipe flow  =    24.561(CFS)
Normal flow depth in pipe =   14.45(In.)
Flow top width inside pipe =   35.29(In.)
Critical Depth =   19.15(In.)
Pipe flow velocity =      9.26(Ft/s)
Travel time through pipe =    1.83 min.
Time of concentration (TC) =    11.52 min.


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Process from Point/Station      206.000 to Point/Station      210.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      8.520(Ac.)
Runoff from this stream =     24.561(CFS)
Time of concentration =   11.52 min.
Rainfall intensity =     3.007(In/Hr)
Area averaged loss rate (Fm) =    0.1198(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000


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Process from Point/Station      209.000 to Point/Station      211.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   269.000(Ft.)
Bottom (of initial area) elevation =   263.000(Ft.)
Difference in elevation =     6.000(Ft.)
Slope =    0.02000  s(%)=       2.00
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.329 min.
Rainfall intensity =      3.614(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.869
```

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Subarea runoff =      3.171(CFS)
Total initial stream area =        1.010(Ac.)


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Process from Point/Station      211.000 to Point/Station      212.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of street segment elevation =   263.000(Ft.)
End of street segment elevation =   261.000(Ft.)
Length of street segment  =   313.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      3.970(CFS)
Depth of flow =   0.391(Ft.), Average velocity =   2.112(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  13.238(Ft.)
Flow velocity =   2.11(Ft/s)
Travel time =    2.47 min.     TC =   10.80  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      3.120(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.864
Subarea runoff =      1.546(CFS) for    0.740(Ac.)
Total runoff =      4.717(CFS)       Total area =        1.75(Ac.)
Area averaged Fm value =    0.125(In/Hr)
Street flow at end of street =      4.717(CFS)
Half street flow at end of street =      4.717(CFS)
Depth of flow =   0.411(Ft.), Average velocity =   2.201(Ft/s)
Flow width (from curb towards crown)=  14.198(Ft.)


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Process from Point/Station      212.000 to Point/Station      213.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of street segment elevation =   261.000(Ft.)
End of street segment elevation =   256.000(Ft.)
Length of street segment  =   458.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
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Estimated mean flow rate at midpoint of street =      6.153(CFS)
Depth of flow =   0.423(Ft.), Average velocity =   2.642(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  14.839(Ft.)
Flow velocity =   2.64(Ft/s)
Travel time =    2.89 min.     TC =   13.69  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.400
Decimal fraction soil group D = 0.600
SCS curve number for soil(AMC 2)  = 72.60
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.220(In/Hr)
Max Catchment Loss (Fm) =     0.110(In/Hr)
Rainfall intensity =      2.728(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.861
Subarea runoff =      2.800(CFS) for    1.450(Ac.)
Total runoff =      7.516(CFS)       Total area =        3.20(Ac.)
Area averaged Fm value =    0.118(In/Hr)
Street flow at end of street =      7.516(CFS)
Half street flow at end of street =      7.516(CFS)
Depth of flow =   0.448(Ft.), Average velocity =   2.773(Ft/s)
Flow width (from curb towards crown)=  16.073(Ft.)


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Process from Point/Station      213.000 to Point/Station      210.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   251.000(Ft.)
Downstream point/station elevation =   250.000(Ft.)
Pipe length  =    10.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     7.516(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =     7.516(CFS)
Normal flow depth in pipe =    5.82(In.)
Flow top width inside pipe =   16.84(In.)
Critical Depth =   12.74(In.)
Pipe flow velocity =     15.20(Ft/s)
Travel time through pipe =    0.01 min.
Time of concentration (TC) =    13.70 min.


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Process from Point/Station      213.000 to Point/Station      210.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      3.200(Ac.)
Runoff from this stream =      7.516(CFS)
Time of concentration =   13.70 min.
Rainfall intensity =     2.727(In/Hr)
Area averaged loss rate (Fm) =    0.1182(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000


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Process from Point/Station      205.000 to Point/Station      214.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
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Initial area flow distance =   205.000(Ft.)
Top (of initial area) elevation =   269.000(Ft.)
Bottom (of initial area) elevation =   263.000(Ft.)
Difference in elevation =     6.000(Ft.)
Slope =    0.02927  s(%)=       2.93
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.628 min.
Rainfall intensity =      4.112(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.873
Subarea runoff =      1.328(CFS)
Total initial stream area =        0.370(Ac.)


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Process from Point/Station      214.000 to Point/Station      215.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of street segment elevation =   263.000(Ft.)
End of street segment elevation =   261.000(Ft.)
Length of street segment  =   303.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      2.659(CFS)
Depth of flow =   0.349(Ft.), Average velocity =   1.946(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  11.134(Ft.)
Flow velocity =   1.95(Ft/s)
Travel time =    2.59 min.     TC =    9.22  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      3.411(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.867
Subarea runoff =      2.606(CFS) for    0.960(Ac.)
Total runoff =      3.933(CFS)       Total area =        1.33(Ac.)
Area averaged Fm value =    0.125(In/Hr)
Street flow at end of street =      3.933(CFS)
Half street flow at end of street =      3.933(CFS)
Depth of flow =   0.389(Ft.), Average velocity =   2.134(Ft/s)
Flow width (from curb towards crown)=  13.101(Ft.)


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Process from Point/Station      215.000 to Point/Station      216.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of street segment elevation =   261.000(Ft.)
End of street segment elevation =   256.000(Ft.)
Length of street segment  =   459.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
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Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      7.367(CFS)
Depth of flow =   0.432(Ft.), Average velocity =   3.001(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  15.258(Ft.)
Flow velocity =   3.00(Ft/s)
Travel time =    2.55 min.     TC =   11.77  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.400
Decimal fraction soil group D = 0.600
SCS curve number for soil(AMC 2)  = 72.60
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.220(In/Hr)
Max Catchment Loss (Fm) =     0.110(In/Hr)
Rainfall intensity =      2.971(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.865
Subarea runoff =      6.812(CFS) for    2.850(Ac.)
Total runoff =     10.745(CFS)       Total area =        4.18(Ac.)
Area averaged Fm value =    0.115(In/Hr)
Street flow at end of street =     10.745(CFS)
Half street flow at end of street =     10.745(CFS)
Depth of flow =   0.481(Ft.), Average velocity =   3.289(Ft/s)
Flow width (from curb towards crown)=  17.721(Ft.)


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Process from Point/Station      216.000 to Point/Station      210.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
____________________________________________________________________________
Upstream point/station elevation =   251.000(Ft.)
Downstream point/station elevation =   250.000(Ft.)
Pipe length  =    31.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    10.745(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =    10.745(CFS)
Normal flow depth in pipe =    9.73(In.)
Flow top width inside pipe =   17.94(In.)
Critical Depth =   15.09(In.)
Pipe flow velocity =     11.02(Ft/s)
Travel time through pipe =    0.05 min.
Time of concentration (TC) =    11.82 min.


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Process from Point/Station      216.000 to Point/Station      210.000
**** CONFLUENCE OF MINOR STREAMS ****
____________________________________________________________________________
Along Main Stream number: 1 in normal stream number 3
Stream flow area =      4.180(Ac.)
Runoff from this stream =     10.745(CFS)
Time of concentration =   11.82 min.
Rainfall intensity =     2.964(In/Hr)
Area averaged loss rate (Fm) =    0.1148(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)
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1      8.52    24.561     11.52    0.120      3.007
2      3.20     7.516     13.70    0.118      2.727
3      4.18    10.745     11.82    0.115      2.964
Qmax(1) =
          1.000 *    1.000 *    24.561) +
          1.107 *    0.841 *     7.516) +
          1.015 *    0.975 *    10.745) + =      42.197
Qmax(2) =
          0.903 *    1.000 *    24.561) +
          1.000 *    1.000 *     7.516) +
          0.917 *    1.000 *    10.745) + =      39.543
Qmax(3) =
          0.985 *    1.000 *    24.561) +
          1.091 *    0.863 *     7.516) +
          1.000 *    1.000 *    10.745) + =      42.019

Total of 3 streams to confluence:
Flow rates before confluence point:
      24.561       7.516      10.745
Maximum flow rates at confluence using above data:
       42.197       39.543       42.019
Area of streams before confluence:
        8.520        3.200        4.180
Effective area values after confluence:
       15.288       15.900       15.461
Results of confluence:
Total flow rate =     42.197(CFS)
Time of concentration =    11.525 min.
Effective stream area after confluence =     15.288(Ac.)
Study area average Pervious fraction(Ap) =  0.500
Study area average soil loss rate(Fm) =    0.118(In/Hr)
Study area total (this main stream) =      15.90(Ac.)


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Process from Point/Station      210.000 to Point/Station      217.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   250.000(Ft.)
Downstream point/station elevation =   214.000(Ft.)
Pipe length  =   878.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    42.197(CFS)
Given pipe size =     36.00(In.)
Calculated individual pipe flow  =    42.197(CFS)
Normal flow depth in pipe =   13.82(In.)
Flow top width inside pipe =   35.02(In.)
Critical Depth =   25.40(In.)
Pipe flow velocity =     16.89(Ft/s)
Travel time through pipe =    0.87 min.
Time of concentration (TC) =    12.39 min.


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Process from Point/Station      210.000 to Point/Station      217.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =     15.288(Ac.)
Runoff from this stream =     42.197(CFS)
Time of concentration =   12.39 min.
Rainfall intensity =     2.886(In/Hr)
Area averaged loss rate (Fm) =    0.1181(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000


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Process from Point/Station      508.000 to Point/Station      218.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
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Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
SCS curve number for soil(AMC 2)  = 75.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.200(In/Hr)
Max Catchment Loss (Fm) =     0.100(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   255.000(Ft.)
Bottom (of initial area) elevation =   237.000(Ft.)
Difference in elevation =    18.000(Ft.)
Slope =    0.06000  s(%)=       6.00
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.686 min.
Rainfall intensity =      4.092(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.878
Subarea runoff =      1.401(CFS)
Total initial stream area =        0.390(Ac.)


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Process from Point/Station      218.000 to Point/Station      219.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of street segment elevation =   237.000(Ft.)
End of street segment elevation =   223.000(Ft.)
Length of street segment  =   494.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      5.641(CFS)
Depth of flow =   0.352(Ft.), Average velocity =   4.055(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  11.246(Ft.)
Flow velocity =   4.05(Ft/s)
Travel time =    2.03 min.     TC =    8.72  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      3.522(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.869
Subarea runoff =      8.421(CFS) for    2.820(Ac.)
Total runoff =      9.822(CFS)       Total area =        3.21(Ac.)
Area averaged Fm value =    0.122(In/Hr)
Street flow at end of street =      9.822(CFS)
Half street flow at end of street =      9.822(CFS)
Depth of flow =   0.409(Ft.), Average velocity =   4.624(Ft/s)
Flow width (from curb towards crown)=  14.134(Ft.)


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Process from Point/Station      219.000 to Point/Station      217.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
________________________________________________________________________
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Upstream point/station elevation =   215.000(Ft.)
Downstream point/station elevation =   214.000(Ft.)
Pipe length  =    22.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     9.822(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =     9.822(CFS)
Normal flow depth in pipe =    8.34(In.)
Flow top width inside pipe =   17.95(In.)
Critical Depth =   14.50(In.)
Pipe flow velocity =     12.26(Ft/s)
Travel time through pipe =    0.03 min.
Time of concentration (TC) =     8.75 min.


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Process from Point/Station      219.000 to Point/Station      217.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      3.210(Ac.)
Runoff from this stream =      9.822(CFS)
Time of concentration =    8.75 min.
Rainfall intensity =     3.515(In/Hr)
Area averaged loss rate (Fm) =    0.1220(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000


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Process from Point/Station      503.000 to Point/Station      220.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
SCS curve number for soil(AMC 2)  = 75.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.200(In/Hr)
Max Catchment Loss (Fm) =     0.100(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   256.000(Ft.)
Bottom (of initial area) elevation =   237.000(Ft.)
Difference in elevation =    19.000(Ft.)
Slope =    0.06333  s(%)=       6.33
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.614 min.
Rainfall intensity =      4.117(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.878
Subarea runoff =      0.759(CFS)
Total initial stream area =        0.210(Ac.)


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Process from Point/Station      220.000 to Point/Station      221.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
______________________________________________________________________________
Top of street segment elevation =   237.000(Ft.)
End of street segment elevation =   223.000(Ft.)
Length of street segment  =   472.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
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 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      1.241(CFS)
Depth of flow =   0.234(Ft.), Average velocity =   3.003(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =   5.352(Ft.)
Flow velocity =   3.00(Ft/s)
Travel time =    2.62 min.     TC =    9.23  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.950
Decimal fraction soil group D = 0.050
SCS curve number for soil(AMC 2)  = 69.30
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.248(In/Hr)
Max Catchment Loss (Fm) =     0.124(In/Hr)
Rainfall intensity =      3.409(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.870
Subarea runoff =      0.871(CFS) for    0.340(Ac.)
Total runoff =      1.631(CFS)       Total area =        0.55(Ac.)
Area averaged Fm value =    0.115(In/Hr)
Street flow at end of street =      1.631(CFS)
Half street flow at end of street =      1.631(CFS)
Depth of flow =   0.252(Ft.), Average velocity =   3.153(Ft/s)
Flow width (from curb towards crown)=   6.248(Ft.)


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Process from Point/Station      221.000 to Point/Station      217.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
____________________________________________________________________________
Upstream point/station elevation =   215.000(Ft.)
Downstream point/station elevation =   214.000(Ft.)
Pipe length  =    33.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.631(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =     1.631(CFS)
Normal flow depth in pipe =    3.63(In.)
Flow top width inside pipe =   14.45(In.)
Critical Depth =    5.75(In.)
Pipe flow velocity =      6.40(Ft/s)
Travel time through pipe =    0.09 min.
Time of concentration (TC) =     9.32 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      221.000 to Point/Station      217.000
**** CONFLUENCE OF MINOR STREAMS ****
____________________________________________________________________________
Along Main Stream number: 1 in normal stream number 3
Stream flow area =      0.550(Ac.)
Runoff from this stream =      1.631(CFS)
Time of concentration =    9.32 min.
Rainfall intensity =     3.391(In/Hr)
Area averaged loss rate (Fm) =    0.1147(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1     15.29    42.197     12.39    0.118      2.886
2      3.21     9.822      8.75    0.122      3.515
3      0.55     1.631      9.32    0.115      3.391
Qmax(1) =
          1.000 *    1.000 *    42.197) +
          0.815 *    1.000 *     9.822) +
          0.846 *    1.000 *     1.631) + =      51.578
```

```
Qmax(2) =
          1.227 *    0.706 *    42.197) +
          1.000 *    1.000 *     9.822) +
          1.038 *    0.939 *     1.631) + =      47.965
Qmax(3) =
          1.182 *    0.752 *    42.197) +
          0.963 *    1.000 *     9.822) +
          1.000 *    1.000 *     1.631) + =      48.621

Total of 3 streams to confluence:
Flow rates before confluence point:
      42.197       9.822       1.631
Maximum flow rates at confluence using above data:
       51.578       47.965       48.621
Area of streams before confluence:
       15.288        3.210        0.550
Effective area values after confluence:
       19.048       14.518       15.258
Results of confluence:
Total flow rate =     51.578(CFS)
Time of concentration =    12.391 min.
Effective stream area after confluence =     19.048(Ac.)
Study area average Pervious fraction(Ap) =  0.500
Study area average soil loss rate(Fm) =    0.119(In/Hr)
Study area total (this main stream) =      19.05(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      217.000 to Point/Station      222.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   214.000(Ft.)
Downstream point/station elevation =   212.000(Ft.)
Pipe length  =    52.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    51.578(CFS)
Given pipe size =     36.00(In.)
Calculated individual pipe flow  =    51.578(CFS)
Normal flow depth in pipe =   15.71(In.)
Flow top width inside pipe =   35.71(In.)
Critical Depth =   28.04(In.)
Pipe flow velocity =     17.41(Ft/s)
Travel time through pipe =    0.05 min.
Time of concentration (TC) =    12.44 min.
End of computations, total study area =           19.66 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.500
Area averaged SCS curve number (AMC 2) =  70.5
```

- 100 Year Post-Development Rational Method – Area 'B'

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                    Orange County Rational Hydrology Program

                (Hydrology Manual Date(s) October 1986 & November 1996)

 CIVILCADD/CIVILDESIGN  Engineering Software, (c) 1989-2012 Version 8.2
       Rational Hydrology Study, Date: 10/13/16  File Name: prb100.roc
---------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION RATIONAL METHOD - AREA 'B' - 100 YEAR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
---------------------------------------------------------------------------


Program License Serial Number 4094

---------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

---------------------------------------------------------------------------

Rational hydrology study storm event year is   100.0

Decimal fraction of study above 2000 ft., 600M  =     0.0000
English Units Used for input data


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      200.000 to Point/Station      201.000
**** INITIAL AREA EVALUATION ****
___________________________________________________________________________
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   230.000(Ft.)
Top (of initial area) elevation =   335.000(Ft.)
Bottom (of initial area) elevation =   305.200(Ft.)
Difference in elevation =    29.800(Ft.)
Slope =    0.12957  s(%)=      12.96
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.154 min.
Rainfall intensity =      6.081(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.881
Subarea runoff =      5.467(CFS)
Total initial stream area =        1.020(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      201.000 to Point/Station      202.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
___________________________________________________________________________
Top of street segment elevation =   305.200(Ft.)
End of street segment elevation =   282.000(Ft.)
Length of street segment  =     0.160(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
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 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      5.896(CFS)
Depth of flow =   0.085(Ft.), Average velocity = 137.075(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =   2.000(Ft.)
Flow velocity = 137.07(Ft/s)
Travel time =    0.00 min.     TC =    5.15  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      6.081(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.881
Subarea runoff =      0.858(CFS) for    0.160(Ac.)
Total runoff =      6.325(CFS)       Total area =        1.18(Ac.)
Area averaged Fm value =    0.125(In/Hr)
Street flow at end of street =      6.325(CFS)
Half street flow at end of street =      6.325(CFS)
Depth of flow =   0.087(Ft.), Average velocity = 139.503(Ft/s)
Flow width (from curb towards crown)=   2.000(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      201.000 to Point/Station      202.000
**** CONFLUENCE OF MINOR STREAMS ****
____________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      1.180(Ac.)
Runoff from this stream =      6.325(CFS)
Time of concentration =    5.15 min.
Rainfall intensity =     6.081(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      203.000 to Point/Station      204.000
**** INITIAL AREA EVALUATION ****
____________________________________________________________________________
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.150
Decimal fraction soil group D = 0.850
SCS curve number for soil(AMC 2)  = 74.10
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.208(In/Hr)
Max Catchment Loss (Fm) =     0.104(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   302.500(Ft.)
Bottom (of initial area) elevation =   288.300(Ft.)
Difference in elevation =    14.200(Ft.)
Slope =    0.04733  s(%)=       4.73
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    7.011 min.
Rainfall intensity =      5.098(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.882
Subarea runoff =      8.720(CFS)
Total initial stream area =        1.940(Ac.)


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Process from Point/Station      204.000 to Point/Station      202.000
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**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
----------------------------------------------------------------------------
Top of street segment elevation =   288.300(Ft.)
End of street segment elevation =   282.000(Ft.)
Length of street segment  =   422.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [2] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =     13.255(CFS)
Depth of flow =   0.401(Ft.), Average velocity =   3.298(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  13.722(Ft.)
Flow velocity =   3.30(Ft/s)
Travel time =    2.13 min.     TC =    9.14  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.950
Decimal fraction soil group D = 0.050
SCS curve number for soil(AMC 2)  = 69.30
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.248(In/Hr)
Max Catchment Loss (Fm) =     0.124(In/Hr)
Rainfall intensity =      4.378(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.876
Subarea runoff =      8.967(CFS) for    2.670(Ac.)
Total runoff =     17.686(CFS)       Total area =        4.61(Ac.)
Area averaged Fm value =    0.115(In/Hr)
Street flow at end of street =     17.686(CFS)
Half street flow at end of street =      8.843(CFS)
Depth of flow =   0.435(Ft.), Average velocity =   3.534(Ft/s)
Flow width (from curb towards crown)=  15.412(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      204.000 to Point/Station      202.000
**** CONFLUENCE OF MINOR STREAMS ****
----------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      4.610(Ac.)
Runoff from this stream =     17.686(CFS)
Time of concentration =    9.14 min.
Rainfall intensity =     4.378(In/Hr)
Area averaged loss rate (Fm) =    0.1153(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1      1.18     6.325      5.15    0.125      6.081
2      4.61    17.686      9.14    0.115      4.378
Qmax(1) =
          1.000 *    1.000 *     6.325) +
          1.399 *    0.564 *    17.686) + =      20.276
Qmax(2) =
          0.714 *    1.000 *     6.325) +
          1.000 *    1.000 *    17.686) + =      22.203
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```
Total of 2 streams to confluence:
Flow rates before confluence point:
       6.325      17.686
Maximum flow rates at confluence using above data:
       20.276       22.203
Area of streams before confluence:
        1.180        4.610
Effective area values after confluence:
        3.779        5.790
Results of confluence:
Total flow rate =     22.203(CFS)
Time of concentration =     9.144 min.
Effective stream area after confluence =      5.790(Ac.)
Study area average Pervious fraction(Ap) =  0.500
Study area average soil loss rate(Fm) =    0.117(In/Hr)
Study area total (this main stream) =       5.79(Ac.)


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Process from Point/Station      202.000 to Point/Station      205.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of street segment elevation =   282.000(Ft.)
End of street segment elevation =   269.000(Ft.)
Length of street segment  =   176.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =     22.830(CFS)
Depth of flow =   0.454(Ft.), Average velocity =   8.150(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  16.353(Ft.)
Flow velocity =   8.15(Ft/s)
Travel time =    0.36 min.     TC =    9.50  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      4.282(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.875
Subarea runoff =      1.185(CFS) for    0.450(Ac.)
Total runoff =     23.388(CFS)       Total area =        6.24(Ac.)
Area averaged Fm value =    0.118(In/Hr)
Street flow at end of street =     23.388(CFS)
Half street flow at end of street =     23.388(CFS)
Depth of flow =   0.457(Ft.), Average velocity =   8.198(Ft/s)
Flow width (from curb towards crown)=  16.511(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      205.000 to Point/Station      206.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
________________________________________________________________________
Upstream point/station elevation =   263.000(Ft.)
Downstream point/station elevation =   262.000(Ft.)
```

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Pipe length  =    27.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    23.388(CFS)
Given pipe size =     18.00(In.)
NOTE: Normal flow is pressure flow in user selected pipe size.
The approximate hydraulic grade line above the pipe invert is
     4.418(Ft.)  at the headworks or inlet of the pipe(s)
 Pipe friction loss =      1.338(Ft.)
 Minor friction loss =      4.080(Ft.)       K-factor =   1.50
Pipe flow velocity =     13.23(Ft/s)
Travel time through pipe =    0.03 min.
Time of concentration (TC) =     9.54 min.


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Process from Point/Station      205.000 to Point/Station      206.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      6.240(Ac.)
Runoff from this stream =     23.388(CFS)
Time of concentration =    9.54 min.
Rainfall intensity =     4.274(In/Hr)
Area averaged loss rate (Fm) =    0.1179(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000


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Process from Point/Station      207.000 to Point/Station      208.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   356.000(Ft.)
Bottom (of initial area) elevation =   304.000(Ft.)
Difference in elevation =    52.000(Ft.)
Slope =    0.17333  s(%)=      17.33
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.408 min.
Rainfall intensity =      5.915(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.881
Subarea runoff =      6.410(CFS)
Total initial stream area =        1.230(Ac.)


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Process from Point/Station      208.000 to Point/Station      209.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of street segment elevation =   304.000(Ft.)
End of street segment elevation =   269.000(Ft.)
Length of street segment  =   374.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
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 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      8.677(CFS)
Depth of flow =   0.336(Ft.), Average velocity =   7.088(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  10.475(Ft.)
Flow velocity =   7.09(Ft/s)
Travel time =    0.88 min.     TC =    6.29  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      5.426(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.879
Subarea runoff =      4.468(CFS) for    1.050(Ac.)
Total runoff =     10.878(CFS)       Total area =        2.28(Ac.)
Area averaged Fm value =    0.125(In/Hr)
Street flow at end of street =     10.878(CFS)
Half street flow at end of street =     10.878(CFS)
Depth of flow =   0.357(Ft.), Average velocity =   7.471(Ft/s)
Flow width (from curb towards crown)=  11.530(Ft.)


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Process from Point/Station      209.000 to Point/Station      206.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
____________________________________________________________________________
Upstream point/station elevation =   263.000(Ft.)
Downstream point/station elevation =   262.000(Ft.)
Pipe length  =    17.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    10.878(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =    10.878(CFS)
Normal flow depth in pipe =    8.21(In.)
Flow top width inside pipe =   17.93(In.)
Critical Depth =   15.17(In.)
Pipe flow velocity =     13.85(Ft/s)
Travel time through pipe =    0.02 min.
Time of concentration (TC) =     6.31 min.


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Process from Point/Station      209.000 to Point/Station      206.000
**** CONFLUENCE OF MINOR STREAMS ****
____________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      2.280(Ac.)
Runoff from this stream =     10.878(CFS)
Time of concentration =    6.31 min.
Rainfall intensity =     5.416(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1      6.24    23.388      9.54    0.118      4.274
2      2.28    10.878      6.31    0.125      5.416
Qmax(1) =
          1.000 *    1.000 *    23.388) +
          0.784 *    1.000 *    10.878) + =      31.917
Qmax(2) =
          1.275 *    0.661 *    23.388) +
          1.000 *    1.000 *    10.878) + =      30.598
```

```
Total of 2 streams to confluence:
Flow rates before confluence point:
      23.388      10.878
Maximum flow rates at confluence using above data:
       31.917       30.598
Area of streams before confluence:
        6.240        2.280
Effective area values after confluence:
        8.520        6.407
Results of confluence:
Total flow rate =     31.917(CFS)
Time of concentration =     9.537 min.
Effective stream area after confluence =      8.520(Ac.)
Study area average Pervious fraction(Ap) =  0.500
Study area average soil loss rate(Fm) =    0.120(In/Hr)
Study area total (this main stream) =       8.52(Ac.)


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Process from Point/Station      206.000 to Point/Station      210.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
------------------------------------------------------------------------
Upstream point/station elevation =   262.000(Ft.)
Downstream point/station elevation =   250.000(Ft.)
Pipe length  =  1017.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    31.917(CFS)
Given pipe size =     36.00(In.)
Calculated individual pipe flow  =    31.917(CFS)
Normal flow depth in pipe =   16.72(In.)
Flow top width inside pipe =   35.91(In.)
Critical Depth =   21.99(In.)
Pipe flow velocity =      9.93(Ft/s)
Travel time through pipe =    1.71 min.
Time of concentration (TC) =    11.25 min.


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Process from Point/Station      206.000 to Point/Station      210.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      8.520(Ac.)
Runoff from this stream =     31.917(CFS)
Time of concentration =   11.25 min.
Rainfall intensity =     3.889(In/Hr)
Area averaged loss rate (Fm) =    0.1198(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000


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Process from Point/Station      209.000 to Point/Station      211.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   269.000(Ft.)
Bottom (of initial area) elevation =   263.000(Ft.)
Difference in elevation =     6.000(Ft.)
Slope =    0.02000  s(%)=       2.00
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.329 min.
Rainfall intensity =      4.619(In/Hr) for a   100.0 year storm
```

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Effective runoff coefficient used for area (Q=KCIA) is C = 0.876
Subarea runoff =      4.085(CFS)
Total initial stream area =        1.010(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      211.000 to Point/Station      212.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------
Top of street segment elevation =   263.000(Ft.)
End of street segment elevation =   261.000(Ft.)
Length of street segment  =   313.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      5.135(CFS)
Depth of flow =   0.421(Ft.), Average velocity =   2.247(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  14.692(Ft.)
Flow velocity =   2.25(Ft/s)
Travel time =    2.32 min.     TC =   10.65  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      4.012(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.872
Subarea runoff =      2.037(CFS) for    0.740(Ac.)
Total runoff =      6.121(CFS)       Total area =        1.75(Ac.)
Area averaged Fm value =    0.125(In/Hr)
Street flow at end of street =      6.121(CFS)
Half street flow at end of street =      6.121(CFS)
Depth of flow =   0.442(Ft.), Average velocity =   2.344(Ft/s)
Flow width (from curb towards crown)=  15.763(Ft.)


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Process from Point/Station      212.000 to Point/Station      213.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------
Top of street segment elevation =   261.000(Ft.)
End of street segment elevation =   256.000(Ft.)
Length of street segment  =   458.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
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 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      8.009(CFS)
Depth of flow =   0.456(Ft.), Average velocity =   2.816(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  16.484(Ft.)
Flow velocity =   2.82(Ft/s)
Travel time =    2.71 min.     TC =   13.36  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.400
Decimal fraction soil group D = 0.600
SCS curve number for soil(AMC 2)  = 72.60
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.220(In/Hr)
Max Catchment Loss (Fm) =     0.110(In/Hr)
Rainfall intensity =      3.523(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.870
Subarea runoff =      3.684(CFS) for    1.450(Ac.)
Total runoff =      9.806(CFS)       Total area =        3.20(Ac.)
Area averaged Fm value =    0.118(In/Hr)
Street flow at end of street =      9.806(CFS)
Half street flow at end of street =      9.806(CFS)
Depth of flow =   0.484(Ft.), Average velocity =   2.958(Ft/s)
Flow width (from curb towards crown)=  17.854(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      213.000 to Point/Station      210.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
____________________________________________________________________________
Upstream point/station elevation =   251.000(Ft.)
Downstream point/station elevation =   250.000(Ft.)
Pipe length  =    10.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     9.806(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =     9.806(CFS)
Normal flow depth in pipe =    6.70(In.)
Flow top width inside pipe =   17.40(In.)
Critical Depth =   14.50(In.)
Pipe flow velocity =     16.36(Ft/s)
Travel time through pipe =    0.01 min.
Time of concentration (TC) =    13.37 min.


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Process from Point/Station      213.000 to Point/Station      210.000
**** CONFLUENCE OF MINOR STREAMS ****
____________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      3.200(Ac.)
Runoff from this stream =      9.806(CFS)
Time of concentration =   13.37 min.
Rainfall intensity =     3.521(In/Hr)
Area averaged loss rate (Fm) =    0.1182(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000


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Process from Point/Station      205.000 to Point/Station      214.000
**** INITIAL AREA EVALUATION ****
____________________________________________________________________________
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
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Initial subarea data:
Initial area flow distance =   205.000(Ft.)
Top (of initial area) elevation =   269.000(Ft.)
Bottom (of initial area) elevation =   263.000(Ft.)
Difference in elevation =     6.000(Ft.)
Slope =    0.02927  s(%)=       2.93
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.628 min.
Rainfall intensity =      5.265(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.879
Subarea runoff =      1.711(CFS)
Total initial stream area =        0.370(Ac.)


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Process from Point/Station      214.000 to Point/Station      215.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
______________________________________________________________________________
Top of street segment elevation =   263.000(Ft.)
End of street segment elevation =   261.000(Ft.)
Length of street segment  =   303.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      3.449(CFS)
Depth of flow =   0.375(Ft.), Average velocity =   2.069(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  12.412(Ft.)
Flow velocity =   2.07(Ft/s)
Travel time =    2.44 min.     TC =    9.07  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      4.399(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.874
Subarea runoff =      3.404(CFS) for    0.960(Ac.)
Total runoff =      5.116(CFS)       Total area =        1.33(Ac.)
Area averaged Fm value =    0.125(In/Hr)
Street flow at end of street =      5.116(CFS)
Half street flow at end of street =      5.116(CFS)
Depth of flow =   0.418(Ft.), Average velocity =   2.273(Ft/s)
Flow width (from curb towards crown)=  14.575(Ft.)


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Process from Point/Station      215.000 to Point/Station      216.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
______________________________________________________________________________
Top of street segment elevation =   261.000(Ft.)
End of street segment elevation =   256.000(Ft.)
Length of street segment  =   459.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
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Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      9.613(CFS)
Depth of flow =   0.466(Ft.), Average velocity =   3.201(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  16.960(Ft.)
Flow velocity =   3.20(Ft/s)
Travel time =    2.39 min.     TC =   11.46  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.400
Decimal fraction soil group D = 0.600
SCS curve number for soil(AMC 2)  = 72.60
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.220(In/Hr)
Max Catchment Loss (Fm) =     0.110(In/Hr)
Rainfall intensity =      3.847(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.873
Subarea runoff =      8.925(CFS) for    2.850(Ac.)
Total runoff =     14.040(CFS)       Total area =        4.18(Ac.)
Area averaged Fm value =    0.115(In/Hr)
Street flow at end of street =     14.040(CFS)
Half street flow at end of street =     14.040(CFS)
Depth of flow =   0.518(Ft.), Average velocity =   3.569(Ft/s)
Warning: depth of flow exceeds top of curb
Note:  depth of flow exceeds top of street crown.
Distance that curb overflow reaches into property =    0.89(Ft.)
Flow width (from curb towards crown)=  18.000(Ft.)


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Process from Point/Station      216.000 to Point/Station      210.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
________________________________________________________________________
Upstream point/station elevation =   251.000(Ft.)
Downstream point/station elevation =   250.000(Ft.)
Pipe length  =    31.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    14.040(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =    14.040(CFS)
Normal flow depth in pipe =   11.57(In.)
Flow top width inside pipe =   17.25(In.)
Critical Depth =   16.58(In.)
Pipe flow velocity =     11.70(Ft/s)
Travel time through pipe =    0.04 min.
Time of concentration (TC) =    11.50 min.


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Process from Point/Station      216.000 to Point/Station      210.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 3
Stream flow area =      4.180(Ac.)
Runoff from this stream =     14.040(CFS)
Time of concentration =   11.50 min.
Rainfall intensity =     3.838(In/Hr)
Area averaged loss rate (Fm) =    0.1148(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000
Summary of stream data:
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Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1      8.52    31.917     11.25    0.120      3.889
2      3.20     9.806     13.37    0.118      3.521
3      4.18    14.040     11.50    0.115      3.838
Qmax(1) =
          1.000 *    1.000 *    31.917) +
          1.108 *    0.841 *     9.806) +
          1.013 *    0.978 *    14.040) + =      54.964
Qmax(2) =
          0.903 *    1.000 *    31.917) +
          1.000 *    1.000 *     9.806) +
          0.915 *    1.000 *    14.040) + =      51.456
Qmax(3) =
          0.987 *    1.000 *    31.917) +
          1.093 *    0.860 *     9.806) +
          1.000 *    1.000 *    14.040) + =      54.754

Total of 3 streams to confluence:
Flow rates before confluence point:
      31.917       9.806      14.040
Maximum flow rates at confluence using above data:
       54.964       51.456       54.754
Area of streams before confluence:
        8.520        3.200        4.180
Effective area values after confluence:
       15.297       15.900       15.453
Results of confluence:
Total flow rate =     54.964(CFS)
Time of concentration =    11.245 min.
Effective stream area after confluence =     15.297(Ac.)
Study area average Pervious fraction(Ap) =  0.500
Study area average soil loss rate(Fm) =    0.118(In/Hr)
Study area total (this main stream) =      15.90(Ac.)


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Process from Point/Station      210.000 to Point/Station      217.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
________________________________________________________________________
Upstream point/station elevation =   250.000(Ft.)
Downstream point/station elevation =   214.000(Ft.)
Pipe length  =   878.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    54.964(CFS)
Given pipe size =     36.00(In.)
Calculated individual pipe flow  =    54.964(CFS)
Normal flow depth in pipe =   15.99(In.)
Flow top width inside pipe =   35.77(In.)
Critical Depth =   28.88(In.)
Pipe flow velocity =     18.12(Ft/s)
Travel time through pipe =    0.81 min.
Time of concentration (TC) =    12.05 min.


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Process from Point/Station      210.000 to Point/Station      217.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =     15.297(Ac.)
Runoff from this stream =     54.964(CFS)
Time of concentration =   12.05 min.
Rainfall intensity =     3.737(In/Hr)
Area averaged loss rate (Fm) =    0.1181(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000


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Process from Point/Station      508.000 to Point/Station      218.000
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**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
SCS curve number for soil(AMC 2)  = 75.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.200(In/Hr)
Max Catchment Loss (Fm) =     0.100(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   255.000(Ft.)
Bottom (of initial area) elevation =   237.000(Ft.)
Difference in elevation =    18.000(Ft.)
Slope =    0.06000  s(%)=       6.00
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.686 min.
Rainfall intensity =      5.238(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.883
Subarea runoff =      1.804(CFS)
Total initial stream area =        0.390(Ac.)


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Process from Point/Station      218.000 to Point/Station      219.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------
Top of street segment elevation =   237.000(Ft.)
End of street segment elevation =   223.000(Ft.)
Length of street segment  =   494.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      7.314(CFS)
Depth of flow =   0.377(Ft.), Average velocity =   4.310(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  12.531(Ft.)
Flow velocity =   4.31(Ft/s)
Travel time =    1.91 min.     TC =    8.60  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      4.536(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.876
Subarea runoff =     10.948(CFS) for    2.820(Ac.)
Total runoff =     12.751(CFS)        Total area =        3.21(Ac.)
Area averaged Fm value =    0.122(In/Hr)
Street flow at end of street =     12.751(CFS)
Half street flow at end of street =     12.751(CFS)
Depth of flow =   0.441(Ft.), Average velocity =   4.924(Ft/s)
Flow width (from curb towards crown)=  15.694(Ft.)
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Process from Point/Station      219.000 to Point/Station      217.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =   215.000(Ft.)
Downstream point/station elevation =   214.000(Ft.)
Pipe length  =    22.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    12.751(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =    12.751(CFS)
Normal flow depth in pipe =    9.73(In.)
Flow top width inside pipe =   17.94(In.)
Critical Depth =   16.10(In.)
Pipe flow velocity =     13.08(Ft/s)
Travel time through pipe =    0.03 min.
Time of concentration (TC) =     8.62 min.


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Process from Point/Station      219.000 to Point/Station      217.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      3.210(Ac.)
Runoff from this stream =     12.751(CFS)
Time of concentration =    8.62 min.
Rainfall intensity =     4.527(In/Hr)
Area averaged loss rate (Fm) =    0.1220(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000


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Process from Point/Station      503.000 to Point/Station      220.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
SCS curve number for soil(AMC 2)  = 75.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.200(In/Hr)
Max Catchment Loss (Fm) =     0.100(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   256.000(Ft.)
Bottom (of initial area) elevation =   237.000(Ft.)
Difference in elevation =    19.000(Ft.)
Slope =    0.06333  s(%)=       6.33
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.614 min.
Rainfall intensity =      5.271(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.883
Subarea runoff =      0.977(CFS)
Total initial stream area =        0.210(Ac.)


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Process from Point/Station      220.000 to Point/Station      221.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------------
Top of street segment elevation =   237.000(Ft.)
End of street segment elevation =   223.000(Ft.)
Length of street segment  =   472.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
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Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      1.574(CFS)
Depth of flow =   0.249(Ft.), Average velocity =   3.133(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =   6.131(Ft.)
Flow velocity =   3.13(Ft/s)
Travel time =    2.51 min.     TC =    9.13  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.950
Decimal fraction soil group D = 0.050
SCS curve number for soil(AMC 2)  = 69.30
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.248(In/Hr)
Max Catchment Loss (Fm) =     0.124(In/Hr)
Rainfall intensity =      4.383(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.876
Subarea runoff =      1.136(CFS) for    0.340(Ac.)
Total runoff =      2.113(CFS)       Total area =        0.55(Ac.)
Area averaged Fm value =    0.115(In/Hr)
Street flow at end of street =      2.113(CFS)
Half street flow at end of street =      2.113(CFS)
Depth of flow =   0.269(Ft.), Average velocity =   3.319(Ft/s)
Flow width (from curb towards crown)=   7.141(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      221.000 to Point/Station      217.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   215.000(Ft.)
Downstream point/station elevation =   214.000(Ft.)
Pipe length  =    33.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     2.113(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =     2.113(CFS)
Normal flow depth in pipe =    4.13(In.)
Flow top width inside pipe =   15.14(In.)
Critical Depth =    6.58(In.)
Pipe flow velocity =      6.90(Ft/s)
Travel time through pipe =    0.08 min.
Time of concentration (TC) =     9.21 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      221.000 to Point/Station      217.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 3
Stream flow area =      0.550(Ac.)
Runoff from this stream =      2.113(CFS)
Time of concentration =    9.21 min.
Rainfall intensity =     4.361(In/Hr)
Area averaged loss rate (Fm) =    0.1147(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1     15.30    54.964     12.05    0.118      3.737
2      3.21    12.751      8.62    0.122      4.527
3      0.55     2.113      9.21    0.115      4.361
```

```
Qmax(1) =
          1.000 *    1.000 *    54.964) +
          0.821 *    1.000 *    12.751) +
          0.853 *    1.000 *     2.113) + =      67.231
Qmax(2) =
          1.218 *    0.716 *    54.964) +
          1.000 *    1.000 *    12.751) +
          1.039 *    0.937 *     2.113) + =      62.724
Qmax(3) =
          1.172 *    0.764 *    54.964) +
          0.962 *    1.000 *    12.751) +
          1.000 *    1.000 *     2.113) + =      63.602

Total of 3 streams to confluence:
Flow rates before confluence point:
      54.964      12.751       2.113
Maximum flow rates at confluence using above data:
       67.231       62.724       63.602
Area of streams before confluence:
       15.297        3.210        0.550
Effective area values after confluence:
       19.057       14.672       15.443
Results of confluence:
Total flow rate =     67.231(CFS)
Time of concentration =    12.053 min.
Effective stream area after confluence =     19.057(Ac.)
Study area average Pervious fraction(Ap) =  0.500
Study area average soil loss rate(Fm) =    0.119(In/Hr)
Study area total (this main stream) =      19.06(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      217.000 to Point/Station      222.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   214.000(Ft.)
Downstream point/station elevation =   212.000(Ft.)
Pipe length  =    52.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    67.231(CFS)
Given pipe size =     36.00(In.)
Calculated individual pipe flow  =    67.231(CFS)
Normal flow depth in pipe =   18.30(In.)
Flow top width inside pipe =   36.00(In.)
Critical Depth =   31.42(In.)
Pipe flow velocity =     18.63(Ft/s)
Travel time through pipe =    0.05 min.
Time of concentration (TC) =    12.10 min.
End of computations, total study area =           19.66 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.500
Area averaged SCS curve number (AMC 2) =  70.5
```

- 2 Year 3 Hour Pre-Development Unit Hydrograph – Area 'B'

```
        U n i t   H y d r o g r a p h   A n a l y s i s

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        Study date  10/05/16   File Name EXB00203.out


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'B' - 2 YEAR 3 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

        Storm Event Year = 2

        Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 80.2       7.8          0.40     D     0.200     1.000    0.200
 80.2      11.8          0.60     C     0.250     1.000    0.250

Area-averaged adjusted loss rate Fm (In/Hr) =  0.230

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
     7.84   0.400         80.2      63.3       5.80     0.058

    11.76   0.600         80.2      63.3       5.80     0.058

Area-averaged catchment yield fraction, Y =  0.058
Area-averaged low loss fraction, Yb =  0.942
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.233 (hours)
Watershed area =      19.60(Ac.)
Catchment Lag time =   0.186 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 44.7932
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.230(In/Hr)
Average low loss rate fraction (Yb) = 0.942 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.190(In)
Computed peak 30-minute rainfall =  0.400(In)
Specified peak 1-hour rainfall =  0.530(In)
Computed peak 3-hour rainfall =  0.890(In)
Specified peak 6-hour rainfall =  1.220(In)
Specified peak 24-hour rainfall =  2.050(In)


Rainfall depth area reduction factors:
Using a total area of      19.60(Ac.) (Ref: fig. E-4)
```

```
5-minute factor = 0.999     Adjusted rainfall =  0.190(In)
30-minute factor = 0.999    Adjusted rainfall =  0.400(In)
1-hour factor = 0.999       Adjusted rainfall =  0.530(In)
3-hour factor = 1.000       Adjusted rainfall =  0.890(In)
6-hour factor = 1.000       Adjusted rainfall =  1.220(In)
24-hour factor = 1.000 Adjusted rainfall =  2.050(In)
--------------------------------------------------------------------

                     U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------
               (K =       237.04 (CFS))

  1                3.667                   8.692
  2               18.673                  35.571
  3               55.689                  87.740
  4               73.322                  41.798
  5               82.432                  21.595
  6               88.469                  14.309
  7               92.653                   9.917
  8               95.496                   6.739
  9               97.322                   4.328
 10               98.206                   2.097
 11               98.703                   1.178
 12               99.088                   0.913
 13               99.383                   0.698
 14               99.705                   0.763
 15               99.887                   0.432
 16              100.000                   0.267
--------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.1898              0.1898
  2              0.2532              0.0634
  3              0.2996              0.0465
  4              0.3377              0.0380
  5              0.3705              0.0328
  6              0.3996              0.0292
  7              0.4254              0.0258
  8              0.4491              0.0237
  9              0.4711              0.0220
 10              0.4917              0.0206
 11              0.5111              0.0194
 12              0.5295              0.0184
 13              0.5499              0.0204
 14              0.5695              0.0196
 15              0.5884              0.0189
 16              0.6066              0.0182
 17              0.6242              0.0176
 18              0.6413              0.0171
 19              0.6579              0.0166
 20              0.6741              0.0161
 21              0.6898              0.0157
 22              0.7051              0.0153
 23              0.7201              0.0150
 24              0.7347              0.0146
 25              0.7490              0.0143
 26              0.7631              0.0140
 27              0.7768              0.0137
 28              0.7902              0.0135
 29              0.8035              0.0132
 30              0.8164              0.0130
 31              0.8292              0.0127
 32              0.8417              0.0125
 33              0.8540              0.0123
 34              0.8662              0.0121
 35              0.8781              0.0119
 36              0.8899              0.0118
```

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0118	0.0111	0.0007
2	0.0119	0.0113	0.0007
3	0.0123	0.0116	0.0007
4	0.0125	0.0118	0.0007
5	0.0130	0.0122	0.0007
6	0.0132	0.0125	0.0008
7	0.0137	0.0129	0.0008
8	0.0140	0.0132	0.0008
9	0.0146	0.0138	0.0008
10	0.0150	0.0141	0.0009
11	0.0157	0.0148	0.0009
12	0.0161	0.0152	0.0009
13	0.0171	0.0161	0.0010
14	0.0176	0.0166	0.0010
15	0.0189	0.0178	0.0011
16	0.0196	0.0185	0.0011
17	0.0184	0.0173	0.0011
18	0.0194	0.0183	0.0011
19	0.0220	0.0192	0.0028
20	0.0237	0.0192	0.0045
21	0.0292	0.0192	0.0100
22	0.0328	0.0192	0.0136
23	0.0465	0.0192	0.0273
24	0.0634	0.0192	0.0442
25	0.1898	0.0192	0.1707
26	0.0380	0.0192	0.0189
27	0.0258	0.0192	0.0066
28	0.0206	0.0192	0.0014
29	0.0204	0.0192	0.0012
30	0.0182	0.0172	0.0011
31	0.0166	0.0156	0.0010
32	0.0153	0.0144	0.0009
33	0.0143	0.0135	0.0008
34	0.0135	0.0127	0.0008
35	0.0127	0.0120	0.0007
36	0.0121	0.0114	0.0007

Total soil rain loss = 0.57(In)
Total effective rainfall = 0.32(In)
Peak flow rate in flood hydrograph = 18.48(CFS)

++

3 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	5.0	10.0	15.0	20.0
0+ 5	0.0000	0.01	Q	|	|	|	|
0+10	0.0002	0.03	Q	|	|	|	|
0+15	0.0009	0.09	Q	|	|	|	|
0+20	0.0017	0.12	Q	|	|	|	|
0+25	0.0026	0.14	Q	|	|	|	|
0+30	0.0037	0.15	Q	|	|	|	|
0+35	0.0048	0.16	Q	|	|	|	|
0+40	0.0060	0.17	Q	|	|	|	|
0+45	0.0072	0.18	Q	|	|	|	|
0+50	0.0085	0.19	Q	|	|	|	|
0+55	0.0098	0.19	Q	|	|	|	|
1+ 0	0.0112	0.20	Q	|	|	|	|
1+ 5	0.0126	0.21	Q	|	|	|	|
1+10	0.0141	0.21	QV	|	|	|	|
1+15	0.0156	0.22	QV	|	|	|	|

```
   1+20       0.0172      0.23  QV        |         |         |         |
   1+25       0.0189      0.25  QV        |         |         |         |
   1+30       0.0207      0.25  QV        |         |         |         |
   1+35       0.0225      0.27  QV        |         |         |         |
   1+40       0.0249      0.35  QV        |         |         |         |
   1+45       0.0291      0.61  |QV       |         |         |         |
   1+50       0.0364      1.06  | Q       |         |         |         |
   1+55       0.0494      1.89  |  Q      |         |         |         |
   2+ 0       0.0710      3.14  |    VQ   |         |         |         |
   2+ 5       0.1148      6.35  |       V | Q       |         |         |
   2+10       0.1958     11.76  |         |   V     |  Q      |         |
   2+15       0.3231     18.48  |         |         |   V     |     Q   |
   2+20       0.3962     10.62  |         |         |Q        V         |
   2+25       0.4387      6.17  |         | Q       |         |  V      |
   2+30       0.4664      4.02  |       Q |         |         |    V    |
   2+35       0.4855      2.78  |    Q    |         |         |     V   |
   2+40       0.4988      1.93  |  Q      |         |         |      V  |
   2+45       0.5077      1.29  | Q       |         |         |       V |
   2+50       0.5132      0.79  |Q        |         |         |       V |
   2+55       0.5169      0.55  |Q        |         |         |        V|
   3+ 0       0.5200      0.44  Q         |         |         |        V|
   3+ 5       0.5226      0.37  Q         |         |         |        V|
   3+10       0.5248      0.32  Q         |         |         |        V|
   3+15       0.5260      0.18  Q         |         |         |        V|
   3+20       0.5268      0.11  Q         |         |         |        V|
   3+25       0.5270      0.04  Q         |         |         |        V|
   3+30       0.5272      0.02  Q         |         |         |        V|
   3+35       0.5273      0.01  Q         |         |         |        V|
   3+40       0.5274      0.01  Q         |         |         |        V|
   3+45       0.5274      0.00  Q         |         |         |        V|
   3+50       0.5274      0.00  Q         |         |         |        V|
   3+55       0.5274      0.00  Q         |         |         |        V|
   4+ 0       0.5274      0.00  Q         |         |         |        V|
   4+ 5       0.5274      0.00  Q         |         |         |        V|
   4+10       0.5274      0.00  Q         |         |         |        V|
   4+15       0.5274      0.00  Q         |         |         |         V
------------------------------------------------------------------------
```

- 2 Year 6 Hour Pre-Development Unit Hydrograph – Area 'B'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/05/16   File Name EXB00206.out

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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996

Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'B' - 2 YEAR 6 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------
       Storm Event Year = 2

       Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********

SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 80.2       7.8          0.40     D     0.200     1.000    0.200
 80.2      11.8          0.60     C     0.250     1.000    0.250

Area-averaged adjusted loss rate Fm (In/Hr) =  0.230

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)           Yield Fr
     7.84   0.400         80.2      63.3       5.80     0.058

    11.76   0.600         80.2      63.3       5.80     0.058

Area-averaged catchment yield fraction, Y =  0.058
Area-averaged low loss fraction, Yb =  0.942
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.233 (hours)
Watershed area =      19.60(Ac.)
Catchment Lag time =   0.186 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 44.7932
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.230(In/Hr)
Average low loss rate fraction (Yb) = 0.942 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.190(In)
Computed peak 30-minute rainfall =  0.400(In)
Specified peak 1-hour rainfall =  0.530(In)
Computed peak 3-hour rainfall =  0.890(In)
Specified peak 6-hour rainfall =  1.220(In)
Specified peak 24-hour rainfall =  2.050(In)


Rainfall depth area reduction factors:
Using a total area of      19.60(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.190(In)
30-minute factor = 0.999    Adjusted rainfall =  0.400(In)
1-hour factor = 0.999       Adjusted rainfall =  0.530(In)
3-hour factor = 1.000       Adjusted rainfall =  0.890(In)
```

```
6-hour factor = 1.000       Adjusted rainfall =  1.220(In)
24-hour factor = 1.000 Adjusted rainfall =  2.050(In)
------------------------------------------------------------------------

                      U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
------------------------------------------------------------------------
               (K =       237.04 (CFS))

  1                3.667                   8.692
  2               18.673                  35.571
  3               55.689                  87.740
  4               73.322                  41.798
  5               82.432                  21.595
  6               88.469                  14.309
  7               92.653                   9.917
  8               95.496                   6.739
  9               97.322                   4.328
 10               98.206                   2.097
 11               98.703                   1.178
 12               99.088                   0.913
 13               99.383                   0.698
 14               99.705                   0.763
 15               99.887                   0.432
 16              100.000                   0.267
------------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.1898              0.1898
  2              0.2532              0.0634
  3              0.2996              0.0465
  4              0.3377              0.0380
  5              0.3705              0.0328
  6              0.3996              0.0292
  7              0.4254              0.0258
  8              0.4491              0.0237
  9              0.4711              0.0220
 10              0.4917              0.0206
 11              0.5111              0.0194
 12              0.5295              0.0184
 13              0.5499              0.0204
 14              0.5695              0.0196
 15              0.5884              0.0189
 16              0.6066              0.0182
 17              0.6242              0.0176
 18              0.6413              0.0171
 19              0.6579              0.0166
 20              0.6741              0.0161
 21              0.6898              0.0157
 22              0.7051              0.0153
 23              0.7201              0.0150
 24              0.7347              0.0146
 25              0.7490              0.0143
 26              0.7631              0.0140
 27              0.7768              0.0137
 28              0.7902              0.0135
 29              0.8035              0.0132
 30              0.8164              0.0130
 31              0.8292              0.0127
 32              0.8417              0.0125
 33              0.8540              0.0123
 34              0.8662              0.0121
 35              0.8781              0.0119
 36              0.8899              0.0118
 37              0.9011              0.0112
 38              0.9121              0.0110
 39              0.9229              0.0108
 40              0.9336              0.0107
 41              0.9442              0.0106
```

42	0.9546	0.0104
43	0.9648	0.0103
44	0.9750	0.0101
45	0.9850	0.0100
46	0.9949	0.0099
47	1.0047	0.0098
48	1.0144	0.0097
49	1.0239	0.0096
50	1.0334	0.0095
51	1.0427	0.0094
52	1.0520	0.0093
53	1.0612	0.0092
54	1.0702	0.0091
55	1.0792	0.0090
56	1.0881	0.0089
57	1.0969	0.0088
58	1.1056	0.0087
59	1.1142	0.0086
60	1.1228	0.0086
61	1.1313	0.0085
62	1.1397	0.0084
63	1.1480	0.0083
64	1.1563	0.0083
65	1.1644	0.0082
66	1.1726	0.0081
67	1.1806	0.0081
68	1.1886	0.0080
69	1.1965	0.0079
70	1.2044	0.0079
71	1.2122	0.0078
72	1.2199	0.0077

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0077	0.0073	0.0004
2	0.0078	0.0073	0.0004
3	0.0079	0.0075	0.0005
4	0.0080	0.0075	0.0005
5	0.0081	0.0077	0.0005
6	0.0082	0.0077	0.0005
7	0.0083	0.0078	0.0005
8	0.0084	0.0079	0.0005
9	0.0086	0.0081	0.0005
10	0.0086	0.0081	0.0005
11	0.0088	0.0083	0.0005
12	0.0089	0.0084	0.0005
13	0.0091	0.0085	0.0005
14	0.0092	0.0086	0.0005
15	0.0094	0.0088	0.0005
16	0.0095	0.0089	0.0005
17	0.0097	0.0091	0.0006
18	0.0098	0.0092	0.0006
19	0.0100	0.0094	0.0006
20	0.0101	0.0096	0.0006
21	0.0104	0.0098	0.0006
22	0.0106	0.0099	0.0006
23	0.0108	0.0102	0.0006
24	0.0110	0.0104	0.0006
25	0.0118	0.0111	0.0007
26	0.0119	0.0113	0.0007
27	0.0123	0.0116	0.0007
28	0.0125	0.0118	0.0007
29	0.0130	0.0122	0.0007
30	0.0132	0.0125	0.0008
31	0.0137	0.0129	0.0008
32	0.0140	0.0132	0.0008
33	0.0146	0.0138	0.0008
34	0.0150	0.0141	0.0009
35	0.0157	0.0148	0.0009

36	0.0161	0.0152	0.0009
37	0.0171	0.0161	0.0010
38	0.0176	0.0166	0.0010
39	0.0189	0.0178	0.0011
40	0.0196	0.0185	0.0011
41	0.0184	0.0173	0.0011
42	0.0194	0.0183	0.0011
43	0.0220	0.0192	0.0028
44	0.0237	0.0192	0.0045
45	0.0292	0.0192	0.0100
46	0.0328	0.0192	0.0136
47	0.0465	0.0192	0.0273
48	0.0634	0.0192	0.0442
49	0.1898	0.0192	0.1707
50	0.0380	0.0192	0.0189
51	0.0258	0.0192	0.0066
52	0.0206	0.0192	0.0014
53	0.0204	0.0192	0.0012
54	0.0182	0.0172	0.0011
55	0.0166	0.0156	0.0010
56	0.0153	0.0144	0.0009
57	0.0143	0.0135	0.0008
58	0.0135	0.0127	0.0008
59	0.0127	0.0120	0.0007
60	0.0121	0.0114	0.0007
61	0.0112	0.0105	0.0006
62	0.0107	0.0101	0.0006
63	0.0103	0.0097	0.0006
64	0.0099	0.0093	0.0006
65	0.0096	0.0090	0.0006
66	0.0093	0.0087	0.0005
67	0.0090	0.0085	0.0005
68	0.0087	0.0082	0.0005
69	0.0085	0.0080	0.0005
70	0.0083	0.0078	0.0005
71	0.0081	0.0076	0.0005
72	0.0079	0.0074	0.0005

Total soil rain loss = 0.88(In)
Total effective rainfall = 0.34(In)
Peak flow rate in flood hydrograph = 18.48(CFS)

++

6 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	5.0	10.0	15.0	20.0
0+ 5	0.0000	0.00	Q	|	|	|	|
0+10	0.0002	0.02	Q	|	|	|	|
0+15	0.0006	0.06	Q	|	|	|	|
0+20	0.0011	0.08	Q	|	|	|	|
0+25	0.0017	0.09	Q	|	|	|	|
0+30	0.0024	0.10	Q	|	|	|	|
0+35	0.0031	0.10	Q	|	|	|	|
0+40	0.0038	0.11	Q	|	|	|	|
0+45	0.0046	0.11	Q	|	|	|	|
0+50	0.0053	0.11	Q	|	|	|	|
0+55	0.0061	0.11	Q	|	|	|	|
1+ 0	0.0069	0.12	Q	|	|	|	|
1+ 5	0.0077	0.12	Q	|	|	|	|
1+10	0.0086	0.12	Q	|	|	|	|
1+15	0.0094	0.12	Q	|	|	|	|
1+20	0.0103	0.12	Q	|	|	|	|
1+25	0.0111	0.13	Q	|	|	|	|
1+30	0.0120	0.13	Q	|	|	|	|
1+35	0.0129	0.13	Q	|	|	|	|

```
   1+40       0.0138      0.13  Q          |          |          |          |
   1+45       0.0147      0.13  QV         |          |          |          |
   1+50       0.0157      0.14  QV         |          |          |          |
   1+55       0.0166      0.14  QV         |          |          |          |
   2+ 0       0.0176      0.14  QV         |          |          |          |
   2+ 5       0.0186      0.15  QV         |          |          |          |
   2+10       0.0196      0.15  QV         |          |          |          |
   2+15       0.0207      0.15  QV         |          |          |          |
   2+20       0.0218      0.16  QV         |          |          |          |
   2+25       0.0229      0.16  QV         |          |          |          |
   2+30       0.0241      0.17  QV         |          |          |          |
   2+35       0.0253      0.17  QV         |          |          |          |
   2+40       0.0265      0.18  QV         |          |          |          |
   2+45       0.0278      0.18  QV         |          |          |          |
   2+50       0.0290      0.19  Q V        |          |          |          |
   2+55       0.0304      0.19  Q V        |          |          |          |
   3+ 0       0.0318      0.20  Q V        |          |          |          |
   3+ 5       0.0332      0.21  Q V        |          |          |          |
   3+10       0.0347      0.22  Q V        |          |          |          |
   3+15       0.0362      0.22  Q V        |          |          |          |
   3+20       0.0378      0.23  Q V        |          |          |          |
   3+25       0.0395      0.25  Q V        |          |          |          |
   3+30       0.0413      0.25  Q V        |          |          |          |
   3+35       0.0431      0.27  Q  V       |          |          |          |
   3+40       0.0455      0.35  Q  V       |          |          |          |
   3+45       0.0497      0.61  |Q V       |          |          |          |
   3+50       0.0570      1.06  | Q V      |          |          |          |
   3+55       0.0700      1.89  |  Q V     |          |          |          |
   4+ 0       0.0916      3.14  |     Q    |          |          |          |
   4+ 5       0.1354      6.35  |        V| Q         |          |          |
   4+10       0.2164     11.76  |          |    V     |  Q       |          |
   4+15       0.3437     18.48  |          |          |   V      |     Q    |
   4+20       0.4168     10.62  |          |          |Q       V|          |
   4+25       0.4593      6.17  |          | Q        |          | V        |
   4+30       0.4870      4.02  |        Q |          |          |   V      |
   4+35       0.5061      2.78  |    Q     |          |          |     V    |
   4+40       0.5194      1.93  |  Q       |          |          |      V   |
   4+45       0.5283      1.29  | Q        |          |          |      V   |
   4+50       0.5338      0.79  |Q         |          |          |       V  |
   4+55       0.5375      0.55  |Q         |          |          |       V  |
   5+ 0       0.5406      0.44  Q          |          |          |       V  |
   5+ 5       0.5432      0.38  Q          |          |          |       V  |
   5+10       0.5456      0.35  Q          |          |          |        V|
   5+15       0.5474      0.27  Q          |          |          |        V|
   5+20       0.5489      0.21  Q          |          |          |        V|
   5+25       0.5500      0.16  Q          |          |          |        V|
   5+30       0.5510      0.14  Q          |          |          |        V|
   5+35       0.5519      0.14  Q          |          |          |        V|
   5+40       0.5528      0.13  Q          |          |          |        V|
   5+45       0.5537      0.13  Q          |          |          |        V|
   5+50       0.5546      0.12  Q          |          |          |        V|
   5+55       0.5554      0.12  Q          |          |          |        V|
   6+ 0       0.5562      0.12  Q          |          |          |        V|
   6+ 5       0.5570      0.11  Q          |          |          |        V|
   6+10       0.5576      0.09  Q          |          |          |        V|
   6+15       0.5579      0.05  Q          |          |          |        V|
   6+20       0.5581      0.03  Q          |          |          |        V|
   6+25       0.5583      0.02  Q          |          |          |        V|
   6+30       0.5584      0.01  Q          |          |          |        V|
   6+35       0.5584      0.01  Q          |          |          |        V|
   6+40       0.5585      0.01  Q          |          |          |        V|
   6+45       0.5585      0.00  Q          |          |          |        V|
   6+50       0.5585      0.00  Q          |          |          |        V|
   6+55       0.5585      0.00  Q          |          |          |        V|
   7+ 0       0.5585      0.00  Q          |          |          |        V|
   7+ 5       0.5585      0.00  Q          |          |          |        V|
   7+10       0.5585      0.00  Q          |          |          |        V|
   7+15       0.5585      0.00  Q          |          |          |        V|
-------------------------------------------------------------------------
```

- 2 Year 12 Hour Pre-Development Unit Hydrograph – Area 'B'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989-2012, Version 7.2

       Study date  10/05/16   File Name EXB00212.out


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'B' - 2 YEAR 12 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 2

       Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 80.2       7.8          0.40     D     0.200     1.000    0.200
 80.2      11.8          0.60     C     0.250     1.000    0.250

Area-averaged adjusted loss rate Fm (In/Hr) =  0.230

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
     7.84   0.400         80.2      63.3       5.80     0.058

    11.76   0.600         80.2      63.3       5.80     0.058

Area-averaged catchment yield fraction, Y =  0.058
Area-averaged low loss fraction, Yb =  0.942
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.233 (hours)
Watershed area =      19.60(Ac.)
Catchment Lag time =   0.186 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 44.7932
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.230(In/Hr)
Average low loss rate fraction (Yb) = 0.942 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.190(In)
Computed peak 30-minute rainfall =  0.400(In)
Specified peak 1-hour rainfall =  0.530(In)
Computed peak 3-hour rainfall =  0.890(In)
Specified peak 6-hour rainfall =  1.220(In)
Specified peak 24-hour rainfall =  2.050(In)


Rainfall depth area reduction factors:
Using a total area of      19.60(Ac.) (Ref: fig. E-4)
```

```
5-minute factor = 0.999     Adjusted rainfall =  0.190(In)
30-minute factor = 0.999    Adjusted rainfall =  0.400(In)
1-hour factor = 0.999       Adjusted rainfall =  0.530(In)
3-hour factor = 1.000       Adjusted rainfall =  0.890(In)
6-hour factor = 1.000       Adjusted rainfall =  1.220(In)
24-hour factor = 1.000 Adjusted rainfall =  2.050(In)
--------------------------------------------------------------------

                     U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------
               (K =       237.04 (CFS))

  1                3.667                   8.692
  2               18.673                  35.571
  3               55.689                  87.740
  4               73.322                  41.798
  5               82.432                  21.595
  6               88.469                  14.309
  7               92.653                   9.917
  8               95.496                   6.739
  9               97.322                   4.328
 10               98.206                   2.097
 11               98.703                   1.178
 12               99.088                   0.913
 13               99.383                   0.698
 14               99.705                   0.763
 15               99.887                   0.432
 16              100.000                   0.267
--------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.1898              0.1898
  2              0.2532              0.0634
  3              0.2996              0.0465
  4              0.3377              0.0380
  5              0.3705              0.0328
  6              0.3996              0.0292
  7              0.4254              0.0258
  8              0.4491              0.0237
  9              0.4711              0.0220
 10              0.4917              0.0206
 11              0.5111              0.0194
 12              0.5295              0.0184
 13              0.5499              0.0204
 14              0.5695              0.0196
 15              0.5884              0.0189
 16              0.6066              0.0182
 17              0.6242              0.0176
 18              0.6413              0.0171
 19              0.6579              0.0166
 20              0.6741              0.0161
 21              0.6898              0.0157
 22              0.7051              0.0153
 23              0.7201              0.0150
 24              0.7347              0.0146
 25              0.7490              0.0143
 26              0.7631              0.0140
 27              0.7768              0.0137
 28              0.7902              0.0135
 29              0.8035              0.0132
 30              0.8164              0.0130
 31              0.8292              0.0127
 32              0.8417              0.0125
 33              0.8540              0.0123
 34              0.8662              0.0121
 35              0.8781              0.0119
 36              0.8899              0.0118
```

37	0.9011	0.0112
38	0.9121	0.0110
39	0.9229	0.0108
40	0.9336	0.0107
41	0.9442	0.0106
42	0.9546	0.0104
43	0.9648	0.0103
44	0.9750	0.0101
45	0.9850	0.0100
46	0.9949	0.0099
47	1.0047	0.0098
48	1.0144	0.0097
49	1.0239	0.0096
50	1.0334	0.0095
51	1.0427	0.0094
52	1.0520	0.0093
53	1.0612	0.0092
54	1.0702	0.0091
55	1.0792	0.0090
56	1.0881	0.0089
57	1.0969	0.0088
58	1.1056	0.0087
59	1.1142	0.0086
60	1.1228	0.0086
61	1.1313	0.0085
62	1.1397	0.0084
63	1.1480	0.0083
64	1.1563	0.0083
65	1.1644	0.0082
66	1.1726	0.0081
67	1.1806	0.0081
68	1.1886	0.0080
69	1.1965	0.0079
70	1.2044	0.0079
71	1.2122	0.0078
72	1.2199	0.0077
73	1.2262	0.0063
74	1.2325	0.0063
75	1.2387	0.0062
76	1.2449	0.0062
77	1.2510	0.0061
78	1.2570	0.0061
79	1.2630	0.0060
80	1.2690	0.0060
81	1.2749	0.0059
82	1.2808	0.0059
83	1.2866	0.0058
84	1.2924	0.0058
85	1.2981	0.0057
86	1.3038	0.0057
87	1.3095	0.0057
88	1.3151	0.0056
89	1.3207	0.0056
90	1.3262	0.0055
91	1.3317	0.0055
92	1.3372	0.0055
93	1.3426	0.0054
94	1.3480	0.0054
95	1.3533	0.0054
96	1.3587	0.0053
97	1.3639	0.0053
98	1.3692	0.0052
99	1.3744	0.0052
100	1.3796	0.0052
101	1.3847	0.0051
102	1.3898	0.0051
103	1.3949	0.0051
104	1.4000	0.0051
105	1.4050	0.0050
106	1.4100	0.0050
107	1.4150	0.0050

108	1.4199	0.0049
109	1.4248	0.0049
110	1.4297	0.0049
111	1.4346	0.0049
112	1.4394	0.0048
113	1.4442	0.0048
114	1.4489	0.0048
115	1.4537	0.0047
116	1.4584	0.0047
117	1.4631	0.0047
118	1.4678	0.0047
119	1.4724	0.0046
120	1.4770	0.0046
121	1.4816	0.0046
122	1.4862	0.0046
123	1.4908	0.0045
124	1.4953	0.0045
125	1.4998	0.0045
126	1.5043	0.0045
127	1.5087	0.0045
128	1.5132	0.0044
129	1.5176	0.0044
130	1.5220	0.0044
131	1.5263	0.0044
132	1.5307	0.0044
133	1.5350	0.0043
134	1.5393	0.0043
135	1.5436	0.0043
136	1.5479	0.0043
137	1.5522	0.0043
138	1.5564	0.0042
139	1.5606	0.0042
140	1.5648	0.0042
141	1.5690	0.0042
142	1.5731	0.0042
143	1.5773	0.0041
144	1.5814	0.0041

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0041	0.0039	0.0002
2	0.0041	0.0039	0.0002
3	0.0042	0.0039	0.0002
4	0.0042	0.0040	0.0002
5	0.0042	0.0040	0.0002
6	0.0043	0.0040	0.0002
7	0.0043	0.0040	0.0002
8	0.0043	0.0041	0.0002
9	0.0044	0.0041	0.0003
10	0.0044	0.0041	0.0003
11	0.0044	0.0042	0.0003
12	0.0044	0.0042	0.0003
13	0.0045	0.0042	0.0003
14	0.0045	0.0042	0.0003
15	0.0045	0.0043	0.0003
16	0.0046	0.0043	0.0003
17	0.0046	0.0044	0.0003
18	0.0046	0.0044	0.0003
19	0.0047	0.0044	0.0003
20	0.0047	0.0044	0.0003
21	0.0048	0.0045	0.0003
22	0.0048	0.0045	0.0003
23	0.0049	0.0046	0.0003
24	0.0049	0.0046	0.0003
25	0.0049	0.0047	0.0003
26	0.0050	0.0047	0.0003
27	0.0050	0.0047	0.0003
28	0.0051	0.0048	0.0003
29	0.0051	0.0048	0.0003

30	0.0051	0.0049	0.0003
31	0.0052	0.0049	0.0003
32	0.0052	0.0049	0.0003
33	0.0053	0.0050	0.0003
34	0.0054	0.0050	0.0003
35	0.0054	0.0051	0.0003
36	0.0055	0.0051	0.0003
37	0.0055	0.0052	0.0003
38	0.0056	0.0053	0.0003
39	0.0057	0.0053	0.0003
40	0.0057	0.0054	0.0003
41	0.0058	0.0054	0.0003
42	0.0058	0.0055	0.0003
43	0.0059	0.0056	0.0003
44	0.0060	0.0056	0.0003
45	0.0061	0.0057	0.0003
46	0.0061	0.0058	0.0004
47	0.0062	0.0059	0.0004
48	0.0063	0.0059	0.0004
49	0.0077	0.0073	0.0004
50	0.0078	0.0073	0.0004
51	0.0079	0.0075	0.0005
52	0.0080	0.0075	0.0005
53	0.0081	0.0077	0.0005
54	0.0082	0.0077	0.0005
55	0.0083	0.0078	0.0005
56	0.0084	0.0079	0.0005
57	0.0086	0.0081	0.0005
58	0.0086	0.0081	0.0005
59	0.0088	0.0083	0.0005
60	0.0089	0.0084	0.0005
61	0.0091	0.0085	0.0005
62	0.0092	0.0086	0.0005
63	0.0094	0.0088	0.0005
64	0.0095	0.0089	0.0005
65	0.0097	0.0091	0.0006
66	0.0098	0.0092	0.0006
67	0.0100	0.0094	0.0006
68	0.0101	0.0096	0.0006
69	0.0104	0.0098	0.0006
70	0.0106	0.0099	0.0006
71	0.0108	0.0102	0.0006
72	0.0110	0.0104	0.0006
73	0.0118	0.0111	0.0007
74	0.0119	0.0113	0.0007
75	0.0123	0.0116	0.0007
76	0.0125	0.0118	0.0007
77	0.0130	0.0122	0.0007
78	0.0132	0.0125	0.0008
79	0.0137	0.0129	0.0008
80	0.0140	0.0132	0.0008
81	0.0146	0.0138	0.0008
82	0.0150	0.0141	0.0009
83	0.0157	0.0148	0.0009
84	0.0161	0.0152	0.0009
85	0.0171	0.0161	0.0010
86	0.0176	0.0166	0.0010
87	0.0189	0.0178	0.0011
88	0.0196	0.0185	0.0011
89	0.0184	0.0173	0.0011
90	0.0194	0.0183	0.0011
91	0.0220	0.0192	0.0028
92	0.0237	0.0192	0.0045
93	0.0292	0.0192	0.0100
94	0.0328	0.0192	0.0136
95	0.0465	0.0192	0.0273
96	0.0634	0.0192	0.0442
97	0.1898	0.0192	0.1707
98	0.0380	0.0192	0.0189
99	0.0258	0.0192	0.0066
100	0.0206	0.0192	0.0014

```
      101              0.0204          0.0192              0.0012
      102              0.0182          0.0172              0.0011
      103              0.0166          0.0156              0.0010
      104              0.0153          0.0144              0.0009
      105              0.0143          0.0135              0.0008
      106              0.0135          0.0127              0.0008
      107              0.0127          0.0120              0.0007
      108              0.0121          0.0114              0.0007
      109              0.0112          0.0105              0.0006
      110              0.0107          0.0101              0.0006
      111              0.0103          0.0097              0.0006
      112              0.0099          0.0093              0.0006
      113              0.0096          0.0090              0.0006
      114              0.0093          0.0087              0.0005
      115              0.0090          0.0085              0.0005
      116              0.0087          0.0082              0.0005
      117              0.0085          0.0080              0.0005
      118              0.0083          0.0078              0.0005
      119              0.0081          0.0076              0.0005
      120              0.0079          0.0074              0.0005
      121              0.0063          0.0060              0.0004
      122              0.0062          0.0058              0.0004
      123              0.0060          0.0057              0.0003
      124              0.0059          0.0055              0.0003
      125              0.0057          0.0054              0.0003
      126              0.0056          0.0053              0.0003
      127              0.0055          0.0052              0.0003
      128              0.0054          0.0051              0.0003
      129              0.0053          0.0050              0.0003
      130              0.0052          0.0049              0.0003
      131              0.0051          0.0048              0.0003
      132              0.0050          0.0047              0.0003
      133              0.0049          0.0046              0.0003
      134              0.0048          0.0045              0.0003
      135              0.0047          0.0045              0.0003
      136              0.0047          0.0044              0.0003
      137              0.0046          0.0043              0.0003
      138              0.0045          0.0043              0.0003
      139              0.0045          0.0042              0.0003
      140              0.0044          0.0041              0.0003
      141              0.0043          0.0041              0.0002
      142              0.0043          0.0040              0.0002
      143              0.0042          0.0040              0.0002
      144              0.0042          0.0039              0.0002
      ------------------------------------------------------------------------
      ------------------------------------------------------------------------
      Total soil rain loss =      1.22(In)
      Total effective rainfall =      0.36(In)
      Peak flow rate in flood hydrograph =     18.48(CFS)
      ------------------------------------------------------------------------
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                        12 - H O U R    S T O R M
                   R u n o f f     H y d r o g r a p h
      ------------------------------------------------------------------------
                Hydrograph in   5   Minute intervals ((CFS))

      ------------------------------------------------------------------------
 Time(h+m) Volume Ac.Ft   Q(CFS)  0        5.0      10.0      15.0      20.0
 ----------------------------------------------------------------------
   0+ 5       0.0000      0.00  Q         |         |         |         |
   0+10       0.0001      0.01  Q         |         |         |         |
   0+15       0.0003      0.03  Q         |         |         |         |
   0+20       0.0006      0.04  Q         |         |         |         |
   0+25       0.0009      0.05  Q         |         |         |         |
   0+30       0.0013      0.05  Q         |         |         |         |
   0+35       0.0016      0.05  Q         |         |         |         |
   0+40       0.0020      0.06  Q         |         |         |         |
   0+45       0.0024      0.06  Q         |         |         |         |
   0+50       0.0028      0.06  Q         |         |         |         |
   0+55       0.0032      0.06  Q         |         |         |         |
   1+ 0       0.0036      0.06  Q         |         |         |         |
```

```
1+ 5       0.0040      0.06  Q          |          |          |          |
1+10       0.0044      0.06  Q          |          |          |          |
1+15       0.0048      0.06  Q          |          |          |          |
1+20       0.0053      0.06  Q          |          |          |          |
1+25       0.0057      0.06  Q          |          |          |          |
1+30       0.0061      0.06  Q          |          |          |          |
1+35       0.0066      0.06  Q          |          |          |          |
1+40       0.0070      0.06  Q          |          |          |          |
1+45       0.0074      0.06  Q          |          |          |          |
1+50       0.0079      0.06  Q          |          |          |          |
1+55       0.0083      0.06  Q          |          |          |          |
2+ 0       0.0088      0.07  Q          |          |          |          |
2+ 5       0.0092      0.07  Q          |          |          |          |
2+10       0.0097      0.07  Q          |          |          |          |
2+15       0.0101      0.07  Q          |          |          |          |
2+20       0.0106      0.07  Q          |          |          |          |
2+25       0.0111      0.07  Q          |          |          |          |
2+30       0.0115      0.07  Q          |          |          |          |
2+35       0.0120      0.07  Q          |          |          |          |
2+40       0.0125      0.07  Q          |          |          |          |
2+45       0.0130      0.07  Q          |          |          |          |
2+50       0.0135      0.07  Q          |          |          |          |
2+55       0.0140      0.07  Q          |          |          |          |
3+ 0       0.0145      0.07  Q          |          |          |          |
3+ 5       0.0150      0.07  QV         |          |          |          |
3+10       0.0155      0.07  QV         |          |          |          |
3+15       0.0160      0.07  QV         |          |          |          |
3+20       0.0165      0.08  QV         |          |          |          |
3+25       0.0170      0.08  QV         |          |          |          |
3+30       0.0176      0.08  QV         |          |          |          |
3+35       0.0181      0.08  QV         |          |          |          |
3+40       0.0187      0.08  QV         |          |          |          |
3+45       0.0192      0.08  QV         |          |          |          |
3+50       0.0198      0.08  QV         |          |          |          |
3+55       0.0203      0.08  QV         |          |          |          |
4+ 0       0.0209      0.08  QV         |          |          |          |
4+ 5       0.0215      0.08  QV         |          |          |          |
4+10       0.0221      0.09  QV         |          |          |          |
4+15       0.0227      0.10  QV         |          |          |          |
4+20       0.0234      0.10  QV         |          |          |          |
4+25       0.0242      0.10  QV         |          |          |          |
4+30       0.0249      0.11  QV         |          |          |          |
4+35       0.0256      0.11  QV         |          |          |          |
4+40       0.0264      0.11  QV         |          |          |          |
4+45       0.0272      0.11  QV         |          |          |          |
4+50       0.0279      0.11  QV         |          |          |          |
4+55       0.0287      0.12  QV         |          |          |          |
5+ 0       0.0295      0.12  QV         |          |          |          |
5+ 5       0.0304      0.12  Q V        |          |          |          |
5+10       0.0312      0.12  Q V        |          |          |          |
5+15       0.0320      0.12  Q V        |          |          |          |
5+20       0.0329      0.12  Q V        |          |          |          |
5+25       0.0337      0.13  Q V        |          |          |          |
5+30       0.0346      0.13  Q V        |          |          |          |
5+35       0.0355      0.13  Q V        |          |          |          |
5+40       0.0364      0.13  Q V        |          |          |          |
5+45       0.0374      0.13  Q V        |          |          |          |
5+50       0.0383      0.14  Q V        |          |          |          |
5+55       0.0393      0.14  Q V        |          |          |          |
6+ 0       0.0402      0.14  Q V        |          |          |          |
6+ 5       0.0412      0.15  Q V        |          |          |          |
6+10       0.0423      0.15  Q V        |          |          |          |
6+15       0.0433      0.15  Q V        |          |          |          |
6+20       0.0444      0.16  Q V        |          |          |          |
6+25       0.0456      0.16  Q  V       |          |          |          |
6+30       0.0467      0.17  Q  V       |          |          |          |
6+35       0.0479      0.17  Q  V       |          |          |          |
6+40       0.0491      0.18  Q  V       |          |          |          |
6+45       0.0504      0.18  Q  V       |          |          |          |
6+50       0.0517      0.19  Q  V       |          |          |          |
6+55       0.0530      0.19  Q  V       |          |          |          |
```

```
 7+ 0       0.0544      0.20  Q  V      |          |          |          |
 7+ 5       0.0558      0.21  Q  V      |          |          |          |
 7+10       0.0573      0.22  Q  V      |          |          |          |
 7+15       0.0588      0.22  Q  V      |          |          |          |
 7+20       0.0605      0.23  Q   V     |          |          |          |
 7+25       0.0621      0.25  Q   V     |          |          |          |
 7+30       0.0639      0.25  Q   V     |          |          |          |
 7+35       0.0657      0.27  Q   V     |          |          |          |
 7+40       0.0681      0.35  Q   V     |          |          |          |
 7+45       0.0723      0.61  |Q  V     |          |          |          |
 7+50       0.0796      1.06  | Q  V    |          |          |          |
 7+55       0.0927      1.89  |  Q  V   |          |          |          |
 8+ 0       0.1143      3.14  |     QV  |          |          |          |
 8+ 5       0.1580      6.35  |          V Q        |          |          |
 8+10       0.2390     11.76  |          |     V    |  Q       |          |
 8+15       0.3663     18.48  |          |          |   V      |     Q    |
 8+20       0.4394     10.62  |          |          |Q        V|          |
 8+25       0.4819      6.17  |          | Q        |          | V        |
 8+30       0.5096      4.02  |        Q |          |          |   V      |
 8+35       0.5288      2.78  |    Q     |          |          |    V     |
 8+40       0.5420      1.93  |  Q       |          |          |     V    |
 8+45       0.5510      1.29  | Q        |          |          |      V   |
 8+50       0.5564      0.79  |Q         |          |          |      V   |
 8+55       0.5602      0.55  |Q         |          |          |      V   |
 9+ 0       0.5632      0.44  Q          |          |          |       V  |
 9+ 5       0.5658      0.38  Q          |          |          |       V  |
 9+10       0.5682      0.35  Q          |          |          |       V  |
 9+15       0.5701      0.27  Q          |          |          |       V  |
 9+20       0.5715      0.21  Q          |          |          |       V  |
 9+25       0.5726      0.16  Q          |          |          |       V  |
 9+30       0.5736      0.14  Q          |          |          |       V  |
 9+35       0.5746      0.14  Q          |          |          |       V  |
 9+40       0.5755      0.13  Q          |          |          |       V  |
 9+45       0.5763      0.13  Q          |          |          |       V  |
 9+50       0.5772      0.12  Q          |          |          |       V  |
 9+55       0.5780      0.12  Q          |          |          |        V|
10+ 0       0.5788      0.12  Q          |          |          |        V|
10+ 5       0.5796      0.11  Q          |          |          |        V|
10+10       0.5803      0.11  Q          |          |          |        V|
10+15       0.5810      0.10  Q          |          |          |        V|
10+20       0.5816      0.09  Q          |          |          |        V|
10+25       0.5822      0.09  Q          |          |          |        V|
10+30       0.5828      0.08  Q          |          |          |        V|
10+35       0.5834      0.08  Q          |          |          |        V|
10+40       0.5839      0.08  Q          |          |          |        V|
10+45       0.5845      0.08  Q          |          |          |        V|
10+50       0.5850      0.08  Q          |          |          |        V|
10+55       0.5855      0.07  Q          |          |          |        V|
11+ 0       0.5860      0.07  Q          |          |          |        V|
11+ 5       0.5865      0.07  Q          |          |          |        V|
11+10       0.5870      0.07  Q          |          |          |        V|
11+15       0.5874      0.07  Q          |          |          |        V|
11+20       0.5879      0.07  Q          |          |          |        V|
11+25       0.5884      0.07  Q          |          |          |        V|
11+30       0.5888      0.06  Q          |          |          |        V|
11+35       0.5892      0.06  Q          |          |          |        V|
11+40       0.5897      0.06  Q          |          |          |        V|
11+45       0.5901      0.06  Q          |          |          |        V|
11+50       0.5905      0.06  Q          |          |          |        V|
11+55       0.5909      0.06  Q          |          |          |        V|
12+ 0       0.5914      0.06  Q          |          |          |        V|
12+ 5       0.5917      0.06  Q          |          |          |        V|
12+10       0.5921      0.05  Q          |          |          |        V|
12+15       0.5922      0.03  Q          |          |          |        V|
12+20       0.5923      0.02  Q          |          |          |        V|
12+25       0.5924      0.01  Q          |          |          |        V|
12+30       0.5925      0.01  Q          |          |          |        V|
12+35       0.5925      0.00  Q          |          |          |        V|
12+40       0.5925      0.00  Q          |          |          |        V|
12+45       0.5925      0.00  Q          |          |          |        V|
12+50       0.5925      0.00  Q          |          |          |        V|
```

```
   12+55       0.5925      0.00  Q         |         |         |        V|
   13+ 0       0.5925      0.00  Q         |         |         |        V|
   13+ 5       0.5925      0.00  Q         |         |         |        V|
   13+10       0.5925      0.00  Q         |         |         |        V|
   13+15       0.5925      0.00  Q         |         |         |        V|
-------------------------------------------------------------------------
```

- 2 Year 24 Hour Pre-Development Unit Hydrograph – Area 'B'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/05/16   File Name EXB00224.out


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------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'B' - 2 YEAR 24 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 2

       Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 80.2       7.8          0.40     D     0.200     1.000    0.200
 80.2      11.8          0.60     C     0.250     1.000    0.250

Area-averaged adjusted loss rate Fm (In/Hr) =  0.230

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
     7.84   0.400         80.2      63.3       5.80     0.058

    11.76   0.600         80.2      63.3       5.80     0.058

Area-averaged catchment yield fraction, Y =  0.058
Area-averaged low loss fraction, Yb =  0.942
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.233 (hours)
Watershed area =      19.60(Ac.)
Catchment Lag time =   0.186 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 44.7932
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.230(In/Hr)
Average low loss rate fraction (Yb) = 0.942 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.190(In)
Computed peak 30-minute rainfall =  0.400(In)
Specified peak 1-hour rainfall =  0.530(In)
Computed peak 3-hour rainfall =  0.890(In)
Specified peak 6-hour rainfall =  1.220(In)
Specified peak 24-hour rainfall =  2.050(In)


Rainfall depth area reduction factors:
Using a total area of      19.60(Ac.) (Ref: fig. E-4)
```

```
5-minute factor = 0.999     Adjusted rainfall =  0.190(In)
30-minute factor = 0.999    Adjusted rainfall =  0.400(In)
1-hour factor = 0.999       Adjusted rainfall =  0.530(In)
3-hour factor = 1.000       Adjusted rainfall =  0.890(In)
6-hour factor = 1.000       Adjusted rainfall =  1.220(In)
24-hour factor = 1.000 Adjusted rainfall =  2.050(In)
--------------------------------------------------------------------

                     U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------
               (K =       237.04 (CFS))

  1                3.667                   8.692
  2               18.673                  35.571
  3               55.689                  87.740
  4               73.322                  41.798
  5               82.432                  21.595
  6               88.469                  14.309
  7               92.653                   9.917
  8               95.496                   6.739
  9               97.322                   4.328
 10               98.206                   2.097
 11               98.703                   1.178
 12               99.088                   0.913
 13               99.383                   0.698
 14               99.705                   0.763
 15               99.887                   0.432
 16              100.000                   0.267
--------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.1898              0.1898
  2              0.2532              0.0634
  3              0.2996              0.0465
  4              0.3377              0.0380
  5              0.3705              0.0328
  6              0.3996              0.0292
  7              0.4254              0.0258
  8              0.4491              0.0237
  9              0.4711              0.0220
 10              0.4917              0.0206
 11              0.5111              0.0194
 12              0.5295              0.0184
 13              0.5499              0.0204
 14              0.5695              0.0196
 15              0.5884              0.0189
 16              0.6066              0.0182
 17              0.6242              0.0176
 18              0.6413              0.0171
 19              0.6579              0.0166
 20              0.6741              0.0161
 21              0.6898              0.0157
 22              0.7051              0.0153
 23              0.7201              0.0150
 24              0.7347              0.0146
 25              0.7490              0.0143
 26              0.7631              0.0140
 27              0.7768              0.0137
 28              0.7902              0.0135
 29              0.8035              0.0132
 30              0.8164              0.0130
 31              0.8292              0.0127
 32              0.8417              0.0125
 33              0.8540              0.0123
 34              0.8662              0.0121
 35              0.8781              0.0119
 36              0.8899              0.0118
```

37	0.9011	0.0112
38	0.9121	0.0110
39	0.9229	0.0108
40	0.9336	0.0107
41	0.9442	0.0106
42	0.9546	0.0104
43	0.9648	0.0103
44	0.9750	0.0101
45	0.9850	0.0100
46	0.9949	0.0099
47	1.0047	0.0098
48	1.0144	0.0097
49	1.0239	0.0096
50	1.0334	0.0095
51	1.0427	0.0094
52	1.0520	0.0093
53	1.0612	0.0092
54	1.0702	0.0091
55	1.0792	0.0090
56	1.0881	0.0089
57	1.0969	0.0088
58	1.1056	0.0087
59	1.1142	0.0086
60	1.1228	0.0086
61	1.1313	0.0085
62	1.1397	0.0084
63	1.1480	0.0083
64	1.1563	0.0083
65	1.1644	0.0082
66	1.1726	0.0081
67	1.1806	0.0081
68	1.1886	0.0080
69	1.1965	0.0079
70	1.2044	0.0079
71	1.2122	0.0078
72	1.2199	0.0077
73	1.2262	0.0063
74	1.2325	0.0063
75	1.2387	0.0062
76	1.2449	0.0062
77	1.2510	0.0061
78	1.2570	0.0061
79	1.2630	0.0060
80	1.2690	0.0060
81	1.2749	0.0059
82	1.2808	0.0059
83	1.2866	0.0058
84	1.2924	0.0058
85	1.2981	0.0057
86	1.3038	0.0057
87	1.3095	0.0057
88	1.3151	0.0056
89	1.3207	0.0056
90	1.3262	0.0055
91	1.3317	0.0055
92	1.3372	0.0055
93	1.3426	0.0054
94	1.3480	0.0054
95	1.3533	0.0054
96	1.3587	0.0053
97	1.3639	0.0053
98	1.3692	0.0052
99	1.3744	0.0052
100	1.3796	0.0052
101	1.3847	0.0051
102	1.3898	0.0051
103	1.3949	0.0051
104	1.4000	0.0051
105	1.4050	0.0050
106	1.4100	0.0050
107	1.4150	0.0050

108	1.4199	0.0049
109	1.4248	0.0049
110	1.4297	0.0049
111	1.4346	0.0049
112	1.4394	0.0048
113	1.4442	0.0048
114	1.4489	0.0048
115	1.4537	0.0047
116	1.4584	0.0047
117	1.4631	0.0047
118	1.4678	0.0047
119	1.4724	0.0046
120	1.4770	0.0046
121	1.4816	0.0046
122	1.4862	0.0046
123	1.4908	0.0045
124	1.4953	0.0045
125	1.4998	0.0045
126	1.5043	0.0045
127	1.5087	0.0045
128	1.5132	0.0044
129	1.5176	0.0044
130	1.5220	0.0044
131	1.5263	0.0044
132	1.5307	0.0044
133	1.5350	0.0043
134	1.5393	0.0043
135	1.5436	0.0043
136	1.5479	0.0043
137	1.5522	0.0043
138	1.5564	0.0042
139	1.5606	0.0042
140	1.5648	0.0042
141	1.5690	0.0042
142	1.5731	0.0042
143	1.5773	0.0041
144	1.5814	0.0041
145	1.5855	0.0041
146	1.5896	0.0041
147	1.5936	0.0041
148	1.5977	0.0041
149	1.6017	0.0040
150	1.6057	0.0040
151	1.6097	0.0040
152	1.6137	0.0040
153	1.6177	0.0040
154	1.6216	0.0040
155	1.6256	0.0039
156	1.6295	0.0039
157	1.6334	0.0039
158	1.6373	0.0039
159	1.6412	0.0039
160	1.6450	0.0039
161	1.6489	0.0038
162	1.6527	0.0038
163	1.6565	0.0038
164	1.6603	0.0038
165	1.6641	0.0038
166	1.6678	0.0038
167	1.6716	0.0038
168	1.6753	0.0037
169	1.6791	0.0037
170	1.6828	0.0037
171	1.6865	0.0037
172	1.6902	0.0037
173	1.6938	0.0037
174	1.6975	0.0037
175	1.7011	0.0036
176	1.7048	0.0036
177	1.7084	0.0036
178	1.7120	0.0036

179	1.7156	0.0036
180	1.7192	0.0036
181	1.7227	0.0036
182	1.7263	0.0036
183	1.7299	0.0035
184	1.7334	0.0035
185	1.7369	0.0035
186	1.7404	0.0035
187	1.7439	0.0035
188	1.7474	0.0035
189	1.7509	0.0035
190	1.7543	0.0035
191	1.7578	0.0035
192	1.7612	0.0034
193	1.7647	0.0034
194	1.7681	0.0034
195	1.7715	0.0034
196	1.7749	0.0034
197	1.7783	0.0034
198	1.7816	0.0034
199	1.7850	0.0034
200	1.7884	0.0034
201	1.7917	0.0033
202	1.7950	0.0033
203	1.7983	0.0033
204	1.8017	0.0033
205	1.8050	0.0033
206	1.8083	0.0033
207	1.8115	0.0033
208	1.8148	0.0033
209	1.8181	0.0033
210	1.8213	0.0033
211	1.8246	0.0032
212	1.8278	0.0032
213	1.8310	0.0032
214	1.8342	0.0032
215	1.8374	0.0032
216	1.8406	0.0032
217	1.8438	0.0032
218	1.8470	0.0032
219	1.8502	0.0032
220	1.8533	0.0032
221	1.8565	0.0031
222	1.8596	0.0031
223	1.8627	0.0031
224	1.8659	0.0031
225	1.8690	0.0031
226	1.8721	0.0031
227	1.8752	0.0031
228	1.8783	0.0031
229	1.8813	0.0031
230	1.8844	0.0031
231	1.8875	0.0031
232	1.8905	0.0031
233	1.8936	0.0030
234	1.8966	0.0030
235	1.8997	0.0030
236	1.9027	0.0030
237	1.9057	0.0030
238	1.9087	0.0030
239	1.9117	0.0030
240	1.9147	0.0030
241	1.9177	0.0030
242	1.9206	0.0030
243	1.9236	0.0030
244	1.9266	0.0030
245	1.9295	0.0030
246	1.9325	0.0029
247	1.9354	0.0029
248	1.9383	0.0029
249	1.9413	0.0029

250	1.9442	0.0029
251	1.9471	0.0029
252	1.9500	0.0029
253	1.9529	0.0029
254	1.9558	0.0029
255	1.9586	0.0029
256	1.9615	0.0029
257	1.9644	0.0029
258	1.9672	0.0029
259	1.9701	0.0029
260	1.9729	0.0028
261	1.9758	0.0028
262	1.9786	0.0028
263	1.9814	0.0028
264	1.9842	0.0028
265	1.9871	0.0028
266	1.9899	0.0028
267	1.9927	0.0028
268	1.9954	0.0028
269	1.9982	0.0028
270	2.0010	0.0028
271	2.0038	0.0028
272	2.0065	0.0028
273	2.0093	0.0028
274	2.0121	0.0028
275	2.0148	0.0027
276	2.0175	0.0027
277	2.0203	0.0027
278	2.0230	0.0027
279	2.0257	0.0027
280	2.0284	0.0027
281	2.0312	0.0027
282	2.0339	0.0027
283	2.0366	0.0027
284	2.0392	0.0027
285	2.0419	0.0027
286	2.0446	0.0027
287	2.0473	0.0027
288	2.0499	0.0027

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0027	0.0025	0.0002
2	0.0027	0.0025	0.0002
3	0.0027	0.0025	0.0002
4	0.0027	0.0025	0.0002
5	0.0027	0.0025	0.0002
6	0.0027	0.0026	0.0002
7	0.0027	0.0026	0.0002
8	0.0027	0.0026	0.0002
9	0.0027	0.0026	0.0002
10	0.0027	0.0026	0.0002
11	0.0028	0.0026	0.0002
12	0.0028	0.0026	0.0002
13	0.0028	0.0026	0.0002
14	0.0028	0.0026	0.0002
15	0.0028	0.0026	0.0002
16	0.0028	0.0026	0.0002
17	0.0028	0.0027	0.0002
18	0.0028	0.0027	0.0002
19	0.0028	0.0027	0.0002
20	0.0028	0.0027	0.0002
21	0.0029	0.0027	0.0002
22	0.0029	0.0027	0.0002
23	0.0029	0.0027	0.0002
24	0.0029	0.0027	0.0002
25	0.0029	0.0027	0.0002
26	0.0029	0.0027	0.0002
27	0.0029	0.0028	0.0002

28	0.0029	0.0028	0.0002
29	0.0029	0.0028	0.0002
30	0.0030	0.0028	0.0002
31	0.0030	0.0028	0.0002
32	0.0030	0.0028	0.0002
33	0.0030	0.0028	0.0002
34	0.0030	0.0028	0.0002
35	0.0030	0.0028	0.0002
36	0.0030	0.0028	0.0002
37	0.0030	0.0029	0.0002
38	0.0030	0.0029	0.0002
39	0.0031	0.0029	0.0002
40	0.0031	0.0029	0.0002
41	0.0031	0.0029	0.0002
42	0.0031	0.0029	0.0002
43	0.0031	0.0029	0.0002
44	0.0031	0.0029	0.0002
45	0.0031	0.0030	0.0002
46	0.0031	0.0030	0.0002
47	0.0032	0.0030	0.0002
48	0.0032	0.0030	0.0002
49	0.0032	0.0030	0.0002
50	0.0032	0.0030	0.0002
51	0.0032	0.0030	0.0002
52	0.0032	0.0030	0.0002
53	0.0033	0.0031	0.0002
54	0.0033	0.0031	0.0002
55	0.0033	0.0031	0.0002
56	0.0033	0.0031	0.0002
57	0.0033	0.0031	0.0002
58	0.0033	0.0031	0.0002
59	0.0033	0.0031	0.0002
60	0.0034	0.0032	0.0002
61	0.0034	0.0032	0.0002
62	0.0034	0.0032	0.0002
63	0.0034	0.0032	0.0002
64	0.0034	0.0032	0.0002
65	0.0034	0.0032	0.0002
66	0.0035	0.0033	0.0002
67	0.0035	0.0033	0.0002
68	0.0035	0.0033	0.0002
69	0.0035	0.0033	0.0002
70	0.0035	0.0033	0.0002
71	0.0035	0.0033	0.0002
72	0.0036	0.0034	0.0002
73	0.0036	0.0034	0.0002
74	0.0036	0.0034	0.0002
75	0.0036	0.0034	0.0002
76	0.0036	0.0034	0.0002
77	0.0037	0.0034	0.0002
78	0.0037	0.0035	0.0002
79	0.0037	0.0035	0.0002
80	0.0037	0.0035	0.0002
81	0.0037	0.0035	0.0002
82	0.0038	0.0035	0.0002
83	0.0038	0.0036	0.0002
84	0.0038	0.0036	0.0002
85	0.0038	0.0036	0.0002
86	0.0038	0.0036	0.0002
87	0.0039	0.0036	0.0002
88	0.0039	0.0037	0.0002
89	0.0039	0.0037	0.0002
90	0.0039	0.0037	0.0002
91	0.0040	0.0037	0.0002
92	0.0040	0.0038	0.0002
93	0.0040	0.0038	0.0002
94	0.0040	0.0038	0.0002
95	0.0041	0.0038	0.0002
96	0.0041	0.0038	0.0002
97	0.0041	0.0039	0.0002
98	0.0041	0.0039	0.0002

99	0.0042	0.0039	0.0002
100	0.0042	0.0040	0.0002
101	0.0042	0.0040	0.0002
102	0.0043	0.0040	0.0002
103	0.0043	0.0040	0.0002
104	0.0043	0.0041	0.0002
105	0.0044	0.0041	0.0003
106	0.0044	0.0041	0.0003
107	0.0044	0.0042	0.0003
108	0.0044	0.0042	0.0003
109	0.0045	0.0042	0.0003
110	0.0045	0.0042	0.0003
111	0.0045	0.0043	0.0003
112	0.0046	0.0043	0.0003
113	0.0046	0.0044	0.0003
114	0.0046	0.0044	0.0003
115	0.0047	0.0044	0.0003
116	0.0047	0.0044	0.0003
117	0.0048	0.0045	0.0003
118	0.0048	0.0045	0.0003
119	0.0049	0.0046	0.0003
120	0.0049	0.0046	0.0003
121	0.0049	0.0047	0.0003
122	0.0050	0.0047	0.0003
123	0.0050	0.0047	0.0003
124	0.0051	0.0048	0.0003
125	0.0051	0.0048	0.0003
126	0.0051	0.0049	0.0003
127	0.0052	0.0049	0.0003
128	0.0052	0.0049	0.0003
129	0.0053	0.0050	0.0003
130	0.0054	0.0050	0.0003
131	0.0054	0.0051	0.0003
132	0.0055	0.0051	0.0003
133	0.0055	0.0052	0.0003
134	0.0056	0.0053	0.0003
135	0.0057	0.0053	0.0003
136	0.0057	0.0054	0.0003
137	0.0058	0.0054	0.0003
138	0.0058	0.0055	0.0003
139	0.0059	0.0056	0.0003
140	0.0060	0.0056	0.0003
141	0.0061	0.0057	0.0003
142	0.0061	0.0058	0.0004
143	0.0062	0.0059	0.0004
144	0.0063	0.0059	0.0004
145	0.0077	0.0073	0.0004
146	0.0078	0.0073	0.0004
147	0.0079	0.0075	0.0005
148	0.0080	0.0075	0.0005
149	0.0081	0.0077	0.0005
150	0.0082	0.0077	0.0005
151	0.0083	0.0078	0.0005
152	0.0084	0.0079	0.0005
153	0.0086	0.0081	0.0005
154	0.0086	0.0081	0.0005
155	0.0088	0.0083	0.0005
156	0.0089	0.0084	0.0005
157	0.0091	0.0085	0.0005
158	0.0092	0.0086	0.0005
159	0.0094	0.0088	0.0005
160	0.0095	0.0089	0.0005
161	0.0097	0.0091	0.0006
162	0.0098	0.0092	0.0006
163	0.0100	0.0094	0.0006
164	0.0101	0.0096	0.0006
165	0.0104	0.0098	0.0006
166	0.0106	0.0099	0.0006
167	0.0108	0.0102	0.0006
168	0.0110	0.0104	0.0006
169	0.0118	0.0111	0.0007

170	0.0119	0.0113	0.0007
171	0.0123	0.0116	0.0007
172	0.0125	0.0118	0.0007
173	0.0130	0.0122	0.0007
174	0.0132	0.0125	0.0008
175	0.0137	0.0129	0.0008
176	0.0140	0.0132	0.0008
177	0.0146	0.0138	0.0008
178	0.0150	0.0141	0.0009
179	0.0157	0.0148	0.0009
180	0.0161	0.0152	0.0009
181	0.0171	0.0161	0.0010
182	0.0176	0.0166	0.0010
183	0.0189	0.0178	0.0011
184	0.0196	0.0185	0.0011
185	0.0184	0.0173	0.0011
186	0.0194	0.0183	0.0011
187	0.0220	0.0192	0.0028
188	0.0237	0.0192	0.0045
189	0.0292	0.0192	0.0100
190	0.0328	0.0192	0.0136
191	0.0465	0.0192	0.0273
192	0.0634	0.0192	0.0442
193	0.1898	0.0192	0.1707
194	0.0380	0.0192	0.0189
195	0.0258	0.0192	0.0066
196	0.0206	0.0192	0.0014
197	0.0204	0.0192	0.0012
198	0.0182	0.0172	0.0011
199	0.0166	0.0156	0.0010
200	0.0153	0.0144	0.0009
201	0.0143	0.0135	0.0008
202	0.0135	0.0127	0.0008
203	0.0127	0.0120	0.0007
204	0.0121	0.0114	0.0007
205	0.0112	0.0105	0.0006
206	0.0107	0.0101	0.0006
207	0.0103	0.0097	0.0006
208	0.0099	0.0093	0.0006
209	0.0096	0.0090	0.0006
210	0.0093	0.0087	0.0005
211	0.0090	0.0085	0.0005
212	0.0087	0.0082	0.0005
213	0.0085	0.0080	0.0005
214	0.0083	0.0078	0.0005
215	0.0081	0.0076	0.0005
216	0.0079	0.0074	0.0005
217	0.0063	0.0060	0.0004
218	0.0062	0.0058	0.0004
219	0.0060	0.0057	0.0003
220	0.0059	0.0055	0.0003
221	0.0057	0.0054	0.0003
222	0.0056	0.0053	0.0003
223	0.0055	0.0052	0.0003
224	0.0054	0.0051	0.0003
225	0.0053	0.0050	0.0003
226	0.0052	0.0049	0.0003
227	0.0051	0.0048	0.0003
228	0.0050	0.0047	0.0003
229	0.0049	0.0046	0.0003
230	0.0048	0.0045	0.0003
231	0.0047	0.0045	0.0003
232	0.0047	0.0044	0.0003
233	0.0046	0.0043	0.0003
234	0.0045	0.0043	0.0003
235	0.0045	0.0042	0.0003
236	0.0044	0.0041	0.0003
237	0.0043	0.0041	0.0002
238	0.0043	0.0040	0.0002
239	0.0042	0.0040	0.0002
240	0.0042	0.0039	0.0002

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      241              0.0041          0.0039              0.0002
      242              0.0041          0.0038              0.0002
      243              0.0040          0.0038              0.0002
      244              0.0040          0.0037              0.0002
      245              0.0039          0.0037              0.0002
      246              0.0039          0.0036              0.0002
      247              0.0038          0.0036              0.0002
      248              0.0038          0.0036              0.0002
      249              0.0037          0.0035              0.0002
      250              0.0037          0.0035              0.0002
      251              0.0036          0.0034              0.0002
      252              0.0036          0.0034              0.0002
      253              0.0036          0.0034              0.0002
      254              0.0035          0.0033              0.0002
      255              0.0035          0.0033              0.0002
      256              0.0035          0.0033              0.0002
      257              0.0034          0.0032              0.0002
      258              0.0034          0.0032              0.0002
      259              0.0034          0.0032              0.0002
      260              0.0033          0.0031              0.0002
      261              0.0033          0.0031              0.0002
      262              0.0033          0.0031              0.0002
      263              0.0032          0.0031              0.0002
      264              0.0032          0.0030              0.0002
      265              0.0032          0.0030              0.0002
      266              0.0032          0.0030              0.0002
      267              0.0031          0.0030              0.0002
      268              0.0031          0.0029              0.0002
      269              0.0031          0.0029              0.0002
      270              0.0031          0.0029              0.0002
      271              0.0030          0.0029              0.0002
      272              0.0030          0.0028              0.0002
      273              0.0030          0.0028              0.0002
      274              0.0030          0.0028              0.0002
      275              0.0029          0.0028              0.0002
      276              0.0029          0.0027              0.0002
      277              0.0029          0.0027              0.0002
      278              0.0029          0.0027              0.0002
      279              0.0029          0.0027              0.0002
      280              0.0028          0.0027              0.0002
      281              0.0028          0.0026              0.0002
      282              0.0028          0.0026              0.0002
      283              0.0028          0.0026              0.0002
      284              0.0028          0.0026              0.0002
      285              0.0027          0.0026              0.0002
      286              0.0027          0.0026              0.0002
      287              0.0027          0.0025              0.0002
      288              0.0027          0.0025              0.0002
      ----------------------------------------------------------------------
      ----------------------------------------------------------------------
      Total soil rain loss =      1.66(In)
      Total effective rainfall =      0.39(In)
      Peak flow rate in flood hydrograph =     18.48(CFS)
      ----------------------------------------------------------------------
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          24 - H O U R    S T O R M
                     R u n o f f      H y d r o g r a p h
      ----------------------------------------------------------------------
                  Hydrograph in   5   Minute intervals ((CFS))

      ----------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0        5.0      10.0      15.0      20.0
----------------------------------------------------------------------
  0+ 5       0.0000      0.00  Q         |         |         |         |
  0+10       0.0001      0.01  Q         |         |         |         |
  0+15       0.0002      0.02  Q         |         |         |         |
  0+20       0.0004      0.03  Q         |         |         |         |
  0+25       0.0006      0.03  Q         |         |         |         |
  0+30       0.0008      0.03  Q         |         |         |         |
  0+35       0.0010      0.03  Q         |         |         |         |
  0+40       0.0013      0.04  Q         |         |         |         |
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0+45	0.0015	0.04	Q	|	|	|	|
0+50	0.0018	0.04	Q	|	|	|	|
0+55	0.0020	0.04	Q	|	|	|	|
1+ 0	0.0023	0.04	Q	|	|	|	|
1+ 5	0.0026	0.04	Q	|	|	|	|
1+10	0.0028	0.04	Q	|	|	|	|
1+15	0.0031	0.04	Q	|	|	|	|
1+20	0.0033	0.04	Q	|	|	|	|
1+25	0.0036	0.04	Q	|	|	|	|
1+30	0.0039	0.04	Q	|	|	|	|
1+35	0.0041	0.04	Q	|	|	|	|
1+40	0.0044	0.04	Q	|	|	|	|
1+45	0.0047	0.04	Q	|	|	|	|
1+50	0.0049	0.04	Q	|	|	|	|
1+55	0.0052	0.04	Q	|	|	|	|
2+ 0	0.0055	0.04	Q	|	|	|	|
2+ 5	0.0057	0.04	Q	|	|	|	|
2+10	0.0060	0.04	Q	|	|	|	|
2+15	0.0063	0.04	Q	|	|	|	|
2+20	0.0065	0.04	Q	|	|	|	|
2+25	0.0068	0.04	Q	|	|	|	|
2+30	0.0071	0.04	Q	|	|	|	|
2+35	0.0074	0.04	Q	|	|	|	|
2+40	0.0077	0.04	Q	|	|	|	|
2+45	0.0079	0.04	Q	|	|	|	|
2+50	0.0082	0.04	Q	|	|	|	|
2+55	0.0085	0.04	Q	|	|	|	|
3+ 0	0.0088	0.04	Q	|	|	|	|
3+ 5	0.0091	0.04	Q	|	|	|	|
3+10	0.0093	0.04	Q	|	|	|	|
3+15	0.0096	0.04	Q	|	|	|	|
3+20	0.0099	0.04	Q	|	|	|	|
3+25	0.0102	0.04	Q	|	|	|	|
3+30	0.0105	0.04	Q	|	|	|	|
3+35	0.0108	0.04	Q	|	|	|	|
3+40	0.0111	0.04	Q	|	|	|	|
3+45	0.0114	0.04	Q	|	|	|	|
3+50	0.0116	0.04	Q	|	|	|	|
3+55	0.0119	0.04	Q	|	|	|	|
4+ 0	0.0122	0.04	Q	|	|	|	|
4+ 5	0.0125	0.04	Q	|	|	|	|
4+10	0.0128	0.04	Q	|	|	|	|
4+15	0.0131	0.04	Q	|	|	|	|
4+20	0.0134	0.04	Q	|	|	|	|
4+25	0.0137	0.04	Q	|	|	|	|
4+30	0.0140	0.04	Q	|	|	|	|
4+35	0.0143	0.04	Q	|	|	|	|
4+40	0.0146	0.04	Q	|	|	|	|
4+45	0.0150	0.04	Q	|	|	|	|
4+50	0.0153	0.04	Q	|	|	|	|
4+55	0.0156	0.05	Q	|	|	|	|
5+ 0	0.0159	0.05	Q	|	|	|	|
5+ 5	0.0162	0.05	QV	|	|	|	|
5+10	0.0165	0.05	QV	|	|	|	|
5+15	0.0168	0.05	QV	|	|	|	|
5+20	0.0171	0.05	QV	|	|	|	|
5+25	0.0175	0.05	QV	|	|	|	|
5+30	0.0178	0.05	QV	|	|	|	|
5+35	0.0181	0.05	QV	|	|	|	|
5+40	0.0184	0.05	QV	|	|	|	|
5+45	0.0188	0.05	QV	|	|	|	|
5+50	0.0191	0.05	QV	|	|	|	|
5+55	0.0194	0.05	QV	|	|	|	|
6+ 0	0.0197	0.05	QV	|	|	|	|
6+ 5	0.0201	0.05	QV	|	|	|	|
6+10	0.0204	0.05	QV	|	|	|	|
6+15	0.0207	0.05	QV	|	|	|	|
6+20	0.0211	0.05	QV	|	|	|	|
6+25	0.0214	0.05	QV	|	|	|	|
6+30	0.0218	0.05	QV	|	|	|	|
6+35	0.0221	0.05	QV	|	|	|	|

6+40	0.0224	0.05	QV	|	|	|	|
6+45	0.0228	0.05	QV	|	|	|	|
6+50	0.0231	0.05	QV	|	|	|	|
6+55	0.0235	0.05	QV	|	|	|	|
7+ 0	0.0238	0.05	QV	|	|	|	|
7+ 5	0.0242	0.05	QV	|	|	|	|
7+10	0.0246	0.05	QV	|	|	|	|
7+15	0.0249	0.05	QV	|	|	|	|
7+20	0.0253	0.05	QV	|	|	|	|
7+25	0.0256	0.05	QV	|	|	|	|
7+30	0.0260	0.05	QV	|	|	|	|
7+35	0.0264	0.05	QV	|	|	|	|
7+40	0.0267	0.05	QV	|	|	|	|
7+45	0.0271	0.05	QV	|	|	|	|
7+50	0.0275	0.05	QV	|	|	|	|
7+55	0.0279	0.05	QV	|	|	|	|
8+ 0	0.0282	0.05	QV	|	|	|	|
8+ 5	0.0286	0.06	QV	|	|	|	|
8+10	0.0290	0.06	QV	|	|	|	|
8+15	0.0294	0.06	QV	|	|	|	|
8+20	0.0298	0.06	QV	|	|	|	|
8+25	0.0302	0.06	QV	|	|	|	|
8+30	0.0305	0.06	QV	|	|	|	|
8+35	0.0309	0.06	QV	|	|	|	|
8+40	0.0313	0.06	QV	|	|	|	|
8+45	0.0317	0.06	QV	|	|	|	|
8+50	0.0321	0.06	Q V	|	|	|	|
8+55	0.0326	0.06	Q V	|	|	|	|
9+ 0	0.0330	0.06	Q V	|	|	|	|
9+ 5	0.0334	0.06	Q V	|	|	|	|
9+10	0.0338	0.06	Q V	|	|	|	|
9+15	0.0342	0.06	Q V	|	|	|	|
9+20	0.0346	0.06	Q V	|	|	|	|
9+25	0.0351	0.06	Q V	|	|	|	|
9+30	0.0355	0.06	Q V	|	|	|	|
9+35	0.0359	0.06	Q V	|	|	|	|
9+40	0.0363	0.06	Q V	|	|	|	|
9+45	0.0368	0.06	Q V	|	|	|	|
9+50	0.0372	0.06	Q V	|	|	|	|
9+55	0.0377	0.06	Q V	|	|	|	|
10+ 0	0.0381	0.07	Q V	|	|	|	|
10+ 5	0.0386	0.07	Q V	|	|	|	|
10+10	0.0390	0.07	Q V	|	|	|	|
10+15	0.0395	0.07	Q V	|	|	|	|
10+20	0.0400	0.07	Q V	|	|	|	|
10+25	0.0404	0.07	Q V	|	|	|	|
10+30	0.0409	0.07	Q V	|	|	|	|
10+35	0.0414	0.07	Q V	|	|	|	|
10+40	0.0419	0.07	Q V	|	|	|	|
10+45	0.0423	0.07	Q V	|	|	|	|
10+50	0.0428	0.07	Q V	|	|	|	|
10+55	0.0433	0.07	Q V	|	|	|	|
11+ 0	0.0438	0.07	Q V	|	|	|	|
11+ 5	0.0443	0.07	Q V	|	|	|	|
11+10	0.0448	0.07	Q V	|	|	|	|
11+15	0.0454	0.07	Q V	|	|	|	|
11+20	0.0459	0.08	Q V	|	|	|	|
11+25	0.0464	0.08	Q V	|	|	|	|
11+30	0.0469	0.08	Q V	|	|	|	|
11+35	0.0475	0.08	Q V	|	|	|	|
11+40	0.0480	0.08	Q V	|	|	|	|
11+45	0.0486	0.08	Q V	|	|	|	|
11+50	0.0491	0.08	Q V	|	|	|	|
11+55	0.0497	0.08	Q V	|	|	|	|
12+ 0	0.0503	0.08	Q V	|	|	|	|
12+ 5	0.0508	0.08	Q V	|	|	|	|
12+10	0.0514	0.09	Q V	|	|	|	|
12+15	0.0521	0.10	Q V	|	|	|	|
12+20	0.0528	0.10	Q V	|	|	|	|
12+25	0.0535	0.10	Q V	|	|	|	|
12+30	0.0542	0.11	Q V	|	|	|	|

```
12+35      0.0550      0.11  Q  V      |          |          |          |
12+40      0.0558      0.11  Q  V      |          |          |          |
12+45      0.0565      0.11  Q  V      |          |          |          |
12+50      0.0573      0.11  Q  V      |          |          |          |
12+55      0.0581      0.12  Q  V      |          |          |          |
13+ 0      0.0589      0.12  Q  V      |          |          |          |
13+ 5      0.0597      0.12  Q  V      |          |          |          |
13+10      0.0605      0.12  Q  V      |          |          |          |
13+15      0.0614      0.12  Q  V      |          |          |          |
13+20      0.0622      0.12  Q  V      |          |          |          |
13+25      0.0631      0.13  Q  V      |          |          |          |
13+30      0.0640      0.13  Q   V     |          |          |          |
13+35      0.0649      0.13  Q   V     |          |          |          |
13+40      0.0658      0.13  Q   V     |          |          |          |
13+45      0.0667      0.13  Q   V     |          |          |          |
13+50      0.0677      0.14  Q   V     |          |          |          |
13+55      0.0686      0.14  Q   V     |          |          |          |
14+ 0      0.0696      0.14  Q   V     |          |          |          |
14+ 5      0.0706      0.15  Q   V     |          |          |          |
14+10      0.0716      0.15  Q   V     |          |          |          |
14+15      0.0727      0.15  Q   V     |          |          |          |
14+20      0.0738      0.16  Q   V     |          |          |          |
14+25      0.0749      0.16  Q   V     |          |          |          |
14+30      0.0761      0.17  Q   V     |          |          |          |
14+35      0.0773      0.17  Q   V     |          |          |          |
14+40      0.0785      0.18  Q   V     |          |          |          |
14+45      0.0797      0.18  Q    V    |          |          |          |
14+50      0.0810      0.19  Q    V    |          |          |          |
14+55      0.0824      0.19  Q    V    |          |          |          |
15+ 0      0.0837      0.20  Q    V    |          |          |          |
15+ 5      0.0852      0.21  Q    V    |          |          |          |
15+10      0.0867      0.22  Q    V    |          |          |          |
15+15      0.0882      0.22  Q    V    |          |          |          |
15+20      0.0898      0.23  Q    V    |          |          |          |
15+25      0.0915      0.25  Q    V    |          |          |          |
15+30      0.0932      0.25  Q    V    |          |          |          |
15+35      0.0951      0.27  Q    V    |          |          |          |
15+40      0.0975      0.35  Q     V   |          |          |          |
15+45      0.1017      0.61  |Q    V   |          |          |          |
15+50      0.1090      1.06  | Q   V   |          |          |          |
15+55      0.1220      1.89  |  Q   V  |          |          |          |
16+ 0      0.1436      3.14  |     Q  V|          |          |          |
16+ 5      0.1873      6.35  |          |VQ        |          |          |
16+10      0.2684     11.76  |          |     V    |  Q       |          |
16+15      0.3957     18.48  |          |          |   V      |     Q    |
16+20      0.4688     10.62  |          |          |Q       V|          |
16+25      0.5113      6.17  |          | Q        |          | V        |
16+30      0.5389      4.02  |        Q |          |          |  V       |
16+35      0.5581      2.78  |    Q     |          |          |    V     |
16+40      0.5714      1.93  |  Q       |          |          |    V     |
16+45      0.5803      1.29  | Q        |          |          |     V    |
16+50      0.5858      0.79  |Q         |          |          |     V    |
16+55      0.5895      0.55  |Q         |          |          |      V   |
17+ 0      0.5926      0.44  Q          |          |          |      V   |
17+ 5      0.5952      0.38  Q          |          |          |      V   |
17+10      0.5976      0.35  Q          |          |          |      V   |
17+15      0.5994      0.27  Q          |          |          |      V   |
17+20      0.6009      0.21  Q          |          |          |      V   |
17+25      0.6020      0.16  Q          |          |          |      V   |
17+30      0.6030      0.14  Q          |          |          |      V   |
17+35      0.6039      0.14  Q          |          |          |      V   |
17+40      0.6048      0.13  Q          |          |          |       V  |
17+45      0.6057      0.13  Q          |          |          |       V  |
17+50      0.6066      0.12  Q          |          |          |       V  |
17+55      0.6074      0.12  Q          |          |          |       V  |
18+ 0      0.6082      0.12  Q          |          |          |       V  |
18+ 5      0.6090      0.11  Q          |          |          |       V  |
18+10      0.6097      0.11  Q          |          |          |       V  |
18+15      0.6104      0.10  Q          |          |          |       V  |
18+20      0.6110      0.09  Q          |          |          |       V  |
18+25      0.6116      0.09  Q          |          |          |       V  |
```

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18+30       0.6122      0.08  Q          |          |          |       V |
18+35       0.6128      0.08  Q          |          |          |       V |
18+40       0.6133      0.08  Q          |          |          |       V |
18+45       0.6138      0.08  Q          |          |          |       V |
18+50       0.6144      0.08  Q          |          |          |       V |
18+55       0.6149      0.07  Q          |          |          |       V |
19+ 0       0.6154      0.07  Q          |          |          |       V |
19+ 5       0.6159      0.07  Q          |          |          |       V |
19+10       0.6163      0.07  Q          |          |          |       V |
19+15       0.6168      0.07  Q          |          |          |       V |
19+20       0.6173      0.07  Q          |          |          |       V |
19+25       0.6177      0.07  Q          |          |          |       V |
19+30       0.6182      0.06  Q          |          |          |       V |
19+35       0.6186      0.06  Q          |          |          |       V |
19+40       0.6190      0.06  Q          |          |          |       V |
19+45       0.6195      0.06  Q          |          |          |       V |
19+50       0.6199      0.06  Q          |          |          |       V |
19+55       0.6203      0.06  Q          |          |          |       V |
20+ 0       0.6207      0.06  Q          |          |          |       V |
20+ 5       0.6211      0.06  Q          |          |          |        V|
20+10       0.6215      0.06  Q          |          |          |        V|
20+15       0.6219      0.06  Q          |          |          |        V|
20+20       0.6223      0.06  Q          |          |          |        V|
20+25       0.6227      0.06  Q          |          |          |        V|
20+30       0.6230      0.05  Q          |          |          |        V|
20+35       0.6234      0.05  Q          |          |          |        V|
20+40       0.6238      0.05  Q          |          |          |        V|
20+45       0.6242      0.05  Q          |          |          |        V|
20+50       0.6245      0.05  Q          |          |          |        V|
20+55       0.6249      0.05  Q          |          |          |        V|
21+ 0       0.6252      0.05  Q          |          |          |        V|
21+ 5       0.6256      0.05  Q          |          |          |        V|
21+10       0.6259      0.05  Q          |          |          |        V|
21+15       0.6262      0.05  Q          |          |          |        V|
21+20       0.6266      0.05  Q          |          |          |        V|
21+25       0.6269      0.05  Q          |          |          |        V|
21+30       0.6272      0.05  Q          |          |          |        V|
21+35       0.6276      0.05  Q          |          |          |        V|
21+40       0.6279      0.05  Q          |          |          |        V|
21+45       0.6282      0.05  Q          |          |          |        V|
21+50       0.6285      0.05  Q          |          |          |        V|
21+55       0.6288      0.05  Q          |          |          |        V|
22+ 0       0.6292      0.05  Q          |          |          |        V|
22+ 5       0.6295      0.04  Q          |          |          |        V|
22+10       0.6298      0.04  Q          |          |          |        V|
22+15       0.6301      0.04  Q          |          |          |        V|
22+20       0.6304      0.04  Q          |          |          |        V|
22+25       0.6307      0.04  Q          |          |          |        V|
22+30       0.6310      0.04  Q          |          |          |        V|
22+35       0.6313      0.04  Q          |          |          |        V|
22+40       0.6315      0.04  Q          |          |          |        V|
22+45       0.6318      0.04  Q          |          |          |        V|
22+50       0.6321      0.04  Q          |          |          |        V|
22+55       0.6324      0.04  Q          |          |          |        V|
23+ 0       0.6327      0.04  Q          |          |          |        V|
23+ 5       0.6330      0.04  Q          |          |          |        V|
23+10       0.6332      0.04  Q          |          |          |        V|
23+15       0.6335      0.04  Q          |          |          |        V|
23+20       0.6338      0.04  Q          |          |          |        V|
23+25       0.6341      0.04  Q          |          |          |        V|
23+30       0.6343      0.04  Q          |          |          |        V|
23+35       0.6346      0.04  Q          |          |          |        V|
23+40       0.6349      0.04  Q          |          |          |        V|
23+45       0.6351      0.04  Q          |          |          |        V|
23+50       0.6354      0.04  Q          |          |          |        V|
23+55       0.6356      0.04  Q          |          |          |        V|
24+ 0       0.6359      0.04  Q          |          |          |        V|
24+ 5       0.6361      0.04  Q          |          |          |        V|
24+10       0.6363      0.03  Q          |          |          |        V|
24+15       0.6365      0.02  Q          |          |          |        V|
24+20       0.6365      0.01  Q          |          |          |        V|
```

```
   24+25       0.6366      0.01  Q          |          |          |         V|
   24+30       0.6366      0.00  Q          |          |          |         V|
   24+35       0.6366      0.00  Q          |          |          |         V|
   24+40       0.6366      0.00  Q          |          |          |         V|
   24+45       0.6366      0.00  Q          |          |          |         V|
   24+50       0.6366      0.00  Q          |          |          |         V|
   24+55       0.6366      0.00  Q          |          |          |         V|
   25+ 0       0.6367      0.00  Q          |          |          |         V|
   25+ 5       0.6367      0.00  Q          |          |          |         V|
   25+10       0.6367      0.00  Q          |          |          |         V|
   25+15       0.6367      0.00  Q          |          |          |         V|
-------------------------------------------------------------------------------
```

- 5 Year 3 Hour Pre-Development Unit Hydrograph – Area 'B'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/05/16   File Name EXB00503.out


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------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'B' - 5 YEAR 3 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 5

       Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 80.2       7.8          0.40     D     0.200     1.000    0.200
 80.2      11.8          0.60     C     0.250     1.000    0.250

Area-averaged adjusted loss rate Fm (In/Hr) =  0.230

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
     7.84   0.400         80.2      63.3       5.80     0.150

    11.76   0.600         80.2      63.3       5.80     0.150

Area-averaged catchment yield fraction, Y =  0.150
Area-averaged low loss fraction, Yb =  0.850
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.223 (hours)
Watershed area =      19.60(Ac.)
Catchment Lag time =   0.178 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 46.7220
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.230(In/Hr)
Average low loss rate fraction (Yb) = 0.850 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.260(In)
Computed peak 30-minute rainfall =  0.590(In)
Specified peak 1-hour rainfall =  0.780(In)
Computed peak 3-hour rainfall =  1.310(In)
Specified peak 6-hour rainfall =  1.810(In)
Specified peak 24-hour rainfall =  3.030(In)


Rainfall depth area reduction factors:
Using a total area of      19.60(Ac.) (Ref: fig. E-4)
```

```
5-minute factor = 0.999     Adjusted rainfall =  0.260(In)
30-minute factor = 0.999    Adjusted rainfall =  0.589(In)
1-hour factor = 0.999       Adjusted rainfall =  0.779(In)
3-hour factor = 1.000       Adjusted rainfall =  1.310(In)
6-hour factor = 1.000       Adjusted rainfall =  1.810(In)
24-hour factor = 1.000 Adjusted rainfall =  3.030(In)
--------------------------------------------------------------------

                     U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------
               (K =       237.04 (CFS))

  1                3.891                   9.222
  2               20.580                  39.561
  3               58.765                  90.513
  4               74.958                  38.383
  5               83.783                  20.919
  6               89.595                  13.777
  7               93.569                   9.420
  8               96.172                   6.168
  9               97.748                   3.736
 10               98.420                   1.594
 11               98.897                   1.132
 12               99.226                   0.779
 13               99.570                   0.814
 14               99.823                   0.599
 15              100.000                   0.420
--------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.2598              0.2598
  2              0.3567              0.0969
  3              0.4293              0.0727
  4              0.4897              0.0604
  5              0.5423              0.0526
  6              0.5895              0.0472
  7              0.6272              0.0378
  8              0.6619              0.0347
  9              0.6940              0.0322
 10              0.7241              0.0301
 11              0.7524              0.0283
 12              0.7793              0.0268
 13              0.8093              0.0300
 14              0.8382              0.0289
 15              0.8660              0.0278
 16              0.8928              0.0268
 17              0.9187              0.0260
 18              0.9439              0.0252
 19              0.9683              0.0244
 20              0.9921              0.0238
 21              1.0153              0.0231
 22              1.0378              0.0226
 23              1.0599              0.0220
 24              1.0814              0.0215
 25              1.1025              0.0211
 26              1.1231              0.0206
 27              1.1433              0.0202
 28              1.1631              0.0198
 29              1.1826              0.0195
 30              1.2017              0.0191
 31              1.2205              0.0188
 32              1.2389              0.0185
 33              1.2571              0.0182
 34              1.2749              0.0179
 35              1.2925              0.0176
 36              1.3098              0.0173
--------------------------------------------------------------------
```

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0173	0.0147	0.0026
2	0.0176	0.0149	0.0026
3	0.0182	0.0154	0.0027
4	0.0185	0.0157	0.0028
5	0.0191	0.0162	0.0029
6	0.0195	0.0165	0.0029
7	0.0202	0.0172	0.0030
8	0.0206	0.0175	0.0031
9	0.0215	0.0183	0.0032
10	0.0220	0.0187	0.0033
11	0.0231	0.0192	0.0040
12	0.0238	0.0192	0.0046
13	0.0252	0.0192	0.0060
14	0.0260	0.0192	0.0068
15	0.0278	0.0192	0.0086
16	0.0289	0.0192	0.0097
17	0.0268	0.0192	0.0077
18	0.0283	0.0192	0.0092
19	0.0322	0.0192	0.0130
20	0.0347	0.0192	0.0155
21	0.0472	0.0192	0.0280
22	0.0526	0.0192	0.0334
23	0.0727	0.0192	0.0535
24	0.0969	0.0192	0.0777
25	0.2598	0.0192	0.2406
26	0.0604	0.0192	0.0412
27	0.0378	0.0192	0.0186
28	0.0301	0.0192	0.0109
29	0.0300	0.0192	0.0109
30	0.0268	0.0192	0.0077
31	0.0244	0.0192	0.0053
32	0.0226	0.0192	0.0034
33	0.0211	0.0179	0.0032
34	0.0198	0.0168	0.0030
35	0.0188	0.0159	0.0028
36	0.0179	0.0152	0.0027

Total soil rain loss = 0.65(In)
Total effective rainfall = 0.66(In)
Peak flow rate in flood hydrograph = 28.59(CFS)

3 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	7.5	15.0	22.5	30.0
0+ 5	0.0002	0.02	Q	|	|	|	|
0+10	0.0010	0.13	Q	|	|	|	|
0+15	0.0036	0.37	Q	|	|	|	|
0+20	0.0068	0.47	Q	|	|	|	|
0+25	0.0105	0.54	Q	|	|	|	|
0+30	0.0146	0.59	Q	|	|	|	|
0+35	0.0189	0.63	Q	|	|	|	|
0+40	0.0235	0.66	Q	|	|	|	|
0+45	0.0282	0.69	QV	|	|	|	|
0+50	0.0331	0.71	QV	|	|	|	|
0+55	0.0383	0.75	QV	|	|	|	|
1+ 0	0.0437	0.80	|Q	|	|	|	|
1+ 5	0.0500	0.90	|Q	|	|	|	|
1+10	0.0572	1.05	|QV	|	|	|	|
1+15	0.0660	1.27	|QV	|	|	|	|
1+20	0.0763	1.50	| Q	|	|	|	|

```
   1+25       0.0885      1.77  | QV      |         |         |         |
   1+30       0.1017      1.92  | QV      |         |         |         |
   1+35       0.1151      1.94  | Q V     |         |         |         |
   1+40       0.1305      2.24  | Q V     |         |         |         |
   1+45       0.1502      2.86  |  Q V    |         |         |         |
   1+50       0.1764      3.81  |    QV   |         |         |         |
   1+55       0.2145      5.53  |      Q  |         |         |         |
   2+ 0       0.2671      7.64  |        VQ         |         |         |
   2+ 5       0.3530     12.47  |         |  V  Q   |         |         |
   2+10       0.4933     20.37  |         |       V |      Q  |         |
   2+15       0.6902     28.59  |         |         |   V     |       Q |
   2+20       0.8057     16.76  |         |         | Q       V         |
   2+25       0.8799     10.78  |         |   Q     |         | V       |
   2+30       0.9326      7.65  |         Q         |         |   V     |
   2+35       0.9724      5.77  |      Q  |         |         |     V   |
   2+40       1.0011      4.17  |    Q    |         |         |      V  |
   2+45       1.0210      2.89  |  Q      |         |         |       V |
   2+50       1.0341      1.91  | Q       |         |         |       V |
   2+55       1.0444      1.49  |Q        |         |         |       V |
   3+ 0       1.0528      1.22  |Q        |         |         |        V|
   3+ 5       1.0601      1.06  |Q        |         |         |        V|
   3+10       1.0657      0.81  |Q        |         |         |        V|
   3+15       1.0688      0.45  Q         |         |         |        V|
   3+20       1.0703      0.22  Q         |         |         |        V|
   3+25       1.0712      0.13  Q         |         |         |        V|
   3+30       1.0718      0.08  Q         |         |         |        V|
   3+35       1.0721      0.05  Q         |         |         |        V|
   3+40       1.0723      0.03  Q         |         |         |        V|
   3+45       1.0724      0.02  Q         |         |         |        V|
   3+50       1.0725      0.01  Q         |         |         |        V|
   3+55       1.0726      0.01  Q         |         |         |        V|
   4+ 0       1.0726      0.01  Q         |         |         |        V|
   4+ 5       1.0726      0.00  Q         |         |         |        V|
   4+10       1.0726      0.00  Q         |         |         |         V
-------------------------------------------------------------------------
```

- 5 Year 6 Hour Pre-Development Unit Hydrograph – Area 'B'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/05/16   File Name EXB00506.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'B' - 5 YEAR 6 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 5

       Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 80.2       7.8          0.40     D     0.200     1.000    0.200
 80.2      11.8          0.60     C     0.250     1.000    0.250

Area-averaged adjusted loss rate Fm (In/Hr) =  0.230

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
     7.84   0.400         80.2      63.3       5.80     0.150

    11.76   0.600         80.2      63.3       5.80     0.150

Area-averaged catchment yield fraction, Y =  0.150
Area-averaged low loss fraction, Yb =  0.850
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.223 (hours)
Watershed area =      19.60(Ac.)
Catchment Lag time =   0.178 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 46.7220
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.230(In/Hr)
Average low loss rate fraction (Yb) = 0.850 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.260(In)
Computed peak 30-minute rainfall =  0.590(In)
Specified peak 1-hour rainfall =  0.780(In)
Computed peak 3-hour rainfall =  1.310(In)
Specified peak 6-hour rainfall =  1.810(In)
Specified peak 24-hour rainfall =  3.030(In)


Rainfall depth area reduction factors:
Using a total area of      19.60(Ac.) (Ref: fig. E-4)
```

```
5-minute factor = 0.999     Adjusted rainfall =  0.260(In)
30-minute factor = 0.999    Adjusted rainfall =  0.589(In)
1-hour factor = 0.999       Adjusted rainfall =  0.779(In)
3-hour factor = 1.000       Adjusted rainfall =  1.310(In)
6-hour factor = 1.000       Adjusted rainfall =  1.810(In)
24-hour factor = 1.000 Adjusted rainfall =  3.030(In)
--------------------------------------------------------------------

                     U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------
               (K =       237.04 (CFS))

  1                3.891                   9.222
  2               20.580                  39.561
  3               58.765                  90.513
  4               74.958                  38.383
  5               83.783                  20.919
  6               89.595                  13.777
  7               93.569                   9.420
  8               96.172                   6.168
  9               97.748                   3.736
 10               98.420                   1.594
 11               98.897                   1.132
 12               99.226                   0.779
 13               99.570                   0.814
 14               99.823                   0.599
 15              100.000                   0.420
--------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.2598              0.2598
  2              0.3567              0.0969
  3              0.4293              0.0727
  4              0.4897              0.0604
  5              0.5423              0.0526
  6              0.5895              0.0472
  7              0.6272              0.0378
  8              0.6619              0.0347
  9              0.6940              0.0322
 10              0.7241              0.0301
 11              0.7524              0.0283
 12              0.7793              0.0268
 13              0.8093              0.0300
 14              0.8382              0.0289
 15              0.8660              0.0278
 16              0.8928              0.0268
 17              0.9187              0.0260
 18              0.9439              0.0252
 19              0.9683              0.0244
 20              0.9921              0.0238
 21              1.0153              0.0231
 22              1.0378              0.0226
 23              1.0599              0.0220
 24              1.0814              0.0215
 25              1.1025              0.0211
 26              1.1231              0.0206
 27              1.1433              0.0202
 28              1.1631              0.0198
 29              1.1826              0.0195
 30              1.2017              0.0191
 31              1.2205              0.0188
 32              1.2389              0.0185
 33              1.2571              0.0182
 34              1.2749              0.0179
 35              1.2925              0.0176
 36              1.3098              0.0173
 37              1.3267              0.0168
```

38	1.3433	0.0166
39	1.3597	0.0164
40	1.3758	0.0162
41	1.3918	0.0159
42	1.4075	0.0157
43	1.4230	0.0155
44	1.4384	0.0153
45	1.4535	0.0152
46	1.4685	0.0150
47	1.4833	0.0148
48	1.4980	0.0146
49	1.5125	0.0145
50	1.5268	0.0143
51	1.5409	0.0142
52	1.5550	0.0140
53	1.5688	0.0139
54	1.5826	0.0137
55	1.5962	0.0136
56	1.6097	0.0135
57	1.6230	0.0133
58	1.6362	0.0132
59	1.6493	0.0131
60	1.6623	0.0130
61	1.6752	0.0129
62	1.6879	0.0128
63	1.7006	0.0126
64	1.7131	0.0125
65	1.7256	0.0124
66	1.7379	0.0123
67	1.7501	0.0122
68	1.7623	0.0121
69	1.7743	0.0120
70	1.7863	0.0119
71	1.7981	0.0119
72	1.8099	0.0118

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0118	0.0100	0.0018
2	0.0119	0.0101	0.0018
3	0.0120	0.0102	0.0018
4	0.0121	0.0103	0.0018
5	0.0123	0.0105	0.0019
6	0.0124	0.0106	0.0019
7	0.0126	0.0107	0.0019
8	0.0128	0.0108	0.0019
9	0.0130	0.0110	0.0020
10	0.0131	0.0111	0.0020
11	0.0133	0.0113	0.0020
12	0.0135	0.0114	0.0020
13	0.0137	0.0117	0.0021
14	0.0139	0.0118	0.0021
15	0.0142	0.0120	0.0021
16	0.0143	0.0122	0.0022
17	0.0146	0.0124	0.0022
18	0.0148	0.0126	0.0022
19	0.0152	0.0129	0.0023
20	0.0153	0.0130	0.0023
21	0.0157	0.0134	0.0024
22	0.0159	0.0135	0.0024
23	0.0164	0.0139	0.0025
24	0.0166	0.0141	0.0025
25	0.0173	0.0147	0.0026
26	0.0176	0.0149	0.0026
27	0.0182	0.0154	0.0027
28	0.0185	0.0157	0.0028
29	0.0191	0.0162	0.0029
30	0.0195	0.0165	0.0029
31	0.0202	0.0172	0.0030

```
      32              0.0206          0.0175              0.0031
      33              0.0215          0.0183              0.0032
      34              0.0220          0.0187              0.0033
      35              0.0231          0.0192              0.0040
      36              0.0238          0.0192              0.0046
      37              0.0252          0.0192              0.0060
      38              0.0260          0.0192              0.0068
      39              0.0278          0.0192              0.0086
      40              0.0289          0.0192              0.0097
      41              0.0268          0.0192              0.0077
      42              0.0283          0.0192              0.0092
      43              0.0322          0.0192              0.0130
      44              0.0347          0.0192              0.0155
      45              0.0472          0.0192              0.0280
      46              0.0526          0.0192              0.0334
      47              0.0727          0.0192              0.0535
      48              0.0969          0.0192              0.0777
      49              0.2598          0.0192              0.2406
      50              0.0604          0.0192              0.0412
      51              0.0378          0.0192              0.0186
      52              0.0301          0.0192              0.0109
      53              0.0300          0.0192              0.0109
      54              0.0268          0.0192              0.0077
      55              0.0244          0.0192              0.0053
      56              0.0226          0.0192              0.0034
      57              0.0211          0.0179              0.0032
      58              0.0198          0.0168              0.0030
      59              0.0188          0.0159              0.0028
      60              0.0179          0.0152              0.0027
      61              0.0168          0.0143              0.0025
      62              0.0162          0.0137              0.0024
      63              0.0155          0.0132              0.0023
      64              0.0150          0.0127              0.0023
      65              0.0145          0.0123              0.0022
      66              0.0140          0.0119              0.0021
      67              0.0136          0.0116              0.0020
      68              0.0132          0.0112              0.0020
      69              0.0129          0.0109              0.0019
      70              0.0125          0.0107              0.0019
      71              0.0122          0.0104              0.0018
      72              0.0119          0.0102              0.0018
     ------------------------------------------------------------------------
     ------------------------------------------------------------------------
     Total soil rain loss =      1.08(In)
     Total effective rainfall =      0.73(In)
     Peak flow rate in flood hydrograph =     28.59(CFS)
     ------------------------------------------------------------------------
     ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                        6 - H O U R    S T O R M
                   R u n o f f      H y d r o g r a p h
     ------------------------------------------------------------------------
               Hydrograph in   5   Minute intervals ((CFS))

     ------------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0        7.5      15.0      22.5      30.0
----------------------------------------------------------------------------
  0+ 5       0.0001      0.02  Q         |         |         |         |
  0+10       0.0007      0.09  Q         |         |         |         |
  0+15       0.0024      0.25  Q         |         |         |         |
  0+20       0.0046      0.32  Q         |         |         |         |
  0+25       0.0071      0.36  Q         |         |         |         |
  0+30       0.0097      0.39  Q         |         |         |         |
  0+35       0.0125      0.41  Q         |         |         |         |
  0+40       0.0155      0.42  Q         |         |         |         |
  0+45       0.0185      0.44  Q         |         |         |         |
  0+50       0.0215      0.44  Q         |         |         |         |
  0+55       0.0247      0.45  Q         |         |         |         |
  1+ 0       0.0278      0.46  Q         |         |         |         |
  1+ 5       0.0310      0.47  QV        |         |         |         |
  1+10       0.0343      0.48  QV        |         |         |         |
  1+15       0.0376      0.48  QV        |         |         |         |
```

```
1+20       0.0410      0.49  QV        |         |         |         |
1+25       0.0444      0.50  QV        |         |         |         |
1+30       0.0479      0.51  QV        |         |         |         |
1+35       0.0515      0.51  QV        |         |         |         |
1+40       0.0551      0.52  QV        |         |         |         |
1+45       0.0587      0.53  QV        |         |         |         |
1+50       0.0624      0.54  Q V       |         |         |         |
1+55       0.0662      0.55  Q V       |         |         |         |
2+ 0       0.0701      0.56  Q V       |         |         |         |
2+ 5       0.0741      0.57  Q V       |         |         |         |
2+10       0.0781      0.59  Q V       |         |         |         |
2+15       0.0822      0.60  Q V       |         |         |         |
2+20       0.0865      0.62  Q V       |         |         |         |
2+25       0.0908      0.63  Q  V      |         |         |         |
2+30       0.0953      0.65  Q  V      |         |         |         |
2+35       0.0999      0.67  Q  V      |         |         |         |
2+40       0.1046      0.68  Q  V      |         |         |         |
2+45       0.1094      0.70  Q  V      |         |         |         |
2+50       0.1144      0.72  Q  V      |         |         |         |
2+55       0.1196      0.75  |Q  V      |         |         |         |
3+ 0       0.1251      0.80  |Q  V      |         |         |         |
3+ 5       0.1313      0.91  |Q  V      |         |         |         |
3+10       0.1386      1.06  |Q  V      |         |         |         |
3+15       0.1474      1.27  |Q  V      |         |         |         |
3+20       0.1577      1.50  | Q  V     |         |         |         |
3+25       0.1699      1.77  | Q  V     |         |         |         |
3+30       0.1831      1.92  | Q   V    |         |         |         |
3+35       0.1965      1.94  | Q   V    |         |         |         |
3+40       0.2119      2.24  | Q    V   |         |         |         |
3+45       0.2316      2.86  |  Q   V   |         |         |         |
3+50       0.2578      3.81  |    Q  V  |         |         |         |
3+55       0.2959      5.53  |      Q V |         |         |         |
4+ 0       0.3485      7.64  |         QV         |         |         |
4+ 5       0.4344     12.47  |          |   V Q   |         |         |
4+10       0.5747     20.37  |          |        V|      Q  |         |
4+15       0.7716     28.59  |          |         |    V    |        Q|
4+20       0.8871     16.76  |          |         | Q      V|         |
4+25       0.9613     10.78  |          |   Q     |         | V       |
4+30       1.0140      7.65  |          Q         |         |  V      |
4+35       1.0538      5.77  |       Q  |         |         |    V    |
4+40       1.0825      4.17  |     Q    |         |         |     V   |
4+45       1.1024      2.89  |   Q      |         |         |     V   |
4+50       1.1155      1.91  |  Q       |         |         |      V  |
4+55       1.1258      1.49  |Q         |         |         |      V  |
5+ 0       1.1342      1.22  |Q         |         |         |      V  |
5+ 5       1.1417      1.09  |Q         |         |         |       V |
5+10       1.1481      0.93  |Q         |         |         |       V |
5+15       1.1535      0.79  |Q         |         |         |       V |
5+20       1.1580      0.65  Q          |         |         |       V |
5+25       1.1621      0.60  Q          |         |         |       V |
5+30       1.1661      0.57  Q          |         |         |        V|
5+35       1.1698      0.54  Q          |         |         |        V|
5+40       1.1734      0.52  Q          |         |         |        V|
5+45       1.1769      0.50  Q          |         |         |        V|
5+50       1.1802      0.49  Q          |         |         |        V|
5+55       1.1835      0.47  Q          |         |         |        V|
6+ 0       1.1866      0.46  Q          |         |         |        V|
6+ 5       1.1896      0.43  Q          |         |         |        V|
6+10       1.1920      0.35  Q          |         |         |        V|
6+15       1.1933      0.18  Q          |         |         |        V|
6+20       1.1940      0.11  Q          |         |         |        V|
6+25       1.1945      0.07  Q          |         |         |        V|
6+30       1.1948      0.05  Q          |         |         |        V|
6+35       1.1950      0.03  Q          |         |         |        V|
6+40       1.1952      0.02  Q          |         |         |        V|
6+45       1.1952      0.01  Q          |         |         |        V|
6+50       1.1953      0.01  Q          |         |         |        V|
6+55       1.1953      0.00  Q          |         |         |        V|
7+ 0       1.1953      0.00  Q          |         |         |        V|
7+ 5       1.1953      0.00  Q          |         |         |        V|
7+10       1.1954      0.00  Q          |         |         |        V|
```

- 5 Year 12 Hour Pre-Development Unit Hydrograph – Area 'B'

```
        U n i t   H y d r o g r a p h   A n a l y s i s

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        Study date  10/05/16   File Name EXB00512.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

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RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'B' - 5 YEAR 12 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

        Storm Event Year = 5

        Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 80.2       7.8          0.40     D     0.200     1.000    0.200
 80.2      11.8          0.60     C     0.250     1.000    0.250

Area-averaged adjusted loss rate Fm (In/Hr) =  0.230

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
     7.84   0.400         80.2      63.3       5.80     0.150

    11.76   0.600         80.2      63.3       5.80     0.150

Area-averaged catchment yield fraction, Y =  0.150
Area-averaged low loss fraction, Yb =  0.850
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.223 (hours)
Watershed area =      19.60(Ac.)
Catchment Lag time =   0.178 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 46.7220
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.230(In/Hr)
Average low loss rate fraction (Yb) = 0.850 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.260(In)
Computed peak 30-minute rainfall =  0.590(In)
Specified peak 1-hour rainfall =  0.780(In)
Computed peak 3-hour rainfall =  1.310(In)
Specified peak 6-hour rainfall =  1.810(In)
Specified peak 24-hour rainfall =  3.030(In)


Rainfall depth area reduction factors:
Using a total area of      19.60(Ac.) (Ref: fig. E-4)
```

```
5-minute factor = 0.999     Adjusted rainfall =  0.260(In)
30-minute factor = 0.999    Adjusted rainfall =  0.589(In)
1-hour factor = 0.999       Adjusted rainfall =  0.779(In)
3-hour factor = 1.000       Adjusted rainfall =  1.310(In)
6-hour factor = 1.000       Adjusted rainfall =  1.810(In)
24-hour factor = 1.000 Adjusted rainfall =  3.030(In)
--------------------------------------------------------------------

                     U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------
               (K =       237.04 (CFS))

  1                3.891                   9.222
  2               20.580                  39.561
  3               58.765                  90.513
  4               74.958                  38.383
  5               83.783                  20.919
  6               89.595                  13.777
  7               93.569                   9.420
  8               96.172                   6.168
  9               97.748                   3.736
 10               98.420                   1.594
 11               98.897                   1.132
 12               99.226                   0.779
 13               99.570                   0.814
 14               99.823                   0.599
 15              100.000                   0.420
--------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.2598              0.2598
  2              0.3567              0.0969
  3              0.4293              0.0727
  4              0.4897              0.0604
  5              0.5423              0.0526
  6              0.5895              0.0472
  7              0.6272              0.0378
  8              0.6619              0.0347
  9              0.6940              0.0322
 10              0.7241              0.0301
 11              0.7524              0.0283
 12              0.7793              0.0268
 13              0.8093              0.0300
 14              0.8382              0.0289
 15              0.8660              0.0278
 16              0.8928              0.0268
 17              0.9187              0.0260
 18              0.9439              0.0252
 19              0.9683              0.0244
 20              0.9921              0.0238
 21              1.0153              0.0231
 22              1.0378              0.0226
 23              1.0599              0.0220
 24              1.0814              0.0215
 25              1.1025              0.0211
 26              1.1231              0.0206
 27              1.1433              0.0202
 28              1.1631              0.0198
 29              1.1826              0.0195
 30              1.2017              0.0191
 31              1.2205              0.0188
 32              1.2389              0.0185
 33              1.2571              0.0182
 34              1.2749              0.0179
 35              1.2925              0.0176
 36              1.3098              0.0173
 37              1.3267              0.0168
```

38	1.3433	0.0166
39	1.3597	0.0164
40	1.3758	0.0162
41	1.3918	0.0159
42	1.4075	0.0157
43	1.4230	0.0155
44	1.4384	0.0153
45	1.4535	0.0152
46	1.4685	0.0150
47	1.4833	0.0148
48	1.4980	0.0146
49	1.5125	0.0145
50	1.5268	0.0143
51	1.5409	0.0142
52	1.5550	0.0140
53	1.5688	0.0139
54	1.5826	0.0137
55	1.5962	0.0136
56	1.6097	0.0135
57	1.6230	0.0133
58	1.6362	0.0132
59	1.6493	0.0131
60	1.6623	0.0130
61	1.6752	0.0129
62	1.6879	0.0128
63	1.7006	0.0126
64	1.7131	0.0125
65	1.7256	0.0124
66	1.7379	0.0123
67	1.7501	0.0122
68	1.7623	0.0121
69	1.7743	0.0120
70	1.7863	0.0119
71	1.7981	0.0119
72	1.8099	0.0118
73	1.8192	0.0093
74	1.8284	0.0092
75	1.8376	0.0091
76	1.8466	0.0091
77	1.8556	0.0090
78	1.8645	0.0089
79	1.8734	0.0088
80	1.8822	0.0088
81	1.8909	0.0087
82	1.8995	0.0086
83	1.9081	0.0086
84	1.9166	0.0085
85	1.9251	0.0084
86	1.9335	0.0084
87	1.9418	0.0083
88	1.9500	0.0083
89	1.9583	0.0082
90	1.9664	0.0081
91	1.9745	0.0081
92	1.9825	0.0080
93	1.9905	0.0080
94	1.9984	0.0079
95	2.0063	0.0079
96	2.0141	0.0078
97	2.0219	0.0078
98	2.0296	0.0077
99	2.0373	0.0077
100	2.0449	0.0076
101	2.0525	0.0076
102	2.0600	0.0075
103	2.0675	0.0075
104	2.0750	0.0074
105	2.0824	0.0074
106	2.0897	0.0073
107	2.0970	0.0073
108	2.1043	0.0073

109	2.1115	0.0072
110	2.1187	0.0072
111	2.1258	0.0071
112	2.1329	0.0071
113	2.1400	0.0071
114	2.1470	0.0070
115	2.1540	0.0070
116	2.1609	0.0069
117	2.1678	0.0069
118	2.1747	0.0069
119	2.1815	0.0068
120	2.1883	0.0068
121	2.1951	0.0068
122	2.2018	0.0067
123	2.2085	0.0067
124	2.2152	0.0067
125	2.2218	0.0066
126	2.2284	0.0066
127	2.2349	0.0066
128	2.2415	0.0065
129	2.2479	0.0065
130	2.2544	0.0065
131	2.2608	0.0064
132	2.2672	0.0064
133	2.2736	0.0064
134	2.2799	0.0063
135	2.2863	0.0063
136	2.2925	0.0063
137	2.2988	0.0063
138	2.3050	0.0062
139	2.3112	0.0062
140	2.3174	0.0062
141	2.3235	0.0061
142	2.3296	0.0061
143	2.3357	0.0061
144	2.3418	0.0061

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0061	0.0051	0.0009
2	0.0061	0.0052	0.0009
3	0.0061	0.0052	0.0009
4	0.0062	0.0052	0.0009
5	0.0062	0.0053	0.0009
6	0.0063	0.0053	0.0009
7	0.0063	0.0054	0.0009
8	0.0063	0.0054	0.0010
9	0.0064	0.0054	0.0010
10	0.0064	0.0055	0.0010
11	0.0065	0.0055	0.0010
12	0.0065	0.0055	0.0010
13	0.0066	0.0056	0.0010
14	0.0066	0.0056	0.0010
15	0.0067	0.0057	0.0010
16	0.0067	0.0057	0.0010
17	0.0068	0.0058	0.0010
18	0.0068	0.0058	0.0010
19	0.0069	0.0059	0.0010
20	0.0069	0.0059	0.0010
21	0.0070	0.0060	0.0011
22	0.0071	0.0060	0.0011
23	0.0071	0.0061	0.0011
24	0.0072	0.0061	0.0011
25	0.0073	0.0062	0.0011
26	0.0073	0.0062	0.0011
27	0.0074	0.0063	0.0011
28	0.0074	0.0063	0.0011
29	0.0075	0.0064	0.0011
30	0.0076	0.0064	0.0011

31	0.0077	0.0065	0.0012
32	0.0077	0.0066	0.0012
33	0.0078	0.0066	0.0012
34	0.0079	0.0067	0.0012
35	0.0080	0.0068	0.0012
36	0.0080	0.0068	0.0012
37	0.0081	0.0069	0.0012
38	0.0082	0.0070	0.0012
39	0.0083	0.0071	0.0013
40	0.0084	0.0071	0.0013
41	0.0085	0.0072	0.0013
42	0.0086	0.0073	0.0013
43	0.0087	0.0074	0.0013
44	0.0088	0.0075	0.0013
45	0.0089	0.0076	0.0013
46	0.0090	0.0076	0.0014
47	0.0091	0.0078	0.0014
48	0.0092	0.0078	0.0014
49	0.0118	0.0100	0.0018
50	0.0119	0.0101	0.0018
51	0.0120	0.0102	0.0018
52	0.0121	0.0103	0.0018
53	0.0123	0.0105	0.0019
54	0.0124	0.0106	0.0019
55	0.0126	0.0107	0.0019
56	0.0128	0.0108	0.0019
57	0.0130	0.0110	0.0020
58	0.0131	0.0111	0.0020
59	0.0133	0.0113	0.0020
60	0.0135	0.0114	0.0020
61	0.0137	0.0117	0.0021
62	0.0139	0.0118	0.0021
63	0.0142	0.0120	0.0021
64	0.0143	0.0122	0.0022
65	0.0146	0.0124	0.0022
66	0.0148	0.0126	0.0022
67	0.0152	0.0129	0.0023
68	0.0153	0.0130	0.0023
69	0.0157	0.0134	0.0024
70	0.0159	0.0135	0.0024
71	0.0164	0.0139	0.0025
72	0.0166	0.0141	0.0025
73	0.0173	0.0147	0.0026
74	0.0176	0.0149	0.0026
75	0.0182	0.0154	0.0027
76	0.0185	0.0157	0.0028
77	0.0191	0.0162	0.0029
78	0.0195	0.0165	0.0029
79	0.0202	0.0172	0.0030
80	0.0206	0.0175	0.0031
81	0.0215	0.0183	0.0032
82	0.0220	0.0187	0.0033
83	0.0231	0.0192	0.0040
84	0.0238	0.0192	0.0046
85	0.0252	0.0192	0.0060
86	0.0260	0.0192	0.0068
87	0.0278	0.0192	0.0086
88	0.0289	0.0192	0.0097
89	0.0268	0.0192	0.0077
90	0.0283	0.0192	0.0092
91	0.0322	0.0192	0.0130
92	0.0347	0.0192	0.0155
93	0.0472	0.0192	0.0280
94	0.0526	0.0192	0.0334
95	0.0727	0.0192	0.0535
96	0.0969	0.0192	0.0777
97	0.2598	0.0192	0.2406
98	0.0604	0.0192	0.0412
99	0.0378	0.0192	0.0186
100	0.0301	0.0192	0.0109
101	0.0300	0.0192	0.0109

```
      102              0.0268           0.0192              0.0077
      103              0.0244           0.0192              0.0053
      104              0.0226           0.0192              0.0034
      105              0.0211           0.0179              0.0032
      106              0.0198           0.0168              0.0030
      107              0.0188           0.0159              0.0028
      108              0.0179           0.0152              0.0027
      109              0.0168           0.0143              0.0025
      110              0.0162           0.0137              0.0024
      111              0.0155           0.0132              0.0023
      112              0.0150           0.0127              0.0023
      113              0.0145           0.0123              0.0022
      114              0.0140           0.0119              0.0021
      115              0.0136           0.0116              0.0020
      116              0.0132           0.0112              0.0020
      117              0.0129           0.0109              0.0019
      118              0.0125           0.0107              0.0019
      119              0.0122           0.0104              0.0018
      120              0.0119           0.0102              0.0018
      121              0.0093           0.0079              0.0014
      122              0.0091           0.0077              0.0014
      123              0.0088           0.0075              0.0013
      124              0.0086           0.0073              0.0013
      125              0.0084           0.0072              0.0013
      126              0.0083           0.0070              0.0012
      127              0.0081           0.0069              0.0012
      128              0.0079           0.0067              0.0012
      129              0.0078           0.0066              0.0012
      130              0.0076           0.0065              0.0011
      131              0.0075           0.0064              0.0011
      132              0.0073           0.0062              0.0011
      133              0.0072           0.0061              0.0011
      134              0.0071           0.0060              0.0011
      135              0.0070           0.0059              0.0010
      136              0.0069           0.0058              0.0010
      137              0.0068           0.0057              0.0010
      138              0.0067           0.0057              0.0010
      139              0.0066           0.0056              0.0010
      140              0.0065           0.0055              0.0010
      141              0.0064           0.0054              0.0010
      142              0.0063           0.0053              0.0009
      143              0.0062           0.0053              0.0009
      144              0.0061           0.0052              0.0009
      ------------------------------------------------------------------------
      ------------------------------------------------------------------------
      Total soil rain loss =      1.53(In)
      Total effective rainfall =      0.81(In)
      Peak flow rate in flood hydrograph =     28.59(CFS)
      ------------------------------------------------------------------------
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          12 - H O U R    S T O R M
                     R u n o f f      H y d r o g r a p h
      ------------------------------------------------------------------------
                  Hydrograph in   5   Minute intervals ((CFS))

      ------------------------------------------------------------------------
 Time(h+m) Volume Ac.Ft   Q(CFS)  0        7.5      15.0      22.5      30.0
 ------------------------------------------------------------------------
   0+ 5       0.0001      0.01  Q         |         |         |         |
   0+10       0.0004      0.04  Q         |         |         |         |
   0+15       0.0012      0.13  Q         |         |         |         |
   0+20       0.0024      0.16  Q         |         |         |         |
   0+25       0.0036      0.18  Q         |         |         |         |
   0+30       0.0050      0.20  Q         |         |         |         |
   0+35       0.0064      0.21  Q         |         |         |         |
   0+40       0.0079      0.21  Q         |         |         |         |
   0+45       0.0094      0.22  Q         |         |         |         |
   0+50       0.0109      0.22  Q         |         |         |         |
   0+55       0.0124      0.22  Q         |         |         |         |
   1+ 0       0.0140      0.23  Q         |         |         |         |
   1+ 5       0.0156      0.23  Q         |         |         |         |
```

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1+10       0.0172      0.23  Q          |          |          |          |
1+15       0.0188      0.23  Q          |          |          |          |
1+20       0.0204      0.23  Q          |          |          |          |
1+25       0.0220      0.24  Q          |          |          |          |
1+30       0.0237      0.24  Q          |          |          |          |
1+35       0.0253      0.24  Q          |          |          |          |
1+40       0.0270      0.24  Q          |          |          |          |
1+45       0.0287      0.24  Q          |          |          |          |
1+50       0.0304      0.25  Q          |          |          |          |
1+55       0.0321      0.25  Q          |          |          |          |
2+ 0       0.0338      0.25  QV         |          |          |          |
2+ 5       0.0355      0.25  QV         |          |          |          |
2+10       0.0373      0.25  QV         |          |          |          |
2+15       0.0391      0.26  QV         |          |          |          |
2+20       0.0408      0.26  QV         |          |          |          |
2+25       0.0426      0.26  QV         |          |          |          |
2+30       0.0445      0.26  QV         |          |          |          |
2+35       0.0463      0.27  QV         |          |          |          |
2+40       0.0481      0.27  QV         |          |          |          |
2+45       0.0500      0.27  QV         |          |          |          |
2+50       0.0519      0.27  QV         |          |          |          |
2+55       0.0538      0.28  QV         |          |          |          |
3+ 0       0.0557      0.28  QV         |          |          |          |
3+ 5       0.0576      0.28  QV         |          |          |          |
3+10       0.0596      0.28  QV         |          |          |          |
3+15       0.0616      0.29  QV         |          |          |          |
3+20       0.0636      0.29  QV         |          |          |          |
3+25       0.0656      0.29  QV         |          |          |          |
3+30       0.0677      0.30  Q V        |          |          |          |
3+35       0.0697      0.30  Q V        |          |          |          |
3+40       0.0718      0.30  Q V        |          |          |          |
3+45       0.0739      0.31  Q V        |          |          |          |
3+50       0.0761      0.31  Q V        |          |          |          |
3+55       0.0782      0.31  Q V        |          |          |          |
4+ 0       0.0804      0.32  Q V        |          |          |          |
4+ 5       0.0827      0.33  Q V        |          |          |          |
4+10       0.0850      0.34  Q V        |          |          |          |
4+15       0.0876      0.38  Q V        |          |          |          |
4+20       0.0904      0.40  Q V        |          |          |          |
4+25       0.0932      0.41  Q V        |          |          |          |
4+30       0.0961      0.42  Q V        |          |          |          |
4+35       0.0991      0.43  Q V        |          |          |          |
4+40       0.1021      0.44  Q  V       |          |          |          |
4+45       0.1051      0.44  Q  V       |          |          |          |
4+50       0.1082      0.45  Q  V       |          |          |          |
4+55       0.1114      0.46  Q  V       |          |          |          |
5+ 0       0.1146      0.46  Q  V       |          |          |          |
5+ 5       0.1178      0.47  Q  V       |          |          |          |
5+10       0.1211      0.48  Q  V       |          |          |          |
5+15       0.1244      0.48  Q  V       |          |          |          |
5+20       0.1278      0.49  Q  V       |          |          |          |
5+25       0.1312      0.50  Q  V       |          |          |          |
5+30       0.1347      0.51  Q   V      |          |          |          |
5+35       0.1382      0.51  Q   V      |          |          |          |
5+40       0.1418      0.52  Q   V      |          |          |          |
5+45       0.1455      0.53  Q   V      |          |          |          |
5+50       0.1492      0.54  Q   V      |          |          |          |
5+55       0.1530      0.55  Q   V      |          |          |          |
6+ 0       0.1569      0.56  Q   V      |          |          |          |
6+ 5       0.1608      0.57  Q   V      |          |          |          |
6+10       0.1648      0.59  Q   V      |          |          |          |
6+15       0.1690      0.60  Q    V     |          |          |          |
6+20       0.1732      0.62  Q    V     |          |          |          |
6+25       0.1776      0.63  Q    V     |          |          |          |
6+30       0.1821      0.65  Q    V     |          |          |          |
6+35       0.1866      0.67  Q    V     |          |          |          |
6+40       0.1913      0.68  Q    V     |          |          |          |
6+45       0.1962      0.70  Q    V     |          |          |          |
6+50       0.2012      0.72  Q     V    |          |          |          |
6+55       0.2063      0.75  |Q    V    |          |          |          |
7+ 0       0.2118      0.80  |Q    V    |          |          |          |
```

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 7+ 5       0.2181      0.91  |Q    V   |          |          |          |
 7+10       0.2254      1.06  |Q    V   |          |          |          |
 7+15       0.2341      1.27  |Q     V  |          |          |          |
 7+20       0.2445      1.50  | Q    V  |          |          |          |
 7+25       0.2567      1.77  | Q    V  |          |          |          |
 7+30       0.2699      1.92  | Q     V |          |          |          |
 7+35       0.2832      1.94  | Q     V |          |          |          |
 7+40       0.2986      2.24  | Q      V|          |          |          |
 7+45       0.3183      2.86  |  Q     V|          |          |          |
 7+50       0.3445      3.81  |    Q    V          |          |          |
 7+55       0.3826      5.53  |      Q  |V         |          |          |
 8+ 0       0.4353      7.64  |         Q  V       |          |          |
 8+ 5       0.5211     12.47  |          |    VQ   |          |          |
 8+10       0.6614     20.37  |          |         V|      Q   |          |
 8+15       0.8584     28.59  |          |          |    V     |        Q |
 8+20       0.9738     16.76  |          |          | Q      V|          |
 8+25       1.0480     10.78  |          |   Q      |          |V         |
 8+30       1.1007      7.65  |          Q          |          |  V       |
 8+35       1.1405      5.77  |       Q  |          |          |   V      |
 8+40       1.1692      4.17  |     Q    |          |          |    V     |
 8+45       1.1891      2.89  |   Q      |          |          |    V     |
 8+50       1.2023      1.91  | Q        |          |          |     V    |
 8+55       1.2125      1.49  |Q         |          |          |     V    |
 9+ 0       1.2209      1.22  |Q         |          |          |     V    |
 9+ 5       1.2284      1.09  |Q         |          |          |      V   |
 9+10       1.2348      0.93  |Q         |          |          |      V   |
 9+15       1.2403      0.79  |Q         |          |          |      V   |
 9+20       1.2448      0.65  Q          |          |          |      V   |
 9+25       1.2489      0.60  Q          |          |          |      V   |
 9+30       1.2528      0.57  Q          |          |          |      V   |
 9+35       1.2566      0.54  Q          |          |          |      V   |
 9+40       1.2601      0.52  Q          |          |          |       V  |
 9+45       1.2636      0.50  Q          |          |          |       V  |
 9+50       1.2669      0.49  Q          |          |          |       V  |
 9+55       1.2702      0.47  Q          |          |          |       V  |
10+ 0       1.2734      0.46  Q          |          |          |       V  |
10+ 5       1.2764      0.44  Q          |          |          |       V  |
10+10       1.2793      0.42  Q          |          |          |       V  |
10+15       1.2819      0.38  Q          |          |          |       V  |
10+20       1.2843      0.35  Q          |          |          |       V  |
10+25       1.2867      0.34  Q          |          |          |       V  |
10+30       1.2889      0.32  Q          |          |          |       V  |
10+35       1.2910      0.31  Q          |          |          |       V  |
10+40       1.2931      0.30  Q          |          |          |        V|
10+45       1.2952      0.30  Q          |          |          |        V|
10+50       1.2972      0.29  Q          |          |          |        V|
10+55       1.2991      0.28  Q          |          |          |        V|
11+ 0       1.3010      0.28  Q          |          |          |        V|
11+ 5       1.3029      0.27  Q          |          |          |        V|
11+10       1.3048      0.27  Q          |          |          |        V|
11+15       1.3066      0.26  Q          |          |          |        V|
11+20       1.3083      0.26  Q          |          |          |        V|
11+25       1.3101      0.25  Q          |          |          |        V|
11+30       1.3118      0.25  Q          |          |          |        V|
11+35       1.3135      0.24  Q          |          |          |        V|
11+40       1.3151      0.24  Q          |          |          |        V|
11+45       1.3168      0.24  Q          |          |          |        V|
11+50       1.3184      0.23  Q          |          |          |        V|
11+55       1.3199      0.23  Q          |          |          |        V|
12+ 0       1.3215      0.23  Q          |          |          |        V|
12+ 5       1.3230      0.22  Q          |          |          |        V|
12+10       1.3242      0.18  Q          |          |          |        V|
12+15       1.3248      0.09  Q          |          |          |        V|
12+20       1.3252      0.06  Q          |          |          |        V|
12+25       1.3255      0.04  Q          |          |          |        V|
12+30       1.3256      0.02  Q          |          |          |        V|
12+35       1.3257      0.01  Q          |          |          |        V|
12+40       1.3258      0.01  Q          |          |          |        V|
12+45       1.3258      0.01  Q          |          |          |        V|
12+50       1.3258      0.00  Q          |          |          |        V|
12+55       1.3259      0.00  Q          |          |          |        V|
```

```
  13+ 0       1.3259      0.00  Q         |         |         |        V|
  13+ 5       1.3259      0.00  Q         |         |         |        V|
  13+10       1.3259      0.00  Q         |         |         |         V
-------------------------------------------------------------------------
```

- 5 Year 24 Hour Pre-Development Unit Hydrograph – Area 'B'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/05/16   File Name EXB00524.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'B' - 5 YEAR 24 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 5

       Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 80.2       7.8          0.40     D     0.200     1.000    0.200
 80.2      11.8          0.60     C     0.250     1.000    0.250

Area-averaged adjusted loss rate Fm (In/Hr) =  0.230

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
     7.84   0.400         80.2      63.3       5.80     0.150

    11.76   0.600         80.2      63.3       5.80     0.150

Area-averaged catchment yield fraction, Y =  0.150
Area-averaged low loss fraction, Yb =  0.850
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.223 (hours)
Watershed area =      19.60(Ac.)
Catchment Lag time =   0.178 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 46.7220
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.230(In/Hr)
Average low loss rate fraction (Yb) = 0.850 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.260(In)
Computed peak 30-minute rainfall =  0.590(In)
Specified peak 1-hour rainfall =  0.780(In)
Computed peak 3-hour rainfall =  1.310(In)
Specified peak 6-hour rainfall =  1.810(In)
Specified peak 24-hour rainfall =  3.030(In)


Rainfall depth area reduction factors:
Using a total area of      19.60(Ac.) (Ref: fig. E-4)
```

```
5-minute factor = 0.999     Adjusted rainfall =  0.260(In)
30-minute factor = 0.999    Adjusted rainfall =  0.589(In)
1-hour factor = 0.999       Adjusted rainfall =  0.779(In)
3-hour factor = 1.000       Adjusted rainfall =  1.310(In)
6-hour factor = 1.000       Adjusted rainfall =  1.810(In)
24-hour factor = 1.000 Adjusted rainfall =  3.030(In)
--------------------------------------------------------------------

                     U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------
               (K =       237.04 (CFS))

  1                3.891                   9.222
  2               20.580                  39.561
  3               58.765                  90.513
  4               74.958                  38.383
  5               83.783                  20.919
  6               89.595                  13.777
  7               93.569                   9.420
  8               96.172                   6.168
  9               97.748                   3.736
 10               98.420                   1.594
 11               98.897                   1.132
 12               99.226                   0.779
 13               99.570                   0.814
 14               99.823                   0.599
 15              100.000                   0.420
--------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.2598              0.2598
  2              0.3567              0.0969
  3              0.4293              0.0727
  4              0.4897              0.0604
  5              0.5423              0.0526
  6              0.5895              0.0472
  7              0.6272              0.0378
  8              0.6619              0.0347
  9              0.6940              0.0322
 10              0.7241              0.0301
 11              0.7524              0.0283
 12              0.7793              0.0268
 13              0.8093              0.0300
 14              0.8382              0.0289
 15              0.8660              0.0278
 16              0.8928              0.0268
 17              0.9187              0.0260
 18              0.9439              0.0252
 19              0.9683              0.0244
 20              0.9921              0.0238
 21              1.0153              0.0231
 22              1.0378              0.0226
 23              1.0599              0.0220
 24              1.0814              0.0215
 25              1.1025              0.0211
 26              1.1231              0.0206
 27              1.1433              0.0202
 28              1.1631              0.0198
 29              1.1826              0.0195
 30              1.2017              0.0191
 31              1.2205              0.0188
 32              1.2389              0.0185
 33              1.2571              0.0182
 34              1.2749              0.0179
 35              1.2925              0.0176
 36              1.3098              0.0173
 37              1.3267              0.0168
```

38	1.3433	0.0166
39	1.3597	0.0164
40	1.3758	0.0162
41	1.3918	0.0159
42	1.4075	0.0157
43	1.4230	0.0155
44	1.4384	0.0153
45	1.4535	0.0152
46	1.4685	0.0150
47	1.4833	0.0148
48	1.4980	0.0146
49	1.5125	0.0145
50	1.5268	0.0143
51	1.5409	0.0142
52	1.5550	0.0140
53	1.5688	0.0139
54	1.5826	0.0137
55	1.5962	0.0136
56	1.6097	0.0135
57	1.6230	0.0133
58	1.6362	0.0132
59	1.6493	0.0131
60	1.6623	0.0130
61	1.6752	0.0129
62	1.6879	0.0128
63	1.7006	0.0126
64	1.7131	0.0125
65	1.7256	0.0124
66	1.7379	0.0123
67	1.7501	0.0122
68	1.7623	0.0121
69	1.7743	0.0120
70	1.7863	0.0119
71	1.7981	0.0119
72	1.8099	0.0118
73	1.8192	0.0093
74	1.8284	0.0092
75	1.8376	0.0091
76	1.8466	0.0091
77	1.8556	0.0090
78	1.8645	0.0089
79	1.8734	0.0088
80	1.8822	0.0088
81	1.8909	0.0087
82	1.8995	0.0086
83	1.9081	0.0086
84	1.9166	0.0085
85	1.9251	0.0084
86	1.9335	0.0084
87	1.9418	0.0083
88	1.9500	0.0083
89	1.9583	0.0082
90	1.9664	0.0081
91	1.9745	0.0081
92	1.9825	0.0080
93	1.9905	0.0080
94	1.9984	0.0079
95	2.0063	0.0079
96	2.0141	0.0078
97	2.0219	0.0078
98	2.0296	0.0077
99	2.0373	0.0077
100	2.0449	0.0076
101	2.0525	0.0076
102	2.0600	0.0075
103	2.0675	0.0075
104	2.0750	0.0074
105	2.0824	0.0074
106	2.0897	0.0073
107	2.0970	0.0073
108	2.1043	0.0073

109	2.1115	0.0072
110	2.1187	0.0072
111	2.1258	0.0071
112	2.1329	0.0071
113	2.1400	0.0071
114	2.1470	0.0070
115	2.1540	0.0070
116	2.1609	0.0069
117	2.1678	0.0069
118	2.1747	0.0069
119	2.1815	0.0068
120	2.1883	0.0068
121	2.1951	0.0068
122	2.2018	0.0067
123	2.2085	0.0067
124	2.2152	0.0067
125	2.2218	0.0066
126	2.2284	0.0066
127	2.2349	0.0066
128	2.2415	0.0065
129	2.2479	0.0065
130	2.2544	0.0065
131	2.2608	0.0064
132	2.2672	0.0064
133	2.2736	0.0064
134	2.2799	0.0063
135	2.2863	0.0063
136	2.2925	0.0063
137	2.2988	0.0063
138	2.3050	0.0062
139	2.3112	0.0062
140	2.3174	0.0062
141	2.3235	0.0061
142	2.3296	0.0061
143	2.3357	0.0061
144	2.3418	0.0061
145	2.3478	0.0060
146	2.3538	0.0060
147	2.3598	0.0060
148	2.3657	0.0060
149	2.3717	0.0059
150	2.3776	0.0059
151	2.3834	0.0059
152	2.3893	0.0059
153	2.3951	0.0058
154	2.4009	0.0058
155	2.4067	0.0058
156	2.4125	0.0058
157	2.4182	0.0057
158	2.4239	0.0057
159	2.4296	0.0057
160	2.4353	0.0057
161	2.4409	0.0056
162	2.4466	0.0056
163	2.4522	0.0056
164	2.4577	0.0056
165	2.4633	0.0056
166	2.4688	0.0055
167	2.4744	0.0055
168	2.4799	0.0055
169	2.4853	0.0055
170	2.4908	0.0055
171	2.4962	0.0054
172	2.5016	0.0054
173	2.5070	0.0054
174	2.5124	0.0054
175	2.5178	0.0054
176	2.5231	0.0053
177	2.5284	0.0053
178	2.5337	0.0053
179	2.5390	0.0053

180	2.5443	0.0053
181	2.5495	0.0052
182	2.5547	0.0052
183	2.5599	0.0052
184	2.5651	0.0052
185	2.5703	0.0052
186	2.5755	0.0052
187	2.5806	0.0051
188	2.5857	0.0051
189	2.5908	0.0051
190	2.5959	0.0051
191	2.6010	0.0051
192	2.6060	0.0051
193	2.6111	0.0050
194	2.6161	0.0050
195	2.6211	0.0050
196	2.6261	0.0050
197	2.6311	0.0050
198	2.6360	0.0050
199	2.6410	0.0049
200	2.6459	0.0049
201	2.6508	0.0049
202	2.6557	0.0049
203	2.6606	0.0049
204	2.6654	0.0049
205	2.6703	0.0048
206	2.6751	0.0048
207	2.6799	0.0048
208	2.6847	0.0048
209	2.6895	0.0048
210	2.6943	0.0048
211	2.6991	0.0048
212	2.7038	0.0047
213	2.7085	0.0047
214	2.7133	0.0047
215	2.7180	0.0047
216	2.7227	0.0047
217	2.7273	0.0047
218	2.7320	0.0047
219	2.7367	0.0047
220	2.7413	0.0046
221	2.7459	0.0046
222	2.7505	0.0046
223	2.7551	0.0046
224	2.7597	0.0046
225	2.7643	0.0046
226	2.7688	0.0046
227	2.7734	0.0045
228	2.7779	0.0045
229	2.7825	0.0045
230	2.7870	0.0045
231	2.7915	0.0045
232	2.7959	0.0045
233	2.8004	0.0045
234	2.8049	0.0045
235	2.8093	0.0044
236	2.8138	0.0044
237	2.8182	0.0044
238	2.8226	0.0044
239	2.8270	0.0044
240	2.8314	0.0044
241	2.8358	0.0044
242	2.8401	0.0044
243	2.8445	0.0044
244	2.8488	0.0043
245	2.8532	0.0043
246	2.8575	0.0043
247	2.8618	0.0043
248	2.8661	0.0043
249	2.8704	0.0043
250	2.8747	0.0043

251	2.8790	0.0043
252	2.8832	0.0043
253	2.8875	0.0042
254	2.8917	0.0042
255	2.8959	0.0042
256	2.9001	0.0042
257	2.9043	0.0042
258	2.9085	0.0042
259	2.9127	0.0042
260	2.9169	0.0042
261	2.9211	0.0042
262	2.9252	0.0042
263	2.9294	0.0041
264	2.9335	0.0041
265	2.9376	0.0041
266	2.9417	0.0041
267	2.9458	0.0041
268	2.9499	0.0041
269	2.9540	0.0041
270	2.9581	0.0041
271	2.9622	0.0041
272	2.9662	0.0041
273	2.9703	0.0040
274	2.9743	0.0040
275	2.9784	0.0040
276	2.9824	0.0040
277	2.9864	0.0040
278	2.9904	0.0040
279	2.9944	0.0040
280	2.9984	0.0040
281	3.0023	0.0040
282	3.0063	0.0040
283	3.0103	0.0040
284	3.0142	0.0039
285	3.0182	0.0039
286	3.0221	0.0039
287	3.0260	0.0039
288	3.0299	0.0039

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0039	0.0033	0.0006
2	0.0039	0.0033	0.0006
3	0.0039	0.0033	0.0006
4	0.0039	0.0034	0.0006
5	0.0040	0.0034	0.0006
6	0.0040	0.0034	0.0006
7	0.0040	0.0034	0.0006
8	0.0040	0.0034	0.0006
9	0.0040	0.0034	0.0006
10	0.0040	0.0034	0.0006
11	0.0040	0.0034	0.0006
12	0.0041	0.0034	0.0006
13	0.0041	0.0035	0.0006
14	0.0041	0.0035	0.0006
15	0.0041	0.0035	0.0006
16	0.0041	0.0035	0.0006
17	0.0041	0.0035	0.0006
18	0.0041	0.0035	0.0006
19	0.0042	0.0035	0.0006
20	0.0042	0.0035	0.0006
21	0.0042	0.0036	0.0006
22	0.0042	0.0036	0.0006
23	0.0042	0.0036	0.0006
24	0.0042	0.0036	0.0006
25	0.0043	0.0036	0.0006
26	0.0043	0.0036	0.0006
27	0.0043	0.0036	0.0006
28	0.0043	0.0037	0.0006

29	0.0043	0.0037	0.0006
30	0.0043	0.0037	0.0007
31	0.0044	0.0037	0.0007
32	0.0044	0.0037	0.0007
33	0.0044	0.0037	0.0007
34	0.0044	0.0037	0.0007
35	0.0044	0.0038	0.0007
36	0.0044	0.0038	0.0007
37	0.0045	0.0038	0.0007
38	0.0045	0.0038	0.0007
39	0.0045	0.0038	0.0007
40	0.0045	0.0038	0.0007
41	0.0045	0.0039	0.0007
42	0.0045	0.0039	0.0007
43	0.0046	0.0039	0.0007
44	0.0046	0.0039	0.0007
45	0.0046	0.0039	0.0007
46	0.0046	0.0039	0.0007
47	0.0047	0.0040	0.0007
48	0.0047	0.0040	0.0007
49	0.0047	0.0040	0.0007
50	0.0047	0.0040	0.0007
51	0.0047	0.0040	0.0007
52	0.0047	0.0040	0.0007
53	0.0048	0.0041	0.0007
54	0.0048	0.0041	0.0007
55	0.0048	0.0041	0.0007
56	0.0048	0.0041	0.0007
57	0.0049	0.0041	0.0007
58	0.0049	0.0041	0.0007
59	0.0049	0.0042	0.0007
60	0.0049	0.0042	0.0007
61	0.0050	0.0042	0.0007
62	0.0050	0.0042	0.0007
63	0.0050	0.0043	0.0008
64	0.0050	0.0043	0.0008
65	0.0051	0.0043	0.0008
66	0.0051	0.0043	0.0008
67	0.0051	0.0043	0.0008
68	0.0051	0.0044	0.0008
69	0.0052	0.0044	0.0008
70	0.0052	0.0044	0.0008
71	0.0052	0.0044	0.0008
72	0.0052	0.0044	0.0008
73	0.0053	0.0045	0.0008
74	0.0053	0.0045	0.0008
75	0.0053	0.0045	0.0008
76	0.0053	0.0045	0.0008
77	0.0054	0.0046	0.0008
78	0.0054	0.0046	0.0008
79	0.0054	0.0046	0.0008
80	0.0055	0.0046	0.0008
81	0.0055	0.0047	0.0008
82	0.0055	0.0047	0.0008
83	0.0056	0.0047	0.0008
84	0.0056	0.0047	0.0008
85	0.0056	0.0048	0.0008
86	0.0056	0.0048	0.0008
87	0.0057	0.0048	0.0009
88	0.0057	0.0049	0.0009
89	0.0058	0.0049	0.0009
90	0.0058	0.0049	0.0009
91	0.0058	0.0050	0.0009
92	0.0059	0.0050	0.0009
93	0.0059	0.0050	0.0009
94	0.0059	0.0050	0.0009
95	0.0060	0.0051	0.0009
96	0.0060	0.0051	0.0009
97	0.0061	0.0051	0.0009
98	0.0061	0.0052	0.0009
99	0.0061	0.0052	0.0009

100	0.0062	0.0052	0.0009
101	0.0062	0.0053	0.0009
102	0.0063	0.0053	0.0009
103	0.0063	0.0054	0.0009
104	0.0063	0.0054	0.0010
105	0.0064	0.0054	0.0010
106	0.0064	0.0055	0.0010
107	0.0065	0.0055	0.0010
108	0.0065	0.0055	0.0010
109	0.0066	0.0056	0.0010
110	0.0066	0.0056	0.0010
111	0.0067	0.0057	0.0010
112	0.0067	0.0057	0.0010
113	0.0068	0.0058	0.0010
114	0.0068	0.0058	0.0010
115	0.0069	0.0059	0.0010
116	0.0069	0.0059	0.0010
117	0.0070	0.0060	0.0011
118	0.0071	0.0060	0.0011
119	0.0071	0.0061	0.0011
120	0.0072	0.0061	0.0011
121	0.0073	0.0062	0.0011
122	0.0073	0.0062	0.0011
123	0.0074	0.0063	0.0011
124	0.0074	0.0063	0.0011
125	0.0075	0.0064	0.0011
126	0.0076	0.0064	0.0011
127	0.0077	0.0065	0.0012
128	0.0077	0.0066	0.0012
129	0.0078	0.0066	0.0012
130	0.0079	0.0067	0.0012
131	0.0080	0.0068	0.0012
132	0.0080	0.0068	0.0012
133	0.0081	0.0069	0.0012
134	0.0082	0.0070	0.0012
135	0.0083	0.0071	0.0013
136	0.0084	0.0071	0.0013
137	0.0085	0.0072	0.0013
138	0.0086	0.0073	0.0013
139	0.0087	0.0074	0.0013
140	0.0088	0.0075	0.0013
141	0.0089	0.0076	0.0013
142	0.0090	0.0076	0.0014
143	0.0091	0.0078	0.0014
144	0.0092	0.0078	0.0014
145	0.0118	0.0100	0.0018
146	0.0119	0.0101	0.0018
147	0.0120	0.0102	0.0018
148	0.0121	0.0103	0.0018
149	0.0123	0.0105	0.0019
150	0.0124	0.0106	0.0019
151	0.0126	0.0107	0.0019
152	0.0128	0.0108	0.0019
153	0.0130	0.0110	0.0020
154	0.0131	0.0111	0.0020
155	0.0133	0.0113	0.0020
156	0.0135	0.0114	0.0020
157	0.0137	0.0117	0.0021
158	0.0139	0.0118	0.0021
159	0.0142	0.0120	0.0021
160	0.0143	0.0122	0.0022
161	0.0146	0.0124	0.0022
162	0.0148	0.0126	0.0022
163	0.0152	0.0129	0.0023
164	0.0153	0.0130	0.0023
165	0.0157	0.0134	0.0024
166	0.0159	0.0135	0.0024
167	0.0164	0.0139	0.0025
168	0.0166	0.0141	0.0025
169	0.0173	0.0147	0.0026
170	0.0176	0.0149	0.0026

171	0.0182	0.0154	0.0027
172	0.0185	0.0157	0.0028
173	0.0191	0.0162	0.0029
174	0.0195	0.0165	0.0029
175	0.0202	0.0172	0.0030
176	0.0206	0.0175	0.0031
177	0.0215	0.0183	0.0032
178	0.0220	0.0187	0.0033
179	0.0231	0.0192	0.0040
180	0.0238	0.0192	0.0046
181	0.0252	0.0192	0.0060
182	0.0260	0.0192	0.0068
183	0.0278	0.0192	0.0086
184	0.0289	0.0192	0.0097
185	0.0268	0.0192	0.0077
186	0.0283	0.0192	0.0092
187	0.0322	0.0192	0.0130
188	0.0347	0.0192	0.0155
189	0.0472	0.0192	0.0280
190	0.0526	0.0192	0.0334
191	0.0727	0.0192	0.0535
192	0.0969	0.0192	0.0777
193	0.2598	0.0192	0.2406
194	0.0604	0.0192	0.0412
195	0.0378	0.0192	0.0186
196	0.0301	0.0192	0.0109
197	0.0300	0.0192	0.0109
198	0.0268	0.0192	0.0077
199	0.0244	0.0192	0.0053
200	0.0226	0.0192	0.0034
201	0.0211	0.0179	0.0032
202	0.0198	0.0168	0.0030
203	0.0188	0.0159	0.0028
204	0.0179	0.0152	0.0027
205	0.0168	0.0143	0.0025
206	0.0162	0.0137	0.0024
207	0.0155	0.0132	0.0023
208	0.0150	0.0127	0.0023
209	0.0145	0.0123	0.0022
210	0.0140	0.0119	0.0021
211	0.0136	0.0116	0.0020
212	0.0132	0.0112	0.0020
213	0.0129	0.0109	0.0019
214	0.0125	0.0107	0.0019
215	0.0122	0.0104	0.0018
216	0.0119	0.0102	0.0018
217	0.0093	0.0079	0.0014
218	0.0091	0.0077	0.0014
219	0.0088	0.0075	0.0013
220	0.0086	0.0073	0.0013
221	0.0084	0.0072	0.0013
222	0.0083	0.0070	0.0012
223	0.0081	0.0069	0.0012
224	0.0079	0.0067	0.0012
225	0.0078	0.0066	0.0012
226	0.0076	0.0065	0.0011
227	0.0075	0.0064	0.0011
228	0.0073	0.0062	0.0011
229	0.0072	0.0061	0.0011
230	0.0071	0.0060	0.0011
231	0.0070	0.0059	0.0010
232	0.0069	0.0058	0.0010
233	0.0068	0.0057	0.0010
234	0.0067	0.0057	0.0010
235	0.0066	0.0056	0.0010
236	0.0065	0.0055	0.0010
237	0.0064	0.0054	0.0010
238	0.0063	0.0053	0.0009
239	0.0062	0.0053	0.0009
240	0.0061	0.0052	0.0009
241	0.0060	0.0051	0.0009

```
      242              0.0060          0.0051              0.0009
      243              0.0059          0.0050              0.0009
      244              0.0058          0.0049              0.0009
      245              0.0057          0.0049              0.0009
      246              0.0057          0.0048              0.0009
      247              0.0056          0.0048              0.0008
      248              0.0055          0.0047              0.0008
      249              0.0055          0.0047              0.0008
      250              0.0054          0.0046              0.0008
      251              0.0054          0.0046              0.0008
      252              0.0053          0.0045              0.0008
      253              0.0052          0.0045              0.0008
      254              0.0052          0.0044              0.0008
      255              0.0051          0.0044              0.0008
      256              0.0051          0.0043              0.0008
      257              0.0050          0.0043              0.0008
      258              0.0050          0.0042              0.0007
      259              0.0049          0.0042              0.0007
      260              0.0049          0.0042              0.0007
      261              0.0048          0.0041              0.0007
      262              0.0048          0.0041              0.0007
      263              0.0048          0.0040              0.0007
      264              0.0047          0.0040              0.0007
      265              0.0047          0.0040              0.0007
      266              0.0046          0.0039              0.0007
      267              0.0046          0.0039              0.0007
      268              0.0046          0.0039              0.0007
      269              0.0045          0.0038              0.0007
      270              0.0045          0.0038              0.0007
      271              0.0044          0.0038              0.0007
      272              0.0044          0.0038              0.0007
      273              0.0044          0.0037              0.0007
      274              0.0043          0.0037              0.0007
      275              0.0043          0.0037              0.0006
      276              0.0043          0.0036              0.0006
      277              0.0042          0.0036              0.0006
      278              0.0042          0.0036              0.0006
      279              0.0042          0.0036              0.0006
      280              0.0042          0.0035              0.0006
      281              0.0041          0.0035              0.0006
      282              0.0041          0.0035              0.0006
      283              0.0041          0.0035              0.0006
      284              0.0040          0.0034              0.0006
      285              0.0040          0.0034              0.0006
      286              0.0040          0.0034              0.0006
      287              0.0040          0.0034              0.0006
      288              0.0039          0.0033              0.0006
      ------------------------------------------------------------------------
      ------------------------------------------------------------------------
      Total soil rain loss =      2.11(In)
      Total effective rainfall =      0.92(In)
      Peak flow rate in flood hydrograph =     28.59(CFS)
      ------------------------------------------------------------------------
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          24 - H O U R    S T O R M
                     R u n o f f      H y d r o g r a p h
      ------------------------------------------------------------------------
                  Hydrograph in   5   Minute intervals ((CFS))

      ------------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0        7.5      15.0      22.5      30.0
------------------------------------------------------------------------
  0+ 5       0.0000      0.01  Q         |         |         |         |
  0+10       0.0002      0.03  Q         |         |         |         |
  0+15       0.0008      0.08  Q         |         |         |         |
  0+20       0.0015      0.10  Q         |         |         |         |
  0+25       0.0023      0.12  Q         |         |         |         |
  0+30       0.0032      0.13  Q         |         |         |         |
  0+35       0.0041      0.13  Q         |         |         |         |
  0+40       0.0050      0.14  Q         |         |         |         |
  0+45       0.0060      0.14  Q         |         |         |         |
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0+50	0.0070	0.14	Q	|	|	|	|
0+55	0.0079	0.14	Q	|	|	|	|
1+ 0	0.0089	0.14	Q	|	|	|	|
1+ 5	0.0099	0.14	Q	|	|	|	|
1+10	0.0109	0.14	Q	|	|	|	|
1+15	0.0119	0.14	Q	|	|	|	|
1+20	0.0129	0.15	Q	|	|	|	|
1+25	0.0139	0.15	Q	|	|	|	|
1+30	0.0149	0.15	Q	|	|	|	|
1+35	0.0159	0.15	Q	|	|	|	|
1+40	0.0169	0.15	Q	|	|	|	|
1+45	0.0180	0.15	Q	|	|	|	|
1+50	0.0190	0.15	Q	|	|	|	|
1+55	0.0200	0.15	Q	|	|	|	|
2+ 0	0.0210	0.15	Q	|	|	|	|
2+ 5	0.0221	0.15	Q	|	|	|	|
2+10	0.0231	0.15	Q	|	|	|	|
2+15	0.0241	0.15	Q	|	|	|	|
2+20	0.0252	0.15	Q	|	|	|	|
2+25	0.0262	0.15	Q	|	|	|	|
2+30	0.0273	0.15	Q	|	|	|	|
2+35	0.0283	0.15	Q	|	|	|	|
2+40	0.0294	0.15	Q	|	|	|	|
2+45	0.0305	0.15	Q	|	|	|	|
2+50	0.0315	0.16	Q	|	|	|	|
2+55	0.0326	0.16	Q	|	|	|	|
3+ 0	0.0337	0.16	Q	|	|	|	|
3+ 5	0.0348	0.16	Q	|	|	|	|
3+10	0.0359	0.16	Q	|	|	|	|
3+15	0.0369	0.16	Q	|	|	|	|
3+20	0.0380	0.16	QV	|	|	|	|
3+25	0.0391	0.16	QV	|	|	|	|
3+30	0.0402	0.16	QV	|	|	|	|
3+35	0.0414	0.16	QV	|	|	|	|
3+40	0.0425	0.16	QV	|	|	|	|
3+45	0.0436	0.16	QV	|	|	|	|
3+50	0.0447	0.16	QV	|	|	|	|
3+55	0.0458	0.16	QV	|	|	|	|
4+ 0	0.0470	0.16	QV	|	|	|	|
4+ 5	0.0481	0.17	QV	|	|	|	|
4+10	0.0492	0.17	QV	|	|	|	|
4+15	0.0504	0.17	QV	|	|	|	|
4+20	0.0515	0.17	QV	|	|	|	|
4+25	0.0527	0.17	QV	|	|	|	|
4+30	0.0539	0.17	QV	|	|	|	|
4+35	0.0550	0.17	QV	|	|	|	|
4+40	0.0562	0.17	QV	|	|	|	|
4+45	0.0574	0.17	QV	|	|	|	|
4+50	0.0586	0.17	QV	|	|	|	|
4+55	0.0598	0.17	QV	|	|	|	|
5+ 0	0.0609	0.17	QV	|	|	|	|
5+ 5	0.0621	0.17	QV	|	|	|	|
5+10	0.0633	0.17	QV	|	|	|	|
5+15	0.0646	0.18	QV	|	|	|	|
5+20	0.0658	0.18	QV	|	|	|	|
5+25	0.0670	0.18	QV	|	|	|	|
5+30	0.0682	0.18	QV	|	|	|	|
5+35	0.0695	0.18	QV	|	|	|	|
5+40	0.0707	0.18	QV	|	|	|	|
5+45	0.0719	0.18	QV	|	|	|	|
5+50	0.0732	0.18	QV	|	|	|	|
5+55	0.0745	0.18	QV	|	|	|	|
6+ 0	0.0757	0.18	Q V	|	|	|	|
6+ 5	0.0770	0.18	Q V	|	|	|	|
6+10	0.0783	0.19	Q V	|	|	|	|
6+15	0.0796	0.19	Q V	|	|	|	|
6+20	0.0809	0.19	Q V	|	|	|	|
6+25	0.0821	0.19	Q V	|	|	|	|
6+30	0.0835	0.19	Q V	|	|	|	|
6+35	0.0848	0.19	Q V	|	|	|	|
6+40	0.0861	0.19	Q V	|	|	|	|

6+45	0.0874	0.19	Q	V			
6+50	0.0887	0.19	Q	V			
6+55	0.0901	0.19	Q	V			
7+ 0	0.0914	0.20	Q	V			
7+ 5	0.0928	0.20	Q	V			
7+10	0.0942	0.20	Q	V			
7+15	0.0955	0.20	Q	V			
7+20	0.0969	0.20	Q	V			
7+25	0.0983	0.20	Q	V			
7+30	0.0997	0.20	Q	V			
7+35	0.1011	0.20	Q	V			
7+40	0.1025	0.21	Q	V			
7+45	0.1039	0.21	Q	V			
7+50	0.1054	0.21	Q	V			
7+55	0.1068	0.21	Q	V			
8+ 0	0.1083	0.21	Q	V			
8+ 5	0.1097	0.21	Q	V			
8+10	0.1112	0.21	Q	V			
8+15	0.1127	0.21	Q	V			
8+20	0.1141	0.22	Q	V			
8+25	0.1156	0.22	Q	V			
8+30	0.1172	0.22	Q	V			
8+35	0.1187	0.22	Q	V			
8+40	0.1202	0.22	Q	V			
8+45	0.1217	0.22	Q	V			
8+50	0.1233	0.22	Q	V			
8+55	0.1248	0.23	Q	V			
9+ 0	0.1264	0.23	Q	V			
9+ 5	0.1280	0.23	Q	V			
9+10	0.1296	0.23	Q	V			
9+15	0.1312	0.23	Q	V			
9+20	0.1328	0.23	Q	V			
9+25	0.1344	0.24	Q	V			
9+30	0.1361	0.24	Q	V			
9+35	0.1377	0.24	Q	V			
9+40	0.1394	0.24	Q	V			
9+45	0.1411	0.24	Q	V			
9+50	0.1428	0.25	Q	V			
9+55	0.1445	0.25	Q	V			
10+ 0	0.1462	0.25	Q	V			
10+ 5	0.1480	0.25	Q	V			
10+10	0.1497	0.25	Q	V			
10+15	0.1515	0.26	Q	V			
10+20	0.1533	0.26	Q	V			
10+25	0.1551	0.26	Q	V			
10+30	0.1569	0.26	Q	V			
10+35	0.1587	0.27	Q	V			
10+40	0.1606	0.27	Q	V			
10+45	0.1624	0.27	Q	V			
10+50	0.1643	0.27	Q	V			
10+55	0.1662	0.28	Q	V			
11+ 0	0.1681	0.28	Q	V			
11+ 5	0.1701	0.28	Q	V			
11+10	0.1720	0.28	Q	V			
11+15	0.1740	0.29	Q	V			
11+20	0.1760	0.29	Q	V			
11+25	0.1780	0.29	Q	V			
11+30	0.1801	0.30	Q	V			
11+35	0.1821	0.30	Q	V			
11+40	0.1842	0.30	Q	V			
11+45	0.1863	0.31	Q	V			
11+50	0.1885	0.31	Q	V			
11+55	0.1906	0.31	Q	V			
12+ 0	0.1928	0.32	Q	V			
12+ 5	0.1951	0.33	Q	V			
12+10	0.1974	0.34	Q	V			
12+15	0.2001	0.38	Q	V			
12+20	0.2028	0.40	Q	V			
12+25	0.2056	0.41	Q	V			
12+30	0.2085	0.42	Q	V			
12+35	0.2115	0.43	Q	V			

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12+40       0.2145      0.44  Q    V    |          |          |          |
12+45       0.2176      0.44  Q    V    |          |          |          |
12+50       0.2206      0.45  Q    V    |          |          |          |
12+55       0.2238      0.46  Q    V    |          |          |          |
13+ 0       0.2270      0.46  Q     V   |          |          |          |
13+ 5       0.2302      0.47  Q     V   |          |          |          |
13+10       0.2335      0.48  Q     V   |          |          |          |
13+15       0.2368      0.48  Q     V   |          |          |          |
13+20       0.2402      0.49  Q     V   |          |          |          |
13+25       0.2436      0.50  Q     V   |          |          |          |
13+30       0.2471      0.51  Q     V   |          |          |          |
13+35       0.2506      0.51  Q     V   |          |          |          |
13+40       0.2542      0.52  Q     V   |          |          |          |
13+45       0.2579      0.53  Q     V   |          |          |          |
13+50       0.2616      0.54  Q      V  |          |          |          |
13+55       0.2654      0.55  Q      V  |          |          |          |
14+ 0       0.2693      0.56  Q      V  |          |          |          |
14+ 5       0.2732      0.57  Q      V  |          |          |          |
14+10       0.2773      0.59  Q      V  |          |          |          |
14+15       0.2814      0.60  Q      V  |          |          |          |
14+20       0.2857      0.62  Q      V  |          |          |          |
14+25       0.2900      0.63  Q      V  |          |          |          |
14+30       0.2945      0.65  Q      V  |          |          |          |
14+35       0.2991      0.67  Q       V |          |          |          |
14+40       0.3038      0.68  Q       V |          |          |          |
14+45       0.3086      0.70  Q       V |          |          |          |
14+50       0.3136      0.72  Q       V |          |          |          |
14+55       0.3187      0.75  |Q      V |          |          |          |
15+ 0       0.3243      0.80  |Q      V |          |          |          |
15+ 5       0.3305      0.91  |Q      V |          |          |          |
15+10       0.3378      1.06  |Q       V|          |          |          |
15+15       0.3465      1.27  |Q       V|          |          |          |
15+20       0.3569      1.50  | Q      V|          |          |          |
15+25       0.3691      1.77  | Q      V|          |          |          |
15+30       0.3823      1.92  | Q       V          |          |          |
15+35       0.3956      1.94  | Q       V          |          |          |
15+40       0.4110      2.24  | Q       V          |          |          |
15+45       0.4307      2.86  |  Q       V         |          |          |
15+50       0.4570      3.81  |    Q     | V       |          |          |
15+55       0.4951      5.53  |      Q   |  V      |          |          |
16+ 0       0.5477      7.64  |        Q   V       |          |          |
16+ 5       0.6335     12.47  |          |     Q   |          |          |
16+10       0.7739     20.37  |          |          V      Q  |          |
16+15       0.9708     28.59  |          |          |    V     |        Q |
16+20       1.0862     16.76  |          |          | Q      V|          |
16+25       1.1604     10.78  |          |   Q      |          |V         |
16+30       1.2132      7.65  |          Q          |          | V        |
16+35       1.2529      5.77  |       Q  |          |          |  V       |
16+40       1.2816      4.17  |     Q    |          |          |   V      |
16+45       1.3015      2.89  |   Q      |          |          |   V      |
16+50       1.3147      1.91  | Q        |          |          |    V     |
16+55       1.3249      1.49  |Q         |          |          |    V     |
17+ 0       1.3334      1.22  |Q         |          |          |    V     |
17+ 5       1.3408      1.09  |Q         |          |          |    V     |
17+10       1.3472      0.93  |Q         |          |          |     V    |
17+15       1.3527      0.79  |Q         |          |          |     V    |
17+20       1.3572      0.65  Q          |          |          |     V    |
17+25       1.3613      0.60  Q          |          |          |     V    |
17+30       1.3652      0.57  Q          |          |          |     V    |
17+35       1.3690      0.54  Q          |          |          |     V    |
17+40       1.3726      0.52  Q          |          |          |     V    |
17+45       1.3760      0.50  Q          |          |          |     V    |
17+50       1.3794      0.49  Q          |          |          |     V    |
17+55       1.3826      0.47  Q          |          |          |     V    |
18+ 0       1.3858      0.46  Q          |          |          |      V   |
18+ 5       1.3888      0.44  Q          |          |          |      V   |
18+10       1.3917      0.42  Q          |          |          |      V   |
18+15       1.3943      0.38  Q          |          |          |      V   |
18+20       1.3968      0.35  Q          |          |          |      V   |
18+25       1.3991      0.34  Q          |          |          |      V   |
18+30       1.4013      0.32  Q          |          |          |      V   |
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18+35	1.4035	0.31	Q	|	|	|	V |
18+40	1.4056	0.30	Q	|	|	|	V |
18+45	1.4076	0.30	Q	|	|	|	V |
18+50	1.4096	0.29	Q	|	|	|	V |
18+55	1.4116	0.28	Q	|	|	|	V |
19+ 0	1.4135	0.28	Q	|	|	|	V |
19+ 5	1.4153	0.27	Q	|	|	|	V |
19+10	1.4172	0.27	Q	|	|	|	V |
19+15	1.4190	0.26	Q	|	|	|	V |
19+20	1.4207	0.26	Q	|	|	|	V |
19+25	1.4225	0.25	Q	|	|	|	V |
19+30	1.4242	0.25	Q	|	|	|	V |
19+35	1.4259	0.24	Q	|	|	|	V |
19+40	1.4275	0.24	Q	|	|	|	V |
19+45	1.4292	0.24	Q	|	|	|	V |
19+50	1.4308	0.23	Q	|	|	|	V |
19+55	1.4324	0.23	Q	|	|	|	V |
20+ 0	1.4339	0.23	Q	|	|	|	V |
20+ 5	1.4355	0.22	Q	|	|	|	V |
20+10	1.4370	0.22	Q	|	|	|	V |
20+15	1.4385	0.22	Q	|	|	|	V |
20+20	1.4400	0.21	Q	|	|	|	V |
20+25	1.4414	0.21	Q	|	|	|	V |
20+30	1.4429	0.21	Q	|	|	|	V |
20+35	1.4443	0.21	Q	|	|	|	V |
20+40	1.4457	0.20	Q	|	|	|	V |
20+45	1.4471	0.20	Q	|	|	|	V |
20+50	1.4485	0.20	Q	|	|	|	V |
20+55	1.4498	0.20	Q	|	|	|	V |
21+ 0	1.4512	0.19	Q	|	|	|	V |
21+ 5	1.4525	0.19	Q	|	|	|	V |
21+10	1.4538	0.19	Q	|	|	|	V |
21+15	1.4551	0.19	Q	|	|	|	V |
21+20	1.4564	0.19	Q	|	|	|	V |
21+25	1.4577	0.18	Q	|	|	|	V|
21+30	1.4589	0.18	Q	|	|	|	V|
21+35	1.4602	0.18	Q	|	|	|	V|
21+40	1.4614	0.18	Q	|	|	|	V|
21+45	1.4626	0.18	Q	|	|	|	V|
21+50	1.4638	0.18	Q	|	|	|	V|
21+55	1.4650	0.17	Q	|	|	|	V|
22+ 0	1.4662	0.17	Q	|	|	|	V|
22+ 5	1.4674	0.17	Q	|	|	|	V|
22+10	1.4686	0.17	Q	|	|	|	V|
22+15	1.4697	0.17	Q	|	|	|	V|
22+20	1.4709	0.17	Q	|	|	|	V|
22+25	1.4720	0.17	Q	|	|	|	V|
22+30	1.4731	0.16	Q	|	|	|	V|
22+35	1.4743	0.16	Q	|	|	|	V|
22+40	1.4754	0.16	Q	|	|	|	V|
22+45	1.4765	0.16	Q	|	|	|	V|
22+50	1.4776	0.16	Q	|	|	|	V|
22+55	1.4786	0.16	Q	|	|	|	V|
23+ 0	1.4797	0.16	Q	|	|	|	V|
23+ 5	1.4808	0.15	Q	|	|	|	V|
23+10	1.4818	0.15	Q	|	|	|	V|
23+15	1.4829	0.15	Q	|	|	|	V|
23+20	1.4839	0.15	Q	|	|	|	V|
23+25	1.4850	0.15	Q	|	|	|	V|
23+30	1.4860	0.15	Q	|	|	|	V|
23+35	1.4870	0.15	Q	|	|	|	V|
23+40	1.4880	0.15	Q	|	|	|	V|
23+45	1.4890	0.15	Q	|	|	|	V|
23+50	1.4900	0.14	Q	|	|	|	V|
23+55	1.4910	0.14	Q	|	|	|	V|
24+ 0	1.4920	0.14	Q	|	|	|	V|
24+ 5	1.4929	0.14	Q	|	|	|	V|
24+10	1.4937	0.11	Q	|	|	|	V|
24+15	1.4941	0.06	Q	|	|	|	V|
24+20	1.4944	0.04	Q	|	|	|	V|
24+25	1.4945	0.02	Q	|	|	|	V|

```
   24+30       1.4946      0.01  Q         |         |         |        V|
   24+35       1.4947      0.01  Q         |         |         |        V|
   24+40       1.4947      0.01  Q         |         |         |        V|
   24+45       1.4947      0.00  Q         |         |         |        V|
   24+50       1.4948      0.00  Q         |         |         |        V|
   24+55       1.4948      0.00  Q         |         |         |        V|
   25+ 0       1.4948      0.00  Q         |         |         |        V|
   25+ 5       1.4948      0.00  Q         |         |         |        V|
   25+10       1.4948      0.00  Q         |         |         |         V
-------------------------------------------------------------------------
```

- 25 Year 3 Hour Pre-Development Unit Hydrograph – Area 'B'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/05/16   File Name EXB02503.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'B' - 25 YEAR 3 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 25

       Antecedent Moisture Condition = 2

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 80.2       7.8          0.40     D     0.200     1.000    0.200
 80.2      11.8          0.60     C     0.250     1.000    0.250

Area-averaged adjusted loss rate Fm (In/Hr) =  0.230

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC2)          Yield Fr
     7.84   0.400         80.2      80.2       2.47     0.550

    11.76   0.600         80.2      80.2       2.47     0.550

Area-averaged catchment yield fraction, Y =  0.550
Area-averaged low loss fraction, Yb =  0.450
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.213 (hours)
Watershed area =      19.60(Ac.)
Catchment Lag time =   0.171 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 48.7969
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.230(In/Hr)
Average low loss rate fraction (Yb) = 0.450 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.400(In)
Computed peak 30-minute rainfall =  0.870(In)
Specified peak 1-hour rainfall =  1.150(In)
Computed peak 3-hour rainfall =  1.940(In)
Specified peak 6-hour rainfall =  2.710(In)
Specified peak 24-hour rainfall =  4.490(In)


Rainfall depth area reduction factors:
Using a total area of      19.60(Ac.) (Ref: fig. E-4)
```

```
5-minute factor = 0.999     Adjusted rainfall =  0.400(In)
30-minute factor = 0.999    Adjusted rainfall =  0.869(In)
1-hour factor = 0.999       Adjusted rainfall =  1.149(In)
3-hour factor = 1.000       Adjusted rainfall =  1.940(In)
6-hour factor = 1.000       Adjusted rainfall =  2.710(In)
24-hour factor = 1.000 Adjusted rainfall =  4.490(In)
--------------------------------------------------------------------

                    U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------
               (K =       237.04 (CFS))

  1                4.136                   9.803
  2               23.024                  44.772
  3               61.460                  91.108
  4               76.582                  35.844
  5               85.122                  20.244
  6               90.704                  13.231
  7               94.446                   8.870
  8               96.804                   5.590
  9               98.062                   2.982
 10               98.633                   1.354
 11               99.068                   1.031
 12               99.393                   0.769
 13               99.731                   0.802
 14               99.913                   0.430
 15              100.000                   0.207
--------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.3996              0.3996
  2              0.5398              0.1401
  3              0.6435              0.1038
  4              0.7290              0.0855
  5              0.8031              0.0741
  6              0.8692              0.0661
  7              0.9248              0.0556
  8              0.9759              0.0511
  9              1.0233              0.0474
 10              1.0676              0.0443
 11              1.1094              0.0418
 12              1.1489              0.0395
 13              1.1936              0.0447
 14              1.2366              0.0429
 15              1.2779              0.0413
 16              1.3178              0.0399
 17              1.3565              0.0386
 18              1.3939              0.0375
 19              1.4303              0.0364
 20              1.4657              0.0354
 21              1.5002              0.0345
 22              1.5339              0.0336
 23              1.5667              0.0329
 24              1.5988              0.0321
 25              1.6303              0.0314
 26              1.6610              0.0308
 27              1.6912              0.0302
 28              1.7208              0.0296
 29              1.7498              0.0290
 30              1.7783              0.0285
 31              1.8063              0.0280
 32              1.8339              0.0275
 33              1.8610              0.0271
 34              1.8876              0.0267
 35              1.9139              0.0263
 36              1.9398              0.0259
--------------------------------------------------------------------
```

```
      Unit             Unit           Unit             Effective
      Period           Rainfall       Soil-Loss        Rainfall
      (number)           (In)         (In)               (In)
      ---------------------------------------------------------------------
        1              0.0259         0.0116             0.0142
        2              0.0263         0.0118             0.0145
        3              0.0271         0.0122             0.0149
        4              0.0275         0.0124             0.0152
        5              0.0285         0.0128             0.0157
        6              0.0290         0.0131             0.0160
        7              0.0302         0.0136             0.0166
        8              0.0308         0.0138             0.0169
        9              0.0321         0.0144             0.0177
       10              0.0329         0.0148             0.0181
       11              0.0345         0.0155             0.0190
       12              0.0354         0.0159             0.0195
       13              0.0375         0.0169             0.0206
       14              0.0386         0.0174             0.0213
       15              0.0413         0.0186             0.0227
       16              0.0429         0.0192             0.0238
       17              0.0395         0.0178             0.0218
       18              0.0418         0.0188             0.0230
       19              0.0474         0.0192             0.0282
       20              0.0511         0.0192             0.0319
       21              0.0661         0.0192             0.0469
       22              0.0741         0.0192             0.0549
       23              0.1038         0.0192             0.0846
       24              0.1401         0.0192             0.1210
       25              0.3996         0.0192             0.3805
       26              0.0855         0.0192             0.0663
       27              0.0556         0.0192             0.0365
       28              0.0443         0.0192             0.0252
       29              0.0447         0.0192             0.0255
       30              0.0399         0.0180             0.0220
       31              0.0364         0.0164             0.0200
       32              0.0336         0.0151             0.0185
       33              0.0314         0.0141             0.0173
       34              0.0296         0.0133             0.0163
       35              0.0280         0.0126             0.0154
       36              0.0267         0.0120             0.0147
      ---------------------------------------------------------------------
      ---------------------------------------------------------------------
      Total soil rain loss =      0.58(In)
      Total effective rainfall =      1.36(In)
      Peak flow rate in flood hydrograph =     45.55(CFS)
      ---------------------------------------------------------------------
      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          3 - H O U R    S T O R M
                    R u n o f f      H y d r o g r a p h
      ---------------------------------------------------------------------
                 Hydrograph in   5   Minute intervals ((CFS))

      ---------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0       12.5      25.0      37.5      50.0
---------------------------------------------------------------------------
  0+ 5       0.0010      0.14  Q         |         |         |         |
  0+10       0.0063      0.78  Q         |         |         |         |
  0+15       0.0207      2.09  VQ        |         |         |         |
  0+20       0.0389      2.64  V Q       |         |         |         |
  0+25       0.0596      3.00  |VQ       |         |         |         |
  0+30       0.0820      3.25  |VQ       |         |         |         |
  0+35       0.1059      3.47  |VQ       |         |         |         |
  0+40       0.1309      3.64  | Q       |         |         |         |
  0+45       0.1570      3.79  | VQ      |         |         |         |
  0+50       0.1840      3.92  |  Q      |         |         |         |
  0+55       0.2120      4.06  |  Q      |         |         |         |
  1+ 0       0.2409      4.20  |  QV     |         |         |         |
  1+ 5       0.2710      4.37  |  QV     |         |         |         |
  1+10       0.3023      4.54  |  Q V    |         |         |         |
  1+15       0.3350      4.75  |  Q  V   |         |         |         |
  1+20       0.3691      4.95  |  Q  V   |         |         |         |
```

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   1+25       0.4048      5.18  |   Q  V  |         |         |         |
   1+30       0.4413      5.29  |   Q  V  |         |         |         |
   1+35       0.4778      5.31  |   Q   V |         |         |         |
   1+40       0.5169      5.67  |   Q    V|         |         |         |
   1+45       0.5617      6.50  |    Q    V         |         |         |
   1+50       0.6154      7.80  |     Q   |V        |         |         |
   1+55       0.6847     10.07  |       Q | V       |         |         |
   2+ 0       0.7754     13.17  |         Q   V     |         |         |
   2+ 5       0.9183     20.74  |         |     Q   |         |         |
   2+10       1.1530     34.08  |         |         V      Q  |         |
   2+15       1.4667     45.55  |         |         |     V   |     Q   |
   2+20       1.6463     26.09  |         |         Q        V|         |
   2+25       1.7682     17.70  |         |   Q     |         |V        |
   2+30       1.8591     13.20  |         Q         |         |  V      |
   2+35       1.9315     10.51  |       Q |         |         |   V     |
   2+40       1.9887      8.31  |     Q   |         |         |    V    |
   2+45       2.0345      6.64  |    Q    |         |         |     V   |
   2+50       2.0725      5.52  |   Q     |         |         |      V  |
   2+55       2.1067      4.97  |  Q      |         |         |       V |
   3+ 0       2.1380      4.54  |  Q      |         |         |       V |
   3+ 5       2.1663      4.11  |  Q      |         |         |        V|
   3+10       2.1878      3.12  | Q       |         |         |        V|
   3+15       2.1987      1.58  |Q        |         |         |        V|
   3+20       2.2050      0.92  Q         |         |         |        V|
   3+25       2.2090      0.57  Q         |         |         |        V|
   3+30       2.2114      0.36  Q         |         |         |        V|
   3+35       2.2129      0.21  Q         |         |         |        V|
   3+40       2.2137      0.12  Q         |         |         |        V|
   3+45       2.2142      0.07  Q         |         |         |        V|
   3+50       2.2146      0.05  Q         |         |         |        V|
   3+55       2.2148      0.03  Q         |         |         |        V|
   4+ 0       2.2150      0.02  Q         |         |         |        V|
   4+ 5       2.2150      0.01  Q         |         |         |        V|
   4+10       2.2151      0.00  Q         |         |         |         V
-------------------------------------------------------------------------
```

- 25 Year 6 Hour Pre-Development Unit Hydrograph – Area 'B'

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       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/05/16   File Name EXB02506.out

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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996

Program License Serial Number 4094

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RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'B' - 25 YEAR 6 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 25

       Antecedent Moisture Condition = 2

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********

SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 80.2       7.8          0.40     D     0.200     1.000    0.200
 80.2      11.8          0.60     C     0.250     1.000    0.250

Area-averaged adjusted loss rate Fm (In/Hr) =  0.230

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC2)           Yield Fr
     7.84   0.400         80.2      80.2       2.47     0.550

    11.76   0.600         80.2      80.2       2.47     0.550

Area-averaged catchment yield fraction, Y =  0.550
Area-averaged low loss fraction, Yb =  0.450
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.213 (hours)
Watershed area =      19.60(Ac.)
Catchment Lag time =   0.171 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 48.7969
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.230(In/Hr)
Average low loss rate fraction (Yb) = 0.450 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.400(In)
Computed peak 30-minute rainfall =  0.870(In)
Specified peak 1-hour rainfall =  1.150(In)
Computed peak 3-hour rainfall =  1.940(In)
Specified peak 6-hour rainfall =  2.710(In)
Specified peak 24-hour rainfall =  4.490(In)


Rainfall depth area reduction factors:
Using a total area of      19.60(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.400(In)
30-minute factor = 0.999    Adjusted rainfall =  0.869(In)
```

1-hour factor = 0.999 Adjusted rainfall = 1.149(In)
3-hour factor = 1.000 Adjusted rainfall = 1.940(In)
6-hour factor = 1.000 Adjusted rainfall = 2.710(In)
24-hour factor = 1.000 Adjusted rainfall = 4.490(In)

U n i t H y d r o g r a p h

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 237.04 (CFS))	
1	4.136	9.803
2	23.024	44.772
3	61.460	91.108
4	76.582	35.844
5	85.122	20.244
6	90.704	13.231
7	94.446	8.870
8	96.804	5.590
9	98.062	2.982
10	98.633	1.354
11	99.068	1.031
12	99.393	0.769
13	99.731	0.802
14	99.913	0.430
15	100.000	0.207

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.3996	0.3996
2	0.5398	0.1401
3	0.6435	0.1038
4	0.7290	0.0855
5	0.8031	0.0741
6	0.8692	0.0661
7	0.9248	0.0556
8	0.9759	0.0511
9	1.0233	0.0474
10	1.0676	0.0443
11	1.1094	0.0418
12	1.1489	0.0395
13	1.1936	0.0447
14	1.2366	0.0429
15	1.2779	0.0413
16	1.3178	0.0399
17	1.3565	0.0386
18	1.3939	0.0375
19	1.4303	0.0364
20	1.4657	0.0354
21	1.5002	0.0345
22	1.5339	0.0336
23	1.5667	0.0329
24	1.5988	0.0321
25	1.6303	0.0314
26	1.6610	0.0308
27	1.6912	0.0302
28	1.7208	0.0296
29	1.7498	0.0290
30	1.7783	0.0285
31	1.8063	0.0280
32	1.8339	0.0275
33	1.8610	0.0271
34	1.8876	0.0267
35	1.9139	0.0263
36	1.9398	0.0259
37	1.9656	0.0258
38	1.9910	0.0254
39	2.0161	0.0251
40	2.0409	0.0248

41	2.0653	0.0245
42	2.0895	0.0241
43	2.1133	0.0238
44	2.1369	0.0236
45	2.1602	0.0233
46	2.1832	0.0230
47	2.2060	0.0228
48	2.2285	0.0225
49	2.2508	0.0223
50	2.2728	0.0220
51	2.2946	0.0218
52	2.3162	0.0216
53	2.3376	0.0214
54	2.3588	0.0212
55	2.3797	0.0210
56	2.4005	0.0208
57	2.4211	0.0206
58	2.4415	0.0204
59	2.4617	0.0202
60	2.4817	0.0200
61	2.5016	0.0199
62	2.5213	0.0197
63	2.5408	0.0195
64	2.5602	0.0194
65	2.5794	0.0192
66	2.5985	0.0191
67	2.6174	0.0189
68	2.6361	0.0188
69	2.6548	0.0186
70	2.6733	0.0185
71	2.6916	0.0184
72	2.7098	0.0182

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0182	0.0082	0.0100
2	0.0184	0.0083	0.0101
3	0.0186	0.0084	0.0102
4	0.0188	0.0084	0.0103
5	0.0191	0.0086	0.0105
6	0.0192	0.0086	0.0106
7	0.0195	0.0088	0.0107
8	0.0197	0.0089	0.0108
9	0.0200	0.0090	0.0110
10	0.0202	0.0091	0.0111
11	0.0206	0.0093	0.0113
12	0.0208	0.0093	0.0114
13	0.0212	0.0095	0.0116
14	0.0214	0.0096	0.0118
15	0.0218	0.0098	0.0120
16	0.0220	0.0099	0.0121
17	0.0225	0.0101	0.0124
18	0.0228	0.0102	0.0125
19	0.0233	0.0105	0.0128
20	0.0236	0.0106	0.0130
21	0.0241	0.0109	0.0133
22	0.0245	0.0110	0.0135
23	0.0251	0.0113	0.0138
24	0.0254	0.0114	0.0140
25	0.0259	0.0116	0.0142
26	0.0263	0.0118	0.0145
27	0.0271	0.0122	0.0149
28	0.0275	0.0124	0.0152
29	0.0285	0.0128	0.0157
30	0.0290	0.0131	0.0160
31	0.0302	0.0136	0.0166
32	0.0308	0.0138	0.0169
33	0.0321	0.0144	0.0177
34	0.0329	0.0148	0.0181

```
       35              0.0345          0.0155              0.0190
       36              0.0354          0.0159              0.0195
       37              0.0375          0.0169              0.0206
       38              0.0386          0.0174              0.0213
       39              0.0413          0.0186              0.0227
       40              0.0429          0.0192              0.0238
       41              0.0395          0.0178              0.0218
       42              0.0418          0.0188              0.0230
       43              0.0474          0.0192              0.0282
       44              0.0511          0.0192              0.0319
       45              0.0661          0.0192              0.0469
       46              0.0741          0.0192              0.0549
       47              0.1038          0.0192              0.0846
       48              0.1401          0.0192              0.1210
       49              0.3996          0.0192              0.3805
       50              0.0855          0.0192              0.0663
       51              0.0556          0.0192              0.0365
       52              0.0443          0.0192              0.0252
       53              0.0447          0.0192              0.0255
       54              0.0399          0.0180              0.0220
       55              0.0364          0.0164              0.0200
       56              0.0336          0.0151              0.0185
       57              0.0314          0.0141              0.0173
       58              0.0296          0.0133              0.0163
       59              0.0280          0.0126              0.0154
       60              0.0267          0.0120              0.0147
       61              0.0258          0.0116              0.0142
       62              0.0248          0.0111              0.0136
       63              0.0238          0.0107              0.0131
       64              0.0230          0.0104              0.0127
       65              0.0223          0.0100              0.0123
       66              0.0216          0.0097              0.0119
       67              0.0210          0.0094              0.0115
       68              0.0204          0.0092              0.0112
       69              0.0199          0.0089              0.0109
       70              0.0194          0.0087              0.0107
       71              0.0189          0.0085              0.0104
       72              0.0185          0.0083              0.0102
      ------------------------------------------------------------------------
      ------------------------------------------------------------------------
      Total soil rain loss =      0.93(In)
      Total effective rainfall =      1.78(In)
      Peak flow rate in flood hydrograph =     45.55(CFS)
      ------------------------------------------------------------------------
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          6 - H O U R    S T O R M
                     R u n o f f      H y d r o g r a p h
      ------------------------------------------------------------------------
                 Hydrograph in   5   Minute intervals ((CFS))

      ------------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0       12.5      25.0      37.5      50.0
-------------------------------------------------------------------------
  0+ 5       0.0007      0.10  Q         |         |         |         |
  0+10       0.0044      0.55  Q         |         |         |         |
  0+15       0.0145      1.47  VQ        |         |         |         |
  0+20       0.0272      1.84  VQ        |         |         |         |
  0+25       0.0414      2.06  VQ        |         |         |         |
  0+30       0.0567      2.22  VQ        |         |         |         |
  0+35       0.0728      2.33  |Q        |         |         |         |
  0+40       0.0894      2.42  |Q        |         |         |         |
  0+45       0.1065      2.48  |Q        |         |         |         |
  0+50       0.1238      2.52  |VQ       |         |         |         |
  0+55       0.1415      2.56  |VQ       |         |         |         |
  1+ 0       0.1594      2.60  | Q       |         |         |         |
  1+ 5       0.1777      2.65  | Q       |         |         |         |
  1+10       0.1962      2.69  | Q       |         |         |         |
  1+15       0.2150      2.73  | Q       |         |         |         |
  1+20       0.2340      2.77  | QV      |         |         |         |
  1+25       0.2534      2.81  | QV      |         |         |         |
  1+30       0.2730      2.85  | QV      |         |         |         |
```

```
   1+35       0.2930      2.90  | Q V     |         |         |         |
   1+40       0.3133      2.94  | Q V     |         |         |         |
   1+45       0.3339      3.00  | Q V     |         |         |         |
   1+50       0.3549      3.05  | Q V     |         |         |         |
   1+55       0.3763      3.10  | Q  V    |         |         |         |
   2+ 0       0.3980      3.16  | Q  V    |         |         |         |
   2+ 5       0.4202      3.22  | Q  V    |         |         |         |
   2+10       0.4428      3.28  | Q   V   |         |         |         |
   2+15       0.4657      3.33  | Q   V   |         |         |         |
   2+20       0.4891      3.40  | Q   V   |         |         |         |
   2+25       0.5131      3.48  | Q    V  |         |         |         |
   2+30       0.5376      3.56  | Q    V  |         |         |         |
   2+35       0.5627      3.65  | Q    V  |         |         |         |
   2+40       0.5885      3.74  | Q     V |         |         |         |
   2+45       0.6150      3.85  |  Q    V |         |         |         |
   2+50       0.6423      3.96  |  Q    V |         |         |         |
   2+55       0.6704      4.09  |  Q     V|         |         |         |
   3+ 0       0.6995      4.22  |  Q     V|         |         |         |
   3+ 5       0.7297      4.38  |  Q      V         |         |         |
   3+10       0.7610      4.55  |  Q      V         |         |         |
   3+15       0.7937      4.75  |  Q      V         |         |         |
   3+20       0.8278      4.95  |  Q      |V        |         |         |
   3+25       0.8635      5.18  |   Q     |V        |         |         |
   3+30       0.9000      5.29  |   Q     | V       |         |         |
   3+35       0.9365      5.31  |   Q     | V       |         |         |
   3+40       0.9756      5.67  |   Q     |  V      |         |         |
   3+45       1.0204      6.50  |    Q    |   V     |         |         |
   3+50       1.0741      7.80  |     Q   |   V     |         |         |
   3+55       1.1434     10.07  |       Q |    V    |         |         |
   4+ 0       1.2341     13.17  |         Q     V   |         |         |
   4+ 5       1.3770     20.74  |               Q V |         |         |
   4+10       1.6117     34.08  |                   | V    Q  |         |
   4+15       1.9254     45.55  |                   |    V    |     Q   |
   4+20       2.1050     26.09  |                   |       Q |       V |
   4+25       2.2269     17.70  |                   |   Q     |         V
   4+30       2.3178     13.20  |                   Q         |         |V
   4+35       2.3902     10.51  |                 Q |         |         | V
   4+40       2.4475      8.31  |              Q    |         |         |  V
   4+45       2.4932      6.64  |             Q     |         |         |   V
   4+50       2.5312      5.52  |            Q      |         |         |   V
   4+55       2.5654      4.97  |           Q       |         |         |    V
   5+ 0       2.5967      4.54  |           Q       |         |         |    V
   5+ 5       2.6260      4.25  |           Q       |         |         |     V
   5+10       2.6528      3.89  |           Q       |         |         |     V
   5+15       2.6776      3.61  |          Q        |         |         |     V
   5+20       2.7009      3.38  |          Q        |         |         |      V
   5+25       2.7232      3.23  |          Q        |         |         |      V
   5+30       2.7446      3.11  |          Q        |         |         |      V
   5+35       2.7653      3.00  |          Q        |         |         |       V
   5+40       2.7852      2.90  |          Q        |         |         |       V
   5+45       2.8046      2.81  |          Q        |         |         |       V
   5+50       2.8234      2.73  |          Q        |         |         |       V
   5+55       2.8417      2.65  |          Q        |         |         |        V
   6+ 0       2.8595      2.58  |          Q        |         |         |        V
   6+ 5       2.8761      2.42  |Q                  |         |         |        V
   6+10       2.8894      1.92  |Q                  |         |         |        V
   6+15       2.8960      0.97  Q                   |         |         |        V
   6+20       2.9001      0.59  Q                   |         |         |        V
   6+25       2.9027      0.37  Q                   |         |         |        V
   6+30       2.9043      0.23  Q                   |         |         |        V
   6+35       2.9052      0.14  Q                   |         |         |        V
   6+40       2.9058      0.08  Q                   |         |         |        V
   6+45       2.9061      0.05  Q                   |         |         |        V
   6+50       2.9063      0.03  Q                   |         |         |        V
   6+55       2.9065      0.02  Q                   |         |         |        V
   7+ 0       2.9066      0.01  Q                   |         |         |        V
   7+ 5       2.9066      0.01  Q                   |         |         |        V
   7+10       2.9067      0.00  Q                   |         |         |         V
------------------------------------------------------------------------------
```

- 25 Year 12 Hour Pre-Development Unit Hydrograph – Area 'B'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/05/16   File Name EXB02512.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'B' - 25 YEAR 12 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 25

       Antecedent Moisture Condition = 2

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 80.2       7.8          0.40     D     0.200     1.000    0.200
 80.2      11.8          0.60     C     0.250     1.000    0.250

Area-averaged adjusted loss rate Fm (In/Hr) =  0.230

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC2)           Yield Fr
     7.84   0.400         80.2      80.2       2.47     0.550

    11.76   0.600         80.2      80.2       2.47     0.550

Area-averaged catchment yield fraction, Y =  0.550
Area-averaged low loss fraction, Yb =  0.450
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.213 (hours)
Watershed area =      19.60(Ac.)
Catchment Lag time =   0.171 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 48.7969
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.230(In/Hr)
Average low loss rate fraction (Yb) = 0.450 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.400(In)
Computed peak 30-minute rainfall =  0.870(In)
Specified peak 1-hour rainfall =  1.150(In)
Computed peak 3-hour rainfall =  1.940(In)
Specified peak 6-hour rainfall =  2.710(In)
Specified peak 24-hour rainfall =  4.490(In)


Rainfall depth area reduction factors:
Using a total area of      19.60(Ac.) (Ref: fig. E-4)
```

```
5-minute factor = 0.999     Adjusted rainfall =  0.400(In)
30-minute factor = 0.999    Adjusted rainfall =  0.869(In)
1-hour factor = 0.999       Adjusted rainfall =  1.149(In)
3-hour factor = 1.000       Adjusted rainfall =  1.940(In)
6-hour factor = 1.000       Adjusted rainfall =  2.710(In)
24-hour factor = 1.000 Adjusted rainfall =  4.490(In)
--------------------------------------------------------------------

                     U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------
               (K =       237.04 (CFS))

  1                4.136                   9.803
  2               23.024                  44.772
  3               61.460                  91.108
  4               76.582                  35.844
  5               85.122                  20.244
  6               90.704                  13.231
  7               94.446                   8.870
  8               96.804                   5.590
  9               98.062                   2.982
 10               98.633                   1.354
 11               99.068                   1.031
 12               99.393                   0.769
 13               99.731                   0.802
 14               99.913                   0.430
 15              100.000                   0.207
--------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.3996              0.3996
  2              0.5398              0.1401
  3              0.6435              0.1038
  4              0.7290              0.0855
  5              0.8031              0.0741
  6              0.8692              0.0661
  7              0.9248              0.0556
  8              0.9759              0.0511
  9              1.0233              0.0474
 10              1.0676              0.0443
 11              1.1094              0.0418
 12              1.1489              0.0395
 13              1.1936              0.0447
 14              1.2366              0.0429
 15              1.2779              0.0413
 16              1.3178              0.0399
 17              1.3565              0.0386
 18              1.3939              0.0375
 19              1.4303              0.0364
 20              1.4657              0.0354
 21              1.5002              0.0345
 22              1.5339              0.0336
 23              1.5667              0.0329
 24              1.5988              0.0321
 25              1.6303              0.0314
 26              1.6610              0.0308
 27              1.6912              0.0302
 28              1.7208              0.0296
 29              1.7498              0.0290
 30              1.7783              0.0285
 31              1.8063              0.0280
 32              1.8339              0.0275
 33              1.8610              0.0271
 34              1.8876              0.0267
 35              1.9139              0.0263
 36              1.9398              0.0259
 37              1.9656              0.0258
```

38	1.9910	0.0254
39	2.0161	0.0251
40	2.0409	0.0248
41	2.0653	0.0245
42	2.0895	0.0241
43	2.1133	0.0238
44	2.1369	0.0236
45	2.1602	0.0233
46	2.1832	0.0230
47	2.2060	0.0228
48	2.2285	0.0225
49	2.2508	0.0223
50	2.2728	0.0220
51	2.2946	0.0218
52	2.3162	0.0216
53	2.3376	0.0214
54	2.3588	0.0212
55	2.3797	0.0210
56	2.4005	0.0208
57	2.4211	0.0206
58	2.4415	0.0204
59	2.4617	0.0202
60	2.4817	0.0200
61	2.5016	0.0199
62	2.5213	0.0197
63	2.5408	0.0195
64	2.5602	0.0194
65	2.5794	0.0192
66	2.5985	0.0191
67	2.6174	0.0189
68	2.6361	0.0188
69	2.6548	0.0186
70	2.6733	0.0185
71	2.6916	0.0184
72	2.7098	0.0182
73	2.7235	0.0136
74	2.7370	0.0135
75	2.7504	0.0134
76	2.7637	0.0133
77	2.7769	0.0132
78	2.7900	0.0131
79	2.8030	0.0130
80	2.8158	0.0129
81	2.8286	0.0128
82	2.8413	0.0127
83	2.8539	0.0126
84	2.8663	0.0125
85	2.8787	0.0124
86	2.8910	0.0123
87	2.9032	0.0122
88	2.9153	0.0121
89	2.9273	0.0120
90	2.9393	0.0119
91	2.9511	0.0119
92	2.9629	0.0118
93	2.9746	0.0117
94	2.9862	0.0116
95	2.9977	0.0115
96	3.0092	0.0115
97	3.0206	0.0114
98	3.0319	0.0113
99	3.0431	0.0112
100	3.0543	0.0112
101	3.0654	0.0111
102	3.0764	0.0110
103	3.0873	0.0110
104	3.0982	0.0109
105	3.1090	0.0108
106	3.1198	0.0108
107	3.1305	0.0107
108	3.1411	0.0106

109	3.1517	0.0106
110	3.1622	0.0105
111	3.1726	0.0104
112	3.1830	0.0104
113	3.1933	0.0103
114	3.2036	0.0103
115	3.2138	0.0102
116	3.2239	0.0102
117	3.2340	0.0101
118	3.2441	0.0100
119	3.2541	0.0100
120	3.2640	0.0099
121	3.2739	0.0099
122	3.2837	0.0098
123	3.2935	0.0098
124	3.3032	0.0097
125	3.3129	0.0097
126	3.3225	0.0096
127	3.3321	0.0096
128	3.3416	0.0095
129	3.3511	0.0095
130	3.3605	0.0094
131	3.3699	0.0094
132	3.3793	0.0093
133	3.3886	0.0093
134	3.3978	0.0093
135	3.4071	0.0092
136	3.4162	0.0092
137	3.4254	0.0091
138	3.4344	0.0091
139	3.4435	0.0090
140	3.4525	0.0090
141	3.4615	0.0090
142	3.4704	0.0089
143	3.4793	0.0089
144	3.4881	0.0088

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0088	0.0040	0.0049
2	0.0089	0.0040	0.0049
3	0.0090	0.0040	0.0049
4	0.0090	0.0040	0.0050
5	0.0091	0.0041	0.0050
6	0.0091	0.0041	0.0050
7	0.0092	0.0041	0.0051
8	0.0093	0.0042	0.0051
9	0.0093	0.0042	0.0051
10	0.0094	0.0042	0.0052
11	0.0095	0.0043	0.0052
12	0.0095	0.0043	0.0052
13	0.0096	0.0043	0.0053
14	0.0097	0.0044	0.0053
15	0.0098	0.0044	0.0054
16	0.0098	0.0044	0.0054
17	0.0099	0.0045	0.0055
18	0.0100	0.0045	0.0055
19	0.0101	0.0045	0.0056
20	0.0102	0.0046	0.0056
21	0.0103	0.0046	0.0056
22	0.0103	0.0046	0.0057
23	0.0104	0.0047	0.0057
24	0.0105	0.0047	0.0058
25	0.0106	0.0048	0.0058
26	0.0107	0.0048	0.0059
27	0.0108	0.0049	0.0060
28	0.0109	0.0049	0.0060
29	0.0110	0.0050	0.0061
30	0.0111	0.0050	0.0061

31	0.0112	0.0051	0.0062
32	0.0113	0.0051	0.0062
33	0.0115	0.0052	0.0063
34	0.0115	0.0052	0.0063
35	0.0117	0.0053	0.0064
36	0.0118	0.0053	0.0065
37	0.0119	0.0054	0.0066
38	0.0120	0.0054	0.0066
39	0.0122	0.0055	0.0067
40	0.0123	0.0055	0.0068
41	0.0125	0.0056	0.0069
42	0.0126	0.0057	0.0069
43	0.0128	0.0057	0.0070
44	0.0129	0.0058	0.0071
45	0.0131	0.0059	0.0072
46	0.0132	0.0059	0.0073
47	0.0134	0.0060	0.0074
48	0.0135	0.0061	0.0074
49	0.0182	0.0082	0.0100
50	0.0184	0.0083	0.0101
51	0.0186	0.0084	0.0102
52	0.0188	0.0084	0.0103
53	0.0191	0.0086	0.0105
54	0.0192	0.0086	0.0106
55	0.0195	0.0088	0.0107
56	0.0197	0.0089	0.0108
57	0.0200	0.0090	0.0110
58	0.0202	0.0091	0.0111
59	0.0206	0.0093	0.0113
60	0.0208	0.0093	0.0114
61	0.0212	0.0095	0.0116
62	0.0214	0.0096	0.0118
63	0.0218	0.0098	0.0120
64	0.0220	0.0099	0.0121
65	0.0225	0.0101	0.0124
66	0.0228	0.0102	0.0125
67	0.0233	0.0105	0.0128
68	0.0236	0.0106	0.0130
69	0.0241	0.0109	0.0133
70	0.0245	0.0110	0.0135
71	0.0251	0.0113	0.0138
72	0.0254	0.0114	0.0140
73	0.0259	0.0116	0.0142
74	0.0263	0.0118	0.0145
75	0.0271	0.0122	0.0149
76	0.0275	0.0124	0.0152
77	0.0285	0.0128	0.0157
78	0.0290	0.0131	0.0160
79	0.0302	0.0136	0.0166
80	0.0308	0.0138	0.0169
81	0.0321	0.0144	0.0177
82	0.0329	0.0148	0.0181
83	0.0345	0.0155	0.0190
84	0.0354	0.0159	0.0195
85	0.0375	0.0169	0.0206
86	0.0386	0.0174	0.0213
87	0.0413	0.0186	0.0227
88	0.0429	0.0192	0.0238
89	0.0395	0.0178	0.0218
90	0.0418	0.0188	0.0230
91	0.0474	0.0192	0.0282
92	0.0511	0.0192	0.0319
93	0.0661	0.0192	0.0469
94	0.0741	0.0192	0.0549
95	0.1038	0.0192	0.0846
96	0.1401	0.0192	0.1210
97	0.3996	0.0192	0.3805
98	0.0855	0.0192	0.0663
99	0.0556	0.0192	0.0365
100	0.0443	0.0192	0.0252
101	0.0447	0.0192	0.0255

```
      102              0.0399           0.0180              0.0220
      103              0.0364           0.0164              0.0200
      104              0.0336           0.0151              0.0185
      105              0.0314           0.0141              0.0173
      106              0.0296           0.0133              0.0163
      107              0.0280           0.0126              0.0154
      108              0.0267           0.0120              0.0147
      109              0.0258           0.0116              0.0142
      110              0.0248           0.0111              0.0136
      111              0.0238           0.0107              0.0131
      112              0.0230           0.0104              0.0127
      113              0.0223           0.0100              0.0123
      114              0.0216           0.0097              0.0119
      115              0.0210           0.0094              0.0115
      116              0.0204           0.0092              0.0112
      117              0.0199           0.0089              0.0109
      118              0.0194           0.0087              0.0107
      119              0.0189           0.0085              0.0104
      120              0.0185           0.0083              0.0102
      121              0.0136           0.0061              0.0075
      122              0.0133           0.0060              0.0073
      123              0.0130           0.0058              0.0071
      124              0.0127           0.0057              0.0070
      125              0.0124           0.0056              0.0068
      126              0.0121           0.0054              0.0067
      127              0.0119           0.0053              0.0065
      128              0.0116           0.0052              0.0064
      129              0.0114           0.0051              0.0063
      130              0.0112           0.0050              0.0061
      131              0.0110           0.0049              0.0060
      132              0.0108           0.0048              0.0059
      133              0.0106           0.0048              0.0058
      134              0.0104           0.0047              0.0057
      135              0.0102           0.0046              0.0056
      136              0.0100           0.0045              0.0055
      137              0.0099           0.0044              0.0054
      138              0.0097           0.0044              0.0054
      139              0.0096           0.0043              0.0053
      140              0.0094           0.0042              0.0052
      141              0.0093           0.0042              0.0051
      142              0.0092           0.0041              0.0050
      143              0.0090           0.0041              0.0050
      144              0.0089           0.0040              0.0049
      ------------------------------------------------------------------------
      ------------------------------------------------------------------------
      Total soil rain loss =      1.28(In)
      Total effective rainfall =      2.21(In)
      Peak flow rate in flood hydrograph =     45.55(CFS)
      ------------------------------------------------------------------------
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          12 - H O U R    S T O R M
                     R u n o f f      H y d r o g r a p h
      ------------------------------------------------------------------------
                  Hydrograph in   5   Minute intervals ((CFS))

      ------------------------------------------------------------------------
 Time(h+m) Volume Ac.Ft   Q(CFS)  0       12.5      25.0      37.5      50.0
 ------------------------------------------------------------------------
   0+ 5       0.0003      0.05  Q         |         |         |         |
   0+10       0.0022      0.27  Q         |         |         |         |
   0+15       0.0071      0.71  Q         |         |         |         |
   0+20       0.0132      0.89  Q         |         |         |         |
   0+25       0.0200      0.99  Q         |         |         |         |
   0+30       0.0273      1.06  Q         |         |         |         |
   0+35       0.0350      1.12  Q         |         |         |         |
   0+40       0.0429      1.15  Q         |         |         |         |
   0+45       0.0510      1.17  Q         |         |         |         |
   0+50       0.0592      1.19  Q         |         |         |         |
   0+55       0.0675      1.20  Q         |         |         |         |
   1+ 0       0.0758      1.21  Q         |         |         |         |
   1+ 5       0.0843      1.23  Q         |         |         |         |
```

```
1+10       0.0928      1.24  QV        |         |         |         |
1+15       0.1014      1.25  QV        |         |         |         |
1+20       0.1100      1.26  |Q        |         |         |         |
1+25       0.1188      1.27  |Q        |         |         |         |
1+30       0.1275      1.28  |Q        |         |         |         |
1+35       0.1364      1.29  |Q        |         |         |         |
1+40       0.1453      1.30  |Q        |         |         |         |
1+45       0.1543      1.31  |Q        |         |         |         |
1+50       0.1634      1.32  |Q        |         |         |         |
1+55       0.1726      1.33  |Q        |         |         |         |
2+ 0       0.1818      1.34  |QV       |         |         |         |
2+ 5       0.1911      1.35  |QV       |         |         |         |
2+10       0.2005      1.36  |QV       |         |         |         |
2+15       0.2100      1.38  |QV       |         |         |         |
2+20       0.2195      1.39  |QV       |         |         |         |
2+25       0.2292      1.40  |QV       |         |         |         |
2+30       0.2389      1.41  |QV       |         |         |         |
2+35       0.2487      1.43  |QV       |         |         |         |
2+40       0.2586      1.44  |QV       |         |         |         |
2+45       0.2686      1.45  |QV       |         |         |         |
2+50       0.2787      1.47  |Q V      |         |         |         |
2+55       0.2889      1.48  |Q V      |         |         |         |
3+ 0       0.2992      1.50  |Q V      |         |         |         |
3+ 5       0.3097      1.51  |Q V      |         |         |         |
3+10       0.3202      1.53  |Q V      |         |         |         |
3+15       0.3308      1.54  |Q V      |         |         |         |
3+20       0.3415      1.56  |Q V      |         |         |         |
3+25       0.3524      1.58  |Q V      |         |         |         |
3+30       0.3634      1.59  |Q  V     |         |         |         |
3+35       0.3745      1.61  |Q  V     |         |         |         |
3+40       0.3857      1.63  |Q  V     |         |         |         |
3+45       0.3970      1.65  |Q  V     |         |         |         |
3+50       0.4085      1.67  |Q  V     |         |         |         |
3+55       0.4202      1.69  |Q  V     |         |         |         |
4+ 0       0.4319      1.71  |Q  V     |         |         |         |
4+ 5       0.4440      1.76  |Q  V     |         |         |         |
4+10       0.4570      1.89  |Q   V    |         |         |         |
4+15       0.4717      2.13  |Q   V    |         |         |         |
4+20       0.4872      2.24  |Q   V    |         |         |         |
4+25       0.5032      2.32  |Q   V    |         |         |         |
4+30       0.5195      2.38  |Q   V    |         |         |         |
4+35       0.5363      2.43  |Q   V    |         |         |         |
4+40       0.5533      2.47  |Q    V   |         |         |         |
4+45       0.5706      2.51  | Q   V   |         |         |         |
4+50       0.5881      2.54  | Q   V   |         |         |         |
4+55       0.6059      2.58  | Q   V   |         |         |         |
5+ 0       0.6239      2.61  | Q   V   |         |         |         |
5+ 5       0.6422      2.65  | Q    V  |         |         |         |
5+10       0.6607      2.69  | Q    V  |         |         |         |
5+15       0.6795      2.73  | Q    V  |         |         |         |
5+20       0.6986      2.77  | Q    V  |         |         |         |
5+25       0.7179      2.81  | Q    V  |         |         |         |
5+30       0.7375      2.85  | Q     V |         |         |         |
5+35       0.7575      2.90  | Q     V |         |         |         |
5+40       0.7778      2.94  | Q     V |         |         |         |
5+45       0.7984      3.00  | Q     V |         |         |         |
5+50       0.8194      3.05  | Q      V|         |         |         |
5+55       0.8408      3.10  | Q      V|         |         |         |
6+ 0       0.8625      3.16  | Q      V|         |         |         |
6+ 5       0.8847      3.22  | Q      V|         |         |         |
6+10       0.9073      3.28  | Q       V         |         |         |
6+15       0.9303      3.33  | Q       V         |         |         |
6+20       0.9537      3.40  | Q       V         |         |         |
6+25       0.9776      3.48  | Q       V         |         |         |
6+30       1.0021      3.56  | Q       |V        |         |         |
6+35       1.0272      3.65  | Q       |V        |         |         |
6+40       1.0530      3.74  | Q       |V        |         |         |
6+45       1.0795      3.85  |  Q      |V        |         |         |
6+50       1.1068      3.96  |  Q      | V       |         |         |
6+55       1.1350      4.09  |  Q      | V       |         |         |
7+ 0       1.1640      4.22  |  Q      | V       |         |         |
```

```
 7+ 5      1.1942     4.38  |  Q      |  V      |         |         |
 7+10      1.2255     4.55  |  Q      |  V      |         |         |
 7+15      1.2582     4.75  |  Q      |  V      |         |         |
 7+20      1.2923     4.95  |  Q      |   V     |         |         |
 7+25      1.3280     5.18  |   Q     |   V     |         |         |
 7+30      1.3645     5.29  |   Q     |    V    |         |         |
 7+35      1.4010     5.31  |   Q     |    V    |         |         |
 7+40      1.4401     5.67  |   Q     |    V    |         |         |
 7+45      1.4849     6.50  |    Q    |     V   |         |         |
 7+50      1.5386     7.80  |     Q   |      V  |         |         |
 7+55      1.6080    10.07  |       Q |       V |         |         |
 8+ 0      1.6987    13.17  |         Q       V |         |         |
 8+ 5      1.8415    20.74  |          |     Q   V         |         |
 8+10      2.0762    34.08  |          |          |  V   Q  |         |
 8+15      2.3899    45.55  |          |          |     V   |     Q   |
 8+20      2.5696    26.09  |          |          Q       V |         |
 8+25      2.6915    17.70  |          |   Q     |         V|         |
 8+30      2.7823    13.20  |         Q       |         V          |
 8+35      2.8547    10.51  |       Q |       |          |V         |
 8+40      2.9120     8.31  |     Q   |       |          | V        |
 8+45      2.9577     6.64  |    Q    |       |          | V        |
 8+50      2.9957     5.52  |   Q     |       |          |  V       |
 8+55      3.0299     4.97  |  Q      |       |          |  V       |
 9+ 0      3.0612     4.54  |  Q      |       |          |  V       |
 9+ 5      3.0905     4.25  |  Q      |       |          |   V      |
 9+10      3.1173     3.89  |  Q      |       |          |   V      |
 9+15      3.1422     3.61  | Q       |       |          |   V      |
 9+20      3.1654     3.38  | Q       |       |          |    V     |
 9+25      3.1877     3.23  | Q       |       |          |    V     |
 9+30      3.2091     3.11  | Q       |       |          |    V     |
 9+35      3.2298     3.00  | Q       |       |          |    V     |
 9+40      3.2498     2.90  | Q       |       |          |     V    |
 9+45      3.2691     2.81  | Q       |       |          |     V    |
 9+50      3.2879     2.73  | Q       |       |          |     V    |
 9+55      3.3062     2.65  | Q       |       |          |     V    |
10+ 0      3.3240     2.58  | Q       |       |          |     V    |
10+ 5      3.3412     2.50  |Q        |       |          |      V   |
10+10      3.3572     2.33  |Q        |       |          |      V   |
10+15      3.3713     2.05  |Q        |       |          |      V   |
10+20      3.3845     1.91  |Q        |       |          |      V   |
10+25      3.3970     1.82  |Q        |       |          |      V   |
10+30      3.4090     1.74  |Q        |       |          |      V   |
10+35      3.4206     1.68  |Q        |       |          |      V   |
10+40      3.4318     1.63  |Q        |       |          |       V  |
10+45      3.4427     1.59  |Q        |       |          |       V  |
10+50      3.4534     1.55  |Q        |       |          |       V  |
10+55      3.4638     1.51  |Q        |       |          |       V  |
11+ 0      3.4740     1.48  |Q        |       |          |       V  |
11+ 5      3.4840     1.45  |Q        |       |          |       V  |
11+10      3.4938     1.42  |Q        |       |          |       V  |
11+15      3.5035     1.40  |Q        |       |          |       V  |
11+20      3.5129     1.37  |Q        |       |          |       V  |
11+25      3.5222     1.35  |Q        |       |          |        V|
11+30      3.5313     1.33  |Q        |       |          |        V|
11+35      3.5403     1.31  |Q        |       |          |        V|
11+40      3.5492     1.28  |Q        |       |          |        V|
11+45      3.5579     1.26  |Q        |       |          |        V|
11+50      3.5665     1.25  Q         |       |          |        V|
11+55      3.5749     1.23  Q         |       |          |        V|
12+ 0      3.5833     1.21  Q         |       |          |        V|
12+ 5      3.5912     1.15  Q         |       |          |        V|
12+10      3.5974     0.91  Q         |       |          |        V|
12+15      3.6006     0.46  Q         |       |          |        V|
12+20      3.6025     0.28  Q         |       |          |        V|
12+25      3.6037     0.18  Q         |       |          |        V|
12+30      3.6045     0.11  Q         |       |          |        V|
12+35      3.6050     0.07  Q         |       |          |        V|
12+40      3.6052     0.04  Q         |       |          |        V|
12+45      3.6054     0.02  Q         |       |          |        V|
12+50      3.6055     0.02  Q         |       |          |        V|
12+55      3.6056     0.01  Q         |       |          |        V|
```

```
  13+ 0       3.6056      0.01  Q         |         |         |        V|
  13+ 5       3.6056      0.00  Q         |         |         |        V|
  13+10       3.6056      0.00  Q         |         |         |         V
-------------------------------------------------------------------------
```

- 25 Year 24 Hour Pre-Development Unit Hydrograph – Area 'B'

```
        U n i t   H y d r o g r a p h   A n a l y s i s

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        Study date  10/05/16   File Name EXB02524.out


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'B' - 25 YEAR 24 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

        Storm Event Year = 25

        Antecedent Moisture Condition = 2

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 80.2       7.8          0.40     D     0.200     1.000    0.200
 80.2      11.8          0.60     C     0.250     1.000    0.250

Area-averaged adjusted loss rate Fm (In/Hr) =  0.230

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC2)          Yield Fr
     7.84   0.400         80.2      80.2       2.47     0.550

    11.76   0.600         80.2      80.2       2.47     0.550

Area-averaged catchment yield fraction, Y =  0.550
Area-averaged low loss fraction, Yb =  0.450
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.213 (hours)
Watershed area =      19.60(Ac.)
Catchment Lag time =   0.171 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 48.7969
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.230(In/Hr)
Average low loss rate fraction (Yb) = 0.450 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.400(In)
Computed peak 30-minute rainfall =  0.870(In)
Specified peak 1-hour rainfall =  1.150(In)
Computed peak 3-hour rainfall =  1.940(In)
Specified peak 6-hour rainfall =  2.710(In)
Specified peak 24-hour rainfall =  4.490(In)


Rainfall depth area reduction factors:
Using a total area of      19.60(Ac.) (Ref: fig. E-4)
```

```
5-minute factor = 0.999     Adjusted rainfall =  0.400(In)
30-minute factor = 0.999    Adjusted rainfall =  0.869(In)
1-hour factor = 0.999       Adjusted rainfall =  1.149(In)
3-hour factor = 1.000       Adjusted rainfall =  1.940(In)
6-hour factor = 1.000       Adjusted rainfall =  2.710(In)
24-hour factor = 1.000 Adjusted rainfall =  4.490(In)
--------------------------------------------------------------------

                    U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------
               (K =       237.04 (CFS))

  1                4.136                   9.803
  2               23.024                  44.772
  3               61.460                  91.108
  4               76.582                  35.844
  5               85.122                  20.244
  6               90.704                  13.231
  7               94.446                   8.870
  8               96.804                   5.590
  9               98.062                   2.982
 10               98.633                   1.354
 11               99.068                   1.031
 12               99.393                   0.769
 13               99.731                   0.802
 14               99.913                   0.430
 15              100.000                   0.207
--------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.3996              0.3996
  2              0.5398              0.1401
  3              0.6435              0.1038
  4              0.7290              0.0855
  5              0.8031              0.0741
  6              0.8692              0.0661
  7              0.9248              0.0556
  8              0.9759              0.0511
  9              1.0233              0.0474
 10              1.0676              0.0443
 11              1.1094              0.0418
 12              1.1489              0.0395
 13              1.1936              0.0447
 14              1.2366              0.0429
 15              1.2779              0.0413
 16              1.3178              0.0399
 17              1.3565              0.0386
 18              1.3939              0.0375
 19              1.4303              0.0364
 20              1.4657              0.0354
 21              1.5002              0.0345
 22              1.5339              0.0336
 23              1.5667              0.0329
 24              1.5988              0.0321
 25              1.6303              0.0314
 26              1.6610              0.0308
 27              1.6912              0.0302
 28              1.7208              0.0296
 29              1.7498              0.0290
 30              1.7783              0.0285
 31              1.8063              0.0280
 32              1.8339              0.0275
 33              1.8610              0.0271
 34              1.8876              0.0267
 35              1.9139              0.0263
 36              1.9398              0.0259
 37              1.9656              0.0258
```

38	1.9910	0.0254
39	2.0161	0.0251
40	2.0409	0.0248
41	2.0653	0.0245
42	2.0895	0.0241
43	2.1133	0.0238
44	2.1369	0.0236
45	2.1602	0.0233
46	2.1832	0.0230
47	2.2060	0.0228
48	2.2285	0.0225
49	2.2508	0.0223
50	2.2728	0.0220
51	2.2946	0.0218
52	2.3162	0.0216
53	2.3376	0.0214
54	2.3588	0.0212
55	2.3797	0.0210
56	2.4005	0.0208
57	2.4211	0.0206
58	2.4415	0.0204
59	2.4617	0.0202
60	2.4817	0.0200
61	2.5016	0.0199
62	2.5213	0.0197
63	2.5408	0.0195
64	2.5602	0.0194
65	2.5794	0.0192
66	2.5985	0.0191
67	2.6174	0.0189
68	2.6361	0.0188
69	2.6548	0.0186
70	2.6733	0.0185
71	2.6916	0.0184
72	2.7098	0.0182
73	2.7235	0.0136
74	2.7370	0.0135
75	2.7504	0.0134
76	2.7637	0.0133
77	2.7769	0.0132
78	2.7900	0.0131
79	2.8030	0.0130
80	2.8158	0.0129
81	2.8286	0.0128
82	2.8413	0.0127
83	2.8539	0.0126
84	2.8663	0.0125
85	2.8787	0.0124
86	2.8910	0.0123
87	2.9032	0.0122
88	2.9153	0.0121
89	2.9273	0.0120
90	2.9393	0.0119
91	2.9511	0.0119
92	2.9629	0.0118
93	2.9746	0.0117
94	2.9862	0.0116
95	2.9977	0.0115
96	3.0092	0.0115
97	3.0206	0.0114
98	3.0319	0.0113
99	3.0431	0.0112
100	3.0543	0.0112
101	3.0654	0.0111
102	3.0764	0.0110
103	3.0873	0.0110
104	3.0982	0.0109
105	3.1090	0.0108
106	3.1198	0.0108
107	3.1305	0.0107
108	3.1411	0.0106

109	3.1517	0.0106
110	3.1622	0.0105
111	3.1726	0.0104
112	3.1830	0.0104
113	3.1933	0.0103
114	3.2036	0.0103
115	3.2138	0.0102
116	3.2239	0.0102
117	3.2340	0.0101
118	3.2441	0.0100
119	3.2541	0.0100
120	3.2640	0.0099
121	3.2739	0.0099
122	3.2837	0.0098
123	3.2935	0.0098
124	3.3032	0.0097
125	3.3129	0.0097
126	3.3225	0.0096
127	3.3321	0.0096
128	3.3416	0.0095
129	3.3511	0.0095
130	3.3605	0.0094
131	3.3699	0.0094
132	3.3793	0.0093
133	3.3886	0.0093
134	3.3978	0.0093
135	3.4071	0.0092
136	3.4162	0.0092
137	3.4254	0.0091
138	3.4344	0.0091
139	3.4435	0.0090
140	3.4525	0.0090
141	3.4615	0.0090
142	3.4704	0.0089
143	3.4793	0.0089
144	3.4881	0.0088
145	3.4969	0.0088
146	3.5057	0.0088
147	3.5144	0.0087
148	3.5231	0.0087
149	3.5317	0.0087
150	3.5404	0.0086
151	3.5489	0.0086
152	3.5575	0.0085
153	3.5660	0.0085
154	3.5745	0.0085
155	3.5829	0.0084
156	3.5913	0.0084
157	3.5997	0.0084
158	3.6080	0.0083
159	3.6163	0.0083
160	3.6246	0.0083
161	3.6328	0.0082
162	3.6410	0.0082
163	3.6492	0.0082
164	3.6573	0.0081
165	3.6654	0.0081
166	3.6735	0.0081
167	3.6815	0.0080
168	3.6896	0.0080
169	3.6975	0.0080
170	3.7055	0.0080
171	3.7134	0.0079
172	3.7213	0.0079
173	3.7292	0.0079
174	3.7370	0.0078
175	3.7448	0.0078
176	3.7526	0.0078
177	3.7604	0.0078
178	3.7681	0.0077
179	3.7758	0.0077

180	3.7834	0.0077
181	3.7911	0.0076
182	3.7987	0.0076
183	3.8063	0.0076
184	3.8139	0.0076
185	3.8214	0.0075
186	3.8289	0.0075
187	3.8364	0.0075
188	3.8438	0.0075
189	3.8513	0.0074
190	3.8587	0.0074
191	3.8661	0.0074
192	3.8734	0.0074
193	3.8808	0.0073
194	3.8881	0.0073
195	3.8954	0.0073
196	3.9026	0.0073
197	3.9099	0.0072
198	3.9171	0.0072
199	3.9243	0.0072
200	3.9315	0.0072
201	3.9386	0.0071
202	3.9457	0.0071
203	3.9528	0.0071
204	3.9599	0.0071
205	3.9670	0.0071
206	3.9740	0.0070
207	3.9810	0.0070
208	3.9880	0.0070
209	3.9950	0.0070
210	4.0020	0.0070
211	4.0089	0.0069
212	4.0158	0.0069
213	4.0227	0.0069
214	4.0296	0.0069
215	4.0364	0.0068
216	4.0432	0.0068
217	4.0500	0.0068
218	4.0568	0.0068
219	4.0636	0.0068
220	4.0703	0.0067
221	4.0771	0.0067
222	4.0838	0.0067
223	4.0905	0.0067
224	4.0971	0.0067
225	4.1038	0.0067
226	4.1104	0.0066
227	4.1170	0.0066
228	4.1236	0.0066
229	4.1302	0.0066
230	4.1368	0.0066
231	4.1433	0.0065
232	4.1498	0.0065
233	4.1564	0.0065
234	4.1628	0.0065
235	4.1693	0.0065
236	4.1758	0.0065
237	4.1822	0.0064
238	4.1886	0.0064
239	4.1950	0.0064
240	4.2014	0.0064
241	4.2078	0.0064
242	4.2141	0.0064
243	4.2205	0.0063
244	4.2268	0.0063
245	4.2331	0.0063
246	4.2394	0.0063
247	4.2456	0.0063
248	4.2519	0.0063
249	4.2581	0.0062
250	4.2643	0.0062

251	4.2706	0.0062
252	4.2767	0.0062
253	4.2829	0.0062
254	4.2891	0.0062
255	4.2952	0.0061
256	4.3013	0.0061
257	4.3075	0.0061
258	4.3136	0.0061
259	4.3196	0.0061
260	4.3257	0.0061
261	4.3318	0.0061
262	4.3378	0.0060
263	4.3438	0.0060
264	4.3498	0.0060
265	4.3558	0.0060
266	4.3618	0.0060
267	4.3678	0.0060
268	4.3737	0.0060
269	4.3797	0.0059
270	4.3856	0.0059
271	4.3915	0.0059
272	4.3974	0.0059
273	4.4033	0.0059
274	4.4091	0.0059
275	4.4150	0.0059
276	4.4208	0.0058
277	4.4267	0.0058
278	4.4325	0.0058
279	4.4383	0.0058
280	4.4441	0.0058
281	4.4498	0.0058
282	4.4556	0.0058
283	4.4613	0.0057
284	4.4671	0.0057
285	4.4728	0.0057
286	4.4785	0.0057
287	4.4842	0.0057
288	4.4899	0.0057

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0057	0.0026	0.0031
2	0.0057	0.0026	0.0031
3	0.0057	0.0026	0.0031
4	0.0057	0.0026	0.0032
5	0.0058	0.0026	0.0032
6	0.0058	0.0026	0.0032
7	0.0058	0.0026	0.0032
8	0.0058	0.0026	0.0032
9	0.0058	0.0026	0.0032
10	0.0059	0.0026	0.0032
11	0.0059	0.0026	0.0032
12	0.0059	0.0027	0.0032
13	0.0059	0.0027	0.0033
14	0.0059	0.0027	0.0033
15	0.0060	0.0027	0.0033
16	0.0060	0.0027	0.0033
17	0.0060	0.0027	0.0033
18	0.0060	0.0027	0.0033
19	0.0061	0.0027	0.0033
20	0.0061	0.0027	0.0033
21	0.0061	0.0027	0.0034
22	0.0061	0.0027	0.0034
23	0.0061	0.0028	0.0034
24	0.0062	0.0028	0.0034
25	0.0062	0.0028	0.0034
26	0.0062	0.0028	0.0034
27	0.0062	0.0028	0.0034
28	0.0063	0.0028	0.0034

29	0.0063	0.0028	0.0035
30	0.0063	0.0028	0.0035
31	0.0063	0.0028	0.0035
32	0.0064	0.0029	0.0035
33	0.0064	0.0029	0.0035
34	0.0064	0.0029	0.0035
35	0.0064	0.0029	0.0035
36	0.0065	0.0029	0.0036
37	0.0065	0.0029	0.0036
38	0.0065	0.0029	0.0036
39	0.0065	0.0029	0.0036
40	0.0066	0.0030	0.0036
41	0.0066	0.0030	0.0036
42	0.0066	0.0030	0.0036
43	0.0067	0.0030	0.0037
44	0.0067	0.0030	0.0037
45	0.0067	0.0030	0.0037
46	0.0067	0.0030	0.0037
47	0.0068	0.0030	0.0037
48	0.0068	0.0031	0.0037
49	0.0068	0.0031	0.0038
50	0.0068	0.0031	0.0038
51	0.0069	0.0031	0.0038
52	0.0069	0.0031	0.0038
53	0.0070	0.0031	0.0038
54	0.0070	0.0031	0.0038
55	0.0070	0.0032	0.0039
56	0.0070	0.0032	0.0039
57	0.0071	0.0032	0.0039
58	0.0071	0.0032	0.0039
59	0.0071	0.0032	0.0039
60	0.0072	0.0032	0.0039
61	0.0072	0.0032	0.0040
62	0.0072	0.0033	0.0040
63	0.0073	0.0033	0.0040
64	0.0073	0.0033	0.0040
65	0.0074	0.0033	0.0040
66	0.0074	0.0033	0.0041
67	0.0074	0.0033	0.0041
68	0.0075	0.0034	0.0041
69	0.0075	0.0034	0.0041
70	0.0075	0.0034	0.0041
71	0.0076	0.0034	0.0042
72	0.0076	0.0034	0.0042
73	0.0077	0.0035	0.0042
74	0.0077	0.0035	0.0042
75	0.0078	0.0035	0.0043
76	0.0078	0.0035	0.0043
77	0.0078	0.0035	0.0043
78	0.0079	0.0035	0.0043
79	0.0079	0.0036	0.0044
80	0.0080	0.0036	0.0044
81	0.0080	0.0036	0.0044
82	0.0080	0.0036	0.0044
83	0.0081	0.0036	0.0045
84	0.0081	0.0037	0.0045
85	0.0082	0.0037	0.0045
86	0.0082	0.0037	0.0045
87	0.0083	0.0037	0.0046
88	0.0083	0.0037	0.0046
89	0.0084	0.0038	0.0046
90	0.0084	0.0038	0.0046
91	0.0085	0.0038	0.0047
92	0.0085	0.0038	0.0047
93	0.0086	0.0039	0.0047
94	0.0087	0.0039	0.0048
95	0.0087	0.0039	0.0048
96	0.0088	0.0039	0.0048
97	0.0088	0.0040	0.0049
98	0.0089	0.0040	0.0049
99	0.0090	0.0040	0.0049

100	0.0090	0.0040	0.0050
101	0.0091	0.0041	0.0050
102	0.0091	0.0041	0.0050
103	0.0092	0.0041	0.0051
104	0.0093	0.0042	0.0051
105	0.0093	0.0042	0.0051
106	0.0094	0.0042	0.0052
107	0.0095	0.0043	0.0052
108	0.0095	0.0043	0.0052
109	0.0096	0.0043	0.0053
110	0.0097	0.0044	0.0053
111	0.0098	0.0044	0.0054
112	0.0098	0.0044	0.0054
113	0.0099	0.0045	0.0055
114	0.0100	0.0045	0.0055
115	0.0101	0.0045	0.0056
116	0.0102	0.0046	0.0056
117	0.0103	0.0046	0.0056
118	0.0103	0.0046	0.0057
119	0.0104	0.0047	0.0057
120	0.0105	0.0047	0.0058
121	0.0106	0.0048	0.0058
122	0.0107	0.0048	0.0059
123	0.0108	0.0049	0.0060
124	0.0109	0.0049	0.0060
125	0.0110	0.0050	0.0061
126	0.0111	0.0050	0.0061
127	0.0112	0.0051	0.0062
128	0.0113	0.0051	0.0062
129	0.0115	0.0052	0.0063
130	0.0115	0.0052	0.0063
131	0.0117	0.0053	0.0064
132	0.0118	0.0053	0.0065
133	0.0119	0.0054	0.0066
134	0.0120	0.0054	0.0066
135	0.0122	0.0055	0.0067
136	0.0123	0.0055	0.0068
137	0.0125	0.0056	0.0069
138	0.0126	0.0057	0.0069
139	0.0128	0.0057	0.0070
140	0.0129	0.0058	0.0071
141	0.0131	0.0059	0.0072
142	0.0132	0.0059	0.0073
143	0.0134	0.0060	0.0074
144	0.0135	0.0061	0.0074
145	0.0182	0.0082	0.0100
146	0.0184	0.0083	0.0101
147	0.0186	0.0084	0.0102
148	0.0188	0.0084	0.0103
149	0.0191	0.0086	0.0105
150	0.0192	0.0086	0.0106
151	0.0195	0.0088	0.0107
152	0.0197	0.0089	0.0108
153	0.0200	0.0090	0.0110
154	0.0202	0.0091	0.0111
155	0.0206	0.0093	0.0113
156	0.0208	0.0093	0.0114
157	0.0212	0.0095	0.0116
158	0.0214	0.0096	0.0118
159	0.0218	0.0098	0.0120
160	0.0220	0.0099	0.0121
161	0.0225	0.0101	0.0124
162	0.0228	0.0102	0.0125
163	0.0233	0.0105	0.0128
164	0.0236	0.0106	0.0130
165	0.0241	0.0109	0.0133
166	0.0245	0.0110	0.0135
167	0.0251	0.0113	0.0138
168	0.0254	0.0114	0.0140
169	0.0259	0.0116	0.0142
170	0.0263	0.0118	0.0145

171	0.0271	0.0122	0.0149
172	0.0275	0.0124	0.0152
173	0.0285	0.0128	0.0157
174	0.0290	0.0131	0.0160
175	0.0302	0.0136	0.0166
176	0.0308	0.0138	0.0169
177	0.0321	0.0144	0.0177
178	0.0329	0.0148	0.0181
179	0.0345	0.0155	0.0190
180	0.0354	0.0159	0.0195
181	0.0375	0.0169	0.0206
182	0.0386	0.0174	0.0213
183	0.0413	0.0186	0.0227
184	0.0429	0.0192	0.0238
185	0.0395	0.0178	0.0218
186	0.0418	0.0188	0.0230
187	0.0474	0.0192	0.0282
188	0.0511	0.0192	0.0319
189	0.0661	0.0192	0.0469
190	0.0741	0.0192	0.0549
191	0.1038	0.0192	0.0846
192	0.1401	0.0192	0.1210
193	0.3996	0.0192	0.3805
194	0.0855	0.0192	0.0663
195	0.0556	0.0192	0.0365
196	0.0443	0.0192	0.0252
197	0.0447	0.0192	0.0255
198	0.0399	0.0180	0.0220
199	0.0364	0.0164	0.0200
200	0.0336	0.0151	0.0185
201	0.0314	0.0141	0.0173
202	0.0296	0.0133	0.0163
203	0.0280	0.0126	0.0154
204	0.0267	0.0120	0.0147
205	0.0258	0.0116	0.0142
206	0.0248	0.0111	0.0136
207	0.0238	0.0107	0.0131
208	0.0230	0.0104	0.0127
209	0.0223	0.0100	0.0123
210	0.0216	0.0097	0.0119
211	0.0210	0.0094	0.0115
212	0.0204	0.0092	0.0112
213	0.0199	0.0089	0.0109
214	0.0194	0.0087	0.0107
215	0.0189	0.0085	0.0104
216	0.0185	0.0083	0.0102
217	0.0136	0.0061	0.0075
218	0.0133	0.0060	0.0073
219	0.0130	0.0058	0.0071
220	0.0127	0.0057	0.0070
221	0.0124	0.0056	0.0068
222	0.0121	0.0054	0.0067
223	0.0119	0.0053	0.0065
224	0.0116	0.0052	0.0064
225	0.0114	0.0051	0.0063
226	0.0112	0.0050	0.0061
227	0.0110	0.0049	0.0060
228	0.0108	0.0048	0.0059
229	0.0106	0.0048	0.0058
230	0.0104	0.0047	0.0057
231	0.0102	0.0046	0.0056
232	0.0100	0.0045	0.0055
233	0.0099	0.0044	0.0054
234	0.0097	0.0044	0.0054
235	0.0096	0.0043	0.0053
236	0.0094	0.0042	0.0052
237	0.0093	0.0042	0.0051
238	0.0092	0.0041	0.0050
239	0.0090	0.0041	0.0050
240	0.0089	0.0040	0.0049
241	0.0088	0.0040	0.0048

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      242              0.0087           0.0039              0.0048
      243              0.0086           0.0039              0.0047
      244              0.0085           0.0038              0.0047
      245              0.0084           0.0038              0.0046
      246              0.0083           0.0037              0.0045
      247              0.0082           0.0037              0.0045
      248              0.0081           0.0036              0.0044
      249              0.0080           0.0036              0.0044
      250              0.0079           0.0036              0.0043
      251              0.0078           0.0035              0.0043
      252              0.0077           0.0035              0.0042
      253              0.0076           0.0034              0.0042
      254              0.0076           0.0034              0.0042
      255              0.0075           0.0034              0.0041
      256              0.0074           0.0033              0.0041
      257              0.0073           0.0033              0.0040
      258              0.0073           0.0033              0.0040
      259              0.0072           0.0032              0.0040
      260              0.0071           0.0032              0.0039
      261              0.0071           0.0032              0.0039
      262              0.0070           0.0031              0.0038
      263              0.0069           0.0031              0.0038
      264              0.0069           0.0031              0.0038
      265              0.0068           0.0031              0.0037
      266              0.0067           0.0030              0.0037
      267              0.0067           0.0030              0.0037
      268              0.0066           0.0030              0.0036
      269              0.0066           0.0030              0.0036
      270              0.0065           0.0029              0.0036
      271              0.0065           0.0029              0.0036
      272              0.0064           0.0029              0.0035
      273              0.0064           0.0029              0.0035
      274              0.0063           0.0028              0.0035
      275              0.0063           0.0028              0.0034
      276              0.0062           0.0028              0.0034
      277              0.0062           0.0028              0.0034
      278              0.0061           0.0028              0.0034
      279              0.0061           0.0027              0.0033
      280              0.0060           0.0027              0.0033
      281              0.0060           0.0027              0.0033
      282              0.0060           0.0027              0.0033
      283              0.0059           0.0027              0.0033
      284              0.0059           0.0026              0.0032
      285              0.0058           0.0026              0.0032
      286              0.0058           0.0026              0.0032
      287              0.0057           0.0026              0.0032
      288              0.0057           0.0026              0.0031
      ---------------------------------------------------------------------
      ---------------------------------------------------------------------
      Total soil rain loss =      1.73(In)
      Total effective rainfall =      2.76(In)
      Peak flow rate in flood hydrograph =     45.55(CFS)
      ---------------------------------------------------------------------
      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          24 - H O U R    S T O R M
                    R u n o f f      H y d r o g r a p h
      ---------------------------------------------------------------------
                 Hydrograph in   5   Minute intervals ((CFS))

      ---------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0       12.5      25.0      37.5      50.0
---------------------------------------------------------------------------
  0+ 5       0.0002      0.03  Q         |         |         |         |
  0+10       0.0014      0.17  Q         |         |         |         |
  0+15       0.0045      0.46  Q         |         |         |         |
  0+20       0.0085      0.57  Q         |         |         |         |
  0+25       0.0128      0.63  Q         |         |         |         |
  0+30       0.0175      0.68  Q         |         |         |         |
  0+35       0.0224      0.71  Q         |         |         |         |
  0+40       0.0274      0.73  Q         |         |         |         |
  0+45       0.0325      0.74  Q         |         |         |         |
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0+50	0.0376	0.75	Q	|	|	|	|
0+55	0.0428	0.75	Q	|	|	|	|
1+ 0	0.0480	0.76	Q	|	|	|	|
1+ 5	0.0533	0.76	Q	|	|	|	|
1+10	0.0586	0.77	Q	|	|	|	|
1+15	0.0639	0.77	Q	|	|	|	|
1+20	0.0692	0.77	Q	|	|	|	|
1+25	0.0745	0.78	Q	|	|	|	|
1+30	0.0799	0.78	Q	|	|	|	|
1+35	0.0853	0.78	Q	|	|	|	|
1+40	0.0907	0.78	Q	|	|	|	|
1+45	0.0961	0.79	Q	|	|	|	|
1+50	0.1015	0.79	Q	|	|	|	|
1+55	0.1070	0.79	Q	|	|	|	|
2+ 0	0.1125	0.80	Q	|	|	|	|
2+ 5	0.1180	0.80	QV	|	|	|	|
2+10	0.1235	0.80	QV	|	|	|	|
2+15	0.1290	0.80	QV	|	|	|	|
2+20	0.1346	0.81	QV	|	|	|	|
2+25	0.1402	0.81	QV	|	|	|	|
2+30	0.1458	0.81	QV	|	|	|	|
2+35	0.1514	0.82	QV	|	|	|	|
2+40	0.1570	0.82	QV	|	|	|	|
2+45	0.1627	0.82	QV	|	|	|	|
2+50	0.1684	0.83	QV	|	|	|	|
2+55	0.1741	0.83	QV	|	|	|	|
3+ 0	0.1799	0.83	QV	|	|	|	|
3+ 5	0.1856	0.84	QV	|	|	|	|
3+10	0.1914	0.84	QV	|	|	|	|
3+15	0.1972	0.84	QV	|	|	|	|
3+20	0.2030	0.85	QV	|	|	|	|
3+25	0.2089	0.85	QV	|	|	|	|
3+30	0.2148	0.85	QV	|	|	|	|
3+35	0.2207	0.86	QV	|	|	|	|
3+40	0.2266	0.86	Q V	|	|	|	|
3+45	0.2325	0.86	Q V	|	|	|	|
3+50	0.2385	0.87	Q V	|	|	|	|
3+55	0.2445	0.87	Q V	|	|	|	|
4+ 0	0.2506	0.88	Q V	|	|	|	|
4+ 5	0.2566	0.88	Q V	|	|	|	|
4+10	0.2627	0.88	Q V	|	|	|	|
4+15	0.2688	0.89	Q V	|	|	|	|
4+20	0.2749	0.89	Q V	|	|	|	|
4+25	0.2811	0.89	Q V	|	|	|	|
4+30	0.2873	0.90	Q V	|	|	|	|
4+35	0.2935	0.90	Q V	|	|	|	|
4+40	0.2998	0.91	Q V	|	|	|	|
4+45	0.3060	0.91	Q V	|	|	|	|
4+50	0.3123	0.92	Q V	|	|	|	|
4+55	0.3187	0.92	Q V	|	|	|	|
5+ 0	0.3250	0.92	Q V	|	|	|	|
5+ 5	0.3314	0.93	Q V	|	|	|	|
5+10	0.3379	0.93	Q V	|	|	|	|
5+15	0.3443	0.94	Q V	|	|	|	|
5+20	0.3508	0.94	Q V	|	|	|	|
5+25	0.3573	0.95	Q V	|	|	|	|
5+30	0.3639	0.95	Q V	|	|	|	|
5+35	0.3704	0.96	Q V	|	|	|	|
5+40	0.3771	0.96	Q V	|	|	|	|
5+45	0.3837	0.97	Q V	|	|	|	|
5+50	0.3904	0.97	Q V	|	|	|	|
5+55	0.3971	0.98	Q V	|	|	|	|
6+ 0	0.4039	0.98	Q V	|	|	|	|
6+ 5	0.4106	0.99	Q V	|	|	|	|
6+10	0.4175	0.99	Q V	|	|	|	|
6+15	0.4243	1.00	Q V	|	|	|	|
6+20	0.4312	1.00	Q V	|	|	|	|
6+25	0.4381	1.01	Q V	|	|	|	|
6+30	0.4451	1.01	Q V	|	|	|	|
6+35	0.4521	1.02	Q V	|	|	|	|
6+40	0.4592	1.02	Q V	|	|	|	|

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 6+45      0.4662      1.03  Q   V     |         |         |         |
 6+50      0.4734      1.03  Q   V     |         |         |         |
 6+55      0.4805      1.04  Q   V     |         |         |         |
 7+ 0      0.4877      1.05  Q   V     |         |         |         |
 7+ 5      0.4950      1.05  Q   V     |         |         |         |
 7+10      0.5023      1.06  Q   V     |         |         |         |
 7+15      0.5096      1.06  Q   V     |         |         |         |
 7+20      0.5170      1.07  Q   V     |         |         |         |
 7+25      0.5244      1.08  Q   V     |         |         |         |
 7+30      0.5318      1.08  Q   V     |         |         |         |
 7+35      0.5393      1.09  Q   V     |         |         |         |
 7+40      0.5469      1.10  Q   V     |         |         |         |
 7+45      0.5545      1.10  Q   V     |         |         |         |
 7+50      0.5621      1.11  Q   V     |         |         |         |
 7+55      0.5698      1.12  Q    V    |         |         |         |
 8+ 0      0.5776      1.12  Q    V    |         |         |         |
 8+ 5      0.5854      1.13  Q    V    |         |         |         |
 8+10      0.5932      1.14  Q    V    |         |         |         |
 8+15      0.6011      1.15  Q    V    |         |         |         |
 8+20      0.6091      1.15  Q    V    |         |         |         |
 8+25      0.6171      1.16  Q    V    |         |         |         |
 8+30      0.6251      1.17  Q    V    |         |         |         |
 8+35      0.6332      1.18  Q    V    |         |         |         |
 8+40      0.6414      1.19  Q    V    |         |         |         |
 8+45      0.6496      1.19  Q    V    |         |         |         |
 8+50      0.6579      1.20  Q    V    |         |         |         |
 8+55      0.6663      1.21  Q    V    |         |         |         |
 9+ 0      0.6747      1.22  Q    V    |         |         |         |
 9+ 5      0.6831      1.23  Q     V   |         |         |         |
 9+10      0.6917      1.24  Q     V   |         |         |         |
 9+15      0.7003      1.25  Q     V   |         |         |         |
 9+20      0.7089      1.26  |Q    V   |         |         |         |
 9+25      0.7176      1.27  |Q    V   |         |         |         |
 9+30      0.7264      1.28  |Q    V   |         |         |         |
 9+35      0.7353      1.29  |Q    V   |         |         |         |
 9+40      0.7442      1.30  |Q    V   |         |         |         |
 9+45      0.7532      1.31  |Q    V   |         |         |         |
 9+50      0.7623      1.32  |Q    V   |         |         |         |
 9+55      0.7715      1.33  |Q    V   |         |         |         |
10+ 0      0.7807      1.34  |Q    V   |         |         |         |
10+ 5      0.7900      1.35  |Q     V  |         |         |         |
10+10      0.7994      1.36  |Q     V  |         |         |         |
10+15      0.8088      1.38  |Q     V  |         |         |         |
10+20      0.8184      1.39  |Q     V  |         |         |         |
10+25      0.8280      1.40  |Q     V  |         |         |         |
10+30      0.8378      1.41  |Q     V  |         |         |         |
10+35      0.8476      1.43  |Q     V  |         |         |         |
10+40      0.8575      1.44  |Q     V  |         |         |         |
10+45      0.8675      1.45  |Q     V  |         |         |         |
10+50      0.8776      1.47  |Q     V  |         |         |         |
10+55      0.8878      1.48  |Q     V  |         |         |         |
11+ 0      0.8981      1.50  |Q     V  |         |         |         |
11+ 5      0.9085      1.51  |Q      V |         |         |         |
11+10      0.9190      1.53  |Q      V |         |         |         |
11+15      0.9297      1.54  |Q      V |         |         |         |
11+20      0.9404      1.56  |Q      V |         |         |         |
11+25      0.9513      1.58  |Q      V |         |         |         |
11+30      0.9622      1.59  |Q      V |         |         |         |
11+35      0.9733      1.61  |Q      V |         |         |         |
11+40      0.9846      1.63  |Q      V |         |         |         |
11+45      0.9959      1.65  |Q      V |         |         |         |
11+50      1.0074      1.67  |Q      V |         |         |         |
11+55      1.0190      1.69  |Q       V|         |         |         |
12+ 0      1.0308      1.71  |Q       V|         |         |         |
12+ 5      1.0429      1.76  |Q       V|         |         |         |
12+10      1.0559      1.89  |Q       V|         |         |         |
12+15      1.0706      2.13  |Q       V|         |         |         |
12+20      1.0860      2.24  |Q       V|         |         |         |
12+25      1.1020      2.32  |Q       V|         |         |         |
12+30      1.1184      2.38  |Q       V|         |         |         |
12+35      1.1352      2.43  |Q        V         |         |         |
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12+40      1.1522     2.47  |Q        V         |         |         |
12+45      1.1695     2.51  | Q       V         |         |         |
12+50      1.1870     2.54  | Q       V         |         |         |
12+55      1.2048     2.58  | Q       V         |         |         |
13+ 0      1.2228     2.61  | Q       V         |         |         |
13+ 5      1.2411     2.65  | Q       |V        |         |         |
13+10      1.2596     2.69  | Q       |V        |         |         |
13+15      1.2784     2.73  | Q       |V        |         |         |
13+20      1.2974     2.77  | Q       |V        |         |         |
13+25      1.3168     2.81  | Q       |V        |         |         |
13+30      1.3364     2.85  | Q       |V        |         |         |
13+35      1.3564     2.90  | Q       | V       |         |         |
13+40      1.3767     2.94  | Q       | V       |         |         |
13+45      1.3973     3.00  | Q       | V       |         |         |
13+50      1.4183     3.05  | Q       | V       |         |         |
13+55      1.4397     3.10  | Q       | V       |         |         |
14+ 0      1.4614     3.16  | Q       | V       |         |         |
14+ 5      1.4836     3.22  | Q       |  V      |         |         |
14+10      1.5062     3.28  | Q       |  V      |         |         |
14+15      1.5291     3.33  | Q       |  V      |         |         |
14+20      1.5525     3.40  | Q       |  V      |         |         |
14+25      1.5765     3.48  | Q       |  V      |         |         |
14+30      1.6010     3.56  | Q       |   V     |         |         |
14+35      1.6261     3.65  | Q       |   V     |         |         |
14+40      1.6519     3.74  | Q       |   V     |         |         |
14+45      1.6784     3.85  |  Q      |   V     |         |         |
14+50      1.7057     3.96  |  Q      |    V    |         |         |
14+55      1.7338     4.09  |  Q      |    V    |         |         |
15+ 0      1.7629     4.22  |  Q      |    V    |         |         |
15+ 5      1.7931     4.38  |  Q      |    V    |         |         |
15+10      1.8244     4.55  |  Q      |     V   |         |         |
15+15      1.8571     4.75  |  Q      |     V   |         |         |
15+20      1.8912     4.95  |  Q      |     V   |         |         |
15+25      1.9269     5.18  |   Q     |      V  |         |         |
15+30      1.9634     5.29  |   Q     |      V  |         |         |
15+35      1.9999     5.31  |   Q     |      V  |         |         |
15+40      2.0390     5.67  |   Q     |       V |         |         |
15+45      2.0838     6.50  |    Q    |       V |         |         |
15+50      2.1375     7.80  |     Q   |       V |         |         |
15+55      2.2068    10.07  |       Q |        V|         |         |
16+ 0      2.2975    13.17  |         Q         V         |         |
16+ 5      2.4404    20.74  |          |     Q   |V        |         |
16+10      2.6751    34.08  |          |         |  V   Q  |         |
16+15      2.9888    45.55  |          |         |     V   |     Q   |
16+20      3.1684    26.09  |          |        Q|       V |         |
16+25      3.2903    17.70  |          |   Q     |         V|        |
16+30      3.3812    13.20  |          Q         |          V        |
16+35      3.4536    10.51  |        Q |         |          V        |
16+40      3.5108     8.31  |      Q   |         |          |V       |
16+45      3.5566     6.64  |     Q    |         |          |V       |
16+50      3.5946     5.52  |    Q     |         |          |V       |
16+55      3.6288     4.97  |  Q       |         |          | V      |
17+ 0      3.6601     4.54  |  Q       |         |          | V      |
17+ 5      3.6894     4.25  |  Q       |         |          | V      |
17+10      3.7161     3.89  |  Q       |         |          | V      |
17+15      3.7410     3.61  | Q        |         |          |  V     |
17+20      3.7643     3.38  | Q        |         |          |  V     |
17+25      3.7866     3.23  | Q        |         |          |  V     |
17+30      3.8080     3.11  | Q        |         |          |  V     |
17+35      3.8286     3.00  | Q        |         |          |  V     |
17+40      3.8486     2.90  | Q        |         |          |   V    |
17+45      3.8680     2.81  | Q        |         |          |   V    |
17+50      3.8868     2.73  | Q        |         |          |   V    |
17+55      3.9051     2.65  | Q        |         |          |   V    |
18+ 0      3.9229     2.58  | Q        |         |          |   V    |
18+ 5      3.9400     2.50  |Q         |         |          |   V    |
18+10      3.9561     2.33  |Q         |         |          |    V   |
18+15      3.9702     2.05  |Q         |         |          |    V   |
18+20      3.9834     1.91  |Q         |         |          |    V   |
18+25      3.9959     1.82  |Q         |         |          |    V   |
18+30      4.0079     1.74  |Q         |         |          |    V   |
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18+35      4.0194     1.68  |Q       |        |        |    V    |
18+40      4.0307     1.63  |Q       |        |        |    V    |
18+45      4.0416     1.59  |Q       |        |        |    V    |
18+50      4.0522     1.55  |Q       |        |        |    V    |
18+55      4.0627     1.51  |Q       |        |        |     V   |
19+ 0      4.0729     1.48  |Q       |        |        |     V   |
19+ 5      4.0829     1.45  |Q       |        |        |     V   |
19+10      4.0927     1.42  |Q       |        |        |     V   |
19+15      4.1023     1.40  |Q       |        |        |     V   |
19+20      4.1118     1.37  |Q       |        |        |     V   |
19+25      4.1211     1.35  |Q       |        |        |     V   |
19+30      4.1302     1.33  |Q       |        |        |     V   |
19+35      4.1392     1.31  |Q       |        |        |     V   |
19+40      4.1481     1.28  |Q       |        |        |     V   |
19+45      4.1568     1.26  |Q       |        |        |     V   |
19+50      4.1654     1.25  Q        |        |        |     V   |
19+55      4.1738     1.23  Q        |        |        |      V  |
20+ 0      4.1821     1.21  Q        |        |        |      V  |
20+ 5      4.1904     1.19  Q        |        |        |      V  |
20+10      4.1985     1.18  Q        |        |        |      V  |
20+15      4.2064     1.16  Q        |        |        |      V  |
20+20      4.2143     1.15  Q        |        |        |      V  |
20+25      4.2221     1.13  Q        |        |        |      V  |
20+30      4.2298     1.12  Q        |        |        |      V  |
20+35      4.2374     1.10  Q        |        |        |      V  |
20+40      4.2449     1.09  Q        |        |        |      V  |
20+45      4.2523     1.08  Q        |        |        |      V  |
20+50      4.2596     1.06  Q        |        |        |      V  |
20+55      4.2668     1.05  Q        |        |        |      V  |
21+ 0      4.2740     1.04  Q        |        |        |      V  |
21+ 5      4.2811     1.03  Q        |        |        |       V |
21+10      4.2881     1.02  Q        |        |        |       V |
21+15      4.2950     1.01  Q        |        |        |       V |
21+20      4.3018     0.99  Q        |        |        |       V |
21+25      4.3086     0.98  Q        |        |        |       V |
21+30      4.3153     0.97  Q        |        |        |       V |
21+35      4.3220     0.96  Q        |        |        |       V |
21+40      4.3285     0.95  Q        |        |        |       V |
21+45      4.3351     0.95  Q        |        |        |       V |
21+50      4.3415     0.94  Q        |        |        |       V |
21+55      4.3479     0.93  Q        |        |        |       V |
22+ 0      4.3542     0.92  Q        |        |        |       V |
22+ 5      4.3605     0.91  Q        |        |        |       V |
22+10      4.3667     0.90  Q        |        |        |       V |
22+15      4.3729     0.89  Q        |        |        |       V |
22+20      4.3790     0.89  Q        |        |        |       V |
22+25      4.3850     0.88  Q        |        |        |       V |
22+30      4.3910     0.87  Q        |        |        |       V |
22+35      4.3969     0.86  Q        |        |        |        V|
22+40      4.4028     0.86  Q        |        |        |        V|
22+45      4.4087     0.85  Q        |        |        |        V|
22+50      4.4145     0.84  Q        |        |        |        V|
22+55      4.4202     0.84  Q        |        |        |        V|
23+ 0      4.4260     0.83  Q        |        |        |        V|
23+ 5      4.4316     0.82  Q        |        |        |        V|
23+10      4.4372     0.82  Q        |        |        |        V|
23+15      4.4428     0.81  Q        |        |        |        V|
23+20      4.4484     0.80  Q        |        |        |        V|
23+25      4.4538     0.80  Q        |        |        |        V|
23+30      4.4593     0.79  Q        |        |        |        V|
23+35      4.4647     0.79  Q        |        |        |        V|
23+40      4.4701     0.78  Q        |        |        |        V|
23+45      4.4754     0.77  Q        |        |        |        V|
23+50      4.4807     0.77  Q        |        |        |        V|
23+55      4.4860     0.76  Q        |        |        |        V|
24+ 0      4.4912     0.76  Q        |        |        |        V|
24+ 5      4.4962     0.72  Q        |        |        |        V|
24+10      4.5002     0.58  Q        |        |        |        V|
24+15      4.5022     0.29  Q        |        |        |        V|
24+20      4.5034     0.18  Q        |        |        |        V|
24+25      4.5042     0.11  Q        |        |        |        V|
```

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   24+30       4.5046      0.07  Q         |         |         |        V|
   24+35       4.5049      0.04  Q         |         |         |        V|
   24+40       4.5051      0.02  Q         |         |         |        V|
   24+45       4.5052      0.01  Q         |         |         |        V|
   24+50       4.5053      0.01  Q         |         |         |        V|
   24+55       4.5053      0.01  Q         |         |         |        V|
   25+ 0       4.5053      0.00  Q         |         |         |        V|
   25+ 5       4.5054      0.00  Q         |         |         |        V|
   25+10       4.5054      0.00  Q         |         |         |         V
-------------------------------------------------------------------------
```

- 100 Year 3 Hour Pre-Development Unit Hydrograph – Area 'B'

```
        U n i t   H y d r o g r a p h   A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989-2012, Version 7.2

        Study date  10/05/16   File Name EXB10003.out


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------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'B' - 100 YEAR 3 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

        Storm Event Year = 100

        Antecedent Moisture Condition = 3

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 80.2       7.8          0.40     D     0.200     1.000    0.200
 80.2      11.8          0.60     C     0.250     1.000    0.250

Area-averaged adjusted loss rate Fm (In/Hr) =  0.230

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC3)          Yield Fr
     7.84   0.400         80.2      94.1       0.62     0.878

    11.76   0.600         80.2      94.1       0.62     0.878

Area-averaged catchment yield fraction, Y =  0.878
Area-averaged low loss fraction, Yb =  0.122
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.208 (hours)
Watershed area =      19.60(Ac.)
Catchment Lag time =   0.167 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 49.9600
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.230(In/Hr)
Average low loss rate fraction (Yb) = 0.122 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.520(In)
Computed peak 30-minute rainfall =  1.090(In)
Specified peak 1-hour rainfall =  1.450(In)
Computed peak 3-hour rainfall =  2.430(In)
Specified peak 6-hour rainfall =  3.360(In)
Specified peak 24-hour rainfall =  5.630(In)


Rainfall depth area reduction factors:
Using a total area of      19.60(Ac.) (Ref: fig. E-4)
```

```
5-minute factor = 0.999     Adjusted rainfall =  0.520(In)
30-minute factor = 0.999    Adjusted rainfall =  1.089(In)
1-hour factor = 0.999       Adjusted rainfall =  1.449(In)
3-hour factor = 1.000       Adjusted rainfall =  2.430(In)
6-hour factor = 1.000       Adjusted rainfall =  3.360(In)
24-hour factor = 1.000 Adjusted rainfall =  5.630(In)
--------------------------------------------------------------------

                     U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------
               (K =       237.04 (CFS))

  1                4.275                  10.134
  2               24.503                  47.947
  3               62.763                  90.690
  4               77.446                  34.805
  5               85.826                  19.865
  6               91.281                  12.929
  7               94.886                   8.545
  8               97.115                   5.284
  9               98.196                   2.563
 10               98.746                   1.304
 11               99.147                   0.951
 12               99.496                   0.827
 13               99.798                   0.715
 14               99.949                   0.358
 15              100.000                   0.121
--------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.5195              0.5195
  2              0.6917              0.1722
  3              0.8179              0.1261
  4              0.9211              0.1032
  5              1.0100              0.0889
  6              1.0890              0.0790
  7              1.1604              0.0714
  8              1.2259              0.0656
  9              1.2869              0.0609
 10              1.3439              0.0571
 11              1.3977              0.0538
 12              1.4487              0.0510
 13              1.5043              0.0556
 14              1.5577              0.0534
 15              1.6091              0.0514
 16              1.6587              0.0496
 17              1.7068              0.0480
 18              1.7533              0.0465
 19              1.7985              0.0452
 20              1.8425              0.0440
 21              1.8853              0.0428
 22              1.9270              0.0417
 23              1.9677              0.0407
 24              2.0076              0.0398
 25              2.0465              0.0389
 26              2.0846              0.0381
 27              2.1220              0.0374
 28              2.1586              0.0366
 29              2.1946              0.0360
 30              2.2299              0.0353
 31              2.2646              0.0347
 32              2.2987              0.0341
 33              2.3322              0.0335
 34              2.3652              0.0330
 35              2.3977              0.0325
 36              2.4297              0.0320
--------------------------------------------------------------------
```

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0320	0.0039	0.0281
2	0.0325	0.0040	0.0285
3	0.0335	0.0041	0.0295
4	0.0341	0.0042	0.0299
5	0.0353	0.0043	0.0310
6	0.0360	0.0044	0.0316
7	0.0374	0.0046	0.0328
8	0.0381	0.0046	0.0335
9	0.0398	0.0049	0.0350
10	0.0407	0.0050	0.0358
11	0.0428	0.0052	0.0376
12	0.0440	0.0054	0.0386
13	0.0465	0.0057	0.0409
14	0.0480	0.0059	0.0422
15	0.0514	0.0063	0.0452
16	0.0534	0.0065	0.0469
17	0.0510	0.0062	0.0448
18	0.0538	0.0066	0.0472
19	0.0609	0.0074	0.0535
20	0.0656	0.0080	0.0576
21	0.0790	0.0096	0.0694
22	0.0889	0.0108	0.0781
23	0.1261	0.0154	0.1108
24	0.1722	0.0192	0.1531
25	0.5195	0.0192	0.5004
26	0.1032	0.0126	0.0906
27	0.0714	0.0087	0.0627
28	0.0571	0.0070	0.0501
29	0.0556	0.0068	0.0488
30	0.0496	0.0060	0.0436
31	0.0452	0.0055	0.0397
32	0.0417	0.0051	0.0367
33	0.0389	0.0047	0.0342
34	0.0366	0.0045	0.0322
35	0.0347	0.0042	0.0305
36	0.0330	0.0040	0.0290

Total soil rain loss = 0.25(In)
Total effective rainfall = 2.18(In)
Peak flow rate in flood hydrograph = 60.12(CFS)

3 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	17.5	35.0	52.5	70.0
0+ 5	0.0020	0.28	Q	|	|	|	|
0+10	0.0132	1.64	Q	|	|	|	|
0+15	0.0423	4.22	V Q	|	|	|	|
0+20	0.0786	5.28	V Q	|	|	|	|
0+25	0.1198	5.97	|V Q	|	|	|	|
0+30	0.1644	6.48	|V Q	|	|	|	|
0+35	0.2119	6.89	| VQ	|	|	|	|
0+40	0.2616	7.22	| V Q	|	|	|	|
0+45	0.3133	7.51	| VQ	|	|	|	|
0+50	0.3668	7.77	| Q	|	|	|	|
0+55	0.4223	8.06	| Q	|	|	|	|
1+ 0	0.4798	8.34	| QV	|	|	|	|
1+ 5	0.5396	8.68	| Q V	|	|	|	|
1+10	0.6017	9.02	| QV	|	|	|	|
1+15	0.6667	9.43	| Q V	|	|	|	|
1+20	0.7345	9.85	| Q V	|	|	|	|

```
   1+25       0.8055     10.31  |    Q   V|         |         |         |
   1+30       0.8784     10.58  |     Q  V|         |         |         |
   1+35       0.9523     10.74  |     Q   V         |         |         |
   1+40       1.0304     11.33  |     Q   |V        |         |         |
   1+45       1.1152     12.33  |      Q  | V       |         |         |
   1+50       1.2091     13.63  |      Q  |  V      |         |         |
   1+55       1.3176     15.75  |        Q|   V     |         |         |
   2+ 0       1.4494     19.13  |         Q     V   |         |         |
   2+ 5       1.6443     28.30  |         |     Q V |         |         |
   2+10       1.9623     46.18  |         |         | V   Q   |         |
   2+15       2.3764     60.12  |         |         |     V   |   Q     |
   2+20       2.6175     35.01  |         |         Q        V|         |
   2+25       2.7925     25.41  |         |   Q     |         |V        |
   2+30       2.9310     20.12  |         |Q        |         | V       |
   2+35       3.0462     16.73  |        Q|         |         |   V     |
   2+40       3.1418     13.89  |       Q |         |         |    V    |
   2+45       3.2216     11.58  |     Q   |         |         |     V   |
   2+50       3.2914     10.14  |    Q    |         |         |      V  |
   2+55       3.3552      9.26  |    Q    |         |         |      V  |
   3+ 0       3.4144      8.60  |   Q     |         |         |       V |
   3+ 5       3.4678      7.75  |   Q     |         |         |       V |
   3+10       3.5079      5.83  |  Q      |         |         |        V|
   3+15       3.5279      2.90  |Q        |         |         |        V|
   3+20       3.5397      1.72  Q         |         |         |        V|
   3+25       3.5471      1.07  Q         |         |         |        V|
   3+30       3.5517      0.66  Q         |         |         |        V|
   3+35       3.5543      0.39  Q         |         |         |        V|
   3+40       3.5558      0.22  Q         |         |         |        V|
   3+45       3.5568      0.14  Q         |         |         |        V|
   3+50       3.5574      0.09  Q         |         |         |        V|
   3+55       3.5578      0.06  Q         |         |         |        V|
   4+ 0       3.5581      0.04  Q         |         |         |        V|
   4+ 5       3.5582      0.01  Q         |         |         |        V|
   4+10       3.5582      0.00  Q         |         |         |         V
-------------------------------------------------------------------------
```

- 100 Year 6 Hour Pre-Development Unit Hydrograph – Area 'B'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989-2012, Version 7.2

       Study date  10/05/16   File Name EXB10006.out

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--------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996

Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'B' - 100 YEAR 6 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------
       Storm Event Year = 100

       Antecedent Moisture Condition = 3

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********

SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 80.2       7.8          0.40     D     0.200     1.000    0.200
 80.2      11.8          0.60     C     0.250     1.000    0.250

Area-averaged adjusted loss rate Fm (In/Hr) =  0.230

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC3)           Yield Fr
     7.84   0.400         80.2      94.1       0.62     0.878

    11.76   0.600         80.2      94.1       0.62     0.878

Area-averaged catchment yield fraction, Y =  0.878
Area-averaged low loss fraction, Yb =  0.122
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.208 (hours)
Watershed area =      19.60(Ac.)
Catchment Lag time =   0.167 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 49.9600
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.230(In/Hr)
Average low loss rate fraction (Yb) = 0.122 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.520(In)
Computed peak 30-minute rainfall =  1.090(In)
Specified peak 1-hour rainfall =  1.450(In)
Computed peak 3-hour rainfall =  2.430(In)
Specified peak 6-hour rainfall =  3.360(In)
Specified peak 24-hour rainfall =  5.630(In)


Rainfall depth area reduction factors:
Using a total area of      19.60(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.520(In)
30-minute factor = 0.999    Adjusted rainfall =  1.089(In)
1-hour factor = 0.999       Adjusted rainfall =  1.449(In)
3-hour factor = 1.000       Adjusted rainfall =  2.430(In)
```

```
6-hour factor = 1.000       Adjusted rainfall =  3.360(In)
24-hour factor = 1.000 Adjusted rainfall =  5.630(In)
------------------------------------------------------------------------

                      U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
------------------------------------------------------------------------
               (K =       237.04 (CFS))

  1                4.275                  10.134
  2               24.503                  47.947
  3               62.763                  90.690
  4               77.446                  34.805
  5               85.826                  19.865
  6               91.281                  12.929
  7               94.886                   8.545
  8               97.115                   5.284
  9               98.196                   2.563
 10               98.746                   1.304
 11               99.147                   0.951
 12               99.496                   0.827
 13               99.798                   0.715
 14               99.949                   0.358
 15              100.000                   0.121
------------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.5195              0.5195
  2              0.6917              0.1722
  3              0.8179              0.1261
  4              0.9211              0.1032
  5              1.0100              0.0889
  6              1.0890              0.0790
  7              1.1604              0.0714
  8              1.2259              0.0656
  9              1.2869              0.0609
 10              1.3439              0.0571
 11              1.3977              0.0538
 12              1.4487              0.0510
 13              1.5043              0.0556
 14              1.5577              0.0534
 15              1.6091              0.0514
 16              1.6587              0.0496
 17              1.7068              0.0480
 18              1.7533              0.0465
 19              1.7985              0.0452
 20              1.8425              0.0440
 21              1.8853              0.0428
 22              1.9270              0.0417
 23              1.9677              0.0407
 24              2.0076              0.0398
 25              2.0465              0.0389
 26              2.0846              0.0381
 27              2.1220              0.0374
 28              2.1586              0.0366
 29              2.1946              0.0360
 30              2.2299              0.0353
 31              2.2646              0.0347
 32              2.2987              0.0341
 33              2.3322              0.0335
 34              2.3652              0.0330
 35              2.3977              0.0325
 36              2.4297              0.0320
 37              2.4610              0.0313
 38              2.4919              0.0309
 39              2.5224              0.0305
 40              2.5524              0.0300
 41              2.5821              0.0296
 42              2.6113              0.0293
```

43	2.6402	0.0289
44	2.6687	0.0285
45	2.6969	0.0282
46	2.7248	0.0279
47	2.7523	0.0275
48	2.7796	0.0272
49	2.8065	0.0269
50	2.8331	0.0266
51	2.8595	0.0264
52	2.8856	0.0261
53	2.9114	0.0258
54	2.9369	0.0256
55	2.9622	0.0253
56	2.9873	0.0251
57	3.0121	0.0248
58	3.0367	0.0246
59	3.0611	0.0244
60	3.0852	0.0242
61	3.1092	0.0239
62	3.1329	0.0237
63	3.1564	0.0235
64	3.1798	0.0233
65	3.2029	0.0231
66	3.2258	0.0229
67	3.2486	0.0228
68	3.2712	0.0226
69	3.2936	0.0224
70	3.3158	0.0222
71	3.3379	0.0221
72	3.3598	0.0219

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0219	0.0027	0.0192
2	0.0221	0.0027	0.0194
3	0.0224	0.0027	0.0197
4	0.0226	0.0028	0.0198
5	0.0229	0.0028	0.0202
6	0.0231	0.0028	0.0203
7	0.0235	0.0029	0.0207
8	0.0237	0.0029	0.0208
9	0.0242	0.0029	0.0212
10	0.0244	0.0030	0.0214
11	0.0248	0.0030	0.0218
12	0.0251	0.0031	0.0220
13	0.0256	0.0031	0.0224
14	0.0258	0.0031	0.0227
15	0.0264	0.0032	0.0231
16	0.0266	0.0032	0.0234
17	0.0272	0.0033	0.0239
18	0.0275	0.0034	0.0242
19	0.0282	0.0034	0.0248
20	0.0285	0.0035	0.0251
21	0.0293	0.0036	0.0257
22	0.0296	0.0036	0.0260
23	0.0305	0.0037	0.0267
24	0.0309	0.0038	0.0271
25	0.0320	0.0039	0.0281
26	0.0325	0.0040	0.0285
27	0.0335	0.0041	0.0295
28	0.0341	0.0042	0.0299
29	0.0353	0.0043	0.0310
30	0.0360	0.0044	0.0316
31	0.0374	0.0046	0.0328
32	0.0381	0.0046	0.0335
33	0.0398	0.0049	0.0350
34	0.0407	0.0050	0.0358
35	0.0428	0.0052	0.0376
36	0.0440	0.0054	0.0386

37	0.0465	0.0057	0.0409
38	0.0480	0.0059	0.0422
39	0.0514	0.0063	0.0452
40	0.0534	0.0065	0.0469
41	0.0510	0.0062	0.0448
42	0.0538	0.0066	0.0472
43	0.0609	0.0074	0.0535
44	0.0656	0.0080	0.0576
45	0.0790	0.0096	0.0694
46	0.0889	0.0108	0.0781
47	0.1261	0.0154	0.1108
48	0.1722	0.0192	0.1531
49	0.5195	0.0192	0.5004
50	0.1032	0.0126	0.0906
51	0.0714	0.0087	0.0627
52	0.0571	0.0070	0.0501
53	0.0556	0.0068	0.0488
54	0.0496	0.0060	0.0436
55	0.0452	0.0055	0.0397
56	0.0417	0.0051	0.0367
57	0.0389	0.0047	0.0342
58	0.0366	0.0045	0.0322
59	0.0347	0.0042	0.0305
60	0.0330	0.0040	0.0290
61	0.0313	0.0038	0.0275
62	0.0300	0.0037	0.0264
63	0.0289	0.0035	0.0254
64	0.0279	0.0034	0.0245
65	0.0269	0.0033	0.0236
66	0.0261	0.0032	0.0229
67	0.0253	0.0031	0.0222
68	0.0246	0.0030	0.0216
69	0.0239	0.0029	0.0210
70	0.0233	0.0028	0.0205
71	0.0228	0.0028	0.0200
72	0.0222	0.0027	0.0195

Total soil rain loss = 0.36(In)
Total effective rainfall = 3.00(In)
Peak flow rate in flood hydrograph = 60.12(CFS)

++

6 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	17.5	35.0	52.5	70.0
0+ 5	0.0013	0.19	Q				
0+10	0.0090	1.12	Q				
0+15	0.0288	2.87	VQ				
0+20	0.0534	3.57	V Q				
0+25	0.0809	4.00	V Q				
0+30	0.1105	4.29	V Q				
0+35	0.1415	4.51	|VQ				
0+40	0.1736	4.66	|VQ				
0+45	0.2065	4.77	|VQ				
0+50	0.2399	4.85	|VQ				
0+55	0.2739	4.94	| Q				
1+ 0	0.3085	5.02	| Q				
1+ 5	0.3437	5.11	| Q				
1+10	0.3793	5.18	| QV				
1+15	0.4156	5.26	| Q				
1+20	0.4524	5.34	| Q				
1+25	0.4897	5.42	| QV				
1+30	0.5276	5.51	| QV				
1+35	0.5662	5.60	| QV				
1+40	0.6054	5.69	| QV				

```
   1+45       0.6453      5.79  |  Q V    |         |         |         |
   1+50       0.6859      5.89  |  Q V    |         |         |         |
   1+55       0.7272      6.01  |  Q V    |         |         |         |
   2+ 0       0.7694      6.12  |  Q  V   |         |         |         |
   2+ 5       0.8124      6.25  |  Q  V   |         |         |         |
   2+10       0.8564      6.38  |  Q   V  |         |         |         |
   2+15       0.9014      6.54  |  Q   V  |         |         |         |
   2+20       0.9475      6.69  |  Q   V  |         |         |         |
   2+25       0.9948      6.86  |  Q    V |         |         |         |
   2+30       1.0431      7.02  |   Q   V |         |         |         |
   2+35       1.0928      7.21  |   Q   V |         |         |         |
   2+40       1.1438      7.40  |   Q    V|         |         |         |
   2+45       1.1963      7.62  |   Q    V|         |         |         |
   2+50       1.2503      7.85  |   Q     V         |         |         |
   2+55       1.3062      8.11  |   Q     V         |         |         |
   3+ 0       1.3639      8.38  |   Q     |V        |         |         |
   3+ 5       1.4238      8.70  |   Q     |V        |         |         |
   3+10       1.4859      9.03  |    Q    | V       |         |         |
   3+15       1.5509      9.43  |    Q    | V       |         |         |
   3+20       1.6187      9.85  |    Q    |  V      |         |         |
   3+25       1.6897     10.31  |    Q    |  V      |         |         |
   3+30       1.7626     10.58  |     Q   |   V     |         |         |
   3+35       1.8365     10.74  |     Q   |    V    |         |         |
   3+40       1.9146     11.33  |     Q   |    V    |         |         |
   3+45       1.9994     12.33  |      Q  |     V   |         |         |
   3+50       2.0933     13.63  |      Q  |      V  |         |         |
   3+55       2.2018     15.75  |        Q|       V |         |         |
   4+ 0       2.3336     19.13  |         Q        V|         |         |
   4+ 5       2.5285     28.30  |         |     Q   V         |         |
   4+10       2.8465     46.18  |         |         |  V  Q   |         |
   4+15       3.2606     60.12  |         |         |     V   |   Q     |
   4+20       3.5017     35.01  |         |         Q       V |         |
   4+25       3.6767     25.41  |         |   Q     |         V         |
   4+30       3.8152     20.12  |         |Q        |         |V        |
   4+35       3.9304     16.73  |        Q|         |         | V       |
   4+40       4.0260     13.89  |      Q  |         |         | V       |
   4+45       4.1058     11.58  |     Q   |         |         |  V      |
   4+50       4.1756     10.14  |    Q    |         |         |   V     |
   4+55       4.2394      9.26  |    Q    |         |         |   V     |
   5+ 0       4.2986      8.60  |   Q     |         |         |    V    |
   5+ 5       4.3539      8.02  |   Q     |         |         |    V    |
   5+10       4.4050      7.42  |   Q     |         |         |     V   |
   5+15       4.4526      6.92  |  Q      |         |         |     V   |
   5+20       4.4976      6.54  |  Q      |         |         |     V   |
   5+25       4.5407      6.25  |  Q      |         |         |      V  |
   5+30       4.5820      6.01  |  Q      |         |         |      V  |
   5+35       4.6219      5.79  |  Q      |         |         |      V  |
   5+40       4.6604      5.59  |  Q      |         |         |       V |
   5+45       4.6976      5.41  |  Q      |         |         |       V |
   5+50       4.7338      5.25  | Q       |         |         |       V |
   5+55       4.7689      5.10  | Q       |         |         |       V |
   6+ 0       4.8030      4.96  | Q       |         |         |        V|
   6+ 5       4.8350      4.64  | Q       |         |         |        V|
   6+10       4.8599      3.61  | Q       |         |         |        V|
   6+15       4.8723      1.80  |Q        |         |         |        V|
   6+20       4.8798      1.09  Q         |         |         |        V|
   6+25       4.8845      0.68  Q         |         |         |        V|
   6+30       4.8873      0.42  Q         |         |         |        V|
   6+35       4.8890      0.25  Q         |         |         |        V|
   6+40       4.8900      0.14  Q         |         |         |        V|
   6+45       4.8906      0.09  Q         |         |         |        V|
   6+50       4.8910      0.06  Q         |         |         |        V|
   6+55       4.8913      0.04  Q         |         |         |        V|
   7+ 0       4.8914      0.02  Q         |         |         |        V|
   7+ 5       4.8915      0.01  Q         |         |         |        V|
   7+10       4.8915      0.00  Q         |         |         |        V|
-------------------------------------------------------------------------
```

- 100 Year 12 Hour Pre-Development Unit Hydrograph – Area 'B'

```
        U n i t   H y d r o g r a p h   A n a l y s i s

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        Study date  10/05/16   File Name EXB10012.out


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------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'B' - 100 YEAR 12 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

        Storm Event Year = 100

        Antecedent Moisture Condition = 3

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 80.2       7.8          0.40     D     0.200     1.000    0.200
 80.2      11.8          0.60     C     0.250     1.000    0.250

Area-averaged adjusted loss rate Fm (In/Hr) =  0.230

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC3)          Yield Fr
     7.84   0.400         80.2      94.1       0.62     0.878

    11.76   0.600         80.2      94.1       0.62     0.878

Area-averaged catchment yield fraction, Y =  0.878
Area-averaged low loss fraction, Yb =  0.122
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.208 (hours)
Watershed area =      19.60(Ac.)
Catchment Lag time =   0.167 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 49.9600
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.230(In/Hr)
Average low loss rate fraction (Yb) = 0.122 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.520(In)
Computed peak 30-minute rainfall =  1.090(In)
Specified peak 1-hour rainfall =  1.450(In)
Computed peak 3-hour rainfall =  2.430(In)
Specified peak 6-hour rainfall =  3.360(In)
Specified peak 24-hour rainfall =  5.630(In)


Rainfall depth area reduction factors:
Using a total area of      19.60(Ac.) (Ref: fig. E-4)
```

```
5-minute factor = 0.999     Adjusted rainfall =  0.520(In)
30-minute factor = 0.999    Adjusted rainfall =  1.089(In)
1-hour factor = 0.999       Adjusted rainfall =  1.449(In)
3-hour factor = 1.000       Adjusted rainfall =  2.430(In)
6-hour factor = 1.000       Adjusted rainfall =  3.360(In)
24-hour factor = 1.000 Adjusted rainfall =  5.630(In)
--------------------------------------------------------------------

                     U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------
               (K =       237.04 (CFS))

  1                4.275                  10.134
  2               24.503                  47.947
  3               62.763                  90.690
  4               77.446                  34.805
  5               85.826                  19.865
  6               91.281                  12.929
  7               94.886                   8.545
  8               97.115                   5.284
  9               98.196                   2.563
 10               98.746                   1.304
 11               99.147                   0.951
 12               99.496                   0.827
 13               99.798                   0.715
 14               99.949                   0.358
 15              100.000                   0.121
--------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.5195              0.5195
  2              0.6917              0.1722
  3              0.8179              0.1261
  4              0.9211              0.1032
  5              1.0100              0.0889
  6              1.0890              0.0790
  7              1.1604              0.0714
  8              1.2259              0.0656
  9              1.2869              0.0609
 10              1.3439              0.0571
 11              1.3977              0.0538
 12              1.4487              0.0510
 13              1.5043              0.0556
 14              1.5577              0.0534
 15              1.6091              0.0514
 16              1.6587              0.0496
 17              1.7068              0.0480
 18              1.7533              0.0465
 19              1.7985              0.0452
 20              1.8425              0.0440
 21              1.8853              0.0428
 22              1.9270              0.0417
 23              1.9677              0.0407
 24              2.0076              0.0398
 25              2.0465              0.0389
 26              2.0846              0.0381
 27              2.1220              0.0374
 28              2.1586              0.0366
 29              2.1946              0.0360
 30              2.2299              0.0353
 31              2.2646              0.0347
 32              2.2987              0.0341
 33              2.3322              0.0335
 34              2.3652              0.0330
 35              2.3977              0.0325
 36              2.4297              0.0320
 37              2.4610              0.0313
```

38	2.4919	0.0309
39	2.5224	0.0305
40	2.5524	0.0300
41	2.5821	0.0296
42	2.6113	0.0293
43	2.6402	0.0289
44	2.6687	0.0285
45	2.6969	0.0282
46	2.7248	0.0279
47	2.7523	0.0275
48	2.7796	0.0272
49	2.8065	0.0269
50	2.8331	0.0266
51	2.8595	0.0264
52	2.8856	0.0261
53	2.9114	0.0258
54	2.9369	0.0256
55	2.9622	0.0253
56	2.9873	0.0251
57	3.0121	0.0248
58	3.0367	0.0246
59	3.0611	0.0244
60	3.0852	0.0242
61	3.1092	0.0239
62	3.1329	0.0237
63	3.1564	0.0235
64	3.1798	0.0233
65	3.2029	0.0231
66	3.2258	0.0229
67	3.2486	0.0228
68	3.2712	0.0226
69	3.2936	0.0224
70	3.3158	0.0222
71	3.3379	0.0221
72	3.3598	0.0219
73	3.3771	0.0173
74	3.3942	0.0172
75	3.4113	0.0170
76	3.4281	0.0169
77	3.4448	0.0167
78	3.4614	0.0166
79	3.4779	0.0165
80	3.4942	0.0163
81	3.5104	0.0162
82	3.5265	0.0161
83	3.5425	0.0160
84	3.5583	0.0158
85	3.5740	0.0157
86	3.5896	0.0156
87	3.6051	0.0155
88	3.6205	0.0154
89	3.6357	0.0153
90	3.6509	0.0152
91	3.6659	0.0151
92	3.6809	0.0149
93	3.6957	0.0148
94	3.7105	0.0147
95	3.7251	0.0146
96	3.7397	0.0146
97	3.7541	0.0145
98	3.7685	0.0144
99	3.7828	0.0143
100	3.7970	0.0142
101	3.8111	0.0141
102	3.8251	0.0140
103	3.8390	0.0139
104	3.8528	0.0138
105	3.8666	0.0138
106	3.8803	0.0137
107	3.8938	0.0136
108	3.9074	0.0135

109	3.9208	0.0134
110	3.9341	0.0134
111	3.9474	0.0133
112	3.9606	0.0132
113	3.9738	0.0131
114	3.9868	0.0131
115	3.9998	0.0130
116	4.0127	0.0129
117	4.0256	0.0128
118	4.0383	0.0128
119	4.0511	0.0127
120	4.0637	0.0126
121	4.0763	0.0126
122	4.0888	0.0125
123	4.1012	0.0124
124	4.1136	0.0124
125	4.1259	0.0123
126	4.1382	0.0123
127	4.1504	0.0122
128	4.1625	0.0121
129	4.1746	0.0121
130	4.1866	0.0120
131	4.1986	0.0120
132	4.2105	0.0119
133	4.2224	0.0118
134	4.2341	0.0118
135	4.2459	0.0117
136	4.2576	0.0117
137	4.2692	0.0116
138	4.2808	0.0116
139	4.2923	0.0115
140	4.3038	0.0115
141	4.3152	0.0114
142	4.3266	0.0114
143	4.3379	0.0113
144	4.3492	0.0113

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0113	0.0014	0.0099
2	0.0113	0.0014	0.0099
3	0.0114	0.0014	0.0100
4	0.0115	0.0014	0.0101
5	0.0116	0.0014	0.0102
6	0.0116	0.0014	0.0102
7	0.0117	0.0014	0.0103
8	0.0118	0.0014	0.0104
9	0.0119	0.0015	0.0105
10	0.0120	0.0015	0.0105
11	0.0121	0.0015	0.0106
12	0.0121	0.0015	0.0107
13	0.0123	0.0015	0.0108
14	0.0123	0.0015	0.0108
15	0.0124	0.0015	0.0109
16	0.0125	0.0015	0.0110
17	0.0126	0.0015	0.0111
18	0.0127	0.0015	0.0112
19	0.0128	0.0016	0.0113
20	0.0129	0.0016	0.0113
21	0.0131	0.0016	0.0115
22	0.0131	0.0016	0.0115
23	0.0133	0.0016	0.0117
24	0.0134	0.0016	0.0117
25	0.0135	0.0016	0.0119
26	0.0136	0.0017	0.0119
27	0.0138	0.0017	0.0121
28	0.0138	0.0017	0.0122
29	0.0140	0.0017	0.0123
30	0.0141	0.0017	0.0124

31	0.0143	0.0017	0.0125
32	0.0144	0.0018	0.0126
33	0.0146	0.0018	0.0128
34	0.0146	0.0018	0.0129
35	0.0148	0.0018	0.0130
36	0.0149	0.0018	0.0131
37	0.0152	0.0018	0.0133
38	0.0153	0.0019	0.0134
39	0.0155	0.0019	0.0136
40	0.0156	0.0019	0.0137
41	0.0158	0.0019	0.0139
42	0.0160	0.0019	0.0140
43	0.0162	0.0020	0.0142
44	0.0163	0.0020	0.0143
45	0.0166	0.0020	0.0146
46	0.0167	0.0020	0.0147
47	0.0170	0.0021	0.0149
48	0.0172	0.0021	0.0151
49	0.0219	0.0027	0.0192
50	0.0221	0.0027	0.0194
51	0.0224	0.0027	0.0197
52	0.0226	0.0028	0.0198
53	0.0229	0.0028	0.0202
54	0.0231	0.0028	0.0203
55	0.0235	0.0029	0.0207
56	0.0237	0.0029	0.0208
57	0.0242	0.0029	0.0212
58	0.0244	0.0030	0.0214
59	0.0248	0.0030	0.0218
60	0.0251	0.0031	0.0220
61	0.0256	0.0031	0.0224
62	0.0258	0.0031	0.0227
63	0.0264	0.0032	0.0231
64	0.0266	0.0032	0.0234
65	0.0272	0.0033	0.0239
66	0.0275	0.0034	0.0242
67	0.0282	0.0034	0.0248
68	0.0285	0.0035	0.0251
69	0.0293	0.0036	0.0257
70	0.0296	0.0036	0.0260
71	0.0305	0.0037	0.0267
72	0.0309	0.0038	0.0271
73	0.0320	0.0039	0.0281
74	0.0325	0.0040	0.0285
75	0.0335	0.0041	0.0295
76	0.0341	0.0042	0.0299
77	0.0353	0.0043	0.0310
78	0.0360	0.0044	0.0316
79	0.0374	0.0046	0.0328
80	0.0381	0.0046	0.0335
81	0.0398	0.0049	0.0350
82	0.0407	0.0050	0.0358
83	0.0428	0.0052	0.0376
84	0.0440	0.0054	0.0386
85	0.0465	0.0057	0.0409
86	0.0480	0.0059	0.0422
87	0.0514	0.0063	0.0452
88	0.0534	0.0065	0.0469
89	0.0510	0.0062	0.0448
90	0.0538	0.0066	0.0472
91	0.0609	0.0074	0.0535
92	0.0656	0.0080	0.0576
93	0.0790	0.0096	0.0694
94	0.0889	0.0108	0.0781
95	0.1261	0.0154	0.1108
96	0.1722	0.0192	0.1531
97	0.5195	0.0192	0.5004
98	0.1032	0.0126	0.0906
99	0.0714	0.0087	0.0627
100	0.0571	0.0070	0.0501
101	0.0556	0.0068	0.0488

```
      102              0.0496           0.0060              0.0436
      103              0.0452           0.0055              0.0397
      104              0.0417           0.0051              0.0367
      105              0.0389           0.0047              0.0342
      106              0.0366           0.0045              0.0322
      107              0.0347           0.0042              0.0305
      108              0.0330           0.0040              0.0290
      109              0.0313           0.0038              0.0275
      110              0.0300           0.0037              0.0264
      111              0.0289           0.0035              0.0254
      112              0.0279           0.0034              0.0245
      113              0.0269           0.0033              0.0236
      114              0.0261           0.0032              0.0229
      115              0.0253           0.0031              0.0222
      116              0.0246           0.0030              0.0216
      117              0.0239           0.0029              0.0210
      118              0.0233           0.0028              0.0205
      119              0.0228           0.0028              0.0200
      120              0.0222           0.0027              0.0195
      121              0.0173           0.0021              0.0152
      122              0.0169           0.0021              0.0148
      123              0.0165           0.0020              0.0145
      124              0.0161           0.0020              0.0141
      125              0.0157           0.0019              0.0138
      126              0.0154           0.0019              0.0135
      127              0.0151           0.0018              0.0132
      128              0.0147           0.0018              0.0130
      129              0.0145           0.0018              0.0127
      130              0.0142           0.0017              0.0125
      131              0.0139           0.0017              0.0122
      132              0.0137           0.0017              0.0120
      133              0.0134           0.0016              0.0118
      134              0.0132           0.0016              0.0116
      135              0.0130           0.0016              0.0114
      136              0.0128           0.0016              0.0112
      137              0.0126           0.0015              0.0110
      138              0.0124           0.0015              0.0109
      139              0.0122           0.0015              0.0107
      140              0.0120           0.0015              0.0106
      141              0.0118           0.0014              0.0104
      142              0.0117           0.0014              0.0103
      143              0.0115           0.0014              0.0101
      144              0.0114           0.0014              0.0100
      ------------------------------------------------------------------------
      ------------------------------------------------------------------------
      Total soil rain loss =      0.48(In)
      Total effective rainfall =      3.87(In)
      Peak flow rate in flood hydrograph =     60.12(CFS)
      ------------------------------------------------------------------------
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          12 - H O U R    S T O R M
                     R u n o f f      H y d r o g r a p h
      ------------------------------------------------------------------------
                  Hydrograph in   5   Minute intervals ((CFS))

      ------------------------------------------------------------------------
 Time(h+m) Volume Ac.Ft   Q(CFS)  0       17.5      35.0      52.5      70.0
 ------------------------------------------------------------------------
   0+ 5       0.0007      0.10  Q         |         |         |         |
   0+10       0.0047      0.58  Q         |         |         |         |
   0+15       0.0148      1.48  Q         |         |         |         |
   0+20       0.0274      1.83  VQ        |         |         |         |
   0+25       0.0415      2.04  VQ        |         |         |         |
   0+30       0.0565      2.18  VQ        |         |         |         |
   0+35       0.0722      2.28  VQ        |         |         |         |
   0+40       0.0883      2.35  VQ        |         |         |         |
   0+45       0.1048      2.39  VQ        |         |         |         |
   0+50       0.1214      2.42  VQ        |         |         |         |
   0+55       0.1383      2.44  VQ        |         |         |         |
   1+ 0       0.1553      2.47  VQ        |         |         |         |
   1+ 5       0.1725      2.50  |Q        |         |         |         |
```

```
1+10       0.1898      2.52  |Q        |         |         |         |
1+15       0.2073      2.54  |Q        |         |         |         |
1+20       0.2249      2.56  |Q        |         |         |         |
1+25       0.2426      2.58  |Q        |         |         |         |
1+30       0.2605      2.59  |Q        |         |         |         |
1+35       0.2785      2.62  |Q        |         |         |         |
1+40       0.2966      2.64  |Q        |         |         |         |
1+45       0.3149      2.66  |Q        |         |         |         |
1+50       0.3334      2.68  |QV       |         |         |         |
1+55       0.3520      2.70  |QV       |         |         |         |
2+ 0       0.3707      2.72  |QV       |         |         |         |
2+ 5       0.3896      2.75  |QV       |         |         |         |
2+10       0.4087      2.77  |QV       |         |         |         |
2+15       0.4279      2.79  |QV       |         |         |         |
2+20       0.4473      2.82  |QV       |         |         |         |
2+25       0.4669      2.84  |QV       |         |         |         |
2+30       0.4867      2.87  |Q V      |         |         |         |
2+35       0.5066      2.90  |Q V      |         |         |         |
2+40       0.5267      2.92  |Q V      |         |         |         |
2+45       0.5470      2.95  |Q V      |         |         |         |
2+50       0.5675      2.98  |Q V      |         |         |         |
2+55       0.5883      3.01  |Q V      |         |         |         |
3+ 0       0.6092      3.04  |Q V      |         |         |         |
3+ 5       0.6303      3.07  |Q V      |         |         |         |
3+10       0.6516      3.10  |Q  V     |         |         |         |
3+15       0.6732      3.13  |Q  V     |         |         |         |
3+20       0.6949      3.16  |Q  V     |         |         |         |
3+25       0.7170      3.20  |Q  V     |         |         |         |
3+30       0.7392      3.23  |Q  V     |         |         |         |
3+35       0.7617      3.27  |Q  V     |         |         |         |
3+40       0.7845      3.30  |Q  V     |         |         |         |
3+45       0.8075      3.34  |Q   V    |         |         |         |
3+50       0.8308      3.38  |Q   V    |         |         |         |
3+55       0.8543      3.42  |Q   V    |         |         |         |
4+ 0       0.8782      3.46  |Q   V    |         |         |         |
4+ 5       0.9026      3.55  | Q  V    |         |         |         |
4+10       0.9286      3.78  | Q  V    |         |         |         |
4+15       0.9574      4.18  | Q   V   |         |         |         |
4+20       0.9874      4.36  | Q   V   |         |         |         |
4+25       1.0184      4.49  | Q   V   |         |         |         |
4+30       1.0500      4.60  | Q   V   |         |         |         |
4+35       1.0823      4.69  | Q   V   |         |         |         |
4+40       1.1151      4.76  | Q    V  |         |         |         |
4+45       1.1484      4.83  | Q    V  |         |         |         |
4+50       1.1821      4.90  | Q    V  |         |         |         |
4+55       1.2164      4.97  | Q    V  |         |         |         |
5+ 0       1.2511      5.04  | Q    V  |         |         |         |
5+ 5       1.2863      5.11  | Q     V |         |         |         |
5+10       1.3220      5.18  | Q     V |         |         |         |
5+15       1.3582      5.26  |  Q    V |         |         |         |
5+20       1.3950      5.34  |  Q    V |         |         |         |
5+25       1.4323      5.42  |  Q     V|         |         |         |
5+30       1.4702      5.51  |  Q     V|         |         |         |
5+35       1.5088      5.60  |  Q     V|         |         |         |
5+40       1.5480      5.69  |  Q     V|         |         |         |
5+45       1.5879      5.79  |  Q      V         |         |         |
5+50       1.6285      5.89  |  Q      V         |         |         |
5+55       1.6698      6.01  |  Q      V         |         |         |
6+ 0       1.7120      6.12  |  Q      V         |         |         |
6+ 5       1.7550      6.25  |  Q      |V        |         |         |
6+10       1.7990      6.38  |  Q      |V        |         |         |
6+15       1.8440      6.54  |  Q      |V        |         |         |
6+20       1.8901      6.69  |  Q      |V        |         |         |
6+25       1.9374      6.86  |  Q      | V       |         |         |
6+30       1.9857      7.02  |   Q     | V       |         |         |
6+35       2.0354      7.21  |   Q     | V       |         |         |
6+40       2.0864      7.40  |   Q     |  V      |         |         |
6+45       2.1389      7.62  |   Q     |  V      |         |         |
6+50       2.1930      7.85  |   Q     |  V      |         |         |
6+55       2.2488      8.11  |   Q     |   V     |         |         |
7+ 0       2.3065      8.38  |   Q     |   V     |         |         |
```

```
 7+ 5       2.3664      8.70  |   Q     |    V    |         |         |
 7+10       2.4285      9.03  |    Q    |    V    |         |         |
 7+15       2.4935      9.43  |    Q    |    V    |         |         |
 7+20       2.5613      9.85  |    Q    |     V   |         |         |
 7+25       2.6323     10.31  |    Q    |     V   |         |         |
 7+30       2.7052     10.58  |     Q   |      V  |         |         |
 7+35       2.7791     10.74  |     Q   |      V  |         |         |
 7+40       2.8572     11.33  |     Q   |       V |         |         |
 7+45       2.9421     12.33  |      Q  |       V |         |         |
 7+50       3.0359     13.63  |      Q  |        V|         |         |
 7+55       3.1444     15.75  |        Q|        V|         |         |
 8+ 0       3.2762     19.13  |         Q         V         |         |
 8+ 5       3.4711     28.30  |          |     Q   | V       |         |
 8+10       3.7891     46.18  |          |         |   V Q   |         |
 8+15       4.2032     60.12  |          |         |     V   |   Q     |
 8+20       4.4443     35.01  |          |         Q       V |         |
 8+25       4.6193     25.41  |          |   Q     |         V|         |
 8+30       4.7578     20.12  |          |Q        |          V         |
 8+35       4.8730     16.73  |         Q|         |          V         |
 8+40       4.9686     13.89  |       Q  |         |          |V        |
 8+45       5.0484     11.58  |      Q   |         |          | V       |
 8+50       5.1182     10.14  |     Q    |         |          | V       |
 8+55       5.1820      9.26  |     Q    |         |          | V       |
 9+ 0       5.2412      8.60  |    Q     |         |          |  V      |
 9+ 5       5.2965      8.02  |    Q     |         |          |  V      |
 9+10       5.3476      7.42  |    Q     |         |          |  V      |
 9+15       5.3952      6.92  |   Q      |         |          |   V     |
 9+20       5.4402      6.54  |   Q      |         |          |   V     |
 9+25       5.4833      6.25  |   Q      |         |          |   V     |
 9+30       5.5247      6.01  |   Q      |         |          |    V    |
 9+35       5.5645      5.79  |   Q      |         |          |    V    |
 9+40       5.6030      5.59  |   Q      |         |          |    V    |
 9+45       5.6402      5.41  |   Q      |         |          |    V    |
 9+50       5.6764      5.25  |  Q       |         |          |    V    |
 9+55       5.7115      5.10  |  Q       |         |          |     V   |
10+ 0       5.7457      4.96  |  Q       |         |          |     V   |
10+ 5       5.7787      4.80  |  Q       |         |          |     V   |
10+10       5.8096      4.49  |  Q       |         |          |     V   |
10+15       5.8374      4.03  |  Q       |         |          |      V  |
10+20       5.8635      3.80  |  Q       |         |          |      V  |
10+25       5.8885      3.63  |  Q       |         |          |      V  |
10+30       5.9125      3.49  |Q         |         |          |      V  |
10+35       5.9358      3.38  |Q         |         |          |      V  |
10+40       5.9584      3.28  |Q         |         |          |      V  |
10+45       5.9805      3.20  |Q         |         |          |      V  |
10+50       6.0020      3.13  |Q         |         |          |       V |
10+55       6.0231      3.06  |Q         |         |          |       V |
11+ 0       6.0438      3.00  |Q         |         |          |       V |
11+ 5       6.0641      2.94  |Q         |         |          |       V |
11+10       6.0839      2.89  |Q         |         |          |       V |
11+15       6.1035      2.83  |Q         |         |          |       V |
11+20       6.1226      2.78  |Q         |         |          |       V |
11+25       6.1415      2.74  |Q         |         |          |       V |
11+30       6.1600      2.69  |Q         |         |          |        V|
11+35       6.1783      2.65  |Q         |         |          |        V|
11+40       6.1962      2.61  |Q         |         |          |        V|
11+45       6.2139      2.57  |Q         |         |          |        V|
11+50       6.2313      2.53  |Q         |         |          |        V|
11+55       6.2485      2.49  |Q         |         |          |        V|
12+ 0       6.2654      2.46  |Q         |         |          |        V|
12+ 5       6.2814      2.32  |Q         |         |          |        V|
12+10       6.2940      1.82  |Q         |         |          |        V|
12+15       6.3002      0.90  Q          |         |          |        V|
12+20       6.3039      0.55  Q          |         |          |        V|
12+25       6.3063      0.34  Q          |         |          |        V|
12+30       6.3077      0.21  Q          |         |          |        V|
12+35       6.3086      0.12  Q          |         |          |        V|
12+40       6.3091      0.07  Q          |         |          |        V|
12+45       6.3094      0.04  Q          |         |          |        V|
12+50       6.3096      0.03  Q          |         |          |        V|
12+55       6.3097      0.02  Q          |         |          |        V|
```

```
  13+ 0       6.3098      0.01  Q         |         |         |        V|
  13+ 5       6.3098      0.00  Q         |         |         |        V|
  13+10       6.3099      0.00  Q         |         |         |         V
-------------------------------------------------------------------------
```

- 100 Year 24 Hour Pre-Development Unit Hydrograph – Area 'B'

```
        U n i t   H y d r o g r a p h   A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989-2012, Version 7.2

        Study date  10/05/16   File Name EXB10024.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

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RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'B' - 100 YEAR 24 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

        Storm Event Year = 100

        Antecedent Moisture Condition = 3

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 80.2       7.8          0.40     D     0.200     1.000    0.200
 80.2      11.8          0.60     C     0.250     1.000    0.250

Area-averaged adjusted loss rate Fm (In/Hr) =  0.230

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC3)          Yield Fr
     7.84   0.400         80.2      94.1       0.62     0.878

    11.76   0.600         80.2      94.1       0.62     0.878

Area-averaged catchment yield fraction, Y =  0.878
Area-averaged low loss fraction, Yb =  0.122
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.208 (hours)
Watershed area =      19.60(Ac.)
Catchment Lag time =   0.167 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 49.9600
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.230(In/Hr)
Average low loss rate fraction (Yb) = 0.122 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.520(In)
Computed peak 30-minute rainfall =  1.090(In)
Specified peak 1-hour rainfall =  1.450(In)
Computed peak 3-hour rainfall =  2.430(In)
Specified peak 6-hour rainfall =  3.360(In)
Specified peak 24-hour rainfall =  5.630(In)


Rainfall depth area reduction factors:
Using a total area of      19.60(Ac.) (Ref: fig. E-4)
```

```
5-minute factor = 0.999     Adjusted rainfall =  0.520(In)
30-minute factor = 0.999    Adjusted rainfall =  1.089(In)
1-hour factor = 0.999       Adjusted rainfall =  1.449(In)
3-hour factor = 1.000       Adjusted rainfall =  2.430(In)
6-hour factor = 1.000       Adjusted rainfall =  3.360(In)
24-hour factor = 1.000 Adjusted rainfall =  5.630(In)
--------------------------------------------------------------------

                     U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------
               (K =       237.04 (CFS))

  1                4.275                  10.134
  2               24.503                  47.947
  3               62.763                  90.690
  4               77.446                  34.805
  5               85.826                  19.865
  6               91.281                  12.929
  7               94.886                   8.545
  8               97.115                   5.284
  9               98.196                   2.563
 10               98.746                   1.304
 11               99.147                   0.951
 12               99.496                   0.827
 13               99.798                   0.715
 14               99.949                   0.358
 15              100.000                   0.121
--------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.5195              0.5195
  2              0.6917              0.1722
  3              0.8179              0.1261
  4              0.9211              0.1032
  5              1.0100              0.0889
  6              1.0890              0.0790
  7              1.1604              0.0714
  8              1.2259              0.0656
  9              1.2869              0.0609
 10              1.3439              0.0571
 11              1.3977              0.0538
 12              1.4487              0.0510
 13              1.5043              0.0556
 14              1.5577              0.0534
 15              1.6091              0.0514
 16              1.6587              0.0496
 17              1.7068              0.0480
 18              1.7533              0.0465
 19              1.7985              0.0452
 20              1.8425              0.0440
 21              1.8853              0.0428
 22              1.9270              0.0417
 23              1.9677              0.0407
 24              2.0076              0.0398
 25              2.0465              0.0389
 26              2.0846              0.0381
 27              2.1220              0.0374
 28              2.1586              0.0366
 29              2.1946              0.0360
 30              2.2299              0.0353
 31              2.2646              0.0347
 32              2.2987              0.0341
 33              2.3322              0.0335
 34              2.3652              0.0330
 35              2.3977              0.0325
 36              2.4297              0.0320
 37              2.4610              0.0313
```

38	2.4919	0.0309
39	2.5224	0.0305
40	2.5524	0.0300
41	2.5821	0.0296
42	2.6113	0.0293
43	2.6402	0.0289
44	2.6687	0.0285
45	2.6969	0.0282
46	2.7248	0.0279
47	2.7523	0.0275
48	2.7796	0.0272
49	2.8065	0.0269
50	2.8331	0.0266
51	2.8595	0.0264
52	2.8856	0.0261
53	2.9114	0.0258
54	2.9369	0.0256
55	2.9622	0.0253
56	2.9873	0.0251
57	3.0121	0.0248
58	3.0367	0.0246
59	3.0611	0.0244
60	3.0852	0.0242
61	3.1092	0.0239
62	3.1329	0.0237
63	3.1564	0.0235
64	3.1798	0.0233
65	3.2029	0.0231
66	3.2258	0.0229
67	3.2486	0.0228
68	3.2712	0.0226
69	3.2936	0.0224
70	3.3158	0.0222
71	3.3379	0.0221
72	3.3598	0.0219
73	3.3771	0.0173
74	3.3942	0.0172
75	3.4113	0.0170
76	3.4281	0.0169
77	3.4448	0.0167
78	3.4614	0.0166
79	3.4779	0.0165
80	3.4942	0.0163
81	3.5104	0.0162
82	3.5265	0.0161
83	3.5425	0.0160
84	3.5583	0.0158
85	3.5740	0.0157
86	3.5896	0.0156
87	3.6051	0.0155
88	3.6205	0.0154
89	3.6357	0.0153
90	3.6509	0.0152
91	3.6659	0.0151
92	3.6809	0.0149
93	3.6957	0.0148
94	3.7105	0.0147
95	3.7251	0.0146
96	3.7397	0.0146
97	3.7541	0.0145
98	3.7685	0.0144
99	3.7828	0.0143
100	3.7970	0.0142
101	3.8111	0.0141
102	3.8251	0.0140
103	3.8390	0.0139
104	3.8528	0.0138
105	3.8666	0.0138
106	3.8803	0.0137
107	3.8938	0.0136
108	3.9074	0.0135

109	3.9208	0.0134
110	3.9341	0.0134
111	3.9474	0.0133
112	3.9606	0.0132
113	3.9738	0.0131
114	3.9868	0.0131
115	3.9998	0.0130
116	4.0127	0.0129
117	4.0256	0.0128
118	4.0383	0.0128
119	4.0511	0.0127
120	4.0637	0.0126
121	4.0763	0.0126
122	4.0888	0.0125
123	4.1012	0.0124
124	4.1136	0.0124
125	4.1259	0.0123
126	4.1382	0.0123
127	4.1504	0.0122
128	4.1625	0.0121
129	4.1746	0.0121
130	4.1866	0.0120
131	4.1986	0.0120
132	4.2105	0.0119
133	4.2224	0.0118
134	4.2341	0.0118
135	4.2459	0.0117
136	4.2576	0.0117
137	4.2692	0.0116
138	4.2808	0.0116
139	4.2923	0.0115
140	4.3038	0.0115
141	4.3152	0.0114
142	4.3266	0.0114
143	4.3379	0.0113
144	4.3492	0.0113
145	4.3604	0.0112
146	4.3716	0.0112
147	4.3827	0.0111
148	4.3938	0.0111
149	4.4048	0.0110
150	4.4158	0.0110
151	4.4267	0.0109
152	4.4376	0.0109
153	4.4485	0.0108
154	4.4593	0.0108
155	4.4700	0.0108
156	4.4807	0.0107
157	4.4914	0.0107
158	4.5020	0.0106
159	4.5126	0.0106
160	4.5232	0.0105
161	4.5337	0.0105
162	4.5441	0.0105
163	4.5546	0.0104
164	4.5650	0.0104
165	4.5753	0.0103
166	4.5856	0.0103
167	4.5959	0.0103
168	4.6061	0.0102
169	4.6163	0.0102
170	4.6264	0.0102
171	4.6366	0.0101
172	4.6466	0.0101
173	4.6567	0.0100
174	4.6667	0.0100
175	4.6767	0.0100
176	4.6866	0.0099
177	4.6965	0.0099
178	4.7063	0.0099
179	4.7162	0.0098

180	4.7260	0.0098
181	4.7357	0.0098
182	4.7455	0.0097
183	4.7551	0.0097
184	4.7648	0.0097
185	4.7744	0.0096
186	4.7840	0.0096
187	4.7936	0.0096
188	4.8031	0.0095
189	4.8126	0.0095
190	4.8221	0.0095
191	4.8315	0.0094
192	4.8409	0.0094
193	4.8503	0.0094
194	4.8596	0.0093
195	4.8689	0.0093
196	4.8782	0.0093
197	4.8875	0.0093
198	4.8967	0.0092
199	4.9059	0.0092
200	4.9151	0.0092
201	4.9242	0.0091
202	4.9333	0.0091
203	4.9424	0.0091
204	4.9514	0.0091
205	4.9605	0.0090
206	4.9695	0.0090
207	4.9784	0.0090
208	4.9874	0.0089
209	4.9963	0.0089
210	5.0052	0.0089
211	5.0140	0.0089
212	5.0229	0.0088
213	5.0317	0.0088
214	5.0405	0.0088
215	5.0492	0.0088
216	5.0580	0.0087
217	5.0667	0.0087
218	5.0753	0.0087
219	5.0840	0.0087
220	5.0926	0.0086
221	5.1012	0.0086
222	5.1098	0.0086
223	5.1184	0.0086
224	5.1269	0.0085
225	5.1354	0.0085
226	5.1439	0.0085
227	5.1524	0.0085
228	5.1608	0.0084
229	5.1692	0.0084
230	5.1776	0.0084
231	5.1860	0.0084
232	5.1943	0.0083
233	5.2027	0.0083
234	5.2110	0.0083
235	5.2193	0.0083
236	5.2275	0.0083
237	5.2358	0.0082
238	5.2440	0.0082
239	5.2522	0.0082
240	5.2603	0.0082
241	5.2685	0.0082
242	5.2766	0.0081
243	5.2847	0.0081
244	5.2928	0.0081
245	5.3009	0.0081
246	5.3089	0.0080
247	5.3170	0.0080
248	5.3250	0.0080
249	5.3329	0.0080
250	5.3409	0.0080

251	5.3489	0.0079
252	5.3568	0.0079
253	5.3647	0.0079
254	5.3726	0.0079
255	5.3804	0.0079
256	5.3883	0.0078
257	5.3961	0.0078
258	5.4039	0.0078
259	5.4117	0.0078
260	5.4195	0.0078
261	5.4272	0.0078
262	5.4350	0.0077
263	5.4427	0.0077
264	5.4504	0.0077
265	5.4581	0.0077
266	5.4657	0.0077
267	5.4734	0.0076
268	5.4810	0.0076
269	5.4886	0.0076
270	5.4962	0.0076
271	5.5038	0.0076
272	5.5113	0.0076
273	5.5188	0.0075
274	5.5264	0.0075
275	5.5339	0.0075
276	5.5413	0.0075
277	5.5488	0.0075
278	5.5563	0.0075
279	5.5637	0.0074
280	5.5711	0.0074
281	5.5785	0.0074
282	5.5859	0.0074
283	5.5933	0.0074
284	5.6006	0.0074
285	5.6080	0.0073
286	5.6153	0.0073
287	5.6226	0.0073
288	5.6299	0.0073

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0073	0.0009	0.0064
2	0.0073	0.0009	0.0064
3	0.0073	0.0009	0.0064
4	0.0074	0.0009	0.0065
5	0.0074	0.0009	0.0065
6	0.0074	0.0009	0.0065
7	0.0074	0.0009	0.0065
8	0.0075	0.0009	0.0065
9	0.0075	0.0009	0.0066
10	0.0075	0.0009	0.0066
11	0.0075	0.0009	0.0066
12	0.0076	0.0009	0.0066
13	0.0076	0.0009	0.0067
14	0.0076	0.0009	0.0067
15	0.0076	0.0009	0.0067
16	0.0077	0.0009	0.0067
17	0.0077	0.0009	0.0068
18	0.0077	0.0009	0.0068
19	0.0078	0.0009	0.0068
20	0.0078	0.0009	0.0068
21	0.0078	0.0010	0.0069
22	0.0078	0.0010	0.0069
23	0.0079	0.0010	0.0069
24	0.0079	0.0010	0.0069
25	0.0079	0.0010	0.0070
26	0.0079	0.0010	0.0070
27	0.0080	0.0010	0.0070
28	0.0080	0.0010	0.0070

29	0.0080	0.0010	0.0071
30	0.0081	0.0010	0.0071
31	0.0081	0.0010	0.0071
32	0.0081	0.0010	0.0071
33	0.0082	0.0010	0.0072
34	0.0082	0.0010	0.0072
35	0.0082	0.0010	0.0072
36	0.0083	0.0010	0.0073
37	0.0083	0.0010	0.0073
38	0.0083	0.0010	0.0073
39	0.0084	0.0010	0.0074
40	0.0084	0.0010	0.0074
41	0.0084	0.0010	0.0074
42	0.0085	0.0010	0.0074
43	0.0085	0.0010	0.0075
44	0.0085	0.0010	0.0075
45	0.0086	0.0010	0.0075
46	0.0086	0.0010	0.0076
47	0.0087	0.0011	0.0076
48	0.0087	0.0011	0.0076
49	0.0087	0.0011	0.0077
50	0.0088	0.0011	0.0077
51	0.0088	0.0011	0.0077
52	0.0088	0.0011	0.0078
53	0.0089	0.0011	0.0078
54	0.0089	0.0011	0.0078
55	0.0090	0.0011	0.0079
56	0.0090	0.0011	0.0079
57	0.0091	0.0011	0.0079
58	0.0091	0.0011	0.0080
59	0.0091	0.0011	0.0080
60	0.0092	0.0011	0.0080
61	0.0092	0.0011	0.0081
62	0.0093	0.0011	0.0081
63	0.0093	0.0011	0.0082
64	0.0093	0.0011	0.0082
65	0.0094	0.0011	0.0083
66	0.0094	0.0011	0.0083
67	0.0095	0.0012	0.0083
68	0.0095	0.0012	0.0084
69	0.0096	0.0012	0.0084
70	0.0096	0.0012	0.0085
71	0.0097	0.0012	0.0085
72	0.0097	0.0012	0.0085
73	0.0098	0.0012	0.0086
74	0.0098	0.0012	0.0086
75	0.0099	0.0012	0.0087
76	0.0099	0.0012	0.0087
77	0.0100	0.0012	0.0088
78	0.0100	0.0012	0.0088
79	0.0101	0.0012	0.0089
80	0.0102	0.0012	0.0089
81	0.0102	0.0012	0.0090
82	0.0103	0.0013	0.0090
83	0.0103	0.0013	0.0091
84	0.0104	0.0013	0.0091
85	0.0105	0.0013	0.0092
86	0.0105	0.0013	0.0092
87	0.0106	0.0013	0.0093
88	0.0106	0.0013	0.0093
89	0.0107	0.0013	0.0094
90	0.0108	0.0013	0.0094
91	0.0108	0.0013	0.0095
92	0.0109	0.0013	0.0096
93	0.0110	0.0013	0.0096
94	0.0110	0.0013	0.0097
95	0.0111	0.0014	0.0098
96	0.0112	0.0014	0.0098
97	0.0113	0.0014	0.0099
98	0.0113	0.0014	0.0099
99	0.0114	0.0014	0.0100

100	0.0115	0.0014	0.0101
101	0.0116	0.0014	0.0102
102	0.0116	0.0014	0.0102
103	0.0117	0.0014	0.0103
104	0.0118	0.0014	0.0104
105	0.0119	0.0015	0.0105
106	0.0120	0.0015	0.0105
107	0.0121	0.0015	0.0106
108	0.0121	0.0015	0.0107
109	0.0123	0.0015	0.0108
110	0.0123	0.0015	0.0108
111	0.0124	0.0015	0.0109
112	0.0125	0.0015	0.0110
113	0.0126	0.0015	0.0111
114	0.0127	0.0015	0.0112
115	0.0128	0.0016	0.0113
116	0.0129	0.0016	0.0113
117	0.0131	0.0016	0.0115
118	0.0131	0.0016	0.0115
119	0.0133	0.0016	0.0117
120	0.0134	0.0016	0.0117
121	0.0135	0.0016	0.0119
122	0.0136	0.0017	0.0119
123	0.0138	0.0017	0.0121
124	0.0138	0.0017	0.0122
125	0.0140	0.0017	0.0123
126	0.0141	0.0017	0.0124
127	0.0143	0.0017	0.0125
128	0.0144	0.0018	0.0126
129	0.0146	0.0018	0.0128
130	0.0146	0.0018	0.0129
131	0.0148	0.0018	0.0130
132	0.0149	0.0018	0.0131
133	0.0152	0.0018	0.0133
134	0.0153	0.0019	0.0134
135	0.0155	0.0019	0.0136
136	0.0156	0.0019	0.0137
137	0.0158	0.0019	0.0139
138	0.0160	0.0019	0.0140
139	0.0162	0.0020	0.0142
140	0.0163	0.0020	0.0143
141	0.0166	0.0020	0.0146
142	0.0167	0.0020	0.0147
143	0.0170	0.0021	0.0149
144	0.0172	0.0021	0.0151
145	0.0219	0.0027	0.0192
146	0.0221	0.0027	0.0194
147	0.0224	0.0027	0.0197
148	0.0226	0.0028	0.0198
149	0.0229	0.0028	0.0202
150	0.0231	0.0028	0.0203
151	0.0235	0.0029	0.0207
152	0.0237	0.0029	0.0208
153	0.0242	0.0029	0.0212
154	0.0244	0.0030	0.0214
155	0.0248	0.0030	0.0218
156	0.0251	0.0031	0.0220
157	0.0256	0.0031	0.0224
158	0.0258	0.0031	0.0227
159	0.0264	0.0032	0.0231
160	0.0266	0.0032	0.0234
161	0.0272	0.0033	0.0239
162	0.0275	0.0034	0.0242
163	0.0282	0.0034	0.0248
164	0.0285	0.0035	0.0251
165	0.0293	0.0036	0.0257
166	0.0296	0.0036	0.0260
167	0.0305	0.0037	0.0267
168	0.0309	0.0038	0.0271
169	0.0320	0.0039	0.0281
170	0.0325	0.0040	0.0285

171	0.0335	0.0041	0.0295
172	0.0341	0.0042	0.0299
173	0.0353	0.0043	0.0310
174	0.0360	0.0044	0.0316
175	0.0374	0.0046	0.0328
176	0.0381	0.0046	0.0335
177	0.0398	0.0049	0.0350
178	0.0407	0.0050	0.0358
179	0.0428	0.0052	0.0376
180	0.0440	0.0054	0.0386
181	0.0465	0.0057	0.0409
182	0.0480	0.0059	0.0422
183	0.0514	0.0063	0.0452
184	0.0534	0.0065	0.0469
185	0.0510	0.0062	0.0448
186	0.0538	0.0066	0.0472
187	0.0609	0.0074	0.0535
188	0.0656	0.0080	0.0576
189	0.0790	0.0096	0.0694
190	0.0889	0.0108	0.0781
191	0.1261	0.0154	0.1108
192	0.1722	0.0192	0.1531
193	0.5195	0.0192	0.5004
194	0.1032	0.0126	0.0906
195	0.0714	0.0087	0.0627
196	0.0571	0.0070	0.0501
197	0.0556	0.0068	0.0488
198	0.0496	0.0060	0.0436
199	0.0452	0.0055	0.0397
200	0.0417	0.0051	0.0367
201	0.0389	0.0047	0.0342
202	0.0366	0.0045	0.0322
203	0.0347	0.0042	0.0305
204	0.0330	0.0040	0.0290
205	0.0313	0.0038	0.0275
206	0.0300	0.0037	0.0264
207	0.0289	0.0035	0.0254
208	0.0279	0.0034	0.0245
209	0.0269	0.0033	0.0236
210	0.0261	0.0032	0.0229
211	0.0253	0.0031	0.0222
212	0.0246	0.0030	0.0216
213	0.0239	0.0029	0.0210
214	0.0233	0.0028	0.0205
215	0.0228	0.0028	0.0200
216	0.0222	0.0027	0.0195
217	0.0173	0.0021	0.0152
218	0.0169	0.0021	0.0148
219	0.0165	0.0020	0.0145
220	0.0161	0.0020	0.0141
221	0.0157	0.0019	0.0138
222	0.0154	0.0019	0.0135
223	0.0151	0.0018	0.0132
224	0.0147	0.0018	0.0130
225	0.0145	0.0018	0.0127
226	0.0142	0.0017	0.0125
227	0.0139	0.0017	0.0122
228	0.0137	0.0017	0.0120
229	0.0134	0.0016	0.0118
230	0.0132	0.0016	0.0116
231	0.0130	0.0016	0.0114
232	0.0128	0.0016	0.0112
233	0.0126	0.0015	0.0110
234	0.0124	0.0015	0.0109
235	0.0122	0.0015	0.0107
236	0.0120	0.0015	0.0106
237	0.0118	0.0014	0.0104
238	0.0117	0.0014	0.0103
239	0.0115	0.0014	0.0101
240	0.0114	0.0014	0.0100
241	0.0112	0.0014	0.0099

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      242              0.0111           0.0013              0.0097
      243              0.0109           0.0013              0.0096
      244              0.0108           0.0013              0.0095
      245              0.0107           0.0013              0.0094
      246              0.0105           0.0013              0.0093
      247              0.0104           0.0013              0.0092
      248              0.0103           0.0013              0.0090
      249              0.0102           0.0012              0.0089
      250              0.0101           0.0012              0.0088
      251              0.0100           0.0012              0.0088
      252              0.0099           0.0012              0.0087
      253              0.0098           0.0012              0.0086
      254              0.0097           0.0012              0.0085
      255              0.0096           0.0012              0.0084
      256              0.0095           0.0012              0.0083
      257              0.0094           0.0011              0.0082
      258              0.0093           0.0011              0.0082
      259              0.0092           0.0011              0.0081
      260              0.0091           0.0011              0.0080
      261              0.0090           0.0011              0.0079
      262              0.0089           0.0011              0.0079
      263              0.0089           0.0011              0.0078
      264              0.0088           0.0011              0.0077
      265              0.0087           0.0011              0.0076
      266              0.0086           0.0011              0.0076
      267              0.0086           0.0010              0.0075
      268              0.0085           0.0010              0.0075
      269              0.0084           0.0010              0.0074
      270              0.0083           0.0010              0.0073
      271              0.0083           0.0010              0.0073
      272              0.0082           0.0010              0.0072
      273              0.0082           0.0010              0.0072
      274              0.0081           0.0010              0.0071
      275              0.0080           0.0010              0.0070
      276              0.0080           0.0010              0.0070
      277              0.0079           0.0010              0.0069
      278              0.0078           0.0010              0.0069
      279              0.0078           0.0009              0.0068
      280              0.0077           0.0009              0.0068
      281              0.0077           0.0009              0.0067
      282              0.0076           0.0009              0.0067
      283              0.0076           0.0009              0.0066
      284              0.0075           0.0009              0.0066
      285              0.0075           0.0009              0.0066
      286              0.0074           0.0009              0.0065
      287              0.0074           0.0009              0.0065
      288              0.0073           0.0009              0.0064
      ------------------------------------------------------------------------
      ------------------------------------------------------------------------
      Total soil rain loss =      0.64(In)
      Total effective rainfall =      4.99(In)
      Peak flow rate in flood hydrograph =     60.12(CFS)
      ------------------------------------------------------------------------
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          24 - H O U R    S T O R M
                     R u n o f f      H y d r o g r a p h
      ------------------------------------------------------------------------
                  Hydrograph in   5   Minute intervals ((CFS))

      ------------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0       17.5      35.0      52.5      70.0
------------------------------------------------------------------------
  0+ 5       0.0004      0.06  Q         |         |         |         |
  0+10       0.0030      0.37  Q         |         |         |         |
  0+15       0.0096      0.95  Q         |         |         |         |
  0+20       0.0177      1.18  Q         |         |         |         |
  0+25       0.0267      1.31  Q         |         |         |         |
  0+30       0.0363      1.40  Q         |         |         |         |
  0+35       0.0464      1.46  Q         |         |         |         |
  0+40       0.0566      1.49  Q         |         |         |         |
  0+45       0.0671      1.52  Q         |         |         |         |
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0+50       0.0776      1.53  Q          |          |          |          |
0+55       0.0882      1.54  Q          |          |          |          |
1+ 0       0.0989      1.55  Q          |          |          |          |
1+ 5       0.1097      1.56  Q          |          |          |          |
1+10       0.1205      1.57  Q          |          |          |          |
1+15       0.1313      1.58  Q          |          |          |          |
1+20       0.1422      1.58  Q          |          |          |          |
1+25       0.1531      1.59  Q          |          |          |          |
1+30       0.1641      1.59  Q          |          |          |          |
1+35       0.1751      1.60  Q          |          |          |          |
1+40       0.1861      1.60  Q          |          |          |          |
1+45       0.1972      1.61  Q          |          |          |          |
1+50       0.2083      1.61  QV         |          |          |          |
1+55       0.2195      1.62  QV         |          |          |          |
2+ 0       0.2307      1.63  QV         |          |          |          |
2+ 5       0.2419      1.63  QV         |          |          |          |
2+10       0.2532      1.64  QV         |          |          |          |
2+15       0.2646      1.64  QV         |          |          |          |
2+20       0.2759      1.65  QV         |          |          |          |
2+25       0.2873      1.66  QV         |          |          |          |
2+30       0.2988      1.66  QV         |          |          |          |
2+35       0.3103      1.67  QV         |          |          |          |
2+40       0.3218      1.68  QV         |          |          |          |
2+45       0.3334      1.68  QV         |          |          |          |
2+50       0.3451      1.69  QV         |          |          |          |
2+55       0.3567      1.70  QV         |          |          |          |
3+ 0       0.3685      1.70  QV         |          |          |          |
3+ 5       0.3802      1.71  QV         |          |          |          |
3+10       0.3920      1.72  QV         |          |          |          |
3+15       0.4039      1.72  QV         |          |          |          |
3+20       0.4158      1.73  Q V        |          |          |          |
3+25       0.4278      1.74  Q V        |          |          |          |
3+30       0.4398      1.74  Q V        |          |          |          |
3+35       0.4519      1.75  |QV        |          |          |          |
3+40       0.4640      1.76  |QV        |          |          |          |
3+45       0.4761      1.77  |QV        |          |          |          |
3+50       0.4883      1.77  |QV        |          |          |          |
3+55       0.5006      1.78  |QV        |          |          |          |
4+ 0       0.5129      1.79  |QV        |          |          |          |
4+ 5       0.5253      1.80  |QV        |          |          |          |
4+10       0.5377      1.80  |QV        |          |          |          |
4+15       0.5502      1.81  |QV        |          |          |          |
4+20       0.5627      1.82  |QV        |          |          |          |
4+25       0.5753      1.83  |QV        |          |          |          |
4+30       0.5879      1.84  |QV        |          |          |          |
4+35       0.6006      1.84  |QV        |          |          |          |
4+40       0.6134      1.85  |Q V       |          |          |          |
4+45       0.6262      1.86  |Q V       |          |          |          |
4+50       0.6390      1.87  |Q V       |          |          |          |
4+55       0.6520      1.88  |Q V       |          |          |          |
5+ 0       0.6650      1.89  |Q V       |          |          |          |
5+ 5       0.6780      1.89  |Q V       |          |          |          |
5+10       0.6911      1.90  |Q V       |          |          |          |
5+15       0.7043      1.91  |Q V       |          |          |          |
5+20       0.7175      1.92  |Q V       |          |          |          |
5+25       0.7308      1.93  |Q V       |          |          |          |
5+30       0.7442      1.94  |Q V       |          |          |          |
5+35       0.7576      1.95  |Q V       |          |          |          |
5+40       0.7711      1.96  |Q V       |          |          |          |
5+45       0.7847      1.97  |Q V       |          |          |          |
5+50       0.7983      1.98  |Q V       |          |          |          |
5+55       0.8120      1.99  |Q V       |          |          |          |
6+ 0       0.8258      2.00  |Q  V      |          |          |          |
6+ 5       0.8396      2.01  |Q  V      |          |          |          |
6+10       0.8535      2.02  |Q  V      |          |          |          |
6+15       0.8675      2.03  |Q  V      |          |          |          |
6+20       0.8815      2.04  |Q  V      |          |          |          |
6+25       0.8957      2.05  |Q  V      |          |          |          |
6+30       0.9099      2.06  |Q  V      |          |          |          |
6+35       0.9242      2.07  |Q  V      |          |          |          |
6+40       0.9385      2.08  |Q  V      |          |          |          |
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 6+45       0.9530      2.10  |Q  V     |          |          |          |
 6+50       0.9675      2.11  |Q  V     |          |          |          |
 6+55       0.9821      2.12  |Q  V     |          |          |          |
 7+ 0       0.9967      2.13  |Q  V     |          |          |          |
 7+ 5       1.0115      2.14  |Q  V     |          |          |          |
 7+10       1.0264      2.16  |Q   V    |          |          |          |
 7+15       1.0413      2.17  |Q   V    |          |          |          |
 7+20       1.0563      2.18  |Q   V    |          |          |          |
 7+25       1.0714      2.19  |Q   V    |          |          |          |
 7+30       1.0866      2.21  |Q   V    |          |          |          |
 7+35       1.1019      2.22  |Q   V    |          |          |          |
 7+40       1.1173      2.23  |Q   V    |          |          |          |
 7+45       1.1328      2.25  |Q   V    |          |          |          |
 7+50       1.1483      2.26  |Q   V    |          |          |          |
 7+55       1.1640      2.28  |Q   V    |          |          |          |
 8+ 0       1.1798      2.29  |Q   V    |          |          |          |
 8+ 5       1.1956      2.30  |Q   V    |          |          |          |
 8+10       1.2116      2.32  |Q   V    |          |          |          |
 8+15       1.2277      2.33  |Q    V   |          |          |          |
 8+20       1.2439      2.35  |Q    V   |          |          |          |
 8+25       1.2601      2.37  |Q    V   |          |          |          |
 8+30       1.2765      2.38  |Q    V   |          |          |          |
 8+35       1.2930      2.40  |Q    V   |          |          |          |
 8+40       1.3097      2.41  |Q    V   |          |          |          |
 8+45       1.3264      2.43  |Q    V   |          |          |          |
 8+50       1.3432      2.45  |Q    V   |          |          |          |
 8+55       1.3602      2.46  |Q    V   |          |          |          |
 9+ 0       1.3773      2.48  |Q    V   |          |          |          |
 9+ 5       1.3945      2.50  |Q    V   |          |          |          |
 9+10       1.4119      2.52  |Q    V   |          |          |          |
 9+15       1.4293      2.54  |Q     V  |          |          |          |
 9+20       1.4469      2.56  |Q     V  |          |          |          |
 9+25       1.4647      2.58  |Q     V  |          |          |          |
 9+30       1.4826      2.59  |Q     V  |          |          |          |
 9+35       1.5006      2.62  |Q     V  |          |          |          |
 9+40       1.5187      2.64  |Q     V  |          |          |          |
 9+45       1.5370      2.66  |Q     V  |          |          |          |
 9+50       1.5555      2.68  |Q     V  |          |          |          |
 9+55       1.5741      2.70  |Q     V  |          |          |          |
10+ 0       1.5928      2.72  |Q     V  |          |          |          |
10+ 5       1.6117      2.75  |Q     V  |          |          |          |
10+10       1.6308      2.77  |Q      V |          |          |          |
10+15       1.6500      2.79  |Q      V |          |          |          |
10+20       1.6694      2.82  |Q      V |          |          |          |
10+25       1.6890      2.84  |Q      V |          |          |          |
10+30       1.7088      2.87  |Q      V |          |          |          |
10+35       1.7287      2.90  |Q      V |          |          |          |
10+40       1.7488      2.92  |Q      V |          |          |          |
10+45       1.7691      2.95  |Q      V |          |          |          |
10+50       1.7896      2.98  |Q      V |          |          |          |
10+55       1.8103      3.01  |Q      V |          |          |          |
11+ 0       1.8312      3.04  |Q      V |          |          |          |
11+ 5       1.8524      3.07  |Q       V|          |          |          |
11+10       1.8737      3.10  |Q       V|          |          |          |
11+15       1.8953      3.13  |Q       V|          |          |          |
11+20       1.9170      3.16  |Q       V|          |          |          |
11+25       1.9390      3.20  |Q       V|          |          |          |
11+30       1.9613      3.23  |Q       V|          |          |          |
11+35       1.9838      3.27  |Q       V|          |          |          |
11+40       2.0065      3.30  |Q       V|          |          |          |
11+45       2.0296      3.34  |Q       V|          |          |          |
11+50       2.0528      3.38  |Q        V          |          |          |
11+55       2.0764      3.42  |Q        V          |          |          |
12+ 0       2.1003      3.46  |Q        V          |          |          |
12+ 5       2.1247      3.55  | Q       V          |          |          |
12+10       2.1507      3.78  | Q       V          |          |          |
12+15       2.1795      4.18  | Q       V          |          |          |
12+20       2.2095      4.36  | Q       V          |          |          |
12+25       2.2405      4.49  | Q       |V         |          |          |
12+30       2.2721      4.60  | Q       |V         |          |          |
12+35       2.3044      4.69  | Q       |V         |          |          |
```

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12+40      2.3372     4.76  | Q       |V        |         |         |
12+45      2.3705     4.83  | Q       |V        |         |         |
12+50      2.4042     4.90  | Q       |V        |         |         |
12+55      2.4385     4.97  | Q       |V        |         |         |
13+ 0      2.4731     5.04  | Q       | V       |         |         |
13+ 5      2.5084     5.11  | Q       | V       |         |         |
13+10      2.5441     5.18  | Q       | V       |         |         |
13+15      2.5803     5.26  |  Q      | V       |         |         |
13+20      2.6171     5.34  |  Q      | V       |         |         |
13+25      2.6544     5.42  |  Q      |  V      |         |         |
13+30      2.6923     5.51  |  Q      |  V      |         |         |
13+35      2.7309     5.60  |  Q      |  V      |         |         |
13+40      2.7701     5.69  |  Q      |  V      |         |         |
13+45      2.8100     5.79  |  Q      |  V      |         |         |
13+50      2.8506     5.89  |  Q      |  V      |         |         |
13+55      2.8919     6.01  |  Q      |   V     |         |         |
14+ 0      2.9341     6.12  |  Q      |   V     |         |         |
14+ 5      2.9771     6.25  |  Q      |   V     |         |         |
14+10      3.0211     6.38  |  Q      |   V     |         |         |
14+15      3.0661     6.54  |  Q      |    V    |         |         |
14+20      3.1122     6.69  |  Q      |    V    |         |         |
14+25      3.1595     6.86  |  Q      |    V    |         |         |
14+30      3.2078     7.02  |   Q     |    V    |         |         |
14+35      3.2575     7.21  |   Q     |    V    |         |         |
14+40      3.3085     7.40  |   Q     |     V   |         |         |
14+45      3.3610     7.62  |   Q     |     V   |         |         |
14+50      3.4150     7.85  |   Q     |     V   |         |         |
14+55      3.4709     8.11  |   Q     |      V  |         |         |
15+ 0      3.5286     8.38  |   Q     |      V  |         |         |
15+ 5      3.5885     8.70  |   Q     |      V  |         |         |
15+10      3.6506     9.03  |    Q    |      V  |         |         |
15+15      3.7156     9.43  |    Q    |       V |         |         |
15+20      3.7834     9.85  |    Q    |       V |         |         |
15+25      3.8544    10.31  |    Q    |       V |         |         |
15+30      3.9273    10.58  |     Q   |        V|         |         |
15+35      4.0012    10.74  |     Q   |        V|         |         |
15+40      4.0793    11.33  |     Q   |         V         |         |
15+45      4.1641    12.33  |      Q  |         V         |         |
15+50      4.2580    13.63  |      Q  |         V         |         |
15+55      4.3665    15.75  |        Q|         |V        |         |
16+ 0      4.4983    19.13  |         Q         | V       |         |
16+ 5      4.6932    28.30  |          |     Q  |  V      |         |
16+10      5.0112    46.18  |          |        |   V Q   |         |
16+15      5.4253    60.12  |          |        |     V   |   Q     |
16+20      5.6664    35.01  |          |        Q      V  |         |
16+25      5.8414    25.41  |          |   Q    |       V |         |
16+30      5.9799    20.12  |          |Q       |        V|         |
16+35      6.0951    16.73  |         Q|        |        V|         |
16+40      6.1907    13.89  |       Q  |        |         V         |
16+45      6.2705    11.58  |      Q   |        |         V         |
16+50      6.3403    10.14  |     Q    |        |         |V        |
16+55      6.4041     9.26  |     Q    |        |         |V        |
17+ 0      6.4633     8.60  |    Q     |        |         |V        |
17+ 5      6.5186     8.02  |    Q     |        |         | V       |
17+10      6.5697     7.42  |    Q     |        |         | V       |
17+15      6.6173     6.92  |  Q       |        |         | V       |
17+20      6.6623     6.54  |  Q       |        |         | V       |
17+25      6.7054     6.25  |  Q       |        |         | V       |
17+30      6.7467     6.01  |  Q       |        |         |  V      |
17+35      6.7866     5.79  |  Q       |        |         |  V      |
17+40      6.8251     5.59  |  Q       |        |         |  V      |
17+45      6.8623     5.41  |  Q       |        |         |  V      |
17+50      6.8985     5.25  | Q        |        |         |  V      |
17+55      6.9336     5.10  | Q        |        |         |   V     |
18+ 0      6.9678     4.96  | Q        |        |         |   V     |
18+ 5      7.0008     4.80  | Q        |        |         |   V     |
18+10      7.0317     4.49  | Q        |        |         |   V     |
18+15      7.0595     4.03  | Q        |        |         |   V     |
18+20      7.0856     3.80  | Q        |        |         |   V     |
18+25      7.1106     3.63  | Q        |        |         |   V     |
18+30      7.1346     3.49  |Q         |        |         |    V    |
```

18+35	7.1579	3.38	|Q	|	|	|	V |
18+40	7.1805	3.28	|Q	|	|	|	V |
18+45	7.2026	3.20	|Q	|	|	|	V |
18+50	7.2241	3.13	|Q	|	|	|	V |
18+55	7.2452	3.06	|Q	|	|	|	V |
19+ 0	7.2659	3.00	|Q	|	|	|	V |
19+ 5	7.2862	2.94	|Q	|	|	|	V |
19+10	7.3060	2.89	|Q	|	|	|	V |
19+15	7.3256	2.83	|Q	|	|	|	V |
19+20	7.3447	2.78	|Q	|	|	|	V |
19+25	7.3636	2.74	|Q	|	|	|	V |
19+30	7.3821	2.69	|Q	|	|	|	V |
19+35	7.4004	2.65	|Q	|	|	|	V |
19+40	7.4183	2.61	|Q	|	|	|	V |
19+45	7.4360	2.57	|Q	|	|	|	V |
19+50	7.4534	2.53	|Q	|	|	|	V |
19+55	7.4706	2.49	|Q	|	|	|	V |
20+ 0	7.4875	2.46	|Q	|	|	|	V |
20+ 5	7.5042	2.42	|Q	|	|	|	V |
20+10	7.5207	2.39	|Q	|	|	|	V |
20+15	7.5369	2.36	|Q	|	|	|	V |
20+20	7.5530	2.33	|Q	|	|	|	V |
20+25	7.5688	2.30	|Q	|	|	|	V |
20+30	7.5844	2.27	|Q	|	|	|	V |
20+35	7.5999	2.24	|Q	|	|	|	V |
20+40	7.6151	2.21	|Q	|	|	|	V |
20+45	7.6302	2.19	|Q	|	|	|	V |
20+50	7.6451	2.16	|Q	|	|	|	V |
20+55	7.6598	2.14	|Q	|	|	|	V |
21+ 0	7.6744	2.11	|Q	|	|	|	V |
21+ 5	7.6888	2.09	|Q	|	|	|	V |
21+10	7.7030	2.07	|Q	|	|	|	V |
21+15	7.7171	2.05	|Q	|	|	|	V |
21+20	7.7311	2.03	|Q	|	|	|	V |
21+25	7.7449	2.00	|Q	|	|	|	V |
21+30	7.7585	1.98	|Q	|	|	|	V |
21+35	7.7721	1.96	|Q	|	|	|	V |
21+40	7.7855	1.95	|Q	|	|	|	V |
21+45	7.7987	1.93	|Q	|	|	|	V |
21+50	7.8119	1.91	|Q	|	|	|	V |
21+55	7.8249	1.89	|Q	|	|	|	V |
22+ 0	7.8378	1.87	|Q	|	|	|	V |
22+ 5	7.8506	1.86	|Q	|	|	|	V |
22+10	7.8633	1.84	|Q	|	|	|	V |
22+15	7.8758	1.82	|Q	|	|	|	V |
22+20	7.8883	1.81	|Q	|	|	|	V |
22+25	7.9006	1.79	|Q	|	|	|	V |
22+30	7.9129	1.78	|Q	|	|	|	V |
22+35	7.9250	1.76	|Q	|	|	|	V |
22+40	7.9370	1.75	Q	|	|	|	V |
22+45	7.9490	1.73	Q	|	|	|	V|
22+50	7.9608	1.72	Q	|	|	|	V|
22+55	7.9726	1.71	Q	|	|	|	V|
23+ 0	7.9842	1.69	Q	|	|	|	V|
23+ 5	7.9958	1.68	Q	|	|	|	V|
23+10	8.0073	1.67	Q	|	|	|	V|
23+15	8.0187	1.65	Q	|	|	|	V|
23+20	8.0300	1.64	Q	|	|	|	V|
23+25	8.0412	1.63	Q	|	|	|	V|
23+30	8.0523	1.62	Q	|	|	|	V|
23+35	8.0634	1.61	Q	|	|	|	V|
23+40	8.0744	1.59	Q	|	|	|	V|
23+45	8.0853	1.58	Q	|	|	|	V|
23+50	8.0961	1.57	Q	|	|	|	V|
23+55	8.1069	1.56	Q	|	|	|	V|
24+ 0	8.1176	1.55	Q	|	|	|	V|
24+ 5	8.1277	1.48	Q	|	|	|	V|
24+10	8.1357	1.16	Q	|	|	|	V|
24+15	8.1397	0.57	Q	|	|	|	V|
24+20	8.1421	0.35	Q	|	|	|	V|
24+25	8.1436	0.22	Q	|	|	|	V|

```
   24+30       8.1445      0.13  Q         |         |         |         V|
   24+35       8.1450      0.08  Q         |         |         |         V|
   24+40       8.1453      0.04  Q         |         |         |         V|
   24+45       8.1455      0.03  Q         |         |         |         V|
   24+50       8.1457      0.02  Q         |         |         |         V|
   24+55       8.1458      0.01  Q         |         |         |         V|
   25+ 0       8.1458      0.01  Q         |         |         |         V|
   25+ 5       8.1458      0.00  Q         |         |         |         V|
   25+10       8.1458      0.00  Q         |         |         |         V|
-------------------------------------------------------------------------
```

- 2 Year 3 Hour Post-Development Unit Hydrograph – Area 'B'

```
        U n i t   H y d r o g r a p h   A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989-2012, Version 7.2

        Study date  10/05/16   File Name PRB00203.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'B' - 2 YEAR 3 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

        Storm Event Year = 2

        Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 70.7       7.8          0.40     D     0.200     0.500    0.100
 70.7      11.8          0.60     C     0.250     0.500    0.125

Area-averaged adjusted loss rate Fm (In/Hr) =  0.115

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
     3.92   0.200         70.7      51.8       9.29     0.002
     3.92   0.200         98.0      98.0       0.20     0.890

     5.88   0.300         70.7      51.8       9.29     0.002
     5.88   0.300         98.0      98.0       0.20     0.890

Area-averaged catchment yield fraction, Y =  0.446
Area-averaged low loss fraction, Yb =  0.554
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.180 (hours)
Watershed area =      19.60(Ac.)
Catchment Lag time =   0.144 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 57.8061
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.115(In/Hr)
Average low loss rate fraction (Yb) = 0.554 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.190(In)
Computed peak 30-minute rainfall =  0.400(In)
Specified peak 1-hour rainfall =  0.530(In)
Computed peak 3-hour rainfall =  0.890(In)
Specified peak 6-hour rainfall =  1.220(In)
Specified peak 24-hour rainfall =  2.050(In)
```

```
Rainfall depth area reduction factors:
Using a total area of      19.60(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.190(In)
30-minute factor = 0.999    Adjusted rainfall =  0.400(In)
1-hour factor = 0.999       Adjusted rainfall =  0.530(In)
3-hour factor = 1.000       Adjusted rainfall =  0.890(In)
6-hour factor = 1.000       Adjusted rainfall =  1.220(In)
24-hour factor = 1.000 Adjusted rainfall =  2.050(In)
```

U n i t H y d r o g r a p h

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 237.04 (CFS))	
1	5.288	12.534
2	34.549	69.360
3	69.675	83.262
4	82.481	30.353
5	89.872	17.520
6	94.465	10.888
7	97.135	6.328
8	98.300	2.762
9	98.899	1.421
10	99.309	0.970
11	99.711	0.954
12	99.926	0.509
13	100.000	0.175

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.1898	0.1898
2	0.2532	0.0634
3	0.2996	0.0465
4	0.3377	0.0380
5	0.3705	0.0328
6	0.3996	0.0292
7	0.4254	0.0258
8	0.4491	0.0237
9	0.4711	0.0220
10	0.4917	0.0206
11	0.5111	0.0194
12	0.5295	0.0184
13	0.5499	0.0204
14	0.5695	0.0196
15	0.5884	0.0189
16	0.6066	0.0182
17	0.6242	0.0176
18	0.6413	0.0171
19	0.6579	0.0166
20	0.6741	0.0161
21	0.6898	0.0157
22	0.7051	0.0153
23	0.7201	0.0150
24	0.7347	0.0146
25	0.7490	0.0143
26	0.7631	0.0140
27	0.7768	0.0137
28	0.7902	0.0135
29	0.8035	0.0132
30	0.8164	0.0130
31	0.8292	0.0127
32	0.8417	0.0125
33	0.8540	0.0123
34	0.8662	0.0121
35	0.8781	0.0119
36	0.8899	0.0118

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0118	0.0065	0.0052
2	0.0119	0.0066	0.0053
3	0.0123	0.0068	0.0055
4	0.0125	0.0069	0.0056
5	0.0130	0.0072	0.0058
6	0.0132	0.0073	0.0059
7	0.0137	0.0076	0.0061
8	0.0140	0.0078	0.0062
9	0.0146	0.0081	0.0065
10	0.0150	0.0083	0.0067
11	0.0157	0.0087	0.0070
12	0.0161	0.0089	0.0072
13	0.0171	0.0095	0.0076
14	0.0176	0.0096	0.0080
15	0.0189	0.0096	0.0093
16	0.0196	0.0096	0.0100
17	0.0184	0.0096	0.0088
18	0.0194	0.0096	0.0098
19	0.0220	0.0096	0.0124
20	0.0237	0.0096	0.0141
21	0.0292	0.0096	0.0196
22	0.0328	0.0096	0.0232
23	0.0465	0.0096	0.0369
24	0.0634	0.0096	0.0538
25	0.1898	0.0096	0.1802
26	0.0380	0.0096	0.0285
27	0.0258	0.0096	0.0162
28	0.0206	0.0096	0.0110
29	0.0204	0.0096	0.0108
30	0.0182	0.0096	0.0086
31	0.0166	0.0092	0.0074
32	0.0153	0.0085	0.0068
33	0.0143	0.0079	0.0064
34	0.0135	0.0075	0.0060
35	0.0127	0.0071	0.0057
36	0.0121	0.0067	0.0054

Total soil rain loss = 0.31(In)
Total effective rainfall = 0.58(In)
Peak flow rate in flood hydrograph = 19.92(CFS)

3 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	5.0	10.0	15.0	20.0
0+ 5	0.0005	0.07	Q				
0+10	0.0034	0.43	Q				
0+15	0.0094	0.88	VQ				
0+20	0.0167	1.05	V Q				
0+25	0.0248	1.17	|VQ				
0+30	0.0334	1.26	|VQ				
0+35	0.0426	1.32	|VQ				
0+40	0.0520	1.37	| Q				
0+45	0.0618	1.42	| Q				
0+50	0.0719	1.47	| QV				
0+55	0.0824	1.52	| Q				
1+ 0	0.0933	1.58	| Q				
1+ 5	0.1046	1.64	| QV				
1+10	0.1164	1.71	| QV				
1+15	0.1288	1.81	| Q V				
1+20	0.1423	1.96	| Q V				

```
   1+25       0.1569      2.12  |   Q V   |         |         |         |
   1+30       0.1718      2.16  |   Q  V  |         |         |         |
   1+35       0.1871      2.22  |   Q  V  |         |         |         |
   1+40       0.2043      2.50  |   Q   V |         |         |         |
   1+45       0.2245      2.93  |    Q   V|         |         |         |
   1+50       0.2492      3.59  |      Q  V         |         |         |
   1+55       0.2807      4.57  |        Q|V        |         |         |
   2+ 0       0.3238      6.26  |         | QV      |         |         |
   2+ 5       0.3955     10.40  |         |     V   Q         |         |
   2+10       0.5280     19.24  |         |         | V       |        Q |
   2+15       0.6652     19.92  |         |         |       V |         Q|
   2+20       0.7388     10.70  |         |         |Q        |V         |
   2+25       0.7885      7.21  |         |   Q     |         |  V       |
   2+30       0.8246      5.24  |         Q         |         |   V      |
   2+35       0.8516      3.91  |       Q |         |         |    V     |
   2+40       0.8711      2.84  |     Q   |         |         |     V    |
   2+45       0.8869      2.28  |    Q    |         |         |      V   |
   2+50       0.9005      1.98  |  Q      |         |         |       V  |
   2+55       0.9130      1.81  |  Q      |         |         |       V  |
   3+ 0       0.9240      1.60  |  Q      |         |         |        V |
   3+ 5       0.9335      1.38  | Q       |         |         |        V |
   3+10       0.9397      0.91  |Q        |         |         |        V |
   3+15       0.9426      0.43  Q         |         |         |        V |
   3+20       0.9443      0.24  Q         |         |         |        V |
   3+25       0.9453      0.14  Q         |         |         |        V |
   3+30       0.9458      0.08  Q         |         |         |        V |
   3+35       0.9461      0.04  Q         |         |         |        V |
   3+40       0.9463      0.02  Q         |         |         |        V |
   3+45       0.9464      0.01  Q         |         |         |        V |
   3+50       0.9464      0.01  Q         |         |         |        V |
   3+55       0.9464      0.00  Q         |         |         |        V |
   4+ 0       0.9465      0.00  Q         |         |         |         V
-------------------------------------------------------------------------
```

- 2 Year 6 Hour Post-Development Unit Hydrograph – Area 'B'

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       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/05/16   File Name PRB00206.out

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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996

Program License Serial Number 4094

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RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'B' - 2 YEAR 6 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 2

       Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
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******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 70.7       7.8          0.40     D     0.200     0.500    0.100
 70.7      11.8          0.60     C     0.250     0.500    0.125

Area-averaged adjusted loss rate Fm (In/Hr) =  0.115

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
     3.92   0.200         70.7      51.8       9.29     0.002
     3.92   0.200         98.0      98.0       0.20     0.890

     5.88   0.300         70.7      51.8       9.29     0.002
     5.88   0.300         98.0      98.0       0.20     0.890

Area-averaged catchment yield fraction, Y =  0.446
Area-averaged low loss fraction, Yb =  0.554
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.180 (hours)
Watershed area =      19.60(Ac.)
Catchment Lag time =   0.144 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 57.8061
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.115(In/Hr)
Average low loss rate fraction (Yb) = 0.554 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.190(In)
Computed peak 30-minute rainfall =  0.400(In)
Specified peak 1-hour rainfall =  0.530(In)
Computed peak 3-hour rainfall =  0.890(In)
Specified peak 6-hour rainfall =  1.220(In)
Specified peak 24-hour rainfall =  2.050(In)


Rainfall depth area reduction factors:
Using a total area of      19.60(Ac.) (Ref: fig. E-4)
```

```
5-minute factor = 0.999     Adjusted rainfall =  0.190(In)
30-minute factor = 0.999    Adjusted rainfall =  0.400(In)
1-hour factor = 0.999       Adjusted rainfall =  0.530(In)
3-hour factor = 1.000       Adjusted rainfall =  0.890(In)
6-hour factor = 1.000       Adjusted rainfall =  1.220(In)
24-hour factor = 1.000 Adjusted rainfall =  2.050(In)
--------------------------------------------------------------------------
                      U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------------
               (K =       237.04 (CFS))

  1                5.288                 12.534
  2               34.549                 69.360
  3               69.675                 83.262
  4               82.481                 30.353
  5               89.872                 17.520
  6               94.465                 10.888
  7               97.135                  6.328
  8               98.300                  2.762
  9               98.899                  1.421
 10               99.309                  0.970
 11               99.711                  0.954
 12               99.926                  0.509
 13              100.000                  0.175
--------------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.1898              0.1898
  2              0.2532              0.0634
  3              0.2996              0.0465
  4              0.3377              0.0380
  5              0.3705              0.0328
  6              0.3996              0.0292
  7              0.4254              0.0258
  8              0.4491              0.0237
  9              0.4711              0.0220
 10              0.4917              0.0206
 11              0.5111              0.0194
 12              0.5295              0.0184
 13              0.5499              0.0204
 14              0.5695              0.0196
 15              0.5884              0.0189
 16              0.6066              0.0182
 17              0.6242              0.0176
 18              0.6413              0.0171
 19              0.6579              0.0166
 20              0.6741              0.0161
 21              0.6898              0.0157
 22              0.7051              0.0153
 23              0.7201              0.0150
 24              0.7347              0.0146
 25              0.7490              0.0143
 26              0.7631              0.0140
 27              0.7768              0.0137
 28              0.7902              0.0135
 29              0.8035              0.0132
 30              0.8164              0.0130
 31              0.8292              0.0127
 32              0.8417              0.0125
 33              0.8540              0.0123
 34              0.8662              0.0121
 35              0.8781              0.0119
 36              0.8899              0.0118
 37              0.9011              0.0112
 38              0.9121              0.0110
 39              0.9229              0.0108
 40              0.9336              0.0107
```

41	0.9442	0.0106
42	0.9546	0.0104
43	0.9648	0.0103
44	0.9750	0.0101
45	0.9850	0.0100
46	0.9949	0.0099
47	1.0047	0.0098
48	1.0144	0.0097
49	1.0239	0.0096
50	1.0334	0.0095
51	1.0427	0.0094
52	1.0520	0.0093
53	1.0612	0.0092
54	1.0702	0.0091
55	1.0792	0.0090
56	1.0881	0.0089
57	1.0969	0.0088
58	1.1056	0.0087
59	1.1142	0.0086
60	1.1228	0.0086
61	1.1313	0.0085
62	1.1397	0.0084
63	1.1480	0.0083
64	1.1563	0.0083
65	1.1644	0.0082
66	1.1726	0.0081
67	1.1806	0.0081
68	1.1886	0.0080
69	1.1965	0.0079
70	1.2044	0.0079
71	1.2122	0.0078
72	1.2199	0.0077

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0077	0.0043	0.0035
2	0.0078	0.0043	0.0035
3	0.0079	0.0044	0.0035
4	0.0080	0.0044	0.0036
5	0.0081	0.0045	0.0036
6	0.0082	0.0045	0.0036
7	0.0083	0.0046	0.0037
8	0.0084	0.0047	0.0037
9	0.0086	0.0047	0.0038
10	0.0086	0.0048	0.0038
11	0.0088	0.0049	0.0039
12	0.0089	0.0049	0.0040
13	0.0091	0.0050	0.0040
14	0.0092	0.0051	0.0041
15	0.0094	0.0052	0.0042
16	0.0095	0.0052	0.0042
17	0.0097	0.0054	0.0043
18	0.0098	0.0054	0.0044
19	0.0100	0.0056	0.0045
20	0.0101	0.0056	0.0045
21	0.0104	0.0058	0.0046
22	0.0106	0.0058	0.0047
23	0.0108	0.0060	0.0048
24	0.0110	0.0061	0.0049
25	0.0118	0.0065	0.0052
26	0.0119	0.0066	0.0053
27	0.0123	0.0068	0.0055
28	0.0125	0.0069	0.0056
29	0.0130	0.0072	0.0058
30	0.0132	0.0073	0.0059
31	0.0137	0.0076	0.0061
32	0.0140	0.0078	0.0062
33	0.0146	0.0081	0.0065
34	0.0150	0.0083	0.0067

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       35              0.0157          0.0087              0.0070
       36              0.0161          0.0089              0.0072
       37              0.0171          0.0095              0.0076
       38              0.0176          0.0096              0.0080
       39              0.0189          0.0096              0.0093
       40              0.0196          0.0096              0.0100
       41              0.0184          0.0096              0.0088
       42              0.0194          0.0096              0.0098
       43              0.0220          0.0096              0.0124
       44              0.0237          0.0096              0.0141
       45              0.0292          0.0096              0.0196
       46              0.0328          0.0096              0.0232
       47              0.0465          0.0096              0.0369
       48              0.0634          0.0096              0.0538
       49              0.1898          0.0096              0.1802
       50              0.0380          0.0096              0.0285
       51              0.0258          0.0096              0.0162
       52              0.0206          0.0096              0.0110
       53              0.0204          0.0096              0.0108
       54              0.0182          0.0096              0.0086
       55              0.0166          0.0092              0.0074
       56              0.0153          0.0085              0.0068
       57              0.0143          0.0079              0.0064
       58              0.0135          0.0075              0.0060
       59              0.0127          0.0071              0.0057
       60              0.0121          0.0067              0.0054
       61              0.0112          0.0062              0.0050
       62              0.0107          0.0059              0.0048
       63              0.0103          0.0057              0.0046
       64              0.0099          0.0055              0.0044
       65              0.0096          0.0053              0.0043
       66              0.0093          0.0051              0.0041
       67              0.0090          0.0050              0.0040
       68              0.0087          0.0048              0.0039
       69              0.0085          0.0047              0.0038
       70              0.0083          0.0046              0.0037
       71              0.0081          0.0045              0.0036
       72              0.0079          0.0044              0.0035
      ------------------------------------------------------------------------
      ------------------------------------------------------------------------
      Total soil rain loss =      0.49(In)
      Total effective rainfall =      0.73(In)
      Peak flow rate in flood hydrograph =     19.92(CFS)
      ------------------------------------------------------------------------
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          6 - H O U R    S T O R M
                     R u n o f f      H y d r o g r a p h
      ------------------------------------------------------------------------
                 Hydrograph in   5   Minute intervals ((CFS))

      ------------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0        5.0      10.0      15.0      20.0
-------------------------------------------------------------------------
  0+ 5       0.0003      0.04  Q          |         |         |         |
  0+10       0.0022      0.28  Q          |         |         |         |
  0+15       0.0062      0.57  VQ         |         |         |         |
  0+20       0.0109      0.68  VQ         |         |         |         |
  0+25       0.0161      0.75  VQ         |         |         |         |
  0+30       0.0216      0.80  VQ         |         |         |         |
  0+35       0.0273      0.83  VQ         |         |         |         |
  0+40       0.0332      0.85  |Q         |         |         |         |
  0+45       0.0391      0.87  |Q         |         |         |         |
  0+50       0.0452      0.88  |Q         |         |         |         |
  0+55       0.0514      0.90  |Q         |         |         |         |
  1+ 0       0.0576      0.91  |Q         |         |         |         |
  1+ 5       0.0640      0.92  |QV        |         |         |         |
  1+10       0.0705      0.94  |QV        |         |         |         |
  1+15       0.0770      0.95  |QV        |         |         |         |
  1+20       0.0837      0.97  |QV        |         |         |         |
  1+25       0.0905      0.98  |Q V       |         |         |         |
  1+30       0.0973      1.00  |Q V       |         |         |         |
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   1+35       0.1043      1.02  | QV      |         |         |         |
   1+40       0.1114      1.03  | QV      |         |         |         |
   1+45       0.1187      1.05  | Q V     |         |         |         |
   1+50       0.1260      1.07  | Q V     |         |         |         |
   1+55       0.1336      1.09  | Q V     |         |         |         |
   2+ 0       0.1412      1.11  | Q V     |         |         |         |
   2+ 5       0.1491      1.14  | Q  V    |         |         |         |
   2+10       0.1572      1.18  | Q  V    |         |         |         |
   2+15       0.1656      1.22  | Q  V    |         |         |         |
   2+20       0.1742      1.25  | Q  V    |         |         |         |
   2+25       0.1831      1.29  | Q   V   |         |         |         |
   2+30       0.1922      1.32  | Q   V   |         |         |         |
   2+35       0.2015      1.36  | Q   V   |         |         |         |
   2+40       0.2111      1.39  | Q    V  |         |         |         |
   2+45       0.2210      1.44  | Q    V  |         |         |         |
   2+50       0.2312      1.48  | Q    V  |         |         |         |
   2+55       0.2417      1.53  |  Q    V |         |         |         |
   3+ 0       0.2526      1.58  |  Q    V |         |         |         |
   3+ 5       0.2639      1.64  |  Q    V |         |         |         |
   3+10       0.2757      1.71  |  Q     V|         |         |         |
   3+15       0.2881      1.81  |  Q     V|         |         |         |
   3+20       0.3016      1.96  |  Q      V         |         |         |
   3+25       0.3162      2.12  |   Q     V         |         |         |
   3+30       0.3311      2.16  |   Q     |V        |         |         |
   3+35       0.3464      2.22  |   Q     |V        |         |         |
   3+40       0.3636      2.50  |   Q     | V       |         |         |
   3+45       0.3838      2.93  |    Q    | V       |         |         |
   3+50       0.4085      3.59  |      Q  |  V      |         |         |
   3+55       0.4400      4.57  |        Q|   V     |         |         |
   4+ 0       0.4831      6.26  |         | Q   V   |         |         |
   4+ 5       0.5547     10.40  |         |       V Q         |         |
   4+10       0.6872     19.24  |         |         |  V      |       Q |
   4+15       0.8244     19.92  |         |         |     V   |        Q|
   4+20       0.8981     10.70  |         |         |Q        V         |
   4+25       0.9478      7.21  |         |   Q     |         |V        |
   4+30       0.9839      5.24  |         Q         |         |  V      |
   4+35       1.0108      3.91  |      Q  |         |         |   V     |
   4+40       1.0304      2.84  |    Q    |         |         |   V     |
   4+45       1.0461      2.28  |   Q     |         |         |    V    |
   4+50       1.0598      1.98  |  Q      |         |         |    V    |
   4+55       1.0722      1.81  |  Q      |         |         |     V   |
   5+ 0       1.0832      1.60  |  Q      |         |         |     V   |
   5+ 5       1.0931      1.44  | Q       |         |         |     V   |
   5+10       1.1022      1.31  | Q       |         |         |      V  |
   5+15       1.1106      1.23  | Q       |         |         |      V  |
   5+20       1.1187      1.17  | Q       |         |         |      V  |
   5+25       1.1263      1.11  | Q       |         |         |      V  |
   5+30       1.1337      1.07  | Q       |         |         |       V |
   5+35       1.1408      1.03  | Q       |         |         |       V |
   5+40       1.1476      0.99  |Q        |         |         |       V |
   5+45       1.1543      0.96  |Q        |         |         |       V |
   5+50       1.1607      0.93  |Q        |         |         |        V|
   5+55       1.1669      0.91  |Q        |         |         |        V|
   6+ 0       1.1730      0.88  |Q        |         |         |        V|
   6+ 5       1.1786      0.82  |Q        |         |         |        V|
   6+10       1.1825      0.56  |Q        |         |         |        V|
   6+15       1.1843      0.26  Q         |         |         |        V|
   6+20       1.1853      0.15  Q         |         |         |        V|
   6+25       1.1859      0.09  Q         |         |         |        V|
   6+30       1.1862      0.05  Q         |         |         |        V|
   6+35       1.1864      0.02  Q         |         |         |        V|
   6+40       1.1865      0.01  Q         |         |         |        V|
   6+45       1.1866      0.01  Q         |         |         |        V|
   6+50       1.1866      0.01  Q         |         |         |        V|
   6+55       1.1866      0.00  Q         |         |         |        V|
   7+ 0       1.1866      0.00  Q         |         |         |        V|
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- 2 Year 12 Hour Post-Development Unit Hydrograph – Area 'B'

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       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/05/16   File Name PRB00212.out

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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996

Program License Serial Number 4094

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RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'B' - 2 YEAR 12 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------
       Storm Event Year = 2

       Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********

SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 70.7       7.8          0.40     D     0.200     0.500    0.100
 70.7      11.8          0.60     C     0.250     0.500    0.125

Area-averaged adjusted loss rate Fm (In/Hr) =  0.115

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)           Yield Fr
     3.92   0.200         70.7      51.8       9.29     0.002
     3.92   0.200         98.0      98.0       0.20     0.890

     5.88   0.300         70.7      51.8       9.29     0.002
     5.88   0.300         98.0      98.0       0.20     0.890

Area-averaged catchment yield fraction, Y =  0.446
Area-averaged low loss fraction, Yb =  0.554
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.180 (hours)
Watershed area =      19.60(Ac.)
Catchment Lag time =   0.144 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 57.8061
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.115(In/Hr)
Average low loss rate fraction (Yb) = 0.554 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.190(In)
Computed peak 30-minute rainfall =  0.400(In)
Specified peak 1-hour rainfall =  0.530(In)
Computed peak 3-hour rainfall =  0.890(In)
Specified peak 6-hour rainfall =  1.220(In)
Specified peak 24-hour rainfall =  2.050(In)


Rainfall depth area reduction factors:
Using a total area of      19.60(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.190(In)
30-minute factor = 0.999    Adjusted rainfall =  0.400(In)
```

1-hour factor = 0.999 Adjusted rainfall = 0.530(In)
3-hour factor = 1.000 Adjusted rainfall = 0.890(In)
6-hour factor = 1.000 Adjusted rainfall = 1.220(In)
24-hour factor = 1.000 Adjusted rainfall = 2.050(In)

U n i t H y d r o g r a p h

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 237.04 (CFS))	
1	5.288	12.534
2	34.549	69.360
3	69.675	83.262
4	82.481	30.353
5	89.872	17.520
6	94.465	10.888
7	97.135	6.328
8	98.300	2.762
9	98.899	1.421
10	99.309	0.970
11	99.711	0.954
12	99.926	0.509
13	100.000	0.175

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.1898	0.1898
2	0.2532	0.0634
3	0.2996	0.0465
4	0.3377	0.0380
5	0.3705	0.0328
6	0.3996	0.0292
7	0.4254	0.0258
8	0.4491	0.0237
9	0.4711	0.0220
10	0.4917	0.0206
11	0.5111	0.0194
12	0.5295	0.0184
13	0.5499	0.0204
14	0.5695	0.0196
15	0.5884	0.0189
16	0.6066	0.0182
17	0.6242	0.0176
18	0.6413	0.0171
19	0.6579	0.0166
20	0.6741	0.0161
21	0.6898	0.0157
22	0.7051	0.0153
23	0.7201	0.0150
24	0.7347	0.0146
25	0.7490	0.0143
26	0.7631	0.0140
27	0.7768	0.0137
28	0.7902	0.0135
29	0.8035	0.0132
30	0.8164	0.0130
31	0.8292	0.0127
32	0.8417	0.0125
33	0.8540	0.0123
34	0.8662	0.0121
35	0.8781	0.0119
36	0.8899	0.0118
37	0.9011	0.0112
38	0.9121	0.0110
39	0.9229	0.0108
40	0.9336	0.0107
41	0.9442	0.0106
42	0.9546	0.0104

43	0.9648	0.0103
44	0.9750	0.0101
45	0.9850	0.0100
46	0.9949	0.0099
47	1.0047	0.0098
48	1.0144	0.0097
49	1.0239	0.0096
50	1.0334	0.0095
51	1.0427	0.0094
52	1.0520	0.0093
53	1.0612	0.0092
54	1.0702	0.0091
55	1.0792	0.0090
56	1.0881	0.0089
57	1.0969	0.0088
58	1.1056	0.0087
59	1.1142	0.0086
60	1.1228	0.0086
61	1.1313	0.0085
62	1.1397	0.0084
63	1.1480	0.0083
64	1.1563	0.0083
65	1.1644	0.0082
66	1.1726	0.0081
67	1.1806	0.0081
68	1.1886	0.0080
69	1.1965	0.0079
70	1.2044	0.0079
71	1.2122	0.0078
72	1.2199	0.0077
73	1.2262	0.0063
74	1.2325	0.0063
75	1.2387	0.0062
76	1.2449	0.0062
77	1.2510	0.0061
78	1.2570	0.0061
79	1.2630	0.0060
80	1.2690	0.0060
81	1.2749	0.0059
82	1.2808	0.0059
83	1.2866	0.0058
84	1.2924	0.0058
85	1.2981	0.0057
86	1.3038	0.0057
87	1.3095	0.0057
88	1.3151	0.0056
89	1.3207	0.0056
90	1.3262	0.0055
91	1.3317	0.0055
92	1.3372	0.0055
93	1.3426	0.0054
94	1.3480	0.0054
95	1.3533	0.0054
96	1.3587	0.0053
97	1.3639	0.0053
98	1.3692	0.0052
99	1.3744	0.0052
100	1.3796	0.0052
101	1.3847	0.0051
102	1.3898	0.0051
103	1.3949	0.0051
104	1.4000	0.0051
105	1.4050	0.0050
106	1.4100	0.0050
107	1.4150	0.0050
108	1.4199	0.0049
109	1.4248	0.0049
110	1.4297	0.0049
111	1.4346	0.0049
112	1.4394	0.0048
113	1.4442	0.0048

114	1.4489	0.0048
115	1.4537	0.0047
116	1.4584	0.0047
117	1.4631	0.0047
118	1.4678	0.0047
119	1.4724	0.0046
120	1.4770	0.0046
121	1.4816	0.0046
122	1.4862	0.0046
123	1.4908	0.0045
124	1.4953	0.0045
125	1.4998	0.0045
126	1.5043	0.0045
127	1.5087	0.0045
128	1.5132	0.0044
129	1.5176	0.0044
130	1.5220	0.0044
131	1.5263	0.0044
132	1.5307	0.0044
133	1.5350	0.0043
134	1.5393	0.0043
135	1.5436	0.0043
136	1.5479	0.0043
137	1.5522	0.0043
138	1.5564	0.0042
139	1.5606	0.0042
140	1.5648	0.0042
141	1.5690	0.0042
142	1.5731	0.0042
143	1.5773	0.0041
144	1.5814	0.0041

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0041	0.0023	0.0018
2	0.0041	0.0023	0.0018
3	0.0042	0.0023	0.0019
4	0.0042	0.0023	0.0019
5	0.0042	0.0023	0.0019
6	0.0043	0.0024	0.0019
7	0.0043	0.0024	0.0019
8	0.0043	0.0024	0.0019
9	0.0044	0.0024	0.0019
10	0.0044	0.0024	0.0019
11	0.0044	0.0024	0.0020
12	0.0044	0.0025	0.0020
13	0.0045	0.0025	0.0020
14	0.0045	0.0025	0.0020
15	0.0045	0.0025	0.0020
16	0.0046	0.0025	0.0020
17	0.0046	0.0026	0.0021
18	0.0046	0.0026	0.0021
19	0.0047	0.0026	0.0021
20	0.0047	0.0026	0.0021
21	0.0048	0.0026	0.0021
22	0.0048	0.0027	0.0021
23	0.0049	0.0027	0.0022
24	0.0049	0.0027	0.0022
25	0.0049	0.0027	0.0022
26	0.0050	0.0028	0.0022
27	0.0050	0.0028	0.0022
28	0.0051	0.0028	0.0023
29	0.0051	0.0028	0.0023
30	0.0051	0.0029	0.0023
31	0.0052	0.0029	0.0023
32	0.0052	0.0029	0.0023
33	0.0053	0.0029	0.0024
34	0.0054	0.0030	0.0024
35	0.0054	0.0030	0.0024

36	0.0055	0.0030	0.0024
37	0.0055	0.0031	0.0025
38	0.0056	0.0031	0.0025
39	0.0057	0.0031	0.0025
40	0.0057	0.0032	0.0025
41	0.0058	0.0032	0.0026
42	0.0058	0.0032	0.0026
43	0.0059	0.0033	0.0026
44	0.0060	0.0033	0.0027
45	0.0061	0.0034	0.0027
46	0.0061	0.0034	0.0027
47	0.0062	0.0034	0.0028
48	0.0063	0.0035	0.0028
49	0.0077	0.0043	0.0035
50	0.0078	0.0043	0.0035
51	0.0079	0.0044	0.0035
52	0.0080	0.0044	0.0036
53	0.0081	0.0045	0.0036
54	0.0082	0.0045	0.0036
55	0.0083	0.0046	0.0037
56	0.0084	0.0047	0.0037
57	0.0086	0.0047	0.0038
58	0.0086	0.0048	0.0038
59	0.0088	0.0049	0.0039
60	0.0089	0.0049	0.0040
61	0.0091	0.0050	0.0040
62	0.0092	0.0051	0.0041
63	0.0094	0.0052	0.0042
64	0.0095	0.0052	0.0042
65	0.0097	0.0054	0.0043
66	0.0098	0.0054	0.0044
67	0.0100	0.0056	0.0045
68	0.0101	0.0056	0.0045
69	0.0104	0.0058	0.0046
70	0.0106	0.0058	0.0047
71	0.0108	0.0060	0.0048
72	0.0110	0.0061	0.0049
73	0.0118	0.0065	0.0052
74	0.0119	0.0066	0.0053
75	0.0123	0.0068	0.0055
76	0.0125	0.0069	0.0056
77	0.0130	0.0072	0.0058
78	0.0132	0.0073	0.0059
79	0.0137	0.0076	0.0061
80	0.0140	0.0078	0.0062
81	0.0146	0.0081	0.0065
82	0.0150	0.0083	0.0067
83	0.0157	0.0087	0.0070
84	0.0161	0.0089	0.0072
85	0.0171	0.0095	0.0076
86	0.0176	0.0096	0.0080
87	0.0189	0.0096	0.0093
88	0.0196	0.0096	0.0100
89	0.0184	0.0096	0.0088
90	0.0194	0.0096	0.0098
91	0.0220	0.0096	0.0124
92	0.0237	0.0096	0.0141
93	0.0292	0.0096	0.0196
94	0.0328	0.0096	0.0232
95	0.0465	0.0096	0.0369
96	0.0634	0.0096	0.0538
97	0.1898	0.0096	0.1802
98	0.0380	0.0096	0.0285
99	0.0258	0.0096	0.0162
100	0.0206	0.0096	0.0110
101	0.0204	0.0096	0.0108
102	0.0182	0.0096	0.0086
103	0.0166	0.0092	0.0074
104	0.0153	0.0085	0.0068
105	0.0143	0.0079	0.0064
106	0.0135	0.0075	0.0060

```
      107              0.0127           0.0071              0.0057
      108              0.0121           0.0067              0.0054
      109              0.0112           0.0062              0.0050
      110              0.0107           0.0059              0.0048
      111              0.0103           0.0057              0.0046
      112              0.0099           0.0055              0.0044
      113              0.0096           0.0053              0.0043
      114              0.0093           0.0051              0.0041
      115              0.0090           0.0050              0.0040
      116              0.0087           0.0048              0.0039
      117              0.0085           0.0047              0.0038
      118              0.0083           0.0046              0.0037
      119              0.0081           0.0045              0.0036
      120              0.0079           0.0044              0.0035
      121              0.0063           0.0035              0.0028
      122              0.0062           0.0034              0.0027
      123              0.0060           0.0033              0.0027
      124              0.0059           0.0033              0.0026
      125              0.0057           0.0032              0.0026
      126              0.0056           0.0031              0.0025
      127              0.0055           0.0030              0.0025
      128              0.0054           0.0030              0.0024
      129              0.0053           0.0029              0.0024
      130              0.0052           0.0029              0.0023
      131              0.0051           0.0028              0.0023
      132              0.0050           0.0028              0.0022
      133              0.0049           0.0027              0.0022
      134              0.0048           0.0027              0.0022
      135              0.0047           0.0026              0.0021
      136              0.0047           0.0026              0.0021
      137              0.0046           0.0025              0.0020
      138              0.0045           0.0025              0.0020
      139              0.0045           0.0025              0.0020
      140              0.0044           0.0024              0.0020
      141              0.0043           0.0024              0.0019
      142              0.0043           0.0024              0.0019
      143              0.0042           0.0023              0.0019
      144              0.0042           0.0023              0.0019
      ---------------------------------------------------------------------
      ---------------------------------------------------------------------
      Total soil rain loss =      0.69(In)
      Total effective rainfall =      0.89(In)
      Peak flow rate in flood hydrograph =     19.92(CFS)
      ---------------------------------------------------------------------
      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                        12 - H O U R    S T O R M
                   R u n o f f      H y d r o g r a p h
      ---------------------------------------------------------------------
                Hydrograph in   5   Minute intervals ((CFS))

      ---------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0        5.0      10.0      15.0      20.0
---------------------------------------------------------------------------
  0+ 5       0.0002      0.02  Q         |         |         |         |
  0+10       0.0012      0.15  Q         |         |         |         |
  0+15       0.0033      0.30  Q         |         |         |         |
  0+20       0.0058      0.36  Q         |         |         |         |
  0+25       0.0085      0.40  Q         |         |         |         |
  0+30       0.0114      0.42  Q         |         |         |         |
  0+35       0.0144      0.43  Q         |         |         |         |
  0+40       0.0174      0.44  Q         |         |         |         |
  0+45       0.0205      0.45  Q         |         |         |         |
  0+50       0.0236      0.45  Q         |         |         |         |
  0+55       0.0268      0.46  Q         |         |         |         |
  1+ 0       0.0299      0.46  Q         |         |         |         |
  1+ 5       0.0332      0.47  Q         |         |         |         |
  1+10       0.0364      0.47  QV        |         |         |         |
  1+15       0.0396      0.47  QV        |         |         |         |
  1+20       0.0429      0.48  QV        |         |         |         |
  1+25       0.0462      0.48  QV        |         |         |         |
  1+30       0.0495      0.48  QV        |         |         |         |
```

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1+35      0.0529      0.49  QV       |        |        |        |
1+40      0.0563      0.49  QV       |        |        |        |
1+45      0.0597      0.49  QV       |        |        |        |
1+50      0.0631      0.50  QV       |        |        |        |
1+55      0.0666      0.50  |Q       |        |        |        |
2+ 0      0.0700      0.51  |Q       |        |        |        |
2+ 5      0.0736      0.51  |QV      |        |        |        |
2+10      0.0771      0.52  |QV      |        |        |        |
2+15      0.0807      0.52  |QV      |        |        |        |
2+20      0.0843      0.52  |QV      |        |        |        |
2+25      0.0879      0.53  |QV      |        |        |        |
2+30      0.0916      0.53  |QV      |        |        |        |
2+35      0.0953      0.54  |QV      |        |        |        |
2+40      0.0991      0.54  |QV      |        |        |        |
2+45      0.1028      0.55  |QV      |        |        |        |
2+50      0.1067      0.55  |QV      |        |        |        |
2+55      0.1105      0.56  |Q V     |        |        |        |
3+ 0      0.1144      0.56  |Q V     |        |        |        |
3+ 5      0.1183      0.57  |Q V     |        |        |        |
3+10      0.1223      0.58  |Q V     |        |        |        |
3+15      0.1263      0.58  |Q V     |        |        |        |
3+20      0.1304      0.59  |Q V     |        |        |        |
3+25      0.1345      0.59  |Q V     |        |        |        |
3+30      0.1386      0.60  |Q V     |        |        |        |
3+35      0.1428      0.61  |Q V     |        |        |        |
3+40      0.1470      0.61  |Q  V    |        |        |        |
3+45      0.1513      0.62  |Q  V    |        |        |        |
3+50      0.1557      0.63  |Q  V    |        |        |        |
3+55      0.1600      0.64  |Q  V    |        |        |        |
4+ 0      0.1645      0.64  |Q  V    |        |        |        |
4+ 5      0.1690      0.66  |Q  V    |        |        |        |
4+10      0.1739      0.71  |Q  V    |        |        |        |
4+15      0.1792      0.77  |Q  V    |        |        |        |
4+20      0.1847      0.80  |Q   V   |        |        |        |
4+25      0.1904      0.82  |Q   V   |        |        |        |
4+30      0.1961      0.84  |Q   V   |        |        |        |
4+35      0.2020      0.85  |Q   V   |        |        |        |
4+40      0.2079      0.86  |Q   V   |        |        |        |
4+45      0.2139      0.87  |Q   V   |        |        |        |
4+50      0.2200      0.89  |Q    V  |        |        |        |
4+55      0.2262      0.90  |Q    V  |        |        |        |
5+ 0      0.2325      0.91  |Q    V  |        |        |        |
5+ 5      0.2388      0.92  |Q    V  |        |        |        |
5+10      0.2453      0.94  |Q    V  |        |        |        |
5+15      0.2519      0.95  |Q    V  |        |        |        |
5+20      0.2585      0.97  |Q     V |        |        |        |
5+25      0.2653      0.98  |Q     V |        |        |        |
5+30      0.2722      1.00  |Q     V |        |        |        |
5+35      0.2792      1.02  | Q    V |        |        |        |
5+40      0.2863      1.03  | Q    V |        |        |        |
5+45      0.2935      1.05  | Q     V|        |        |        |
5+50      0.3009      1.07  | Q     V|        |        |        |
5+55      0.3084      1.09  | Q     V|        |        |        |
6+ 0      0.3161      1.11  | Q     V|        |        |        |
6+ 5      0.3239      1.14  | Q     V|        |        |        |
6+10      0.3320      1.18  | Q      V|        |        |        |
6+15      0.3404      1.22  | Q      V|        |        |        |
6+20      0.3490      1.25  | Q      V|        |        |        |
6+25      0.3579      1.29  | Q      V|        |        |        |
6+30      0.3670      1.32  | Q       V        |        |        |
6+35      0.3763      1.36  | Q       V        |        |        |
6+40      0.3859      1.39  | Q       V        |        |        |
6+45      0.3958      1.44  | Q       V        |        |        |
6+50      0.4060      1.48  | Q       |V       |        |        |
6+55      0.4165      1.53  |  Q      |V       |        |        |
7+ 0      0.4274      1.58  |  Q      |V       |        |        |
7+ 5      0.4387      1.64  |  Q      | V      |        |        |
7+10      0.4505      1.71  |  Q      | V      |        |        |
7+15      0.4629      1.81  |  Q      | V      |        |        |
7+20      0.4764      1.96  |  Q      |  V     |        |        |
7+25      0.4910      2.12  |   Q     |  V     |        |        |
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   7+30       0.5059      2.16  |   Q      |  V       |          |          |
   7+35       0.5212      2.22  |   Q      |   V      |          |          |
   7+40       0.5384      2.50  |   Q      |   V      |          |          |
   7+45       0.5586      2.93  |    Q     |    V     |          |          |
   7+50       0.5833      3.59  |      Q   |     V    |          |          |
   7+55       0.6148      4.57  |        Q |     V    |          |          |
   8+ 0       0.6579      6.26  |          | Q     V  |          |          |
   8+ 5       0.7296     10.40  |          |         Q|          |          |
   8+10       0.8621     19.24  |          |          |  V       |        Q |
   8+15       0.9992     19.92  |          |          |     V    |         Q|
   8+20       1.0729     10.70  |          |          |Q       V|          |
   8+25       1.1226      7.21  |          |   Q      |         V|          |
   8+30       1.1587      5.24  |          | Q        |          |V         |
   8+35       1.1857      3.91  |       Q  |          |          | V        |
   8+40       1.2052      2.84  |     Q    |          |          |  V       |
   8+45       1.2210      2.28  |    Q     |          |          |  V       |
   8+50       1.2346      1.98  |  Q       |          |          |   V      |
   8+55       1.2471      1.81  |  Q       |          |          |   V      |
   9+ 0       1.2581      1.60  |  Q       |          |          |   V      |
   9+ 5       1.2680      1.44  | Q        |          |          |   V      |
   9+10       1.2770      1.31  | Q        |          |          |    V     |
   9+15       1.2855      1.23  | Q        |          |          |    V     |
   9+20       1.2935      1.17  | Q        |          |          |    V     |
   9+25       1.3012      1.11  | Q        |          |          |    V     |
   9+30       1.3085      1.07  | Q        |          |          |     V    |
   9+35       1.3156      1.03  | Q        |          |          |     V    |
   9+40       1.3225      0.99  |Q         |          |          |     V    |
   9+45       1.3291      0.96  |Q         |          |          |     V    |
   9+50       1.3355      0.93  |Q         |          |          |     V    |
   9+55       1.3418      0.91  |Q         |          |          |      V   |
  10+ 0       1.3478      0.88  |Q         |          |          |      V   |
  10+ 5       1.3537      0.85  |Q         |          |          |      V   |
  10+10       1.3591      0.79  |Q         |          |          |      V   |
  10+15       1.3641      0.72  |Q         |          |          |      V   |
  10+20       1.3688      0.68  |Q         |          |          |      V   |
  10+25       1.3733      0.66  |Q         |          |          |      V   |
  10+30       1.3777      0.63  |Q         |          |          |       V  |
  10+35       1.3819      0.62  |Q         |          |          |       V  |
  10+40       1.3861      0.60  |Q         |          |          |       V  |
  10+45       1.3901      0.59  |Q         |          |          |       V  |
  10+50       1.3941      0.57  |Q         |          |          |       V  |
  10+55       1.3979      0.56  |Q         |          |          |       V  |
  11+ 0       1.4017      0.55  |Q         |          |          |       V  |
  11+ 5       1.4055      0.54  |Q         |          |          |       V  |
  11+10       1.4091      0.53  |Q         |          |          |       V  |
  11+15       1.4127      0.52  |Q         |          |          |       V  |
  11+20       1.4163      0.51  |Q         |          |          |        V |
  11+25       1.4197      0.50  |Q         |          |          |        V |
  11+30       1.4232      0.50  Q          |          |          |        V |
  11+35       1.4265      0.49  Q          |          |          |        V |
  11+40       1.4298      0.48  Q          |          |          |        V |
  11+45       1.4331      0.47  Q          |          |          |        V |
  11+50       1.4363      0.47  Q          |          |          |        V |
  11+55       1.4395      0.46  Q          |          |          |        V |
  12+ 0       1.4426      0.45  Q          |          |          |        V |
  12+ 5       1.4455      0.42  Q          |          |          |        V |
  12+10       1.4475      0.29  Q          |          |          |        V |
  12+15       1.4485      0.14  Q          |          |          |        V |
  12+20       1.4490      0.08  Q          |          |          |        V |
  12+25       1.4493      0.05  Q          |          |          |        V |
  12+30       1.4495      0.02  Q          |          |          |        V |
  12+35       1.4496      0.01  Q          |          |          |        V |
  12+40       1.4496      0.01  Q          |          |          |        V |
  12+45       1.4497      0.00  Q          |          |          |        V |
  12+50       1.4497      0.00  Q          |          |          |        V |
  12+55       1.4497      0.00  Q          |          |          |        V |
  13+ 0       1.4497      0.00  Q          |          |          |        V |
-------------------------------------------------------------------------
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- 2 Year 24 Hour Post-Development Unit Hydrograph – Area 'B'

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       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/05/16   File Name PRB00224.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'B' - 2 YEAR 24 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 2

       Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 70.7       7.8          0.40     D     0.200     0.500    0.100
 70.7      11.8          0.60     C     0.250     0.500    0.125

Area-averaged adjusted loss rate Fm (In/Hr) =  0.115

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
     3.92   0.200         70.7      51.8       9.29     0.002
     3.92   0.200         98.0      98.0       0.20     0.890

     5.88   0.300         70.7      51.8       9.29     0.002
     5.88   0.300         98.0      98.0       0.20     0.890

Area-averaged catchment yield fraction, Y =  0.446
Area-averaged low loss fraction, Yb =  0.554
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.180 (hours)
Watershed area =      19.60(Ac.)
Catchment Lag time =   0.144 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 57.8061
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.115(In/Hr)
Average low loss rate fraction (Yb) = 0.554 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.190(In)
Computed peak 30-minute rainfall =  0.400(In)
Specified peak 1-hour rainfall =  0.530(In)
Computed peak 3-hour rainfall =  0.890(In)
Specified peak 6-hour rainfall =  1.220(In)
Specified peak 24-hour rainfall =  2.050(In)
```

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Rainfall depth area reduction factors:
Using a total area of      19.60(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.190(In)
30-minute factor = 0.999    Adjusted rainfall =  0.400(In)
1-hour factor = 0.999       Adjusted rainfall =  0.530(In)
3-hour factor = 1.000       Adjusted rainfall =  0.890(In)
6-hour factor = 1.000       Adjusted rainfall =  1.220(In)
24-hour factor = 1.000 Adjusted rainfall =  2.050(In)
------------------------------------------------------------------------

                      U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
------------------------------------------------------------------------
               (K =       237.04 (CFS))

  1                5.288                  12.534
  2               34.549                  69.360
  3               69.675                  83.262
  4               82.481                  30.353
  5               89.872                  17.520
  6               94.465                  10.888
  7               97.135                   6.328
  8               98.300                   2.762
  9               98.899                   1.421
 10               99.309                   0.970
 11               99.711                   0.954
 12               99.926                   0.509
 13              100.000                   0.175
------------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.1898              0.1898
  2              0.2532              0.0634
  3              0.2996              0.0465
  4              0.3377              0.0380
  5              0.3705              0.0328
  6              0.3996              0.0292
  7              0.4254              0.0258
  8              0.4491              0.0237
  9              0.4711              0.0220
 10              0.4917              0.0206
 11              0.5111              0.0194
 12              0.5295              0.0184
 13              0.5499              0.0204
 14              0.5695              0.0196
 15              0.5884              0.0189
 16              0.6066              0.0182
 17              0.6242              0.0176
 18              0.6413              0.0171
 19              0.6579              0.0166
 20              0.6741              0.0161
 21              0.6898              0.0157
 22              0.7051              0.0153
 23              0.7201              0.0150
 24              0.7347              0.0146
 25              0.7490              0.0143
 26              0.7631              0.0140
 27              0.7768              0.0137
 28              0.7902              0.0135
 29              0.8035              0.0132
 30              0.8164              0.0130
 31              0.8292              0.0127
 32              0.8417              0.0125
 33              0.8540              0.0123
 34              0.8662              0.0121
 35              0.8781              0.0119
 36              0.8899              0.0118
 37              0.9011              0.0112
```

38	0.9121	0.0110
39	0.9229	0.0108
40	0.9336	0.0107
41	0.9442	0.0106
42	0.9546	0.0104
43	0.9648	0.0103
44	0.9750	0.0101
45	0.9850	0.0100
46	0.9949	0.0099
47	1.0047	0.0098
48	1.0144	0.0097
49	1.0239	0.0096
50	1.0334	0.0095
51	1.0427	0.0094
52	1.0520	0.0093
53	1.0612	0.0092
54	1.0702	0.0091
55	1.0792	0.0090
56	1.0881	0.0089
57	1.0969	0.0088
58	1.1056	0.0087
59	1.1142	0.0086
60	1.1228	0.0086
61	1.1313	0.0085
62	1.1397	0.0084
63	1.1480	0.0083
64	1.1563	0.0083
65	1.1644	0.0082
66	1.1726	0.0081
67	1.1806	0.0081
68	1.1886	0.0080
69	1.1965	0.0079
70	1.2044	0.0079
71	1.2122	0.0078
72	1.2199	0.0077
73	1.2262	0.0063
74	1.2325	0.0063
75	1.2387	0.0062
76	1.2449	0.0062
77	1.2510	0.0061
78	1.2570	0.0061
79	1.2630	0.0060
80	1.2690	0.0060
81	1.2749	0.0059
82	1.2808	0.0059
83	1.2866	0.0058
84	1.2924	0.0058
85	1.2981	0.0057
86	1.3038	0.0057
87	1.3095	0.0057
88	1.3151	0.0056
89	1.3207	0.0056
90	1.3262	0.0055
91	1.3317	0.0055
92	1.3372	0.0055
93	1.3426	0.0054
94	1.3480	0.0054
95	1.3533	0.0054
96	1.3587	0.0053
97	1.3639	0.0053
98	1.3692	0.0052
99	1.3744	0.0052
100	1.3796	0.0052
101	1.3847	0.0051
102	1.3898	0.0051
103	1.3949	0.0051
104	1.4000	0.0051
105	1.4050	0.0050
106	1.4100	0.0050
107	1.4150	0.0050
108	1.4199	0.0049

109	1.4248	0.0049
110	1.4297	0.0049
111	1.4346	0.0049
112	1.4394	0.0048
113	1.4442	0.0048
114	1.4489	0.0048
115	1.4537	0.0047
116	1.4584	0.0047
117	1.4631	0.0047
118	1.4678	0.0047
119	1.4724	0.0046
120	1.4770	0.0046
121	1.4816	0.0046
122	1.4862	0.0046
123	1.4908	0.0045
124	1.4953	0.0045
125	1.4998	0.0045
126	1.5043	0.0045
127	1.5087	0.0045
128	1.5132	0.0044
129	1.5176	0.0044
130	1.5220	0.0044
131	1.5263	0.0044
132	1.5307	0.0044
133	1.5350	0.0043
134	1.5393	0.0043
135	1.5436	0.0043
136	1.5479	0.0043
137	1.5522	0.0043
138	1.5564	0.0042
139	1.5606	0.0042
140	1.5648	0.0042
141	1.5690	0.0042
142	1.5731	0.0042
143	1.5773	0.0041
144	1.5814	0.0041
145	1.5855	0.0041
146	1.5896	0.0041
147	1.5936	0.0041
148	1.5977	0.0041
149	1.6017	0.0040
150	1.6057	0.0040
151	1.6097	0.0040
152	1.6137	0.0040
153	1.6177	0.0040
154	1.6216	0.0040
155	1.6256	0.0039
156	1.6295	0.0039
157	1.6334	0.0039
158	1.6373	0.0039
159	1.6412	0.0039
160	1.6450	0.0039
161	1.6489	0.0038
162	1.6527	0.0038
163	1.6565	0.0038
164	1.6603	0.0038
165	1.6641	0.0038
166	1.6678	0.0038
167	1.6716	0.0038
168	1.6753	0.0037
169	1.6791	0.0037
170	1.6828	0.0037
171	1.6865	0.0037
172	1.6902	0.0037
173	1.6938	0.0037
174	1.6975	0.0037
175	1.7011	0.0036
176	1.7048	0.0036
177	1.7084	0.0036
178	1.7120	0.0036
179	1.7156	0.0036

180	1.7192	0.0036
181	1.7227	0.0036
182	1.7263	0.0036
183	1.7299	0.0035
184	1.7334	0.0035
185	1.7369	0.0035
186	1.7404	0.0035
187	1.7439	0.0035
188	1.7474	0.0035
189	1.7509	0.0035
190	1.7543	0.0035
191	1.7578	0.0035
192	1.7612	0.0034
193	1.7647	0.0034
194	1.7681	0.0034
195	1.7715	0.0034
196	1.7749	0.0034
197	1.7783	0.0034
198	1.7816	0.0034
199	1.7850	0.0034
200	1.7884	0.0034
201	1.7917	0.0033
202	1.7950	0.0033
203	1.7983	0.0033
204	1.8017	0.0033
205	1.8050	0.0033
206	1.8083	0.0033
207	1.8115	0.0033
208	1.8148	0.0033
209	1.8181	0.0033
210	1.8213	0.0033
211	1.8246	0.0032
212	1.8278	0.0032
213	1.8310	0.0032
214	1.8342	0.0032
215	1.8374	0.0032
216	1.8406	0.0032
217	1.8438	0.0032
218	1.8470	0.0032
219	1.8502	0.0032
220	1.8533	0.0032
221	1.8565	0.0031
222	1.8596	0.0031
223	1.8627	0.0031
224	1.8659	0.0031
225	1.8690	0.0031
226	1.8721	0.0031
227	1.8752	0.0031
228	1.8783	0.0031
229	1.8813	0.0031
230	1.8844	0.0031
231	1.8875	0.0031
232	1.8905	0.0031
233	1.8936	0.0030
234	1.8966	0.0030
235	1.8997	0.0030
236	1.9027	0.0030
237	1.9057	0.0030
238	1.9087	0.0030
239	1.9117	0.0030
240	1.9147	0.0030
241	1.9177	0.0030
242	1.9206	0.0030
243	1.9236	0.0030
244	1.9266	0.0030
245	1.9295	0.0030
246	1.9325	0.0029
247	1.9354	0.0029
248	1.9383	0.0029
249	1.9413	0.0029
250	1.9442	0.0029

251	1.9471	0.0029
252	1.9500	0.0029
253	1.9529	0.0029
254	1.9558	0.0029
255	1.9586	0.0029
256	1.9615	0.0029
257	1.9644	0.0029
258	1.9672	0.0029
259	1.9701	0.0029
260	1.9729	0.0028
261	1.9758	0.0028
262	1.9786	0.0028
263	1.9814	0.0028
264	1.9842	0.0028
265	1.9871	0.0028
266	1.9899	0.0028
267	1.9927	0.0028
268	1.9954	0.0028
269	1.9982	0.0028
270	2.0010	0.0028
271	2.0038	0.0028
272	2.0065	0.0028
273	2.0093	0.0028
274	2.0121	0.0028
275	2.0148	0.0027
276	2.0175	0.0027
277	2.0203	0.0027
278	2.0230	0.0027
279	2.0257	0.0027
280	2.0284	0.0027
281	2.0312	0.0027
282	2.0339	0.0027
283	2.0366	0.0027
284	2.0392	0.0027
285	2.0419	0.0027
286	2.0446	0.0027
287	2.0473	0.0027
288	2.0499	0.0027

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0027	0.0015	0.0012
2	0.0027	0.0015	0.0012
3	0.0027	0.0015	0.0012
4	0.0027	0.0015	0.0012
5	0.0027	0.0015	0.0012
6	0.0027	0.0015	0.0012
7	0.0027	0.0015	0.0012
8	0.0027	0.0015	0.0012
9	0.0027	0.0015	0.0012
10	0.0027	0.0015	0.0012
11	0.0028	0.0015	0.0012
12	0.0028	0.0015	0.0012
13	0.0028	0.0015	0.0012
14	0.0028	0.0015	0.0012
15	0.0028	0.0016	0.0012
16	0.0028	0.0016	0.0013
17	0.0028	0.0016	0.0013
18	0.0028	0.0016	0.0013
19	0.0028	0.0016	0.0013
20	0.0028	0.0016	0.0013
21	0.0029	0.0016	0.0013
22	0.0029	0.0016	0.0013
23	0.0029	0.0016	0.0013
24	0.0029	0.0016	0.0013
25	0.0029	0.0016	0.0013
26	0.0029	0.0016	0.0013
27	0.0029	0.0016	0.0013
28	0.0029	0.0016	0.0013

29	0.0029	0.0016	0.0013
30	0.0030	0.0016	0.0013
31	0.0030	0.0016	0.0013
32	0.0030	0.0016	0.0013
33	0.0030	0.0017	0.0013
34	0.0030	0.0017	0.0013
35	0.0030	0.0017	0.0013
36	0.0030	0.0017	0.0013
37	0.0030	0.0017	0.0014
38	0.0030	0.0017	0.0014
39	0.0031	0.0017	0.0014
40	0.0031	0.0017	0.0014
41	0.0031	0.0017	0.0014
42	0.0031	0.0017	0.0014
43	0.0031	0.0017	0.0014
44	0.0031	0.0017	0.0014
45	0.0031	0.0017	0.0014
46	0.0031	0.0017	0.0014
47	0.0032	0.0018	0.0014
48	0.0032	0.0018	0.0014
49	0.0032	0.0018	0.0014
50	0.0032	0.0018	0.0014
51	0.0032	0.0018	0.0014
52	0.0032	0.0018	0.0014
53	0.0033	0.0018	0.0014
54	0.0033	0.0018	0.0015
55	0.0033	0.0018	0.0015
56	0.0033	0.0018	0.0015
57	0.0033	0.0018	0.0015
58	0.0033	0.0018	0.0015
59	0.0033	0.0019	0.0015
60	0.0034	0.0019	0.0015
61	0.0034	0.0019	0.0015
62	0.0034	0.0019	0.0015
63	0.0034	0.0019	0.0015
64	0.0034	0.0019	0.0015
65	0.0034	0.0019	0.0015
66	0.0035	0.0019	0.0015
67	0.0035	0.0019	0.0015
68	0.0035	0.0019	0.0016
69	0.0035	0.0019	0.0016
70	0.0035	0.0020	0.0016
71	0.0035	0.0020	0.0016
72	0.0036	0.0020	0.0016
73	0.0036	0.0020	0.0016
74	0.0036	0.0020	0.0016
75	0.0036	0.0020	0.0016
76	0.0036	0.0020	0.0016
77	0.0037	0.0020	0.0016
78	0.0037	0.0020	0.0016
79	0.0037	0.0021	0.0016
80	0.0037	0.0021	0.0017
81	0.0037	0.0021	0.0017
82	0.0038	0.0021	0.0017
83	0.0038	0.0021	0.0017
84	0.0038	0.0021	0.0017
85	0.0038	0.0021	0.0017
86	0.0038	0.0021	0.0017
87	0.0039	0.0021	0.0017
88	0.0039	0.0022	0.0017
89	0.0039	0.0022	0.0017
90	0.0039	0.0022	0.0018
91	0.0040	0.0022	0.0018
92	0.0040	0.0022	0.0018
93	0.0040	0.0022	0.0018
94	0.0040	0.0022	0.0018
95	0.0041	0.0023	0.0018
96	0.0041	0.0023	0.0018
97	0.0041	0.0023	0.0018
98	0.0041	0.0023	0.0018
99	0.0042	0.0023	0.0019

100	0.0042	0.0023	0.0019
101	0.0042	0.0023	0.0019
102	0.0043	0.0024	0.0019
103	0.0043	0.0024	0.0019
104	0.0043	0.0024	0.0019
105	0.0044	0.0024	0.0019
106	0.0044	0.0024	0.0019
107	0.0044	0.0024	0.0020
108	0.0044	0.0025	0.0020
109	0.0045	0.0025	0.0020
110	0.0045	0.0025	0.0020
111	0.0045	0.0025	0.0020
112	0.0046	0.0025	0.0020
113	0.0046	0.0026	0.0021
114	0.0046	0.0026	0.0021
115	0.0047	0.0026	0.0021
116	0.0047	0.0026	0.0021
117	0.0048	0.0026	0.0021
118	0.0048	0.0027	0.0021
119	0.0049	0.0027	0.0022
120	0.0049	0.0027	0.0022
121	0.0049	0.0027	0.0022
122	0.0050	0.0028	0.0022
123	0.0050	0.0028	0.0022
124	0.0051	0.0028	0.0023
125	0.0051	0.0028	0.0023
126	0.0051	0.0029	0.0023
127	0.0052	0.0029	0.0023
128	0.0052	0.0029	0.0023
129	0.0053	0.0029	0.0024
130	0.0054	0.0030	0.0024
131	0.0054	0.0030	0.0024
132	0.0055	0.0030	0.0024
133	0.0055	0.0031	0.0025
134	0.0056	0.0031	0.0025
135	0.0057	0.0031	0.0025
136	0.0057	0.0032	0.0025
137	0.0058	0.0032	0.0026
138	0.0058	0.0032	0.0026
139	0.0059	0.0033	0.0026
140	0.0060	0.0033	0.0027
141	0.0061	0.0034	0.0027
142	0.0061	0.0034	0.0027
143	0.0062	0.0034	0.0028
144	0.0063	0.0035	0.0028
145	0.0077	0.0043	0.0035
146	0.0078	0.0043	0.0035
147	0.0079	0.0044	0.0035
148	0.0080	0.0044	0.0036
149	0.0081	0.0045	0.0036
150	0.0082	0.0045	0.0036
151	0.0083	0.0046	0.0037
152	0.0084	0.0047	0.0037
153	0.0086	0.0047	0.0038
154	0.0086	0.0048	0.0038
155	0.0088	0.0049	0.0039
156	0.0089	0.0049	0.0040
157	0.0091	0.0050	0.0040
158	0.0092	0.0051	0.0041
159	0.0094	0.0052	0.0042
160	0.0095	0.0052	0.0042
161	0.0097	0.0054	0.0043
162	0.0098	0.0054	0.0044
163	0.0100	0.0056	0.0045
164	0.0101	0.0056	0.0045
165	0.0104	0.0058	0.0046
166	0.0106	0.0058	0.0047
167	0.0108	0.0060	0.0048
168	0.0110	0.0061	0.0049
169	0.0118	0.0065	0.0052
170	0.0119	0.0066	0.0053

171	0.0123	0.0068	0.0055
172	0.0125	0.0069	0.0056
173	0.0130	0.0072	0.0058
174	0.0132	0.0073	0.0059
175	0.0137	0.0076	0.0061
176	0.0140	0.0078	0.0062
177	0.0146	0.0081	0.0065
178	0.0150	0.0083	0.0067
179	0.0157	0.0087	0.0070
180	0.0161	0.0089	0.0072
181	0.0171	0.0095	0.0076
182	0.0176	0.0096	0.0080
183	0.0189	0.0096	0.0093
184	0.0196	0.0096	0.0100
185	0.0184	0.0096	0.0088
186	0.0194	0.0096	0.0098
187	0.0220	0.0096	0.0124
188	0.0237	0.0096	0.0141
189	0.0292	0.0096	0.0196
190	0.0328	0.0096	0.0232
191	0.0465	0.0096	0.0369
192	0.0634	0.0096	0.0538
193	0.1898	0.0096	0.1802
194	0.0380	0.0096	0.0285
195	0.0258	0.0096	0.0162
196	0.0206	0.0096	0.0110
197	0.0204	0.0096	0.0108
198	0.0182	0.0096	0.0086
199	0.0166	0.0092	0.0074
200	0.0153	0.0085	0.0068
201	0.0143	0.0079	0.0064
202	0.0135	0.0075	0.0060
203	0.0127	0.0071	0.0057
204	0.0121	0.0067	0.0054
205	0.0112	0.0062	0.0050
206	0.0107	0.0059	0.0048
207	0.0103	0.0057	0.0046
208	0.0099	0.0055	0.0044
209	0.0096	0.0053	0.0043
210	0.0093	0.0051	0.0041
211	0.0090	0.0050	0.0040
212	0.0087	0.0048	0.0039
213	0.0085	0.0047	0.0038
214	0.0083	0.0046	0.0037
215	0.0081	0.0045	0.0036
216	0.0079	0.0044	0.0035
217	0.0063	0.0035	0.0028
218	0.0062	0.0034	0.0027
219	0.0060	0.0033	0.0027
220	0.0059	0.0033	0.0026
221	0.0057	0.0032	0.0026
222	0.0056	0.0031	0.0025
223	0.0055	0.0030	0.0025
224	0.0054	0.0030	0.0024
225	0.0053	0.0029	0.0024
226	0.0052	0.0029	0.0023
227	0.0051	0.0028	0.0023
228	0.0050	0.0028	0.0022
229	0.0049	0.0027	0.0022
230	0.0048	0.0027	0.0022
231	0.0047	0.0026	0.0021
232	0.0047	0.0026	0.0021
233	0.0046	0.0025	0.0020
234	0.0045	0.0025	0.0020
235	0.0045	0.0025	0.0020
236	0.0044	0.0024	0.0020
237	0.0043	0.0024	0.0019
238	0.0043	0.0024	0.0019
239	0.0042	0.0023	0.0019
240	0.0042	0.0023	0.0019
241	0.0041	0.0023	0.0018

```
      242              0.0041           0.0022              0.0018
      243              0.0040           0.0022              0.0018
      244              0.0040           0.0022              0.0018
      245              0.0039           0.0022              0.0017
      246              0.0039           0.0021              0.0017
      247              0.0038           0.0021              0.0017
      248              0.0038           0.0021              0.0017
      249              0.0037           0.0021              0.0017
      250              0.0037           0.0020              0.0016
      251              0.0036           0.0020              0.0016
      252              0.0036           0.0020              0.0016
      253              0.0036           0.0020              0.0016
      254              0.0035           0.0020              0.0016
      255              0.0035           0.0019              0.0016
      256              0.0035           0.0019              0.0015
      257              0.0034           0.0019              0.0015
      258              0.0034           0.0019              0.0015
      259              0.0034           0.0019              0.0015
      260              0.0033           0.0018              0.0015
      261              0.0033           0.0018              0.0015
      262              0.0033           0.0018              0.0015
      263              0.0032           0.0018              0.0014
      264              0.0032           0.0018              0.0014
      265              0.0032           0.0018              0.0014
      266              0.0032           0.0018              0.0014
      267              0.0031           0.0017              0.0014
      268              0.0031           0.0017              0.0014
      269              0.0031           0.0017              0.0014
      270              0.0031           0.0017              0.0014
      271              0.0030           0.0017              0.0014
      272              0.0030           0.0017              0.0013
      273              0.0030           0.0017              0.0013
      274              0.0030           0.0016              0.0013
      275              0.0029           0.0016              0.0013
      276              0.0029           0.0016              0.0013
      277              0.0029           0.0016              0.0013
      278              0.0029           0.0016              0.0013
      279              0.0029           0.0016              0.0013
      280              0.0028           0.0016              0.0013
      281              0.0028           0.0016              0.0013
      282              0.0028           0.0015              0.0012
      283              0.0028           0.0015              0.0012
      284              0.0028           0.0015              0.0012
      285              0.0027           0.0015              0.0012
      286              0.0027           0.0015              0.0012
      287              0.0027           0.0015              0.0012
      288              0.0027           0.0015              0.0012
      ------------------------------------------------------------------------
      ------------------------------------------------------------------------
      Total soil rain loss =      0.95(In)
      Total effective rainfall =      1.10(In)
      Peak flow rate in flood hydrograph =     19.92(CFS)
      ------------------------------------------------------------------------
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          24 - H O U R    S T O R M
                     R u n o f f      H y d r o g r a p h
      ------------------------------------------------------------------------
                  Hydrograph in   5   Minute intervals ((CFS))

      ------------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0        5.0      10.0      15.0      20.0
------------------------------------------------------------------------
  0+ 5       0.0001      0.01  Q         |         |         |         |
  0+10       0.0008      0.10  Q         |         |         |         |
  0+15       0.0021      0.20  Q         |         |         |         |
  0+20       0.0037      0.23  Q         |         |         |         |
  0+25       0.0055      0.26  Q         |         |         |         |
  0+30       0.0073      0.27  Q         |         |         |         |
  0+35       0.0093      0.28  Q         |         |         |         |
  0+40       0.0112      0.28  Q         |         |         |         |
  0+45       0.0131      0.28  Q         |         |         |         |
```

0+50	0.0151	0.29	Q	|	|	|	|
0+55	0.0171	0.29	Q	|	|	|	|
1+ 0	0.0191	0.29	Q	|	|	|	|
1+ 5	0.0211	0.29	Q	|	|	|	|
1+10	0.0231	0.29	Q	|	|	|	|
1+15	0.0251	0.29	Q	|	|	|	|
1+20	0.0272	0.29	Q	|	|	|	|
1+25	0.0292	0.30	Q	|	|	|	|
1+30	0.0312	0.30	Q	|	|	|	|
1+35	0.0333	0.30	Q	|	|	|	|
1+40	0.0353	0.30	Q	|	|	|	|
1+45	0.0374	0.30	Q	|	|	|	|
1+50	0.0395	0.30	Q	|	|	|	|
1+55	0.0415	0.30	Q	|	|	|	|
2+ 0	0.0436	0.30	Q	|	|	|	|
2+ 5	0.0457	0.30	QV	|	|	|	|
2+10	0.0478	0.30	QV	|	|	|	|
2+15	0.0499	0.31	QV	|	|	|	|
2+20	0.0520	0.31	QV	|	|	|	|
2+25	0.0542	0.31	QV	|	|	|	|
2+30	0.0563	0.31	QV	|	|	|	|
2+35	0.0584	0.31	QV	|	|	|	|
2+40	0.0606	0.31	QV	|	|	|	|
2+45	0.0627	0.31	QV	|	|	|	|
2+50	0.0649	0.31	QV	|	|	|	|
2+55	0.0671	0.32	QV	|	|	|	|
3+ 0	0.0693	0.32	QV	|	|	|	|
3+ 5	0.0714	0.32	QV	|	|	|	|
3+10	0.0736	0.32	QV	|	|	|	|
3+15	0.0759	0.32	QV	|	|	|	|
3+20	0.0781	0.32	QV	|	|	|	|
3+25	0.0803	0.32	QV	|	|	|	|
3+30	0.0825	0.32	QV	|	|	|	|
3+35	0.0848	0.33	QV	|	|	|	|
3+40	0.0870	0.33	QV	|	|	|	|
3+45	0.0893	0.33	QV	|	|	|	|
3+50	0.0916	0.33	Q V	|	|	|	|
3+55	0.0938	0.33	Q V	|	|	|	|
4+ 0	0.0961	0.33	Q V	|	|	|	|
4+ 5	0.0984	0.33	Q V	|	|	|	|
4+10	0.1007	0.34	Q V	|	|	|	|
4+15	0.1031	0.34	Q V	|	|	|	|
4+20	0.1054	0.34	Q V	|	|	|	|
4+25	0.1077	0.34	Q V	|	|	|	|
4+30	0.1101	0.34	Q V	|	|	|	|
4+35	0.1124	0.34	Q V	|	|	|	|
4+40	0.1148	0.34	Q V	|	|	|	|
4+45	0.1172	0.35	Q V	|	|	|	|
4+50	0.1196	0.35	Q V	|	|	|	|
4+55	0.1220	0.35	Q V	|	|	|	|
5+ 0	0.1244	0.35	Q V	|	|	|	|
5+ 5	0.1268	0.35	Q V	|	|	|	|
5+10	0.1293	0.35	Q V	|	|	|	|
5+15	0.1317	0.36	Q V	|	|	|	|
5+20	0.1342	0.36	Q V	|	|	|	|
5+25	0.1367	0.36	Q V	|	|	|	|
5+30	0.1392	0.36	Q V	|	|	|	|
5+35	0.1417	0.36	Q V	|	|	|	|
5+40	0.1442	0.36	Q V	|	|	|	|
5+45	0.1467	0.37	Q V	|	|	|	|
5+50	0.1492	0.37	Q V	|	|	|	|
5+55	0.1518	0.37	Q V	|	|	|	|
6+ 0	0.1543	0.37	Q V	|	|	|	|
6+ 5	0.1569	0.37	Q V	|	|	|	|
6+10	0.1595	0.38	Q V	|	|	|	|
6+15	0.1621	0.38	Q V	|	|	|	|
6+20	0.1647	0.38	Q V	|	|	|	|
6+25	0.1673	0.38	Q V	|	|	|	|
6+30	0.1700	0.38	Q V	|	|	|	|
6+35	0.1726	0.39	Q V	|	|	|	|
6+40	0.1753	0.39	Q V	|	|	|	|

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 6+45      0.1780      0.39  Q  V      |          |          |          |
 6+50      0.1807      0.39  Q   V     |          |          |          |
 6+55      0.1834      0.39  Q   V     |          |          |          |
 7+ 0      0.1861      0.40  Q   V     |          |          |          |
 7+ 5      0.1889      0.40  Q   V     |          |          |          |
 7+10      0.1916      0.40  Q   V     |          |          |          |
 7+15      0.1944      0.40  Q   V     |          |          |          |
 7+20      0.1972      0.41  Q   V     |          |          |          |
 7+25      0.2000      0.41  Q   V     |          |          |          |
 7+30      0.2029      0.41  Q   V     |          |          |          |
 7+35      0.2057      0.41  Q   V     |          |          |          |
 7+40      0.2086      0.42  Q   V     |          |          |          |
 7+45      0.2114      0.42  Q   V     |          |          |          |
 7+50      0.2143      0.42  Q   V     |          |          |          |
 7+55      0.2173      0.42  Q   V     |          |          |          |
 8+ 0      0.2202      0.43  Q   V     |          |          |          |
 8+ 5      0.2231      0.43  Q   V     |          |          |          |
 8+10      0.2261      0.43  Q    V    |          |          |          |
 8+15      0.2291      0.43  Q    V    |          |          |          |
 8+20      0.2321      0.44  Q    V    |          |          |          |
 8+25      0.2351      0.44  Q    V    |          |          |          |
 8+30      0.2382      0.44  Q    V    |          |          |          |
 8+35      0.2413      0.45  Q    V    |          |          |          |
 8+40      0.2444      0.45  Q    V    |          |          |          |
 8+45      0.2475      0.45  Q    V    |          |          |          |
 8+50      0.2506      0.46  Q    V    |          |          |          |
 8+55      0.2538      0.46  Q    V    |          |          |          |
 9+ 0      0.2569      0.46  Q    V    |          |          |          |
 9+ 5      0.2601      0.47  Q    V    |          |          |          |
 9+10      0.2634      0.47  Q    V    |          |          |          |
 9+15      0.2666      0.47  Q    V    |          |          |          |
 9+20      0.2699      0.48  Q     V   |          |          |          |
 9+25      0.2732      0.48  Q     V   |          |          |          |
 9+30      0.2765      0.48  Q     V   |          |          |          |
 9+35      0.2799      0.49  Q     V   |          |          |          |
 9+40      0.2832      0.49  Q     V   |          |          |          |
 9+45      0.2866      0.49  Q     V   |          |          |          |
 9+50      0.2901      0.50  Q     V   |          |          |          |
 9+55      0.2935      0.50  |Q    V   |          |          |          |
10+ 0      0.2970      0.51  |Q    V   |          |          |          |
10+ 5      0.3005      0.51  |Q    V   |          |          |          |
10+10      0.3041      0.52  |Q    V   |          |          |          |
10+15      0.3077      0.52  |Q    V   |          |          |          |
10+20      0.3113      0.52  |Q    V   |          |          |          |
10+25      0.3149      0.53  |Q     V  |          |          |          |
10+30      0.3186      0.53  |Q     V  |          |          |          |
10+35      0.3223      0.54  |Q     V  |          |          |          |
10+40      0.3261      0.54  |Q     V  |          |          |          |
10+45      0.3298      0.55  |Q     V  |          |          |          |
10+50      0.3337      0.55  |Q     V  |          |          |          |
10+55      0.3375      0.56  |Q     V  |          |          |          |
11+ 0      0.3414      0.56  |Q     V  |          |          |          |
11+ 5      0.3453      0.57  |Q     V  |          |          |          |
11+10      0.3493      0.58  |Q     V  |          |          |          |
11+15      0.3533      0.58  |Q     V  |          |          |          |
11+20      0.3574      0.59  |Q     V  |          |          |          |
11+25      0.3615      0.59  |Q      V |          |          |          |
11+30      0.3656      0.60  |Q      V |          |          |          |
11+35      0.3698      0.61  |Q      V |          |          |          |
11+40      0.3740      0.61  |Q      V |          |          |          |
11+45      0.3783      0.62  |Q      V |          |          |          |
11+50      0.3826      0.63  |Q      V |          |          |          |
11+55      0.3870      0.64  |Q      V |          |          |          |
12+ 0      0.3915      0.64  |Q      V |          |          |          |
12+ 5      0.3960      0.66  |Q      V |          |          |          |
12+10      0.4009      0.71  |Q      V |          |          |          |
12+15      0.4062      0.77  |Q       V|          |          |          |
12+20      0.4117      0.80  |Q       V|          |          |          |
12+25      0.4174      0.82  |Q       V|          |          |          |
12+30      0.4231      0.84  |Q       V|          |          |          |
12+35      0.4290      0.85  |Q       V|          |          |          |
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12+40       0.4349      0.86  |Q       V|         |          |          |
12+45       0.4409      0.87  |Q       V|         |          |          |
12+50       0.4470      0.89  |Q       V|         |          |          |
12+55       0.4532      0.90  |Q        V         |          |          |
13+ 0       0.4595      0.91  |Q        V         |          |          |
13+ 5       0.4658      0.92  |Q        V         |          |          |
13+10       0.4723      0.94  |Q        V         |          |          |
13+15       0.4789      0.95  |Q        V         |          |          |
13+20       0.4855      0.97  |Q        V         |          |          |
13+25       0.4923      0.98  |Q        V         |          |          |
13+30       0.4991      1.00  |Q        |V         |          |          |
13+35       0.5061      1.02  | Q       |V         |          |          |
13+40       0.5132      1.03  | Q       |V         |          |          |
13+45       0.5205      1.05  | Q       |V         |          |          |
13+50       0.5279      1.07  | Q       |V         |          |          |
13+55       0.5354      1.09  | Q       |V         |          |          |
14+ 0       0.5431      1.11  | Q       | V        |          |          |
14+ 5       0.5509      1.14  | Q       | V        |          |          |
14+10       0.5590      1.18  | Q       | V        |          |          |
14+15       0.5674      1.22  | Q       | V        |          |          |
14+20       0.5760      1.25  | Q       | V        |          |          |
14+25       0.5849      1.29  | Q       |  V       |          |          |
14+30       0.5940      1.32  | Q       |  V       |          |          |
14+35       0.6033      1.36  | Q       |  V       |          |          |
14+40       0.6129      1.39  | Q       |  V       |          |          |
14+45       0.6228      1.44  | Q       |  V       |          |          |
14+50       0.6330      1.48  | Q       |   V      |          |          |
14+55       0.6435      1.53  |  Q      |   V      |          |          |
15+ 0       0.6544      1.58  |  Q      |   V      |          |          |
15+ 5       0.6657      1.64  |  Q      |   V      |          |          |
15+10       0.6775      1.71  |  Q      |    V     |          |          |
15+15       0.6899      1.81  |  Q      |    V     |          |          |
15+20       0.7034      1.96  |  Q      |    V     |          |          |
15+25       0.7180      2.12  |   Q     |     V    |          |          |
15+30       0.7329      2.16  |   Q     |     V    |          |          |
15+35       0.7482      2.22  |   Q     |     V    |          |          |
15+40       0.7654      2.50  |   Q     |      V   |          |          |
15+45       0.7856      2.93  |    Q    |      V   |          |          |
15+50       0.8103      3.59  |      Q  |       V  |          |          |
15+55       0.8418      4.57  |        Q|       V  |          |          |
16+ 0       0.8849      6.26  |         | Q      V|          |          |
16+ 5       0.9566     10.40  |         |         QV          |          |
16+10       1.0890     19.24  |         |          |   V      |        Q |
16+15       1.2262     19.92  |         |          |      V   |         Q|
16+20       1.2999     10.70  |         |          |Q       V|          |
16+25       1.3496      7.21  |         |   Q      |          V          |
16+30       1.3857      5.24  |         Q          |          V          |
16+35       1.4127      3.91  |       Q  |         |          |V         |
16+40       1.4322      2.84  |     Q    |         |          |V         |
16+45       1.4479      2.28  |    Q     |         |          | V        |
16+50       1.4616      1.98  |  Q       |         |          | V        |
16+55       1.4740      1.81  |  Q       |         |          | V        |
17+ 0       1.4851      1.60  |  Q       |         |          |  V       |
17+ 5       1.4950      1.44  | Q        |         |          |  V       |
17+10       1.5040      1.31  | Q        |         |          |  V       |
17+15       1.5125      1.23  | Q        |         |          |  V       |
17+20       1.5205      1.17  | Q        |         |          |  V       |
17+25       1.5282      1.11  | Q        |         |          |   V      |
17+30       1.5355      1.07  | Q        |         |          |   V      |
17+35       1.5426      1.03  | Q        |         |          |   V      |
17+40       1.5495      0.99  |Q         |         |          |   V      |
17+45       1.5561      0.96  |Q         |         |          |   V      |
17+50       1.5625      0.93  |Q         |         |          |   V      |
17+55       1.5687      0.91  |Q         |         |          |    V     |
18+ 0       1.5748      0.88  |Q         |         |          |    V     |
18+ 5       1.5807      0.85  |Q         |         |          |    V     |
18+10       1.5861      0.79  |Q         |         |          |    V     |
18+15       1.5911      0.72  |Q         |         |          |    V     |
18+20       1.5958      0.68  |Q         |         |          |    V     |
18+25       1.6003      0.66  |Q         |         |          |    V     |
18+30       1.6047      0.63  |Q         |         |          |    V     |
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18+35      1.6089      0.62  |Q        |         |         |    V    |
18+40      1.6131      0.60  |Q        |         |         |     V   |
18+45      1.6171      0.59  |Q        |         |         |     V   |
18+50      1.6211      0.57  |Q        |         |         |     V   |
18+55      1.6249      0.56  |Q        |         |         |     V   |
19+ 0      1.6287      0.55  |Q        |         |         |     V   |
19+ 5      1.6325      0.54  |Q        |         |         |     V   |
19+10      1.6361      0.53  |Q        |         |         |     V   |
19+15      1.6397      0.52  |Q        |         |         |     V   |
19+20      1.6433      0.51  |Q        |         |         |     V   |
19+25      1.6467      0.50  |Q        |         |         |     V   |
19+30      1.6501      0.50  Q         |         |         |     V   |
19+35      1.6535      0.49  Q         |         |         |     V   |
19+40      1.6568      0.48  Q         |         |         |      V  |
19+45      1.6601      0.47  Q         |         |         |      V  |
19+50      1.6633      0.47  Q         |         |         |      V  |
19+55      1.6665      0.46  Q         |         |         |      V  |
20+ 0      1.6696      0.45  Q         |         |         |      V  |
20+ 5      1.6727      0.45  Q         |         |         |      V  |
20+10      1.6757      0.44  Q         |         |         |      V  |
20+15      1.6787      0.44  Q         |         |         |      V  |
20+20      1.6817      0.43  Q         |         |         |      V  |
20+25      1.6846      0.42  Q         |         |         |      V  |
20+30      1.6875      0.42  Q         |         |         |      V  |
20+35      1.6903      0.41  Q         |         |         |      V  |
20+40      1.6932      0.41  Q         |         |         |      V  |
20+45      1.6959      0.40  Q         |         |         |      V  |
20+50      1.6987      0.40  Q         |         |         |      V  |
20+55      1.7014      0.40  Q         |         |         |       V |
21+ 0      1.7041      0.39  Q         |         |         |       V |
21+ 5      1.7068      0.39  Q         |         |         |       V |
21+10      1.7094      0.38  Q         |         |         |       V |
21+15      1.7120      0.38  Q         |         |         |       V |
21+20      1.7146      0.37  Q         |         |         |       V |
21+25      1.7172      0.37  Q         |         |         |       V |
21+30      1.7197      0.37  Q         |         |         |       V |
21+35      1.7222      0.36  Q         |         |         |       V |
21+40      1.7247      0.36  Q         |         |         |       V |
21+45      1.7271      0.36  Q         |         |         |       V |
21+50      1.7296      0.35  Q         |         |         |       V |
21+55      1.7320      0.35  Q         |         |         |       V |
22+ 0      1.7344      0.35  Q         |         |         |       V |
22+ 5      1.7367      0.34  Q         |         |         |       V |
22+10      1.7391      0.34  Q         |         |         |       V |
22+15      1.7414      0.34  Q         |         |         |       V |
22+20      1.7437      0.33  Q         |         |         |       V |
22+25      1.7460      0.33  Q         |         |         |        V|
22+30      1.7482      0.33  Q         |         |         |        V|
22+35      1.7505      0.33  Q         |         |         |        V|
22+40      1.7527      0.32  Q         |         |         |        V|
22+45      1.7549      0.32  Q         |         |         |        V|
22+50      1.7571      0.32  Q         |         |         |        V|
22+55      1.7593      0.32  Q         |         |         |        V|
23+ 0      1.7615      0.31  Q         |         |         |        V|
23+ 5      1.7636      0.31  Q         |         |         |        V|
23+10      1.7657      0.31  Q         |         |         |        V|
23+15      1.7678      0.31  Q         |         |         |        V|
23+20      1.7699      0.30  Q         |         |         |        V|
23+25      1.7720      0.30  Q         |         |         |        V|
23+30      1.7741      0.30  Q         |         |         |        V|
23+35      1.7761      0.30  Q         |         |         |        V|
23+40      1.7782      0.30  Q         |         |         |        V|
23+45      1.7802      0.29  Q         |         |         |        V|
23+50      1.7822      0.29  Q         |         |         |        V|
23+55      1.7842      0.29  Q         |         |         |        V|
24+ 0      1.7862      0.29  Q         |         |         |        V|
24+ 5      1.7880      0.27  Q         |         |         |        V|
24+10      1.7893      0.19  Q         |         |         |        V|
24+15      1.7899      0.09  Q         |         |         |        V|
24+20      1.7903      0.05  Q         |         |         |        V|
24+25      1.7905      0.03  Q         |         |         |        V|
```

```
   24+30       1.7906      0.02  Q         |         |         |        V|
   24+35       1.7906      0.01  Q         |         |         |        V|
   24+40       1.7907      0.00  Q         |         |         |        V|
   24+45       1.7907      0.00  Q         |         |         |        V|
   24+50       1.7907      0.00  Q         |         |         |        V|
   24+55       1.7907      0.00  Q         |         |         |        V|
   25+ 0       1.7907      0.00  Q         |         |         |         V
-------------------------------------------------------------------------
```

- 5 Year 3 Hour Post-Development Unit Hydrograph – Area 'B'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/05/16   File Name PRB00503.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

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RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'B' - 5 YEAR 3 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 5

       Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 70.7       7.8          0.40     D     0.200     0.500    0.100
 70.7      11.8          0.60     C     0.250     0.500    0.125

Area-averaged adjusted loss rate Fm (In/Hr) =  0.115

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
     3.92   0.200         70.7      51.8       9.29     0.043
     3.92   0.200         98.0      98.0       0.20     0.923

     5.88   0.300         70.7      51.8       9.29     0.043
     5.88   0.300         98.0      98.0       0.20     0.923

Area-averaged catchment yield fraction, Y =  0.483
Area-averaged low loss fraction, Yb =  0.517
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.180 (hours)
Watershed area =      19.60(Ac.)
Catchment Lag time =   0.144 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 57.9347
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.115(In/Hr)
Average low loss rate fraction (Yb) = 0.517 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.260(In)
Computed peak 30-minute rainfall =  0.590(In)
Specified peak 1-hour rainfall =  0.780(In)
Computed peak 3-hour rainfall =  1.310(In)
Specified peak 6-hour rainfall =  1.810(In)
Specified peak 24-hour rainfall =  3.030(In)
```

```
Rainfall depth area reduction factors:
Using a total area of      19.60(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.260(In)
30-minute factor = 0.999    Adjusted rainfall =  0.589(In)
1-hour factor = 0.999       Adjusted rainfall =  0.779(In)
3-hour factor = 1.000       Adjusted rainfall =  1.310(In)
6-hour factor = 1.000       Adjusted rainfall =  1.810(In)
24-hour factor = 1.000 Adjusted rainfall =  3.030(In)
```

U n i t H y d r o g r a p h

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 237.04 (CFS))	
1	5.306	12.576
2	34.708	69.694
3	69.772	83.117
4	82.552	30.293
5	89.929	17.486
6	94.508	10.853
7	97.162	6.291
8	98.311	2.724
9	98.909	1.417
10	99.317	0.968
11	99.719	0.951
12	99.930	0.501
13	100.000	0.167

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.2598	0.2598
2	0.3567	0.0969
3	0.4293	0.0727
4	0.4897	0.0604
5	0.5423	0.0526
6	0.5895	0.0472
7	0.6272	0.0378
8	0.6619	0.0347
9	0.6940	0.0322
10	0.7241	0.0301
11	0.7524	0.0283
12	0.7793	0.0268
13	0.8093	0.0300
14	0.8382	0.0289
15	0.8660	0.0278
16	0.8928	0.0268
17	0.9187	0.0260
18	0.9439	0.0252
19	0.9683	0.0244
20	0.9921	0.0238
21	1.0153	0.0231
22	1.0378	0.0226
23	1.0599	0.0220
24	1.0814	0.0215
25	1.1025	0.0211
26	1.1231	0.0206
27	1.1433	0.0202
28	1.1631	0.0198
29	1.1826	0.0195
30	1.2017	0.0191
31	1.2205	0.0188
32	1.2389	0.0185
33	1.2571	0.0182
34	1.2749	0.0179
35	1.2925	0.0176
36	1.3098	0.0173

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0173	0.0090	0.0084
2	0.0176	0.0091	0.0085
3	0.0182	0.0094	0.0088
4	0.0185	0.0095	0.0089
5	0.0191	0.0096	0.0095
6	0.0195	0.0096	0.0099
7	0.0202	0.0096	0.0106
8	0.0206	0.0096	0.0110
9	0.0215	0.0096	0.0120
10	0.0220	0.0096	0.0125
11	0.0231	0.0096	0.0136
12	0.0238	0.0096	0.0142
13	0.0252	0.0096	0.0156
14	0.0260	0.0096	0.0164
15	0.0278	0.0096	0.0182
16	0.0289	0.0096	0.0193
17	0.0268	0.0096	0.0173
18	0.0283	0.0096	0.0188
19	0.0322	0.0096	0.0226
20	0.0347	0.0096	0.0251
21	0.0472	0.0096	0.0376
22	0.0526	0.0096	0.0430
23	0.0727	0.0096	0.0631
24	0.0969	0.0096	0.0873
25	0.2598	0.0096	0.2502
26	0.0604	0.0096	0.0508
27	0.0378	0.0096	0.0282
28	0.0301	0.0096	0.0205
29	0.0300	0.0096	0.0205
30	0.0268	0.0096	0.0172
31	0.0244	0.0096	0.0149
32	0.0226	0.0096	0.0130
33	0.0211	0.0096	0.0115
34	0.0198	0.0096	0.0102
35	0.0188	0.0096	0.0092
36	0.0179	0.0092	0.0086

Total soil rain loss = 0.34(In)
Total effective rainfall = 0.97(In)
Peak flow rate in flood hydrograph = 29.29(CFS)

3 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	7.5	15.0	22.5	30.0
0+ 5	0.0007	0.11	Q	|	|	|	|
0+10	0.0055	0.69	Q	|	|	|	|
0+15	0.0151	1.40	VQ	|	|	|	|
0+20	0.0267	1.68	V Q	|	|	|	|
0+25	0.0396	1.87	|VQ	|	|	|	|
0+30	0.0536	2.03	|VQ	|	|	|	|
0+35	0.0687	2.18	|VQ	|	|	|	|
0+40	0.0846	2.32	| VQ	|	|	|	|
0+45	0.1015	2.46	| VQ	|	|	|	|
0+50	0.1195	2.61	| Q	|	|	|	|
0+55	0.1386	2.77	| Q	|	|	|	|
1+ 0	0.1589	2.95	| QV	|	|	|	|
1+ 5	0.1806	3.15	| Q	|	|	|	|
1+10	0.2037	3.36	| QV	|	|	|	|
1+15	0.2286	3.61	| QV	|	|	|	|
1+20	0.2554	3.89	| QV	|	|	|	|

```
   1+25       0.2841      4.16  |    Q V  |         |         |         |
   1+30       0.3131      4.22  |    Q V  |         |         |         |
   1+35       0.3427      4.29  |    Q  V |         |         |         |
   1+40       0.3751      4.70  |     Q  V|         |         |         |
   1+45       0.4122      5.39  |      Q  V         |         |         |
   1+50       0.4581      6.67  |       Q |V        |         |         |
   1+55       0.5167      8.50  |         |Q V      |         |         |
   2+ 0       0.5933     11.13  |         |   QV    |         |         |
   2+ 5       0.7102     16.97  |         |       V | Q       |         |
   2+10       0.9078     28.70  |         |         |  V      |       Q |
   2+15       1.1095     29.29  |         |         |      V  |        Q|
   2+20       1.2245     16.69  |         |         | Q       |V        |
   2+25       1.3038     11.51  |         |    Q    |         |  V      |
   2+30       1.3634      8.66  |         |Q        |         |   V     |
   2+35       1.4099      6.75  |       Q |         |         |    V    |
   2+40       1.4455      5.17  |     Q   |         |         |     V   |
   2+45       1.4746      4.23  |    Q    |         |         |      V  |
   2+50       1.4996      3.62  |   Q     |         |         |       V |
   2+55       1.5215      3.19  |   Q     |         |         |       V |
   3+ 0       1.5404      2.74  |  Q      |         |         |        V|
   3+ 5       1.5563      2.30  |  Q      |         |         |        V|
   3+10       1.5667      1.51  | Q       |         |         |        V|
   3+15       1.5716      0.71  Q         |         |         |        V|
   3+20       1.5744      0.41  Q         |         |         |        V|
   3+25       1.5760      0.23  Q         |         |         |        V|
   3+30       1.5769      0.13  Q         |         |         |        V|
   3+35       1.5774      0.07  Q         |         |         |        V|
   3+40       1.5776      0.04  Q         |         |         |        V|
   3+45       1.5778      0.02  Q         |         |         |        V|
   3+50       1.5779      0.01  Q         |         |         |        V|
   3+55       1.5779      0.01  Q         |         |         |        V|
   4+ 0       1.5779      0.00  Q         |         |         |         V
-------------------------------------------------------------------------
```

- 5 Year 6 Hour Post-Development Unit Hydrograph – Area 'B'

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        U n i t   H y d r o g r a p h   A n a l y s i s

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        Study date  10/05/16   File Name PRB00506.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

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RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'B' - 5 YEAR 6 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

        Storm Event Year = 5

        Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 70.7       7.8          0.40     D     0.200     0.500    0.100
 70.7      11.8          0.60     C     0.250     0.500    0.125

Area-averaged adjusted loss rate Fm (In/Hr) =  0.115

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
     3.92   0.200         70.7      51.8       9.29     0.043
     3.92   0.200         98.0      98.0       0.20     0.923

     5.88   0.300         70.7      51.8       9.29     0.043
     5.88   0.300         98.0      98.0       0.20     0.923

Area-averaged catchment yield fraction, Y =  0.483
Area-averaged low loss fraction, Yb =  0.517
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.180 (hours)
Watershed area =      19.60(Ac.)
Catchment Lag time =   0.144 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 57.9347
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.115(In/Hr)
Average low loss rate fraction (Yb) = 0.517 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.260(In)
Computed peak 30-minute rainfall =  0.590(In)
Specified peak 1-hour rainfall =  0.780(In)
Computed peak 3-hour rainfall =  1.310(In)
Specified peak 6-hour rainfall =  1.810(In)
Specified peak 24-hour rainfall =  3.030(In)
```

```
Rainfall depth area reduction factors:
Using a total area of      19.60(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.260(In)
30-minute factor = 0.999    Adjusted rainfall =  0.589(In)
1-hour factor = 0.999       Adjusted rainfall =  0.779(In)
3-hour factor = 1.000       Adjusted rainfall =  1.310(In)
6-hour factor = 1.000       Adjusted rainfall =  1.810(In)
24-hour factor = 1.000 Adjusted rainfall =  3.030(In)
```

U n i t H y d r o g r a p h

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 237.04 (CFS))	
1	5.306	12.576
2	34.708	69.694
3	69.772	83.117
4	82.552	30.293
5	89.929	17.486
6	94.508	10.853
7	97.162	6.291
8	98.311	2.724
9	98.909	1.417
10	99.317	0.968
11	99.719	0.951
12	99.930	0.501
13	100.000	0.167

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.2598	0.2598
2	0.3567	0.0969
3	0.4293	0.0727
4	0.4897	0.0604
5	0.5423	0.0526
6	0.5895	0.0472
7	0.6272	0.0378
8	0.6619	0.0347
9	0.6940	0.0322
10	0.7241	0.0301
11	0.7524	0.0283
12	0.7793	0.0268
13	0.8093	0.0300
14	0.8382	0.0289
15	0.8660	0.0278
16	0.8928	0.0268
17	0.9187	0.0260
18	0.9439	0.0252
19	0.9683	0.0244
20	0.9921	0.0238
21	1.0153	0.0231
22	1.0378	0.0226
23	1.0599	0.0220
24	1.0814	0.0215
25	1.1025	0.0211
26	1.1231	0.0206
27	1.1433	0.0202
28	1.1631	0.0198
29	1.1826	0.0195
30	1.2017	0.0191
31	1.2205	0.0188
32	1.2389	0.0185
33	1.2571	0.0182
34	1.2749	0.0179
35	1.2925	0.0176
36	1.3098	0.0173
37	1.3267	0.0168

38	1.3433	0.0166
39	1.3597	0.0164
40	1.3758	0.0162
41	1.3918	0.0159
42	1.4075	0.0157
43	1.4230	0.0155
44	1.4384	0.0153
45	1.4535	0.0152
46	1.4685	0.0150
47	1.4833	0.0148
48	1.4980	0.0146
49	1.5125	0.0145
50	1.5268	0.0143
51	1.5409	0.0142
52	1.5550	0.0140
53	1.5688	0.0139
54	1.5826	0.0137
55	1.5962	0.0136
56	1.6097	0.0135
57	1.6230	0.0133
58	1.6362	0.0132
59	1.6493	0.0131
60	1.6623	0.0130
61	1.6752	0.0129
62	1.6879	0.0128
63	1.7006	0.0126
64	1.7131	0.0125
65	1.7256	0.0124
66	1.7379	0.0123
67	1.7501	0.0122
68	1.7623	0.0121
69	1.7743	0.0120
70	1.7863	0.0119
71	1.7981	0.0119
72	1.8099	0.0118

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0118	0.0061	0.0057
2	0.0119	0.0061	0.0057
3	0.0120	0.0062	0.0058
4	0.0121	0.0063	0.0059
5	0.0123	0.0064	0.0060
6	0.0124	0.0064	0.0060
7	0.0126	0.0065	0.0061
8	0.0128	0.0066	0.0062
9	0.0130	0.0067	0.0063
10	0.0131	0.0068	0.0063
11	0.0133	0.0069	0.0065
12	0.0135	0.0070	0.0065
13	0.0137	0.0071	0.0066
14	0.0139	0.0072	0.0067
15	0.0142	0.0073	0.0068
16	0.0143	0.0074	0.0069
17	0.0146	0.0076	0.0071
18	0.0148	0.0076	0.0072
19	0.0152	0.0078	0.0073
20	0.0153	0.0079	0.0074
21	0.0157	0.0081	0.0076
22	0.0159	0.0082	0.0077
23	0.0164	0.0085	0.0079
24	0.0166	0.0086	0.0080
25	0.0173	0.0090	0.0084
26	0.0176	0.0091	0.0085
27	0.0182	0.0094	0.0088
28	0.0185	0.0095	0.0089
29	0.0191	0.0096	0.0095
30	0.0195	0.0096	0.0099
31	0.0202	0.0096	0.0106

32	0.0206	0.0096	0.0110
33	0.0215	0.0096	0.0120
34	0.0220	0.0096	0.0125
35	0.0231	0.0096	0.0136
36	0.0238	0.0096	0.0142
37	0.0252	0.0096	0.0156
38	0.0260	0.0096	0.0164
39	0.0278	0.0096	0.0182
40	0.0289	0.0096	0.0193
41	0.0268	0.0096	0.0173
42	0.0283	0.0096	0.0188
43	0.0322	0.0096	0.0226
44	0.0347	0.0096	0.0251
45	0.0472	0.0096	0.0376
46	0.0526	0.0096	0.0430
47	0.0727	0.0096	0.0631
48	0.0969	0.0096	0.0873
49	0.2598	0.0096	0.2502
50	0.0604	0.0096	0.0508
51	0.0378	0.0096	0.0282
52	0.0301	0.0096	0.0205
53	0.0300	0.0096	0.0205
54	0.0268	0.0096	0.0172
55	0.0244	0.0096	0.0149
56	0.0226	0.0096	0.0130
57	0.0211	0.0096	0.0115
58	0.0198	0.0096	0.0102
59	0.0188	0.0096	0.0092
60	0.0179	0.0092	0.0086
61	0.0168	0.0087	0.0081
62	0.0162	0.0083	0.0078
63	0.0155	0.0080	0.0075
64	0.0150	0.0077	0.0072
65	0.0145	0.0075	0.0070
66	0.0140	0.0072	0.0068
67	0.0136	0.0070	0.0066
68	0.0132	0.0068	0.0064
69	0.0129	0.0066	0.0062
70	0.0125	0.0065	0.0061
71	0.0122	0.0063	0.0059
72	0.0119	0.0062	0.0058

Total soil rain loss = 0.60(In)
Total effective rainfall = 1.21(In)
Peak flow rate in flood hydrograph = 29.29(CFS)

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6 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	7.5	15.0	22.5	30.0
0+ 5	0.0005	0.07	Q	|	|	|	|
0+10	0.0037	0.47	Q	|	|	|	|
0+15	0.0102	0.95	VQ	|	|	|	|
0+20	0.0180	1.13	VQ	|	|	|	|
0+25	0.0266	1.24	VQ	|	|	|	|
0+30	0.0356	1.32	VQ	|	|	|	|
0+35	0.0450	1.37	VQ	|	|	|	|
0+40	0.0547	1.40	|Q	|	|	|	|
0+45	0.0645	1.43	|Q	|	|	|	|
0+50	0.0745	1.45	|Q	|	|	|	|
0+55	0.0847	1.48	|Q	|	|	|	|
1+ 0	0.0950	1.50	|Q	|	|	|	|
1+ 5	0.1055	1.52	| Q	|	|	|	|
1+10	0.1161	1.54	| Q	|	|	|	|
1+15	0.1269	1.56	| Q	|	|	|	|

```
   1+20       0.1378      1.59  | Q       |         |         |         |
   1+25       0.1489      1.61  | QV      |         |         |         |
   1+30       0.1602      1.64  | QV      |         |         |         |
   1+35       0.1717      1.67  | QV      |         |         |         |
   1+40       0.1834      1.69  | QV      |         |         |         |
   1+45       0.1952      1.72  | QV      |         |         |         |
   1+50       0.2073      1.76  | Q V     |         |         |         |
   1+55       0.2197      1.79  | Q V     |         |         |         |
   2+ 0       0.2322      1.82  | Q V     |         |         |         |
   2+ 5       0.2451      1.86  | Q V     |         |         |         |
   2+10       0.2582      1.91  | Q  V    |         |         |         |
   2+15       0.2717      1.96  | Q  V    |         |         |         |
   2+20       0.2856      2.01  | Q  V    |         |         |         |
   2+25       0.2998      2.06  | Q   V   |         |         |         |
   2+30       0.3145      2.14  | Q   V   |         |         |         |
   2+35       0.3299      2.23  | Q   V   |         |         |         |
   2+40       0.3460      2.35  |  Q   V  |         |         |         |
   2+45       0.3631      2.48  |  Q   V  |         |         |         |
   2+50       0.3811      2.62  |  Q   V  |         |         |         |
   2+55       0.4003      2.78  |  Q    V |         |         |         |
   3+ 0       0.4206      2.95  |  Q    V |         |         |         |
   3+ 5       0.4423      3.15  |   Q   V |         |         |         |
   3+10       0.4654      3.36  |   Q    V|         |         |         |
   3+15       0.4903      3.61  |   Q    V|         |         |         |
   3+20       0.5171      3.89  |    Q    V         |         |         |
   3+25       0.5457      4.16  |    Q    |V        |         |         |
   3+30       0.5748      4.22  |    Q    |V        |         |         |
   3+35       0.6044      4.29  |    Q    | V       |         |         |
   3+40       0.6367      4.70  |     Q   | V       |         |         |
   3+45       0.6739      5.39  |      Q  |  V      |         |         |
   3+50       0.7198      6.67  |       Q |   V     |         |         |
   3+55       0.7784      8.50  |         |Q   V    |         |         |
   4+ 0       0.8550     11.13  |         |   Q  V  |         |         |
   4+ 5       0.9719     16.97  |         |        V| Q       |         |
   4+10       1.1695     28.70  |         |         |  V      |        Q |
   4+15       1.3712     29.29  |         |         |      V  |         Q|
   4+20       1.4862     16.69  |         |         | Q       V         |
   4+25       1.5655     11.51  |         |    Q    |         |V        |
   4+30       1.6251      8.66  |         |Q        |         | V       |
   4+35       1.6716      6.75  |       Q |         |         |  V      |
   4+40       1.7072      5.17  |     Q   |         |         |   V     |
   4+45       1.7363      4.23  |    Q    |         |         |    V    |
   4+50       1.7613      3.62  |   Q     |         |         |    V    |
   4+55       1.7832      3.19  |   Q     |         |         |     V   |
   5+ 0       1.8021      2.74  |  Q      |         |         |     V   |
   5+ 5       1.8187      2.40  |  Q      |         |         |     V   |
   5+10       1.8337      2.17  | Q       |         |         |      V  |
   5+15       1.8476      2.03  | Q       |         |         |      V  |
   5+20       1.8609      1.92  | Q       |         |         |      V  |
   5+25       1.8735      1.83  | Q       |         |         |      V  |
   5+30       1.8855      1.76  | Q       |         |         |       V |
   5+35       1.8972      1.69  | Q       |         |         |       V |
   5+40       1.9084      1.63  | Q       |         |         |       V |
   5+45       1.9193      1.58  | Q       |         |         |       V |
   5+50       1.9299      1.53  | Q       |         |         |        V|
   5+55       1.9401      1.49  |Q        |         |         |        V|
   6+ 0       1.9502      1.45  |Q        |         |         |        V|
   6+ 5       1.9594      1.35  |Q        |         |         |        V|
   6+10       1.9657      0.92  |Q        |         |         |        V|
   6+15       1.9687      0.43  Q         |         |         |        V|
   6+20       1.9704      0.25  Q         |         |         |        V|
   6+25       1.9714      0.14  Q         |         |         |        V|
   6+30       1.9719      0.08  Q         |         |         |        V|
   6+35       1.9722      0.04  Q         |         |         |        V|
   6+40       1.9724      0.02  Q         |         |         |        V|
   6+45       1.9725      0.02  Q         |         |         |        V|
   6+50       1.9725      0.01  Q         |         |         |        V|
   6+55       1.9725      0.00  Q         |         |         |        V|
   7+ 0       1.9726      0.00  Q         |         |         |         V
-------------------------------------------------------------------------
```

- 5 Year 12 Hour Post-Development Unit Hydrograph – Area 'B'

```
        U n i t   H y d r o g r a p h   A n a l y s i s

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        Study date  10/05/16   File Name PRB00512.out


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------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

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RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'B' - 5 YEAR 12 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

        Storm Event Year = 5

        Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 70.7       7.8          0.40     D     0.200     0.500    0.100
 70.7      11.8          0.60     C     0.250     0.500    0.125

Area-averaged adjusted loss rate Fm (In/Hr) =  0.115

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
     3.92   0.200         70.7      51.8       9.29     0.043
     3.92   0.200         98.0      98.0       0.20     0.923

     5.88   0.300         70.7      51.8       9.29     0.043
     5.88   0.300         98.0      98.0       0.20     0.923

Area-averaged catchment yield fraction, Y =  0.483
Area-averaged low loss fraction, Yb =  0.517
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.180 (hours)
Watershed area =      19.60(Ac.)
Catchment Lag time =   0.144 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 57.9347
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.115(In/Hr)
Average low loss rate fraction (Yb) = 0.517 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.260(In)
Computed peak 30-minute rainfall =  0.590(In)
Specified peak 1-hour rainfall =  0.780(In)
Computed peak 3-hour rainfall =  1.310(In)
Specified peak 6-hour rainfall =  1.810(In)
Specified peak 24-hour rainfall =  3.030(In)
```

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Rainfall depth area reduction factors:
Using a total area of      19.60(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.260(In)
30-minute factor = 0.999    Adjusted rainfall =  0.589(In)
1-hour factor = 0.999       Adjusted rainfall =  0.779(In)
3-hour factor = 1.000       Adjusted rainfall =  1.310(In)
6-hour factor = 1.000       Adjusted rainfall =  1.810(In)
24-hour factor = 1.000 Adjusted rainfall =  3.030(In)
```

U n i t H y d r o g r a p h

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 237.04 (CFS))	
1	5.306	12.576
2	34.708	69.694
3	69.772	83.117
4	82.552	30.293
5	89.929	17.486
6	94.508	10.853
7	97.162	6.291
8	98.311	2.724
9	98.909	1.417
10	99.317	0.968
11	99.719	0.951
12	99.930	0.501
13	100.000	0.167

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.2598	0.2598
2	0.3567	0.0969
3	0.4293	0.0727
4	0.4897	0.0604
5	0.5423	0.0526
6	0.5895	0.0472
7	0.6272	0.0378
8	0.6619	0.0347
9	0.6940	0.0322
10	0.7241	0.0301
11	0.7524	0.0283
12	0.7793	0.0268
13	0.8093	0.0300
14	0.8382	0.0289
15	0.8660	0.0278
16	0.8928	0.0268
17	0.9187	0.0260
18	0.9439	0.0252
19	0.9683	0.0244
20	0.9921	0.0238
21	1.0153	0.0231
22	1.0378	0.0226
23	1.0599	0.0220
24	1.0814	0.0215
25	1.1025	0.0211
26	1.1231	0.0206
27	1.1433	0.0202
28	1.1631	0.0198
29	1.1826	0.0195
30	1.2017	0.0191
31	1.2205	0.0188
32	1.2389	0.0185
33	1.2571	0.0182
34	1.2749	0.0179
35	1.2925	0.0176
36	1.3098	0.0173
37	1.3267	0.0168

38	1.3433	0.0166
39	1.3597	0.0164
40	1.3758	0.0162
41	1.3918	0.0159
42	1.4075	0.0157
43	1.4230	0.0155
44	1.4384	0.0153
45	1.4535	0.0152
46	1.4685	0.0150
47	1.4833	0.0148
48	1.4980	0.0146
49	1.5125	0.0145
50	1.5268	0.0143
51	1.5409	0.0142
52	1.5550	0.0140
53	1.5688	0.0139
54	1.5826	0.0137
55	1.5962	0.0136
56	1.6097	0.0135
57	1.6230	0.0133
58	1.6362	0.0132
59	1.6493	0.0131
60	1.6623	0.0130
61	1.6752	0.0129
62	1.6879	0.0128
63	1.7006	0.0126
64	1.7131	0.0125
65	1.7256	0.0124
66	1.7379	0.0123
67	1.7501	0.0122
68	1.7623	0.0121
69	1.7743	0.0120
70	1.7863	0.0119
71	1.7981	0.0119
72	1.8099	0.0118
73	1.8192	0.0093
74	1.8284	0.0092
75	1.8376	0.0091
76	1.8466	0.0091
77	1.8556	0.0090
78	1.8645	0.0089
79	1.8734	0.0088
80	1.8822	0.0088
81	1.8909	0.0087
82	1.8995	0.0086
83	1.9081	0.0086
84	1.9166	0.0085
85	1.9251	0.0084
86	1.9335	0.0084
87	1.9418	0.0083
88	1.9500	0.0083
89	1.9583	0.0082
90	1.9664	0.0081
91	1.9745	0.0081
92	1.9825	0.0080
93	1.9905	0.0080
94	1.9984	0.0079
95	2.0063	0.0079
96	2.0141	0.0078
97	2.0219	0.0078
98	2.0296	0.0077
99	2.0373	0.0077
100	2.0449	0.0076
101	2.0525	0.0076
102	2.0600	0.0075
103	2.0675	0.0075
104	2.0750	0.0074
105	2.0824	0.0074
106	2.0897	0.0073
107	2.0970	0.0073
108	2.1043	0.0073

109	2.1115	0.0072
110	2.1187	0.0072
111	2.1258	0.0071
112	2.1329	0.0071
113	2.1400	0.0071
114	2.1470	0.0070
115	2.1540	0.0070
116	2.1609	0.0069
117	2.1678	0.0069
118	2.1747	0.0069
119	2.1815	0.0068
120	2.1883	0.0068
121	2.1951	0.0068
122	2.2018	0.0067
123	2.2085	0.0067
124	2.2152	0.0067
125	2.2218	0.0066
126	2.2284	0.0066
127	2.2349	0.0066
128	2.2415	0.0065
129	2.2479	0.0065
130	2.2544	0.0065
131	2.2608	0.0064
132	2.2672	0.0064
133	2.2736	0.0064
134	2.2799	0.0063
135	2.2863	0.0063
136	2.2925	0.0063
137	2.2988	0.0063
138	2.3050	0.0062
139	2.3112	0.0062
140	2.3174	0.0062
141	2.3235	0.0061
142	2.3296	0.0061
143	2.3357	0.0061
144	2.3418	0.0061

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0061	0.0031	0.0029
2	0.0061	0.0031	0.0029
3	0.0061	0.0032	0.0030
4	0.0062	0.0032	0.0030
5	0.0062	0.0032	0.0030
6	0.0063	0.0032	0.0030
7	0.0063	0.0033	0.0030
8	0.0063	0.0033	0.0031
9	0.0064	0.0033	0.0031
10	0.0064	0.0033	0.0031
11	0.0065	0.0034	0.0031
12	0.0065	0.0034	0.0032
13	0.0066	0.0034	0.0032
14	0.0066	0.0034	0.0032
15	0.0067	0.0035	0.0032
16	0.0067	0.0035	0.0033
17	0.0068	0.0035	0.0033
18	0.0068	0.0035	0.0033
19	0.0069	0.0036	0.0033
20	0.0069	0.0036	0.0034
21	0.0070	0.0036	0.0034
22	0.0071	0.0036	0.0034
23	0.0071	0.0037	0.0035
24	0.0072	0.0037	0.0035
25	0.0073	0.0038	0.0035
26	0.0073	0.0038	0.0035
27	0.0074	0.0038	0.0036
28	0.0074	0.0038	0.0036
29	0.0075	0.0039	0.0036
30	0.0076	0.0039	0.0037

31	0.0077	0.0040	0.0037
32	0.0077	0.0040	0.0037
33	0.0078	0.0040	0.0038
34	0.0079	0.0041	0.0038
35	0.0080	0.0041	0.0039
36	0.0080	0.0042	0.0039
37	0.0081	0.0042	0.0039
38	0.0082	0.0042	0.0040
39	0.0083	0.0043	0.0040
40	0.0084	0.0043	0.0041
41	0.0085	0.0044	0.0041
42	0.0086	0.0044	0.0041
43	0.0087	0.0045	0.0042
44	0.0088	0.0045	0.0042
45	0.0089	0.0046	0.0043
46	0.0090	0.0046	0.0043
47	0.0091	0.0047	0.0044
48	0.0092	0.0048	0.0045
49	0.0118	0.0061	0.0057
50	0.0119	0.0061	0.0057
51	0.0120	0.0062	0.0058
52	0.0121	0.0063	0.0059
53	0.0123	0.0064	0.0060
54	0.0124	0.0064	0.0060
55	0.0126	0.0065	0.0061
56	0.0128	0.0066	0.0062
57	0.0130	0.0067	0.0063
58	0.0131	0.0068	0.0063
59	0.0133	0.0069	0.0065
60	0.0135	0.0070	0.0065
61	0.0137	0.0071	0.0066
62	0.0139	0.0072	0.0067
63	0.0142	0.0073	0.0068
64	0.0143	0.0074	0.0069
65	0.0146	0.0076	0.0071
66	0.0148	0.0076	0.0072
67	0.0152	0.0078	0.0073
68	0.0153	0.0079	0.0074
69	0.0157	0.0081	0.0076
70	0.0159	0.0082	0.0077
71	0.0164	0.0085	0.0079
72	0.0166	0.0086	0.0080
73	0.0173	0.0090	0.0084
74	0.0176	0.0091	0.0085
75	0.0182	0.0094	0.0088
76	0.0185	0.0095	0.0089
77	0.0191	0.0096	0.0095
78	0.0195	0.0096	0.0099
79	0.0202	0.0096	0.0106
80	0.0206	0.0096	0.0110
81	0.0215	0.0096	0.0120
82	0.0220	0.0096	0.0125
83	0.0231	0.0096	0.0136
84	0.0238	0.0096	0.0142
85	0.0252	0.0096	0.0156
86	0.0260	0.0096	0.0164
87	0.0278	0.0096	0.0182
88	0.0289	0.0096	0.0193
89	0.0268	0.0096	0.0173
90	0.0283	0.0096	0.0188
91	0.0322	0.0096	0.0226
92	0.0347	0.0096	0.0251
93	0.0472	0.0096	0.0376
94	0.0526	0.0096	0.0430
95	0.0727	0.0096	0.0631
96	0.0969	0.0096	0.0873
97	0.2598	0.0096	0.2502
98	0.0604	0.0096	0.0508
99	0.0378	0.0096	0.0282
100	0.0301	0.0096	0.0205
101	0.0300	0.0096	0.0205

```
      102              0.0268           0.0096              0.0172
      103              0.0244           0.0096              0.0149
      104              0.0226           0.0096              0.0130
      105              0.0211           0.0096              0.0115
      106              0.0198           0.0096              0.0102
      107              0.0188           0.0096              0.0092
      108              0.0179           0.0092              0.0086
      109              0.0168           0.0087              0.0081
      110              0.0162           0.0083              0.0078
      111              0.0155           0.0080              0.0075
      112              0.0150           0.0077              0.0072
      113              0.0145           0.0075              0.0070
      114              0.0140           0.0072              0.0068
      115              0.0136           0.0070              0.0066
      116              0.0132           0.0068              0.0064
      117              0.0129           0.0066              0.0062
      118              0.0125           0.0065              0.0061
      119              0.0122           0.0063              0.0059
      120              0.0119           0.0062              0.0058
      121              0.0093           0.0048              0.0045
      122              0.0091           0.0047              0.0044
      123              0.0088           0.0046              0.0043
      124              0.0086           0.0045              0.0042
      125              0.0084           0.0044              0.0041
      126              0.0083           0.0043              0.0040
      127              0.0081           0.0042              0.0039
      128              0.0079           0.0041              0.0038
      129              0.0078           0.0040              0.0038
      130              0.0076           0.0039              0.0037
      131              0.0075           0.0039              0.0036
      132              0.0073           0.0038              0.0036
      133              0.0072           0.0037              0.0035
      134              0.0071           0.0037              0.0034
      135              0.0070           0.0036              0.0034
      136              0.0069           0.0035              0.0033
      137              0.0068           0.0035              0.0033
      138              0.0067           0.0034              0.0032
      139              0.0066           0.0034              0.0032
      140              0.0065           0.0033              0.0031
      141              0.0064           0.0033              0.0031
      142              0.0063           0.0032              0.0030
      143              0.0062           0.0032              0.0030
      144              0.0061           0.0032              0.0030
      ------------------------------------------------------------------------
      ------------------------------------------------------------------------
      Total soil rain loss =      0.88(In)
      Total effective rainfall =      1.47(In)
      Peak flow rate in flood hydrograph =     29.29(CFS)
      ------------------------------------------------------------------------
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          12 - H O U R    S T O R M
                     R u n o f f      H y d r o g r a p h
      ------------------------------------------------------------------------
                  Hydrograph in   5   Minute intervals ((CFS))

      ------------------------------------------------------------------------
 Time(h+m) Volume Ac.Ft   Q(CFS)  0        7.5      15.0      22.5      30.0
 ------------------------------------------------------------------------
   0+ 5       0.0003      0.04  Q         |         |         |         |
   0+10       0.0019      0.24  Q         |         |         |         |
   0+15       0.0053      0.49  Q         |         |         |         |
   0+20       0.0092      0.58  Q         |         |         |         |
   0+25       0.0136      0.63  Q         |         |         |         |
   0+30       0.0182      0.67  Q         |         |         |         |
   0+35       0.0230      0.69  Q         |         |         |         |
   0+40       0.0278      0.70  Q         |         |         |         |
   0+45       0.0327      0.71  Q         |         |         |         |
   0+50       0.0377      0.72  Q         |         |         |         |
   0+55       0.0427      0.73  Q         |         |         |         |
   1+ 0       0.0478      0.74  Q         |         |         |         |
   1+ 5       0.0529      0.74  Q         |         |         |         |
```

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1+10       0.0580      0.75  Q         |         |         |         |
1+15       0.0632      0.75  |Q        |         |         |         |
1+20       0.0684      0.76  |Q        |         |         |         |
1+25       0.0737      0.76  |Q        |         |         |         |
1+30       0.0790      0.77  |Q        |         |         |         |
1+35       0.0843      0.78  |Q        |         |         |         |
1+40       0.0897      0.78  |Q        |         |         |         |
1+45       0.0952      0.79  |Q        |         |         |         |
1+50       0.1006      0.79  |Q        |         |         |         |
1+55       0.1062      0.80  |Q        |         |         |         |
2+ 0       0.1117      0.81  |Q        |         |         |         |
2+ 5       0.1173      0.81  |Q        |         |         |         |
2+10       0.1230      0.82  |QV       |         |         |         |
2+15       0.1287      0.83  |QV       |         |         |         |
2+20       0.1345      0.84  |QV       |         |         |         |
2+25       0.1403      0.84  |QV       |         |         |         |
2+30       0.1461      0.85  |QV       |         |         |         |
2+35       0.1521      0.86  |QV       |         |         |         |
2+40       0.1580      0.87  |QV       |         |         |         |
2+45       0.1641      0.88  |QV       |         |         |         |
2+50       0.1702      0.88  |QV       |         |         |         |
2+55       0.1763      0.89  |QV       |         |         |         |
3+ 0       0.1825      0.90  |Q V      |         |         |         |
3+ 5       0.1888      0.91  |Q V      |         |         |         |
3+10       0.1951      0.92  |Q V      |         |         |         |
3+15       0.2015      0.93  |Q V      |         |         |         |
3+20       0.2080      0.94  |Q V      |         |         |         |
3+25       0.2145      0.95  |Q V      |         |         |         |
3+30       0.2211      0.96  |Q V      |         |         |         |
3+35       0.2278      0.97  |Q V      |         |         |         |
3+40       0.2346      0.98  |Q V      |         |         |         |
3+45       0.2414      0.99  |Q  V     |         |         |         |
3+50       0.2484      1.00  |Q  V     |         |         |         |
3+55       0.2554      1.02  |Q  V     |         |         |         |
4+ 0       0.2624      1.03  |Q  V     |         |         |         |
4+ 5       0.2697      1.06  |Q  V     |         |         |         |
4+10       0.2777      1.15  |Q  V     |         |         |         |
4+15       0.2863      1.26  |Q  V     |         |         |         |
4+20       0.2954      1.31  |Q  V     |         |         |         |
4+25       0.3046      1.35  |Q   V    |         |         |         |
4+30       0.3141      1.37  |Q   V    |         |         |         |
4+35       0.3237      1.40  |Q   V    |         |         |         |
4+40       0.3335      1.42  |Q   V    |         |         |         |
4+45       0.3434      1.44  |Q   V    |         |         |         |
4+50       0.3534      1.46  |Q   V    |         |         |         |
4+55       0.3636      1.48  |Q    V   |         |         |         |
5+ 0       0.3740      1.50  |Q    V   |         |         |         |
5+ 5       0.3844      1.52  | Q   V   |         |         |         |
5+10       0.3950      1.54  | Q   V   |         |         |         |
5+15       0.4058      1.56  | Q   V   |         |         |         |
5+20       0.4168      1.59  | Q   V   |         |         |         |
5+25       0.4279      1.61  | Q    V  |         |         |         |
5+30       0.4392      1.64  | Q    V  |         |         |         |
5+35       0.4506      1.67  | Q    V  |         |         |         |
5+40       0.4623      1.69  | Q    V  |         |         |         |
5+45       0.4742      1.72  | Q    V  |         |         |         |
5+50       0.4863      1.76  | Q     V |         |         |         |
5+55       0.4986      1.79  | Q     V |         |         |         |
6+ 0       0.5112      1.82  | Q     V |         |         |         |
6+ 5       0.5240      1.86  | Q     V |         |         |         |
6+10       0.5372      1.91  | Q     V |         |         |         |
6+15       0.5507      1.96  | Q      V|         |         |         |
6+20       0.5645      2.01  | Q      V|         |         |         |
6+25       0.5787      2.06  | Q      V|         |         |         |
6+30       0.5934      2.14  | Q      V|         |         |         |
6+35       0.6088      2.23  | Q       V         |         |         |
6+40       0.6250      2.35  |  Q      V         |         |         |
6+45       0.6420      2.48  |  Q      V         |         |         |
6+50       0.6601      2.62  |  Q      |V        |         |         |
6+55       0.6792      2.78  |  Q      |V        |         |         |
7+ 0       0.6995      2.95  |  Q      |V        |         |         |
```

```
 7+ 5       0.7212      3.15  |   Q     | V       |         |         |
 7+10       0.7444      3.36  |   Q     | V       |         |         |
 7+15       0.7692      3.61  |   Q     | V       |         |         |
 7+20       0.7960      3.89  |    Q    |  V      |         |         |
 7+25       0.8247      4.16  |    Q    |  V      |         |         |
 7+30       0.8537      4.22  |    Q    |   V     |         |         |
 7+35       0.8833      4.29  |    Q    |   V     |         |         |
 7+40       0.9157      4.70  |     Q   |    V    |         |         |
 7+45       0.9528      5.39  |      Q  |    V    |         |         |
 7+50       0.9988      6.67  |       Q |     V   |         |         |
 7+55       1.0573      8.50  |         |Q     V  |         |         |
 8+ 0       1.1340     11.13  |         |   Q   V |         |         |
 8+ 5       1.2508     16.97  |         |         V Q       |         |
 8+10       1.4485     28.70  |         |         |   V     |        Q |
 8+15       1.6502     29.29  |         |         |      V  |         Q|
 8+20       1.7651     16.69  |         |         | Q      V|          |
 8+25       1.8444     11.51  |         |    Q    |         V         |
 8+30       1.9041      8.66  |         |Q        |         |V        |
 8+35       1.9506      6.75  |       Q |         |         | V       |
 8+40       1.9861      5.17  |     Q   |         |         |  V      |
 8+45       2.0152      4.23  |    Q    |         |         |  V      |
 8+50       2.0402      3.62  |   Q     |         |         |   V     |
 8+55       2.0622      3.19  |   Q     |         |         |   V     |
 9+ 0       2.0811      2.74  |  Q      |         |         |   V     |
 9+ 5       2.0976      2.40  |  Q      |         |         |    V    |
 9+10       2.1126      2.17  | Q       |         |         |    V    |
 9+15       2.1266      2.03  | Q       |         |         |    V    |
 9+20       2.1398      1.92  | Q       |         |         |    V    |
 9+25       2.1524      1.83  | Q       |         |         |    V    |
 9+30       2.1645      1.76  | Q       |         |         |     V   |
 9+35       2.1761      1.69  | Q       |         |         |     V   |
 9+40       2.1874      1.63  | Q       |         |         |     V   |
 9+45       2.1983      1.58  | Q       |         |         |     V   |
 9+50       2.2088      1.53  | Q       |         |         |     V   |
 9+55       2.2191      1.49  |Q        |         |         |      V  |
10+ 0       2.2291      1.45  |Q        |         |         |      V  |
10+ 5       2.2388      1.40  |Q        |         |         |      V  |
10+10       2.2476      1.29  |Q        |         |         |      V  |
10+15       2.2556      1.16  |Q        |         |         |      V  |
10+20       2.2632      1.10  |Q        |         |         |      V  |
10+25       2.2704      1.05  |Q        |         |         |      V  |
10+30       2.2774      1.01  |Q        |         |         |       V |
10+35       2.2842      0.98  |Q        |         |         |       V |
10+40       2.2908      0.96  |Q        |         |         |       V |
10+45       2.2973      0.94  |Q        |         |         |       V |
10+50       2.3036      0.92  |Q        |         |         |       V |
10+55       2.3098      0.90  |Q        |         |         |       V |
11+ 0       2.3158      0.88  |Q        |         |         |       V |
11+ 5       2.3218      0.86  |Q        |         |         |       V |
11+10       2.3276      0.85  |Q        |         |         |       V |
11+15       2.3334      0.83  |Q        |         |         |        V|
11+20       2.3390      0.82  |Q        |         |         |        V|
11+25       2.3445      0.80  |Q        |         |         |        V|
11+30       2.3500      0.79  |Q        |         |         |        V|
11+35       2.3554      0.78  |Q        |         |         |        V|
11+40       2.3606      0.77  |Q        |         |         |        V|
11+45       2.3658      0.76  |Q        |         |         |        V|
11+50       2.3710      0.74  Q         |         |         |        V|
11+55       2.3760      0.73  Q         |         |         |        V|
12+ 0       2.3810      0.72  Q         |         |         |        V|
12+ 5       2.3857      0.68  Q         |         |         |        V|
12+10       2.3888      0.46  Q         |         |         |        V|
12+15       2.3903      0.22  Q         |         |         |        V|
12+20       2.3912      0.12  Q         |         |         |        V|
12+25       2.3917      0.07  Q         |         |         |        V|
12+30       2.3920      0.04  Q         |         |         |        V|
12+35       2.3921      0.02  Q         |         |         |        V|
12+40       2.3922      0.01  Q         |         |         |        V|
12+45       2.3922      0.01  Q         |         |         |        V|
12+50       2.3923      0.00  Q         |         |         |        V|
12+55       2.3923      0.00  Q         |         |         |        V|
```

```
  13+ 0       2.3923      0.00  Q         |         |         |         V
--------------------------------------------------------------------------
```

- 5 Year 24 Hour Post-Development Unit Hydrograph – Area 'B'

```
        U n i t   H y d r o g r a p h   A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989-2012, Version 7.2

        Study date  10/05/16   File Name PRB00524.out


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------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'B' - 5 YEAR 24 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

        Storm Event Year = 5

        Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 70.7       7.8          0.40     D     0.200     0.500    0.100
 70.7      11.8          0.60     C     0.250     0.500    0.125

Area-averaged adjusted loss rate Fm (In/Hr) =  0.115

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
     3.92   0.200         70.7      51.8       9.29     0.043
     3.92   0.200         98.0      98.0       0.20     0.923

     5.88   0.300         70.7      51.8       9.29     0.043
     5.88   0.300         98.0      98.0       0.20     0.923

Area-averaged catchment yield fraction, Y =  0.483
Area-averaged low loss fraction, Yb =  0.517
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.180 (hours)
Watershed area =      19.60(Ac.)
Catchment Lag time =   0.144 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 57.9347
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.115(In/Hr)
Average low loss rate fraction (Yb) = 0.517 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.260(In)
Computed peak 30-minute rainfall =  0.590(In)
Specified peak 1-hour rainfall =  0.780(In)
Computed peak 3-hour rainfall =  1.310(In)
Specified peak 6-hour rainfall =  1.810(In)
Specified peak 24-hour rainfall =  3.030(In)
```

```
Rainfall depth area reduction factors:
Using a total area of      19.60(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.260(In)
30-minute factor = 0.999    Adjusted rainfall =  0.589(In)
1-hour factor = 0.999       Adjusted rainfall =  0.779(In)
3-hour factor = 1.000       Adjusted rainfall =  1.310(In)
6-hour factor = 1.000       Adjusted rainfall =  1.810(In)
24-hour factor = 1.000 Adjusted rainfall =  3.030(In)
```

U n i t H y d r o g r a p h

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 237.04 (CFS))	
1	5.306	12.576
2	34.708	69.694
3	69.772	83.117
4	82.552	30.293
5	89.929	17.486
6	94.508	10.853
7	97.162	6.291
8	98.311	2.724
9	98.909	1.417
10	99.317	0.968
11	99.719	0.951
12	99.930	0.501
13	100.000	0.167

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.2598	0.2598
2	0.3567	0.0969
3	0.4293	0.0727
4	0.4897	0.0604
5	0.5423	0.0526
6	0.5895	0.0472
7	0.6272	0.0378
8	0.6619	0.0347
9	0.6940	0.0322
10	0.7241	0.0301
11	0.7524	0.0283
12	0.7793	0.0268
13	0.8093	0.0300
14	0.8382	0.0289
15	0.8660	0.0278
16	0.8928	0.0268
17	0.9187	0.0260
18	0.9439	0.0252
19	0.9683	0.0244
20	0.9921	0.0238
21	1.0153	0.0231
22	1.0378	0.0226
23	1.0599	0.0220
24	1.0814	0.0215
25	1.1025	0.0211
26	1.1231	0.0206
27	1.1433	0.0202
28	1.1631	0.0198
29	1.1826	0.0195
30	1.2017	0.0191
31	1.2205	0.0188
32	1.2389	0.0185
33	1.2571	0.0182
34	1.2749	0.0179
35	1.2925	0.0176
36	1.3098	0.0173
37	1.3267	0.0168

38	1.3433	0.0166
39	1.3597	0.0164
40	1.3758	0.0162
41	1.3918	0.0159
42	1.4075	0.0157
43	1.4230	0.0155
44	1.4384	0.0153
45	1.4535	0.0152
46	1.4685	0.0150
47	1.4833	0.0148
48	1.4980	0.0146
49	1.5125	0.0145
50	1.5268	0.0143
51	1.5409	0.0142
52	1.5550	0.0140
53	1.5688	0.0139
54	1.5826	0.0137
55	1.5962	0.0136
56	1.6097	0.0135
57	1.6230	0.0133
58	1.6362	0.0132
59	1.6493	0.0131
60	1.6623	0.0130
61	1.6752	0.0129
62	1.6879	0.0128
63	1.7006	0.0126
64	1.7131	0.0125
65	1.7256	0.0124
66	1.7379	0.0123
67	1.7501	0.0122
68	1.7623	0.0121
69	1.7743	0.0120
70	1.7863	0.0119
71	1.7981	0.0119
72	1.8099	0.0118
73	1.8192	0.0093
74	1.8284	0.0092
75	1.8376	0.0091
76	1.8466	0.0091
77	1.8556	0.0090
78	1.8645	0.0089
79	1.8734	0.0088
80	1.8822	0.0088
81	1.8909	0.0087
82	1.8995	0.0086
83	1.9081	0.0086
84	1.9166	0.0085
85	1.9251	0.0084
86	1.9335	0.0084
87	1.9418	0.0083
88	1.9500	0.0083
89	1.9583	0.0082
90	1.9664	0.0081
91	1.9745	0.0081
92	1.9825	0.0080
93	1.9905	0.0080
94	1.9984	0.0079
95	2.0063	0.0079
96	2.0141	0.0078
97	2.0219	0.0078
98	2.0296	0.0077
99	2.0373	0.0077
100	2.0449	0.0076
101	2.0525	0.0076
102	2.0600	0.0075
103	2.0675	0.0075
104	2.0750	0.0074
105	2.0824	0.0074
106	2.0897	0.0073
107	2.0970	0.0073
108	2.1043	0.0073

109	2.1115	0.0072
110	2.1187	0.0072
111	2.1258	0.0071
112	2.1329	0.0071
113	2.1400	0.0071
114	2.1470	0.0070
115	2.1540	0.0070
116	2.1609	0.0069
117	2.1678	0.0069
118	2.1747	0.0069
119	2.1815	0.0068
120	2.1883	0.0068
121	2.1951	0.0068
122	2.2018	0.0067
123	2.2085	0.0067
124	2.2152	0.0067
125	2.2218	0.0066
126	2.2284	0.0066
127	2.2349	0.0066
128	2.2415	0.0065
129	2.2479	0.0065
130	2.2544	0.0065
131	2.2608	0.0064
132	2.2672	0.0064
133	2.2736	0.0064
134	2.2799	0.0063
135	2.2863	0.0063
136	2.2925	0.0063
137	2.2988	0.0063
138	2.3050	0.0062
139	2.3112	0.0062
140	2.3174	0.0062
141	2.3235	0.0061
142	2.3296	0.0061
143	2.3357	0.0061
144	2.3418	0.0061
145	2.3478	0.0060
146	2.3538	0.0060
147	2.3598	0.0060
148	2.3657	0.0060
149	2.3717	0.0059
150	2.3776	0.0059
151	2.3834	0.0059
152	2.3893	0.0059
153	2.3951	0.0058
154	2.4009	0.0058
155	2.4067	0.0058
156	2.4125	0.0058
157	2.4182	0.0057
158	2.4239	0.0057
159	2.4296	0.0057
160	2.4353	0.0057
161	2.4409	0.0056
162	2.4466	0.0056
163	2.4522	0.0056
164	2.4577	0.0056
165	2.4633	0.0056
166	2.4688	0.0055
167	2.4744	0.0055
168	2.4799	0.0055
169	2.4853	0.0055
170	2.4908	0.0055
171	2.4962	0.0054
172	2.5016	0.0054
173	2.5070	0.0054
174	2.5124	0.0054
175	2.5178	0.0054
176	2.5231	0.0053
177	2.5284	0.0053
178	2.5337	0.0053
179	2.5390	0.0053

180	2.5443	0.0053
181	2.5495	0.0052
182	2.5547	0.0052
183	2.5599	0.0052
184	2.5651	0.0052
185	2.5703	0.0052
186	2.5755	0.0052
187	2.5806	0.0051
188	2.5857	0.0051
189	2.5908	0.0051
190	2.5959	0.0051
191	2.6010	0.0051
192	2.6060	0.0051
193	2.6111	0.0050
194	2.6161	0.0050
195	2.6211	0.0050
196	2.6261	0.0050
197	2.6311	0.0050
198	2.6360	0.0050
199	2.6410	0.0049
200	2.6459	0.0049
201	2.6508	0.0049
202	2.6557	0.0049
203	2.6606	0.0049
204	2.6654	0.0049
205	2.6703	0.0048
206	2.6751	0.0048
207	2.6799	0.0048
208	2.6847	0.0048
209	2.6895	0.0048
210	2.6943	0.0048
211	2.6991	0.0048
212	2.7038	0.0047
213	2.7085	0.0047
214	2.7133	0.0047
215	2.7180	0.0047
216	2.7227	0.0047
217	2.7273	0.0047
218	2.7320	0.0047
219	2.7367	0.0047
220	2.7413	0.0046
221	2.7459	0.0046
222	2.7505	0.0046
223	2.7551	0.0046
224	2.7597	0.0046
225	2.7643	0.0046
226	2.7688	0.0046
227	2.7734	0.0045
228	2.7779	0.0045
229	2.7825	0.0045
230	2.7870	0.0045
231	2.7915	0.0045
232	2.7959	0.0045
233	2.8004	0.0045
234	2.8049	0.0045
235	2.8093	0.0044
236	2.8138	0.0044
237	2.8182	0.0044
238	2.8226	0.0044
239	2.8270	0.0044
240	2.8314	0.0044
241	2.8358	0.0044
242	2.8401	0.0044
243	2.8445	0.0044
244	2.8488	0.0043
245	2.8532	0.0043
246	2.8575	0.0043
247	2.8618	0.0043
248	2.8661	0.0043
249	2.8704	0.0043
250	2.8747	0.0043

251	2.8790	0.0043
252	2.8832	0.0043
253	2.8875	0.0042
254	2.8917	0.0042
255	2.8959	0.0042
256	2.9001	0.0042
257	2.9043	0.0042
258	2.9085	0.0042
259	2.9127	0.0042
260	2.9169	0.0042
261	2.9211	0.0042
262	2.9252	0.0042
263	2.9294	0.0041
264	2.9335	0.0041
265	2.9376	0.0041
266	2.9417	0.0041
267	2.9458	0.0041
268	2.9499	0.0041
269	2.9540	0.0041
270	2.9581	0.0041
271	2.9622	0.0041
272	2.9662	0.0041
273	2.9703	0.0040
274	2.9743	0.0040
275	2.9784	0.0040
276	2.9824	0.0040
277	2.9864	0.0040
278	2.9904	0.0040
279	2.9944	0.0040
280	2.9984	0.0040
281	3.0023	0.0040
282	3.0063	0.0040
283	3.0103	0.0040
284	3.0142	0.0039
285	3.0182	0.0039
286	3.0221	0.0039
287	3.0260	0.0039
288	3.0299	0.0039

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0039	0.0020	0.0019
2	0.0039	0.0020	0.0019
3	0.0039	0.0020	0.0019
4	0.0039	0.0020	0.0019
5	0.0040	0.0020	0.0019
6	0.0040	0.0021	0.0019
7	0.0040	0.0021	0.0019
8	0.0040	0.0021	0.0019
9	0.0040	0.0021	0.0019
10	0.0040	0.0021	0.0019
11	0.0040	0.0021	0.0020
12	0.0041	0.0021	0.0020
13	0.0041	0.0021	0.0020
14	0.0041	0.0021	0.0020
15	0.0041	0.0021	0.0020
16	0.0041	0.0021	0.0020
17	0.0041	0.0021	0.0020
18	0.0041	0.0021	0.0020
19	0.0042	0.0022	0.0020
20	0.0042	0.0022	0.0020
21	0.0042	0.0022	0.0020
22	0.0042	0.0022	0.0020
23	0.0042	0.0022	0.0020
24	0.0042	0.0022	0.0020
25	0.0043	0.0022	0.0021
26	0.0043	0.0022	0.0021
27	0.0043	0.0022	0.0021
28	0.0043	0.0022	0.0021

29	0.0043	0.0022	0.0021
30	0.0043	0.0022	0.0021
31	0.0044	0.0023	0.0021
32	0.0044	0.0023	0.0021
33	0.0044	0.0023	0.0021
34	0.0044	0.0023	0.0021
35	0.0044	0.0023	0.0021
36	0.0044	0.0023	0.0021
37	0.0045	0.0023	0.0022
38	0.0045	0.0023	0.0022
39	0.0045	0.0023	0.0022
40	0.0045	0.0023	0.0022
41	0.0045	0.0023	0.0022
42	0.0045	0.0023	0.0022
43	0.0046	0.0024	0.0022
44	0.0046	0.0024	0.0022
45	0.0046	0.0024	0.0022
46	0.0046	0.0024	0.0022
47	0.0047	0.0024	0.0022
48	0.0047	0.0024	0.0023
49	0.0047	0.0024	0.0023
50	0.0047	0.0024	0.0023
51	0.0047	0.0024	0.0023
52	0.0047	0.0025	0.0023
53	0.0048	0.0025	0.0023
54	0.0048	0.0025	0.0023
55	0.0048	0.0025	0.0023
56	0.0048	0.0025	0.0023
57	0.0049	0.0025	0.0024
58	0.0049	0.0025	0.0024
59	0.0049	0.0025	0.0024
60	0.0049	0.0025	0.0024
61	0.0050	0.0026	0.0024
62	0.0050	0.0026	0.0024
63	0.0050	0.0026	0.0024
64	0.0050	0.0026	0.0024
65	0.0051	0.0026	0.0024
66	0.0051	0.0026	0.0025
67	0.0051	0.0026	0.0025
68	0.0051	0.0026	0.0025
69	0.0052	0.0027	0.0025
70	0.0052	0.0027	0.0025
71	0.0052	0.0027	0.0025
72	0.0052	0.0027	0.0025
73	0.0053	0.0027	0.0025
74	0.0053	0.0027	0.0026
75	0.0053	0.0027	0.0026
76	0.0053	0.0028	0.0026
77	0.0054	0.0028	0.0026
78	0.0054	0.0028	0.0026
79	0.0054	0.0028	0.0026
80	0.0055	0.0028	0.0026
81	0.0055	0.0028	0.0027
82	0.0055	0.0029	0.0027
83	0.0056	0.0029	0.0027
84	0.0056	0.0029	0.0027
85	0.0056	0.0029	0.0027
86	0.0056	0.0029	0.0027
87	0.0057	0.0029	0.0028
88	0.0057	0.0030	0.0028
89	0.0058	0.0030	0.0028
90	0.0058	0.0030	0.0028
91	0.0058	0.0030	0.0028
92	0.0059	0.0030	0.0028
93	0.0059	0.0030	0.0029
94	0.0059	0.0031	0.0029
95	0.0060	0.0031	0.0029
96	0.0060	0.0031	0.0029
97	0.0061	0.0031	0.0029
98	0.0061	0.0031	0.0029
99	0.0061	0.0032	0.0030

100	0.0062	0.0032	0.0030
101	0.0062	0.0032	0.0030
102	0.0063	0.0032	0.0030
103	0.0063	0.0033	0.0030
104	0.0063	0.0033	0.0031
105	0.0064	0.0033	0.0031
106	0.0064	0.0033	0.0031
107	0.0065	0.0034	0.0031
108	0.0065	0.0034	0.0032
109	0.0066	0.0034	0.0032
110	0.0066	0.0034	0.0032
111	0.0067	0.0035	0.0032
112	0.0067	0.0035	0.0033
113	0.0068	0.0035	0.0033
114	0.0068	0.0035	0.0033
115	0.0069	0.0036	0.0033
116	0.0069	0.0036	0.0034
117	0.0070	0.0036	0.0034
118	0.0071	0.0036	0.0034
119	0.0071	0.0037	0.0035
120	0.0072	0.0037	0.0035
121	0.0073	0.0038	0.0035
122	0.0073	0.0038	0.0035
123	0.0074	0.0038	0.0036
124	0.0074	0.0038	0.0036
125	0.0075	0.0039	0.0036
126	0.0076	0.0039	0.0037
127	0.0077	0.0040	0.0037
128	0.0077	0.0040	0.0037
129	0.0078	0.0040	0.0038
130	0.0079	0.0041	0.0038
131	0.0080	0.0041	0.0039
132	0.0080	0.0042	0.0039
133	0.0081	0.0042	0.0039
134	0.0082	0.0042	0.0040
135	0.0083	0.0043	0.0040
136	0.0084	0.0043	0.0041
137	0.0085	0.0044	0.0041
138	0.0086	0.0044	0.0041
139	0.0087	0.0045	0.0042
140	0.0088	0.0045	0.0042
141	0.0089	0.0046	0.0043
142	0.0090	0.0046	0.0043
143	0.0091	0.0047	0.0044
144	0.0092	0.0048	0.0045
145	0.0118	0.0061	0.0057
146	0.0119	0.0061	0.0057
147	0.0120	0.0062	0.0058
148	0.0121	0.0063	0.0059
149	0.0123	0.0064	0.0060
150	0.0124	0.0064	0.0060
151	0.0126	0.0065	0.0061
152	0.0128	0.0066	0.0062
153	0.0130	0.0067	0.0063
154	0.0131	0.0068	0.0063
155	0.0133	0.0069	0.0065
156	0.0135	0.0070	0.0065
157	0.0137	0.0071	0.0066
158	0.0139	0.0072	0.0067
159	0.0142	0.0073	0.0068
160	0.0143	0.0074	0.0069
161	0.0146	0.0076	0.0071
162	0.0148	0.0076	0.0072
163	0.0152	0.0078	0.0073
164	0.0153	0.0079	0.0074
165	0.0157	0.0081	0.0076
166	0.0159	0.0082	0.0077
167	0.0164	0.0085	0.0079
168	0.0166	0.0086	0.0080
169	0.0173	0.0090	0.0084
170	0.0176	0.0091	0.0085

171	0.0182	0.0094	0.0088
172	0.0185	0.0095	0.0089
173	0.0191	0.0096	0.0095
174	0.0195	0.0096	0.0099
175	0.0202	0.0096	0.0106
176	0.0206	0.0096	0.0110
177	0.0215	0.0096	0.0120
178	0.0220	0.0096	0.0125
179	0.0231	0.0096	0.0136
180	0.0238	0.0096	0.0142
181	0.0252	0.0096	0.0156
182	0.0260	0.0096	0.0164
183	0.0278	0.0096	0.0182
184	0.0289	0.0096	0.0193
185	0.0268	0.0096	0.0173
186	0.0283	0.0096	0.0188
187	0.0322	0.0096	0.0226
188	0.0347	0.0096	0.0251
189	0.0472	0.0096	0.0376
190	0.0526	0.0096	0.0430
191	0.0727	0.0096	0.0631
192	0.0969	0.0096	0.0873
193	0.2598	0.0096	0.2502
194	0.0604	0.0096	0.0508
195	0.0378	0.0096	0.0282
196	0.0301	0.0096	0.0205
197	0.0300	0.0096	0.0205
198	0.0268	0.0096	0.0172
199	0.0244	0.0096	0.0149
200	0.0226	0.0096	0.0130
201	0.0211	0.0096	0.0115
202	0.0198	0.0096	0.0102
203	0.0188	0.0096	0.0092
204	0.0179	0.0092	0.0086
205	0.0168	0.0087	0.0081
206	0.0162	0.0083	0.0078
207	0.0155	0.0080	0.0075
208	0.0150	0.0077	0.0072
209	0.0145	0.0075	0.0070
210	0.0140	0.0072	0.0068
211	0.0136	0.0070	0.0066
212	0.0132	0.0068	0.0064
213	0.0129	0.0066	0.0062
214	0.0125	0.0065	0.0061
215	0.0122	0.0063	0.0059
216	0.0119	0.0062	0.0058
217	0.0093	0.0048	0.0045
218	0.0091	0.0047	0.0044
219	0.0088	0.0046	0.0043
220	0.0086	0.0045	0.0042
221	0.0084	0.0044	0.0041
222	0.0083	0.0043	0.0040
223	0.0081	0.0042	0.0039
224	0.0079	0.0041	0.0038
225	0.0078	0.0040	0.0038
226	0.0076	0.0039	0.0037
227	0.0075	0.0039	0.0036
228	0.0073	0.0038	0.0036
229	0.0072	0.0037	0.0035
230	0.0071	0.0037	0.0034
231	0.0070	0.0036	0.0034
232	0.0069	0.0035	0.0033
233	0.0068	0.0035	0.0033
234	0.0067	0.0034	0.0032
235	0.0066	0.0034	0.0032
236	0.0065	0.0033	0.0031
237	0.0064	0.0033	0.0031
238	0.0063	0.0032	0.0030
239	0.0062	0.0032	0.0030
240	0.0061	0.0032	0.0030
241	0.0060	0.0031	0.0029

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      242              0.0060          0.0031              0.0029
      243              0.0059          0.0030              0.0028
      244              0.0058          0.0030              0.0028
      245              0.0057          0.0030              0.0028
      246              0.0057          0.0029              0.0027
      247              0.0056          0.0029              0.0027
      248              0.0055          0.0029              0.0027
      249              0.0055          0.0028              0.0026
      250              0.0054          0.0028              0.0026
      251              0.0054          0.0028              0.0026
      252              0.0053          0.0027              0.0026
      253              0.0052          0.0027              0.0025
      254              0.0052          0.0027              0.0025
      255              0.0051          0.0027              0.0025
      256              0.0051          0.0026              0.0025
      257              0.0050          0.0026              0.0024
      258              0.0050          0.0026              0.0024
      259              0.0049          0.0026              0.0024
      260              0.0049          0.0025              0.0024
      261              0.0048          0.0025              0.0023
      262              0.0048          0.0025              0.0023
      263              0.0048          0.0025              0.0023
      264              0.0047          0.0024              0.0023
      265              0.0047          0.0024              0.0023
      266              0.0046          0.0024              0.0022
      267              0.0046          0.0024              0.0022
      268              0.0046          0.0024              0.0022
      269              0.0045          0.0023              0.0022
      270              0.0045          0.0023              0.0022
      271              0.0044          0.0023              0.0022
      272              0.0044          0.0023              0.0021
      273              0.0044          0.0023              0.0021
      274              0.0043          0.0022              0.0021
      275              0.0043          0.0022              0.0021
      276              0.0043          0.0022              0.0021
      277              0.0042          0.0022              0.0021
      278              0.0042          0.0022              0.0020
      279              0.0042          0.0022              0.0020
      280              0.0042          0.0021              0.0020
      281              0.0041          0.0021              0.0020
      282              0.0041          0.0021              0.0020
      283              0.0041          0.0021              0.0020
      284              0.0040          0.0021              0.0020
      285              0.0040          0.0021              0.0019
      286              0.0040          0.0021              0.0019
      287              0.0040          0.0020              0.0019
      288              0.0039          0.0020              0.0019
      ------------------------------------------------------------------------
      ------------------------------------------------------------------------
      Total soil rain loss =      1.23(In)
      Total effective rainfall =      1.80(In)
      Peak flow rate in flood hydrograph =     29.29(CFS)
      ------------------------------------------------------------------------
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          24 - H O U R    S T O R M
                    R u n o f f      H y d r o g r a p h
      ------------------------------------------------------------------------
                 Hydrograph in   5   Minute intervals ((CFS))

      ------------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0        7.5      15.0      22.5      30.0
------------------------------------------------------------------------
  0+ 5       0.0002      0.02  Q         |         |         |         |
  0+10       0.0012      0.16  Q         |         |         |         |
  0+15       0.0034      0.31  Q         |         |         |         |
  0+20       0.0060      0.37  Q         |         |         |         |
  0+25       0.0088      0.41  Q         |         |         |         |
  0+30       0.0117      0.43  Q         |         |         |         |
  0+35       0.0147      0.44  Q         |         |         |         |
  0+40       0.0178      0.45  Q         |         |         |         |
  0+45       0.0209      0.45  Q         |         |         |         |
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0+50	0.0241	0.46	Q	|	|	|	|
0+55	0.0272	0.46	Q	|	|	|	|
1+ 0	0.0304	0.46	Q	|	|	|	|
1+ 5	0.0336	0.46	Q	|	|	|	|
1+10	0.0368	0.46	Q	|	|	|	|
1+15	0.0400	0.47	Q	|	|	|	|
1+20	0.0432	0.47	Q	|	|	|	|
1+25	0.0465	0.47	Q	|	|	|	|
1+30	0.0497	0.47	Q	|	|	|	|
1+35	0.0530	0.47	Q	|	|	|	|
1+40	0.0562	0.47	Q	|	|	|	|
1+45	0.0595	0.48	Q	|	|	|	|
1+50	0.0628	0.48	Q	|	|	|	|
1+55	0.0661	0.48	Q	|	|	|	|
2+ 0	0.0694	0.48	Q	|	|	|	|
2+ 5	0.0728	0.48	Q	|	|	|	|
2+10	0.0761	0.49	QV	|	|	|	|
2+15	0.0795	0.49	QV	|	|	|	|
2+20	0.0828	0.49	QV	|	|	|	|
2+25	0.0862	0.49	QV	|	|	|	|
2+30	0.0896	0.49	QV	|	|	|	|
2+35	0.0930	0.49	QV	|	|	|	|
2+40	0.0964	0.50	QV	|	|	|	|
2+45	0.0999	0.50	QV	|	|	|	|
2+50	0.1033	0.50	QV	|	|	|	|
2+55	0.1068	0.50	QV	|	|	|	|
3+ 0	0.1102	0.50	QV	|	|	|	|
3+ 5	0.1137	0.51	QV	|	|	|	|
3+10	0.1172	0.51	QV	|	|	|	|
3+15	0.1207	0.51	QV	|	|	|	|
3+20	0.1243	0.51	QV	|	|	|	|
3+25	0.1278	0.51	QV	|	|	|	|
3+30	0.1314	0.52	QV	|	|	|	|
3+35	0.1349	0.52	QV	|	|	|	|
3+40	0.1385	0.52	QV	|	|	|	|
3+45	0.1421	0.52	QV	|	|	|	|
3+50	0.1457	0.53	QV	|	|	|	|
3+55	0.1494	0.53	Q V	|	|	|	|
4+ 0	0.1530	0.53	Q V	|	|	|	|
4+ 5	0.1567	0.53	Q V	|	|	|	|
4+10	0.1604	0.53	Q V	|	|	|	|
4+15	0.1641	0.54	Q V	|	|	|	|
4+20	0.1678	0.54	Q V	|	|	|	|
4+25	0.1715	0.54	Q V	|	|	|	|
4+30	0.1753	0.54	Q V	|	|	|	|
4+35	0.1790	0.55	Q V	|	|	|	|
4+40	0.1828	0.55	Q V	|	|	|	|
4+45	0.1866	0.55	Q V	|	|	|	|
4+50	0.1904	0.55	Q V	|	|	|	|
4+55	0.1942	0.56	Q V	|	|	|	|
5+ 0	0.1981	0.56	Q V	|	|	|	|
5+ 5	0.2019	0.56	Q V	|	|	|	|
5+10	0.2058	0.56	Q V	|	|	|	|
5+15	0.2097	0.57	Q V	|	|	|	|
5+20	0.2137	0.57	Q V	|	|	|	|
5+25	0.2176	0.57	Q V	|	|	|	|
5+30	0.2216	0.57	Q V	|	|	|	|
5+35	0.2255	0.58	Q V	|	|	|	|
5+40	0.2295	0.58	Q V	|	|	|	|
5+45	0.2335	0.58	Q V	|	|	|	|
5+50	0.2376	0.59	Q V	|	|	|	|
5+55	0.2416	0.59	Q V	|	|	|	|
6+ 0	0.2457	0.59	Q V	|	|	|	|
6+ 5	0.2498	0.60	Q V	|	|	|	|
6+10	0.2539	0.60	Q V	|	|	|	|
6+15	0.2581	0.60	Q V	|	|	|	|
6+20	0.2623	0.60	Q V	|	|	|	|
6+25	0.2664	0.61	Q V	|	|	|	|
6+30	0.2707	0.61	Q V	|	|	|	|
6+35	0.2749	0.61	Q V	|	|	|	|
6+40	0.2791	0.62	Q V	|	|	|	|

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 6+45      0.2834      0.62  Q  V      |          |          |          |
 6+50      0.2877      0.62  Q  V      |          |          |          |
 6+55      0.2921      0.63  Q  V      |          |          |          |
 7+ 0      0.2964      0.63  Q   V     |          |          |          |
 7+ 5      0.3008      0.64  Q   V     |          |          |          |
 7+10      0.3052      0.64  Q   V     |          |          |          |
 7+15      0.3096      0.64  Q   V     |          |          |          |
 7+20      0.3141      0.65  Q   V     |          |          |          |
 7+25      0.3185      0.65  Q   V     |          |          |          |
 7+30      0.3230      0.65  Q   V     |          |          |          |
 7+35      0.3276      0.66  Q   V     |          |          |          |
 7+40      0.3321      0.66  Q   V     |          |          |          |
 7+45      0.3367      0.67  Q   V     |          |          |          |
 7+50      0.3413      0.67  Q   V     |          |          |          |
 7+55      0.3460      0.67  Q   V     |          |          |          |
 8+ 0      0.3507      0.68  Q   V     |          |          |          |
 8+ 5      0.3554      0.68  Q   V     |          |          |          |
 8+10      0.3601      0.69  Q   V     |          |          |          |
 8+15      0.3649      0.69  Q   V     |          |          |          |
 8+20      0.3697      0.70  Q    V    |          |          |          |
 8+25      0.3745      0.70  Q    V    |          |          |          |
 8+30      0.3794      0.71  Q    V    |          |          |          |
 8+35      0.3843      0.71  Q    V    |          |          |          |
 8+40      0.3892      0.72  Q    V    |          |          |          |
 8+45      0.3942      0.72  Q    V    |          |          |          |
 8+50      0.3992      0.73  Q    V    |          |          |          |
 8+55      0.4042      0.73  Q    V    |          |          |          |
 9+ 0      0.4093      0.74  Q    V    |          |          |          |
 9+ 5      0.4144      0.74  Q    V    |          |          |          |
 9+10      0.4195      0.75  Q    V    |          |          |          |
 9+15      0.4247      0.75  |Q   V    |          |          |          |
 9+20      0.4299      0.76  |Q   V    |          |          |          |
 9+25      0.4352      0.76  |Q   V    |          |          |          |
 9+30      0.4405      0.77  |Q    V   |          |          |          |
 9+35      0.4458      0.78  |Q    V   |          |          |          |
 9+40      0.4512      0.78  |Q    V   |          |          |          |
 9+45      0.4566      0.79  |Q    V   |          |          |          |
 9+50      0.4621      0.79  |Q    V   |          |          |          |
 9+55      0.4676      0.80  |Q    V   |          |          |          |
10+ 0      0.4732      0.81  |Q    V   |          |          |          |
10+ 5      0.4788      0.81  |Q    V   |          |          |          |
10+10      0.4845      0.82  |Q    V   |          |          |          |
10+15      0.4902      0.83  |Q    V   |          |          |          |
10+20      0.4959      0.84  |Q    V   |          |          |          |
10+25      0.5018      0.84  |Q    V   |          |          |          |
10+30      0.5076      0.85  |Q    V   |          |          |          |
10+35      0.5135      0.86  |Q    V   |          |          |          |
10+40      0.5195      0.87  |Q     V  |          |          |          |
10+45      0.5255      0.88  |Q     V  |          |          |          |
10+50      0.5316      0.88  |Q     V  |          |          |          |
10+55      0.5378      0.89  |Q     V  |          |          |          |
11+ 0      0.5440      0.90  |Q     V  |          |          |          |
11+ 5      0.5503      0.91  |Q     V  |          |          |          |
11+10      0.5566      0.92  |Q     V  |          |          |          |
11+15      0.5630      0.93  |Q     V  |          |          |          |
11+20      0.5695      0.94  |Q     V  |          |          |          |
11+25      0.5760      0.95  |Q     V  |          |          |          |
11+30      0.5826      0.96  |Q     V  |          |          |          |
11+35      0.5893      0.97  |Q      V |          |          |          |
11+40      0.5961      0.98  |Q      V |          |          |          |
11+45      0.6029      0.99  |Q      V |          |          |          |
11+50      0.6098      1.00  |Q      V |          |          |          |
11+55      0.6168      1.02  |Q      V |          |          |          |
12+ 0      0.6239      1.03  |Q      V |          |          |          |
12+ 5      0.6312      1.06  |Q      V |          |          |          |
12+10      0.6391      1.15  |Q      V |          |          |          |
12+15      0.6478      1.26  |Q      V |          |          |          |
12+20      0.6568      1.31  |Q      V |          |          |          |
12+25      0.6661      1.35  |Q       V|          |          |          |
12+30      0.6756      1.37  |Q       V|          |          |          |
12+35      0.6852      1.40  |Q       V|          |          |          |
```

```
12+40       0.6950      1.42  |Q       V|         |          |          |
12+45       0.7049      1.44  |Q       V|         |          |          |
12+50       0.7149      1.46  |Q       V|         |          |          |
12+55       0.7251      1.48  |Q       V|         |          |          |
13+ 0       0.7354      1.50  |Q        V         |          |          |
13+ 5       0.7459      1.52  | Q       V         |          |          |
13+10       0.7565      1.54  | Q       V         |          |          |
13+15       0.7673      1.56  | Q       V         |          |          |
13+20       0.7782      1.59  | Q       V         |          |          |
13+25       0.7894      1.61  | Q       V         |          |          |
13+30       0.8006      1.64  | Q       V         |          |          |
13+35       0.8121      1.67  | Q       |V         |          |          |
13+40       0.8238      1.69  | Q       |V         |          |          |
13+45       0.8357      1.72  | Q       |V         |          |          |
13+50       0.8478      1.76  | Q       |V         |          |          |
13+55       0.8601      1.79  | Q       |V         |          |          |
14+ 0       0.8727      1.82  | Q       |V         |          |          |
14+ 5       0.8855      1.86  | Q       | V        |          |          |
14+10       0.8986      1.91  | Q       | V        |          |          |
14+15       0.9121      1.96  | Q       | V        |          |          |
14+20       0.9260      2.01  | Q       | V        |          |          |
14+25       0.9402      2.06  | Q       | V        |          |          |
14+30       0.9549      2.14  | Q       |  V       |          |          |
14+35       0.9703      2.23  | Q       |  V       |          |          |
14+40       0.9865      2.35  |  Q      |  V       |          |          |
14+45       1.0035      2.48  |  Q      |  V       |          |          |
14+50       1.0216      2.62  |  Q      |  V       |          |          |
14+55       1.0407      2.78  |  Q      |   V      |          |          |
15+ 0       1.0610      2.95  |  Q      |   V      |          |          |
15+ 5       1.0827      3.15  |   Q     |   V      |          |          |
15+10       1.1059      3.36  |   Q     |    V     |          |          |
15+15       1.1307      3.61  |   Q     |    V     |          |          |
15+20       1.1575      3.89  |    Q    |    V     |          |          |
15+25       1.1862      4.16  |    Q    |     V    |          |          |
15+30       1.2152      4.22  |    Q    |     V    |          |          |
15+35       1.2448      4.29  |    Q    |     V    |          |          |
15+40       1.2772      4.70  |     Q   |      V   |          |          |
15+45       1.3143      5.39  |      Q  |      V   |          |          |
15+50       1.3603      6.67  |       Q |       V  |          |          |
15+55       1.4188      8.50  |         |Q       V|          |          |
16+ 0       1.4954     11.13  |         |   Q     V          |          |
16+ 5       1.6123     16.97  |         |         |VQ        |          |
16+10       1.8100     28.70  |         |         |   V      |        Q |
16+15       2.0116     29.29  |         |         |      V   |         Q|
16+20       2.1266     16.69  |         |         | Q     V  |          |
16+25       2.2059     11.51  |         |    Q    |         V          |
16+30       2.2656      8.66  |         |Q        |         V          |
16+35       2.3120      6.75  |       Q |         |          |V         |
16+40       2.3476      5.17  |     Q   |         |          |V         |
16+45       2.3767      4.23  |    Q    |         |          | V        |
16+50       2.4017      3.62  |   Q     |         |          | V        |
16+55       2.4237      3.19  |   Q     |         |          |  V       |
17+ 0       2.4426      2.74  |  Q      |         |          |  V       |
17+ 5       2.4591      2.40  |  Q      |         |          |  V       |
17+10       2.4741      2.17  | Q       |         |          |  V       |
17+15       2.4881      2.03  | Q       |         |          |  V       |
17+20       2.5013      1.92  | Q       |         |          |   V      |
17+25       2.5139      1.83  | Q       |         |          |   V      |
17+30       2.5260      1.76  | Q       |         |          |   V      |
17+35       2.5376      1.69  | Q       |         |          |   V      |
17+40       2.5489      1.63  | Q       |         |          |   V      |
17+45       2.5597      1.58  | Q       |         |          |   V      |
17+50       2.5703      1.53  | Q       |         |          |    V     |
17+55       2.5806      1.49  |Q        |         |          |    V     |
18+ 0       2.5906      1.45  |Q        |         |          |    V     |
18+ 5       2.6002      1.40  |Q        |         |          |    V     |
18+10       2.6091      1.29  |Q        |         |          |    V     |
18+15       2.6171      1.16  |Q        |         |          |    V     |
18+20       2.6247      1.10  |Q        |         |          |    V     |
18+25       2.6319      1.05  |Q        |         |          |    V     |
18+30       2.6389      1.01  |Q        |         |          |    V     |
```

```
18+35      2.6457      0.98  |Q        |         |         |     V   |
18+40      2.6523      0.96  |Q        |         |         |     V   |
18+45      2.6588      0.94  |Q        |         |         |     V   |
18+50      2.6651      0.92  |Q        |         |         |     V   |
18+55      2.6713      0.90  |Q        |         |         |     V   |
19+ 0      2.6773      0.88  |Q        |         |         |     V   |
19+ 5      2.6833      0.86  |Q        |         |         |     V   |
19+10      2.6891      0.85  |Q        |         |         |     V   |
19+15      2.6948      0.83  |Q        |         |         |     V   |
19+20      2.7005      0.82  |Q        |         |         |     V   |
19+25      2.7060      0.80  |Q        |         |         |     V   |
19+30      2.7115      0.79  |Q        |         |         |     V   |
19+35      2.7168      0.78  |Q        |         |         |      V  |
19+40      2.7221      0.77  |Q        |         |         |      V  |
19+45      2.7273      0.76  |Q        |         |         |      V  |
19+50      2.7324      0.74  Q        |         |         |      V  |
19+55      2.7375      0.73  Q        |         |         |      V  |
20+ 0      2.7425      0.72  Q        |         |         |      V  |
20+ 5      2.7474      0.71  Q        |         |         |      V  |
20+10      2.7522      0.70  Q        |         |         |      V  |
20+15      2.7570      0.69  Q        |         |         |      V  |
20+20      2.7617      0.69  Q        |         |         |      V  |
20+25      2.7664      0.68  Q        |         |         |      V  |
20+30      2.7710      0.67  Q        |         |         |      V  |
20+35      2.7755      0.66  Q        |         |         |      V  |
20+40      2.7800      0.65  Q        |         |         |      V  |
20+45      2.7845      0.64  Q        |         |         |      V  |
20+50      2.7889      0.64  Q        |         |         |       V |
20+55      2.7932      0.63  Q        |         |         |       V |
21+ 0      2.7975      0.62  Q        |         |         |       V |
21+ 5      2.8017      0.62  Q        |         |         |       V |
21+10      2.8059      0.61  Q        |         |         |       V |
21+15      2.8101      0.60  Q        |         |         |       V |
21+20      2.8142      0.60  Q        |         |         |       V |
21+25      2.8183      0.59  Q        |         |         |       V |
21+30      2.8223      0.58  Q        |         |         |       V |
21+35      2.8263      0.58  Q        |         |         |       V |
21+40      2.8302      0.57  Q        |         |         |       V |
21+45      2.8341      0.57  Q        |         |         |       V |
21+50      2.8380      0.56  Q        |         |         |       V |
21+55      2.8419      0.56  Q        |         |         |       V |
22+ 0      2.8457      0.55  Q        |         |         |       V |
22+ 5      2.8494      0.55  Q        |         |         |       V |
22+10      2.8532      0.54  Q        |         |         |       V |
22+15      2.8569      0.54  Q        |         |         |       V |
22+20      2.8605      0.53  Q        |         |         |       V |
22+25      2.8642      0.53  Q        |         |         |        V|
22+30      2.8678      0.52  Q        |         |         |        V|
22+35      2.8714      0.52  Q        |         |         |        V|
22+40      2.8749      0.52  Q        |         |         |        V|
22+45      2.8784      0.51  Q        |         |         |        V|
22+50      2.8819      0.51  Q        |         |         |        V|
22+55      2.8854      0.50  Q        |         |         |        V|
23+ 0      2.8888      0.50  Q        |         |         |        V|
23+ 5      2.8922      0.50  Q        |         |         |        V|
23+10      2.8956      0.49  Q        |         |         |        V|
23+15      2.8990      0.49  Q        |         |         |        V|
23+20      2.9023      0.48  Q        |         |         |        V|
23+25      2.9056      0.48  Q        |         |         |        V|
23+30      2.9089      0.48  Q        |         |         |        V|
23+35      2.9122      0.47  Q        |         |         |        V|
23+40      2.9154      0.47  Q        |         |         |        V|
23+45      2.9186      0.47  Q        |         |         |        V|
23+50      2.9218      0.46  Q        |         |         |        V|
23+55      2.9250      0.46  Q        |         |         |        V|
24+ 0      2.9282      0.46  Q        |         |         |        V|
24+ 5      2.9311      0.43  Q        |         |         |        V|
24+10      2.9332      0.30  Q        |         |         |        V|
24+15      2.9341      0.14  Q        |         |         |        V|
24+20      2.9347      0.08  Q        |         |         |        V|
24+25      2.9350      0.05  Q        |         |         |        V|
```

```
   24+30       2.9351      0.02  Q         |         |         |        V|
   24+35       2.9352      0.01  Q         |         |         |        V|
   24+40       2.9353      0.01  Q         |         |         |        V|
   24+45       2.9353      0.00  Q         |         |         |        V|
   24+50       2.9353      0.00  Q         |         |         |        V|
   24+55       2.9353      0.00  Q         |         |         |        V|
   25+ 0       2.9354      0.00  Q         |         |         |        V|
-------------------------------------------------------------------------
```

- 25 Year 3 Hour Post-Development Unit Hydrograph – Area 'B'

```
        U n i t   H y d r o g r a p h   A n a l y s i s

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        Study date  10/05/16   File Name PRB02503.out


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------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'B' - 25 YEAR 3 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

        Storm Event Year = 25

        Antecedent Moisture Condition = 2

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 70.7       7.8          0.40     D     0.200     0.500    0.100
 70.7      11.8          0.60     C     0.250     0.500    0.125

Area-averaged adjusted loss rate Fm (In/Hr) =  0.115

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC2)          Yield Fr
     3.92   0.200         70.7      70.7       4.14     0.382
     3.92   0.200         98.0      98.0       0.20     0.947

     5.88   0.300         70.7      70.7       4.14     0.382
     5.88   0.300         98.0      98.0       0.20     0.947

Area-averaged catchment yield fraction, Y =  0.665
Area-averaged low loss fraction, Yb =  0.335
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.180 (hours)
Watershed area =      19.60(Ac.)
Catchment Lag time =   0.144 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 57.9670
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.115(In/Hr)
Average low loss rate fraction (Yb) = 0.335 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.400(In)
Computed peak 30-minute rainfall =  0.870(In)
Specified peak 1-hour rainfall =  1.150(In)
Computed peak 3-hour rainfall =  1.940(In)
Specified peak 6-hour rainfall =  2.710(In)
Specified peak 24-hour rainfall =  4.490(In)
```

```
Rainfall depth area reduction factors:
Using a total area of      19.60(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.400(In)
30-minute factor = 0.999    Adjusted rainfall =  0.869(In)
1-hour factor = 0.999       Adjusted rainfall =  1.149(In)
3-hour factor = 1.000       Adjusted rainfall =  1.940(In)
6-hour factor = 1.000       Adjusted rainfall =  2.710(In)
24-hour factor = 1.000 Adjusted rainfall =  4.490(In)
------------------------------------------------------------------------

                      U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
------------------------------------------------------------------------
               (K =       237.04 (CFS))

  1                5.310                  12.587
  2               34.747                  69.777
  3               69.797                  83.080
  4               82.570                  30.278
  5               89.943                  17.477
  6               94.518                  10.845
  7               97.168                   6.282
  8               98.314                   2.715
  9               98.911                   1.416
 10               99.319                   0.968
 11               99.720                   0.951
 12               99.931                   0.498
 13              100.000                   0.164
------------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.3996              0.3996
  2              0.5398              0.1401
  3              0.6435              0.1038
  4              0.7290              0.0855
  5              0.8031              0.0741
  6              0.8692              0.0661
  7              0.9248              0.0556
  8              0.9759              0.0511
  9              1.0233              0.0474
 10              1.0676              0.0443
 11              1.1094              0.0418
 12              1.1489              0.0395
 13              1.1936              0.0447
 14              1.2366              0.0429
 15              1.2779              0.0413
 16              1.3178              0.0399
 17              1.3565              0.0386
 18              1.3939              0.0375
 19              1.4303              0.0364
 20              1.4657              0.0354
 21              1.5002              0.0345
 22              1.5339              0.0336
 23              1.5667              0.0329
 24              1.5988              0.0321
 25              1.6303              0.0314
 26              1.6610              0.0308
 27              1.6912              0.0302
 28              1.7208              0.0296
 29              1.7498              0.0290
 30              1.7783              0.0285
 31              1.8063              0.0280
 32              1.8339              0.0275
 33              1.8610              0.0271
 34              1.8876              0.0267
 35              1.9139              0.0263
 36              1.9398              0.0259
------------------------------------------------------------------------
```

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0259	0.0087	0.0172
2	0.0263	0.0088	0.0175
3	0.0271	0.0091	0.0180
4	0.0275	0.0092	0.0183
5	0.0285	0.0096	0.0190
6	0.0290	0.0096	0.0194
7	0.0302	0.0096	0.0206
8	0.0308	0.0096	0.0212
9	0.0321	0.0096	0.0225
10	0.0329	0.0096	0.0233
11	0.0345	0.0096	0.0249
12	0.0354	0.0096	0.0258
13	0.0375	0.0096	0.0279
14	0.0386	0.0096	0.0291
15	0.0413	0.0096	0.0318
16	0.0429	0.0096	0.0333
17	0.0395	0.0096	0.0300
18	0.0418	0.0096	0.0322
19	0.0474	0.0096	0.0378
20	0.0511	0.0096	0.0415
21	0.0661	0.0096	0.0565
22	0.0741	0.0096	0.0645
23	0.1038	0.0096	0.0942
24	0.1401	0.0096	0.1306
25	0.3996	0.0096	0.3900
26	0.0855	0.0096	0.0759
27	0.0556	0.0096	0.0461
28	0.0443	0.0096	0.0348
29	0.0447	0.0096	0.0351
30	0.0399	0.0096	0.0303
31	0.0364	0.0096	0.0268
32	0.0336	0.0096	0.0241
33	0.0314	0.0096	0.0218
34	0.0296	0.0096	0.0200
35	0.0280	0.0094	0.0186
36	0.0267	0.0089	0.0177

Total soil rain loss = 0.34(In)
Total effective rainfall = 1.60(In)
Peak flow rate in flood hydrograph = 45.18(CFS)

3 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	12.5	25.0	37.5	50.0
0+ 5	0.0015	0.22	Q				
0+10	0.0113	1.42	VQ				
0+15	0.0311	2.88	V Q				
0+20	0.0549	3.46	V Q				
0+25	0.0814	3.84	V Q				
0+30	0.1098	4.13	V Q				
0+35	0.1398	4.36	VQ				
0+40	0.1712	4.56	VQ				
0+45	0.2041	4.77	Q				
0+50	0.2385	5.00	Q				
0+55	0.2747	5.25	Q				
1+ 0	0.3127	5.51	Q				
1+ 5	0.3526	5.81	QV				
1+10	0.3948	6.13	Q V				
1+15	0.4395	6.49	QV				
1+20	0.4871	6.90	Q V				

```
   1+25       0.5373      7.29  |    Q  V |         |         |         |
   1+30       0.5880      7.36  |    Q   V|         |         |         |
   1+35       0.6391      7.43  |    Q   V|         |         |         |
   1+40       0.6944      8.02  |     Q   V         |         |         |
   1+45       0.7563      8.99  |      Q  |V        |         |         |
   1+50       0.8296     10.64  |       Q | V       |         |         |
   1+55       0.9194     13.04  |         Q   V     |         |         |
   2+ 0       1.0353     16.83  |          |  Q V   |         |         |
   2+ 5       1.2121     25.68  |          |        V Q       |         |
   2+10       1.5158     44.10  |          |          |  V    |    Q    |
   2+15       1.8270     45.18  |          |          |       V |     Q   |
   2+20       2.0046     25.78  |          |          Q         V         |
   2+25       2.1297     18.17  |          |   Q      |         | V       |
   2+30       2.2258     13.96  |          |Q         |         |   V     |
   2+35       2.3025     11.13  |        Q |          |         |    V    |
   2+40       2.3629      8.77  |       Q  |          |         |     V   |
   2+45       2.4138      7.40  |    Q     |          |         |      V  |
   2+50       2.4586      6.51  |    Q     |          |         |      V  |
   2+55       2.4991      5.87  |   Q      |          |         |       V |
   3+ 0       2.5351      5.22  |   Q      |          |         |       V |
   3+ 5       2.5662      4.51  |  Q       |          |         |        V|
   3+10       2.5868      2.99  | Q        |          |         |        V|
   3+15       2.5965      1.41  |Q         |          |         |        V|
   3+20       2.6020      0.81  Q          |          |         |        V|
   3+25       2.6052      0.46  Q          |          |         |        V|
   3+30       2.6070      0.25  Q          |          |         |        V|
   3+35       2.6079      0.13  Q          |          |         |        V|
   3+40       2.6084      0.08  Q          |          |         |        V|
   3+45       2.6087      0.05  Q          |          |         |        V|
   3+50       2.6089      0.03  Q          |          |         |        V|
   3+55       2.6090      0.01  Q          |          |         |        V|
   4+ 0       2.6091      0.00  Q          |          |         |         V
-------------------------------------------------------------------------
```

- 25 Year 6 Hour Post-Development Unit Hydrograph – Area 'B'

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        U n i t   H y d r o g r a p h   A n a l y s i s

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        Study date  10/05/16   File Name PRB02506.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

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RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'B' - 25 YEAR 6 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

        Storm Event Year = 25

        Antecedent Moisture Condition = 2

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 70.7       7.8          0.40     D     0.200     0.500    0.100
 70.7      11.8          0.60     C     0.250     0.500    0.125

Area-averaged adjusted loss rate Fm (In/Hr) =  0.115

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC2)          Yield Fr
     3.92   0.200         70.7      70.7       4.14     0.382
     3.92   0.200         98.0      98.0       0.20     0.947

     5.88   0.300         70.7      70.7       4.14     0.382
     5.88   0.300         98.0      98.0       0.20     0.947

Area-averaged catchment yield fraction, Y =  0.665
Area-averaged low loss fraction, Yb =  0.335
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.180 (hours)
Watershed area =      19.60(Ac.)
Catchment Lag time =   0.144 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 57.9670
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.115(In/Hr)
Average low loss rate fraction (Yb) = 0.335 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.400(In)
Computed peak 30-minute rainfall =  0.870(In)
Specified peak 1-hour rainfall =  1.150(In)
Computed peak 3-hour rainfall =  1.940(In)
Specified peak 6-hour rainfall =  2.710(In)
Specified peak 24-hour rainfall =  4.490(In)
```

```
Rainfall depth area reduction factors:
Using a total area of      19.60(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.400(In)
30-minute factor = 0.999    Adjusted rainfall =  0.869(In)
1-hour factor = 0.999       Adjusted rainfall =  1.149(In)
3-hour factor = 1.000       Adjusted rainfall =  1.940(In)
6-hour factor = 1.000       Adjusted rainfall =  2.710(In)
24-hour factor = 1.000 Adjusted rainfall =  4.490(In)
```

U n i t H y d r o g r a p h

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 237.04 (CFS))	
1	5.310	12.587
2	34.747	69.777
3	69.797	83.080
4	82.570	30.278
5	89.943	17.477
6	94.518	10.845
7	97.168	6.282
8	98.314	2.715
9	98.911	1.416
10	99.319	0.968
11	99.720	0.951
12	99.931	0.498
13	100.000	0.164

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.3996	0.3996
2	0.5398	0.1401
3	0.6435	0.1038
4	0.7290	0.0855
5	0.8031	0.0741
6	0.8692	0.0661
7	0.9248	0.0556
8	0.9759	0.0511
9	1.0233	0.0474
10	1.0676	0.0443
11	1.1094	0.0418
12	1.1489	0.0395
13	1.1936	0.0447
14	1.2366	0.0429
15	1.2779	0.0413
16	1.3178	0.0399
17	1.3565	0.0386
18	1.3939	0.0375
19	1.4303	0.0364
20	1.4657	0.0354
21	1.5002	0.0345
22	1.5339	0.0336
23	1.5667	0.0329
24	1.5988	0.0321
25	1.6303	0.0314
26	1.6610	0.0308
27	1.6912	0.0302
28	1.7208	0.0296
29	1.7498	0.0290
30	1.7783	0.0285
31	1.8063	0.0280
32	1.8339	0.0275
33	1.8610	0.0271
34	1.8876	0.0267
35	1.9139	0.0263
36	1.9398	0.0259
37	1.9656	0.0258

38	1.9910	0.0254
39	2.0161	0.0251
40	2.0409	0.0248
41	2.0653	0.0245
42	2.0895	0.0241
43	2.1133	0.0238
44	2.1369	0.0236
45	2.1602	0.0233
46	2.1832	0.0230
47	2.2060	0.0228
48	2.2285	0.0225
49	2.2508	0.0223
50	2.2728	0.0220
51	2.2946	0.0218
52	2.3162	0.0216
53	2.3376	0.0214
54	2.3588	0.0212
55	2.3797	0.0210
56	2.4005	0.0208
57	2.4211	0.0206
58	2.4415	0.0204
59	2.4617	0.0202
60	2.4817	0.0200
61	2.5016	0.0199
62	2.5213	0.0197
63	2.5408	0.0195
64	2.5602	0.0194
65	2.5794	0.0192
66	2.5985	0.0191
67	2.6174	0.0189
68	2.6361	0.0188
69	2.6548	0.0186
70	2.6733	0.0185
71	2.6916	0.0184
72	2.7098	0.0182

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0182	0.0061	0.0121
2	0.0184	0.0061	0.0122
3	0.0186	0.0062	0.0124
4	0.0188	0.0063	0.0125
5	0.0191	0.0064	0.0127
6	0.0192	0.0064	0.0128
7	0.0195	0.0065	0.0130
8	0.0197	0.0066	0.0131
9	0.0200	0.0067	0.0133
10	0.0202	0.0068	0.0134
11	0.0206	0.0069	0.0137
12	0.0208	0.0070	0.0138
13	0.0212	0.0071	0.0141
14	0.0214	0.0072	0.0142
15	0.0218	0.0073	0.0145
16	0.0220	0.0074	0.0147
17	0.0225	0.0075	0.0150
18	0.0228	0.0076	0.0151
19	0.0233	0.0078	0.0155
20	0.0236	0.0079	0.0157
21	0.0241	0.0081	0.0161
22	0.0245	0.0082	0.0163
23	0.0251	0.0084	0.0167
24	0.0254	0.0085	0.0169
25	0.0259	0.0087	0.0172
26	0.0263	0.0088	0.0175
27	0.0271	0.0091	0.0180
28	0.0275	0.0092	0.0183
29	0.0285	0.0096	0.0190
30	0.0290	0.0096	0.0194
31	0.0302	0.0096	0.0206

32	0.0308	0.0096	0.0212
33	0.0321	0.0096	0.0225
34	0.0329	0.0096	0.0233
35	0.0345	0.0096	0.0249
36	0.0354	0.0096	0.0258
37	0.0375	0.0096	0.0279
38	0.0386	0.0096	0.0291
39	0.0413	0.0096	0.0318
40	0.0429	0.0096	0.0333
41	0.0395	0.0096	0.0300
42	0.0418	0.0096	0.0322
43	0.0474	0.0096	0.0378
44	0.0511	0.0096	0.0415
45	0.0661	0.0096	0.0565
46	0.0741	0.0096	0.0645
47	0.1038	0.0096	0.0942
48	0.1401	0.0096	0.1306
49	0.3996	0.0096	0.3900
50	0.0855	0.0096	0.0759
51	0.0556	0.0096	0.0461
52	0.0443	0.0096	0.0348
53	0.0447	0.0096	0.0351
54	0.0399	0.0096	0.0303
55	0.0364	0.0096	0.0268
56	0.0336	0.0096	0.0241
57	0.0314	0.0096	0.0218
58	0.0296	0.0096	0.0200
59	0.0280	0.0094	0.0186
60	0.0267	0.0089	0.0177
61	0.0258	0.0086	0.0172
62	0.0248	0.0083	0.0165
63	0.0238	0.0080	0.0159
64	0.0230	0.0077	0.0153
65	0.0223	0.0075	0.0148
66	0.0216	0.0072	0.0144
67	0.0210	0.0070	0.0139
68	0.0204	0.0068	0.0136
69	0.0199	0.0067	0.0132
70	0.0194	0.0065	0.0129
71	0.0189	0.0063	0.0126
72	0.0185	0.0062	0.0123

Total soil rain loss = 0.60(In)
Total effective rainfall = 2.11(In)
Peak flow rate in flood hydrograph = 45.18(CFS)

++

6 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	12.5	25.0	37.5	50.0
0+ 5	0.0011	0.15	Q	|	|	|	|
0+10	0.0079	1.00	Q	|	|	|	|
0+15	0.0218	2.01	VQ	|	|	|	|
0+20	0.0383	2.40	VQ	|	|	|	|
0+25	0.0565	2.64	V Q	|	|	|	|
0+30	0.0758	2.80	V Q	|	|	|	|
0+35	0.0959	2.91	|VQ	|	|	|	|
0+40	0.1164	2.98	|VQ	|	|	|	|
0+45	0.1373	3.03	|VQ	|	|	|	|
0+50	0.1585	3.08	|VQ	|	|	|	|
0+55	0.1801	3.13	| Q	|	|	|	|
1+ 0	0.2020	3.18	| Q	|	|	|	|
1+ 5	0.2242	3.23	| Q	|	|	|	|
1+10	0.2467	3.27	| Q	|	|	|	|
1+15	0.2696	3.32	| QV	|	|	|	|

```
   1+20       0.2928      3.37  | QV      |         |         |         |
   1+25       0.3163      3.42  | QV      |         |         |         |
   1+30       0.3402      3.47  | QV      |         |         |         |
   1+35       0.3645      3.53  | Q V     |         |         |         |
   1+40       0.3891      3.58  | Q V     |         |         |         |
   1+45       0.4143      3.65  | Q V     |         |         |         |
   1+50       0.4398      3.71  | Q  V    |         |         |         |
   1+55       0.4658      3.78  |  Q V    |         |         |         |
   2+ 0       0.4923      3.85  |  Q V    |         |         |         |
   2+ 5       0.5194      3.92  |  Q  V   |         |         |         |
   2+10       0.5468      3.99  |  Q  V   |         |         |         |
   2+15       0.5748      4.06  |  Q  V   |         |         |         |
   2+20       0.6033      4.14  |  Q   V  |         |         |         |
   2+25       0.6325      4.24  |  Q   V  |         |         |         |
   2+30       0.6624      4.34  |  Q   V  |         |         |         |
   2+35       0.6932      4.47  |  Q    V |         |         |         |
   2+40       0.7251      4.63  |  Q    V |         |         |         |
   2+45       0.7583      4.82  |  Q    V |         |         |         |
   2+50       0.7929      5.03  |   Q    V|         |         |         |
   2+55       0.8291      5.26  |   Q    V|         |         |         |
   3+ 0       0.8671      5.52  |   Q     V         |         |         |
   3+ 5       0.9071      5.81  |   Q     V         |         |         |
   3+10       0.9493      6.13  |   Q     |V        |         |         |
   3+15       0.9940      6.49  |    Q    |V        |         |         |
   3+20       1.0415      6.90  |    Q    | V       |         |         |
   3+25       1.0918      7.29  |    Q    | V       |         |         |
   3+30       1.1424      7.36  |    Q    |  V      |         |         |
   3+35       1.1936      7.43  |    Q    |  V      |         |         |
   3+40       1.2488      8.02  |     Q   |   V     |         |         |
   3+45       1.3107      8.99  |      Q  |    V    |         |         |
   3+50       1.3840     10.64  |       Q |     V   |         |         |
   3+55       1.4738     13.04  |         Q      V  |         |         |
   4+ 0       1.5897     16.83  |         |  Q    V |         |         |
   4+ 5       1.7666     25.68  |         |       Q |         |         |
   4+10       2.0703     44.10  |         |         |   V     |    Q    |
   4+15       2.3815     45.18  |         |         |      V  |     Q   |
   4+20       2.5590     25.78  |         |         Q        V|         |
   4+25       2.6841     18.17  |         |   Q     |         |V        |
   4+30       2.7802     13.96  |         |Q        |         | V       |
   4+35       2.8569     11.13  |       Q |         |         |  V      |
   4+40       2.9173      8.77  |      Q  |         |         |  V      |
   4+45       2.9683      7.40  |    Q    |         |         |   V     |
   4+50       3.0131      6.51  |    Q    |         |         |   V     |
   4+55       3.0535      5.87  |   Q     |         |         |    V    |
   5+ 0       3.0895      5.22  |   Q     |         |         |    V    |
   5+ 5       3.1221      4.73  |  Q      |         |         |     V   |
   5+10       3.1524      4.40  |  Q      |         |         |     V   |
   5+15       3.1812      4.18  |  Q      |         |         |     V   |
   5+20       3.2087      4.00  |  Q      |         |         |      V  |
   5+25       3.2351      3.83  |  Q      |         |         |      V  |
   5+30       3.2605      3.69  | Q       |         |         |      V  |
   5+35       3.2851      3.57  | Q       |         |         |       V |
   5+40       3.3089      3.45  | Q       |         |         |       V |
   5+45       3.3319      3.35  | Q       |         |         |       V |
   5+50       3.3543      3.25  | Q       |         |         |       V |
   5+55       3.3761      3.17  | Q       |         |         |        V|
   6+ 0       3.3974      3.09  | Q       |         |         |        V|
   6+ 5       3.4171      2.86  | Q       |         |         |        V|
   6+10       3.4305      1.95  |Q        |         |         |        V|
   6+15       3.4368      0.91  Q         |         |         |        V|
   6+20       3.4404      0.52  Q         |         |         |        V|
   6+25       3.4425      0.30  Q         |         |         |        V|
   6+30       3.4436      0.16  Q         |         |         |        V|
   6+35       3.4442      0.09  Q         |         |         |        V|
   6+40       3.4445      0.05  Q         |         |         |        V|
   6+45       3.4448      0.03  Q         |         |         |        V|
   6+50       3.4449      0.02  Q         |         |         |        V|
   6+55       3.4450      0.01  Q         |         |         |        V|
   7+ 0       3.4450      0.00  Q         |         |         |         V
------------------------------------------------------------------------
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- 25 Year 12 Hour Post-Development Unit Hydrograph – Area 'B'

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        U n i t   H y d r o g r a p h   A n a l y s i s

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        Study date  10/05/16   File Name PRB02512.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

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RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'B' - 25 YEAR 12 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

        Storm Event Year = 25

        Antecedent Moisture Condition = 2

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 70.7       7.8          0.40     D     0.200     0.500    0.100
 70.7      11.8          0.60     C     0.250     0.500    0.125

Area-averaged adjusted loss rate Fm (In/Hr) =  0.115

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC2)          Yield Fr
     3.92   0.200         70.7      70.7       4.14     0.382
     3.92   0.200         98.0      98.0       0.20     0.947

     5.88   0.300         70.7      70.7       4.14     0.382
     5.88   0.300         98.0      98.0       0.20     0.947

Area-averaged catchment yield fraction, Y =  0.665
Area-averaged low loss fraction, Yb =  0.335
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.180 (hours)
Watershed area =      19.60(Ac.)
Catchment Lag time =   0.144 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 57.9670
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.115(In/Hr)
Average low loss rate fraction (Yb) = 0.335 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.400(In)
Computed peak 30-minute rainfall =  0.870(In)
Specified peak 1-hour rainfall =  1.150(In)
Computed peak 3-hour rainfall =  1.940(In)
Specified peak 6-hour rainfall =  2.710(In)
Specified peak 24-hour rainfall =  4.490(In)
```

```
Rainfall depth area reduction factors:
Using a total area of      19.60(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.400(In)
30-minute factor = 0.999    Adjusted rainfall =  0.869(In)
1-hour factor = 0.999       Adjusted rainfall =  1.149(In)
3-hour factor = 1.000       Adjusted rainfall =  1.940(In)
6-hour factor = 1.000       Adjusted rainfall =  2.710(In)
24-hour factor = 1.000 Adjusted rainfall =  4.490(In)
```

U n i t H y d r o g r a p h

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 237.04 (CFS))	
1	5.310	12.587
2	34.747	69.777
3	69.797	83.080
4	82.570	30.278
5	89.943	17.477
6	94.518	10.845
7	97.168	6.282
8	98.314	2.715
9	98.911	1.416
10	99.319	0.968
11	99.720	0.951
12	99.931	0.498
13	100.000	0.164

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.3996	0.3996
2	0.5398	0.1401
3	0.6435	0.1038
4	0.7290	0.0855
5	0.8031	0.0741
6	0.8692	0.0661
7	0.9248	0.0556
8	0.9759	0.0511
9	1.0233	0.0474
10	1.0676	0.0443
11	1.1094	0.0418
12	1.1489	0.0395
13	1.1936	0.0447
14	1.2366	0.0429
15	1.2779	0.0413
16	1.3178	0.0399
17	1.3565	0.0386
18	1.3939	0.0375
19	1.4303	0.0364
20	1.4657	0.0354
21	1.5002	0.0345
22	1.5339	0.0336
23	1.5667	0.0329
24	1.5988	0.0321
25	1.6303	0.0314
26	1.6610	0.0308
27	1.6912	0.0302
28	1.7208	0.0296
29	1.7498	0.0290
30	1.7783	0.0285
31	1.8063	0.0280
32	1.8339	0.0275
33	1.8610	0.0271
34	1.8876	0.0267
35	1.9139	0.0263
36	1.9398	0.0259
37	1.9656	0.0258

38	1.9910	0.0254
39	2.0161	0.0251
40	2.0409	0.0248
41	2.0653	0.0245
42	2.0895	0.0241
43	2.1133	0.0238
44	2.1369	0.0236
45	2.1602	0.0233
46	2.1832	0.0230
47	2.2060	0.0228
48	2.2285	0.0225
49	2.2508	0.0223
50	2.2728	0.0220
51	2.2946	0.0218
52	2.3162	0.0216
53	2.3376	0.0214
54	2.3588	0.0212
55	2.3797	0.0210
56	2.4005	0.0208
57	2.4211	0.0206
58	2.4415	0.0204
59	2.4617	0.0202
60	2.4817	0.0200
61	2.5016	0.0199
62	2.5213	0.0197
63	2.5408	0.0195
64	2.5602	0.0194
65	2.5794	0.0192
66	2.5985	0.0191
67	2.6174	0.0189
68	2.6361	0.0188
69	2.6548	0.0186
70	2.6733	0.0185
71	2.6916	0.0184
72	2.7098	0.0182
73	2.7235	0.0136
74	2.7370	0.0135
75	2.7504	0.0134
76	2.7637	0.0133
77	2.7769	0.0132
78	2.7900	0.0131
79	2.8030	0.0130
80	2.8158	0.0129
81	2.8286	0.0128
82	2.8413	0.0127
83	2.8539	0.0126
84	2.8663	0.0125
85	2.8787	0.0124
86	2.8910	0.0123
87	2.9032	0.0122
88	2.9153	0.0121
89	2.9273	0.0120
90	2.9393	0.0119
91	2.9511	0.0119
92	2.9629	0.0118
93	2.9746	0.0117
94	2.9862	0.0116
95	2.9977	0.0115
96	3.0092	0.0115
97	3.0206	0.0114
98	3.0319	0.0113
99	3.0431	0.0112
100	3.0543	0.0112
101	3.0654	0.0111
102	3.0764	0.0110
103	3.0873	0.0110
104	3.0982	0.0109
105	3.1090	0.0108
106	3.1198	0.0108
107	3.1305	0.0107
108	3.1411	0.0106

109	3.1517	0.0106
110	3.1622	0.0105
111	3.1726	0.0104
112	3.1830	0.0104
113	3.1933	0.0103
114	3.2036	0.0103
115	3.2138	0.0102
116	3.2239	0.0102
117	3.2340	0.0101
118	3.2441	0.0100
119	3.2541	0.0100
120	3.2640	0.0099
121	3.2739	0.0099
122	3.2837	0.0098
123	3.2935	0.0098
124	3.3032	0.0097
125	3.3129	0.0097
126	3.3225	0.0096
127	3.3321	0.0096
128	3.3416	0.0095
129	3.3511	0.0095
130	3.3605	0.0094
131	3.3699	0.0094
132	3.3793	0.0093
133	3.3886	0.0093
134	3.3978	0.0093
135	3.4071	0.0092
136	3.4162	0.0092
137	3.4254	0.0091
138	3.4344	0.0091
139	3.4435	0.0090
140	3.4525	0.0090
141	3.4615	0.0090
142	3.4704	0.0089
143	3.4793	0.0089
144	3.4881	0.0088

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0088	0.0030	0.0059
2	0.0089	0.0030	0.0059
3	0.0090	0.0030	0.0060
4	0.0090	0.0030	0.0060
5	0.0091	0.0030	0.0060
6	0.0091	0.0031	0.0061
7	0.0092	0.0031	0.0061
8	0.0093	0.0031	0.0062
9	0.0093	0.0031	0.0062
10	0.0094	0.0031	0.0062
11	0.0095	0.0032	0.0063
12	0.0095	0.0032	0.0063
13	0.0096	0.0032	0.0064
14	0.0097	0.0032	0.0064
15	0.0098	0.0033	0.0065
16	0.0098	0.0033	0.0065
17	0.0099	0.0033	0.0066
18	0.0100	0.0033	0.0066
19	0.0101	0.0034	0.0067
20	0.0102	0.0034	0.0067
21	0.0103	0.0034	0.0068
22	0.0103	0.0035	0.0069
23	0.0104	0.0035	0.0069
24	0.0105	0.0035	0.0070
25	0.0106	0.0036	0.0071
26	0.0107	0.0036	0.0071
27	0.0108	0.0036	0.0072
28	0.0109	0.0036	0.0072
29	0.0110	0.0037	0.0073
30	0.0111	0.0037	0.0074

31	0.0112	0.0038	0.0075
32	0.0113	0.0038	0.0075
33	0.0115	0.0038	0.0076
34	0.0115	0.0039	0.0077
35	0.0117	0.0039	0.0078
36	0.0118	0.0039	0.0078
37	0.0119	0.0040	0.0079
38	0.0120	0.0040	0.0080
39	0.0122	0.0041	0.0081
40	0.0123	0.0041	0.0082
41	0.0125	0.0042	0.0083
42	0.0126	0.0042	0.0084
43	0.0128	0.0043	0.0085
44	0.0129	0.0043	0.0086
45	0.0131	0.0044	0.0087
46	0.0132	0.0044	0.0088
47	0.0134	0.0045	0.0089
48	0.0135	0.0045	0.0090
49	0.0182	0.0061	0.0121
50	0.0184	0.0061	0.0122
51	0.0186	0.0062	0.0124
52	0.0188	0.0063	0.0125
53	0.0191	0.0064	0.0127
54	0.0192	0.0064	0.0128
55	0.0195	0.0065	0.0130
56	0.0197	0.0066	0.0131
57	0.0200	0.0067	0.0133
58	0.0202	0.0068	0.0134
59	0.0206	0.0069	0.0137
60	0.0208	0.0070	0.0138
61	0.0212	0.0071	0.0141
62	0.0214	0.0072	0.0142
63	0.0218	0.0073	0.0145
64	0.0220	0.0074	0.0147
65	0.0225	0.0075	0.0150
66	0.0228	0.0076	0.0151
67	0.0233	0.0078	0.0155
68	0.0236	0.0079	0.0157
69	0.0241	0.0081	0.0161
70	0.0245	0.0082	0.0163
71	0.0251	0.0084	0.0167
72	0.0254	0.0085	0.0169
73	0.0259	0.0087	0.0172
74	0.0263	0.0088	0.0175
75	0.0271	0.0091	0.0180
76	0.0275	0.0092	0.0183
77	0.0285	0.0096	0.0190
78	0.0290	0.0096	0.0194
79	0.0302	0.0096	0.0206
80	0.0308	0.0096	0.0212
81	0.0321	0.0096	0.0225
82	0.0329	0.0096	0.0233
83	0.0345	0.0096	0.0249
84	0.0354	0.0096	0.0258
85	0.0375	0.0096	0.0279
86	0.0386	0.0096	0.0291
87	0.0413	0.0096	0.0318
88	0.0429	0.0096	0.0333
89	0.0395	0.0096	0.0300
90	0.0418	0.0096	0.0322
91	0.0474	0.0096	0.0378
92	0.0511	0.0096	0.0415
93	0.0661	0.0096	0.0565
94	0.0741	0.0096	0.0645
95	0.1038	0.0096	0.0942
96	0.1401	0.0096	0.1306
97	0.3996	0.0096	0.3900
98	0.0855	0.0096	0.0759
99	0.0556	0.0096	0.0461
100	0.0443	0.0096	0.0348
101	0.0447	0.0096	0.0351

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      102              0.0399           0.0096              0.0303
      103              0.0364           0.0096              0.0268
      104              0.0336           0.0096              0.0241
      105              0.0314           0.0096              0.0218
      106              0.0296           0.0096              0.0200
      107              0.0280           0.0094              0.0186
      108              0.0267           0.0089              0.0177
      109              0.0258           0.0086              0.0172
      110              0.0248           0.0083              0.0165
      111              0.0238           0.0080              0.0159
      112              0.0230           0.0077              0.0153
      113              0.0223           0.0075              0.0148
      114              0.0216           0.0072              0.0144
      115              0.0210           0.0070              0.0139
      116              0.0204           0.0068              0.0136
      117              0.0199           0.0067              0.0132
      118              0.0194           0.0065              0.0129
      119              0.0189           0.0063              0.0126
      120              0.0185           0.0062              0.0123
      121              0.0136           0.0046              0.0091
      122              0.0133           0.0045              0.0088
      123              0.0130           0.0043              0.0086
      124              0.0127           0.0042              0.0084
      125              0.0124           0.0041              0.0082
      126              0.0121           0.0041              0.0081
      127              0.0119           0.0040              0.0079
      128              0.0116           0.0039              0.0077
      129              0.0114           0.0038              0.0076
      130              0.0112           0.0037              0.0074
      131              0.0110           0.0037              0.0073
      132              0.0108           0.0036              0.0071
      133              0.0106           0.0035              0.0070
      134              0.0104           0.0035              0.0069
      135              0.0102           0.0034              0.0068
      136              0.0100           0.0034              0.0067
      137              0.0099           0.0033              0.0066
      138              0.0097           0.0033              0.0065
      139              0.0096           0.0032              0.0064
      140              0.0094           0.0032              0.0063
      141              0.0093           0.0031              0.0062
      142              0.0092           0.0031              0.0061
      143              0.0090           0.0030              0.0060
      144              0.0089           0.0030              0.0059
      ---------------------------------------------------------------------
      ---------------------------------------------------------------------
      Total soil rain loss =      0.86(In)
      Total effective rainfall =      2.63(In)
      Peak flow rate in flood hydrograph =     45.18(CFS)
      ---------------------------------------------------------------------
      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                         12 - H O U R    S T O R M
                    R u n o f f      H y d r o g r a p h
      ---------------------------------------------------------------------
                 Hydrograph in   5   Minute intervals ((CFS))

      ---------------------------------------------------------------------
 Time(h+m) Volume Ac.Ft   Q(CFS)  0       12.5      25.0      37.5      50.0
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   0+ 5       0.0005      0.07  Q         |         |         |         |
   0+10       0.0038      0.48  Q         |         |         |         |
   0+15       0.0106      0.98  Q         |         |         |         |
   0+20       0.0186      1.16  Q         |         |         |         |
   0+25       0.0273      1.27  VQ        |         |         |         |
   0+30       0.0366      1.34  VQ        |         |         |         |
   0+35       0.0461      1.39  VQ        |         |         |         |
   0+40       0.0559      1.41  VQ        |         |         |         |
   0+45       0.0657      1.43  VQ        |         |         |         |
   0+50       0.0757      1.45  VQ        |         |         |         |
   0+55       0.0858      1.46  VQ        |         |         |         |
   1+ 0       0.0960      1.48  VQ        |         |         |         |
   1+ 5       0.1062      1.49  VQ        |         |         |         |
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1+10       0.1166      1.50  |Q        |         |         |         |
1+15       0.1270      1.51  |Q        |         |         |         |
1+20       0.1375      1.52  |Q        |         |         |         |
1+25       0.1481      1.54  |Q        |         |         |         |
1+30       0.1587      1.55  |Q        |         |         |         |
1+35       0.1695      1.56  |Q        |         |         |         |
1+40       0.1803      1.57  |Q        |         |         |         |
1+45       0.1912      1.59  |Q        |         |         |         |
1+50       0.2022      1.60  |Q        |         |         |         |
1+55       0.2133      1.61  |Q        |         |         |         |
2+ 0       0.2245      1.63  |QV       |         |         |         |
2+ 5       0.2358      1.64  |QV       |         |         |         |
2+10       0.2472      1.65  |QV       |         |         |         |
2+15       0.2587      1.67  |QV       |         |         |         |
2+20       0.2703      1.68  |QV       |         |         |         |
2+25       0.2820      1.70  |QV       |         |         |         |
2+30       0.2938      1.71  |QV       |         |         |         |
2+35       0.3057      1.73  |QV       |         |         |         |
2+40       0.3177      1.75  |QV       |         |         |         |
2+45       0.3299      1.76  |Q V      |         |         |         |
2+50       0.3422      1.78  |Q V      |         |         |         |
2+55       0.3545      1.80  |Q V      |         |         |         |
3+ 0       0.3670      1.82  |Q V      |         |         |         |
3+ 5       0.3797      1.83  |Q V      |         |         |         |
3+10       0.3924      1.85  |Q V      |         |         |         |
3+15       0.4053      1.87  |Q V      |         |         |         |
3+20       0.4184      1.89  |Q V      |         |         |         |
3+25       0.4316      1.91  |Q  V     |         |         |         |
3+30       0.4449      1.94  |Q  V     |         |         |         |
3+35       0.4584      1.96  |Q  V     |         |         |         |
3+40       0.4720      1.98  |Q  V     |         |         |         |
3+45       0.4858      2.00  |Q  V     |         |         |         |
3+50       0.4998      2.03  |Q  V     |         |         |         |
3+55       0.5139      2.05  |Q  V     |         |         |         |
4+ 0       0.5282      2.08  |Q  V     |         |         |         |
4+ 5       0.5429      2.14  |Q   V    |         |         |         |
4+10       0.5593      2.37  |Q   V    |         |         |         |
4+15       0.5775      2.65  | Q  V    |         |         |         |
4+20       0.5966      2.77  | Q  V    |         |         |         |
4+25       0.6162      2.85  | Q  V    |         |         |         |
4+30       0.6363      2.92  | Q  V    |         |         |         |
4+35       0.6568      2.97  | Q   V   |         |         |         |
4+40       0.6775      3.01  | Q   V   |         |         |         |
4+45       0.6986      3.06  | Q   V   |         |         |         |
4+50       0.7199      3.10  | Q   V   |         |         |         |
4+55       0.7415      3.14  | Q   V   |         |         |         |
5+ 0       0.7634      3.18  | Q    V  |         |         |         |
5+ 5       0.7857      3.23  | Q    V  |         |         |         |
5+10       0.8082      3.27  | Q    V  |         |         |         |
5+15       0.8310      3.32  | Q    V  |         |         |         |
5+20       0.8542      3.37  | Q    V  |         |         |         |
5+25       0.8777      3.42  | Q     V |         |         |         |
5+30       0.9016      3.47  | Q     V |         |         |         |
5+35       0.9259      3.53  | Q     V |         |         |         |
5+40       0.9506      3.58  | Q     V |         |         |         |
5+45       0.9757      3.65  | Q      V|         |         |         |
5+50       1.0013      3.71  | Q      V|         |         |         |
5+55       1.0273      3.78  |  Q     V|         |         |         |
6+ 0       1.0538      3.85  |  Q     V|         |         |         |
6+ 5       1.0808      3.92  |  Q      V         |         |         |
6+10       1.1083      3.99  |  Q      V         |         |         |
6+15       1.1363      4.06  |  Q      V         |         |         |
6+20       1.1648      4.14  |  Q      V         |         |         |
6+25       1.1940      4.24  |  Q      |V        |         |         |
6+30       1.2239      4.34  |  Q      |V        |         |         |
6+35       1.2547      4.47  |  Q      |V        |         |         |
6+40       1.2865      4.63  |  Q      |V        |         |         |
6+45       1.3197      4.82  |  Q      | V       |         |         |
6+50       1.3543      5.03  |   Q     | V       |         |         |
6+55       1.3906      5.26  |   Q     | V       |         |         |
7+ 0       1.4286      5.52  |   Q     |  V      |         |         |
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 7+ 5      1.4685     5.81  |   Q     |  V      |         |         |
 7+10      1.5107     6.13  |   Q     |   V     |         |         |
 7+15      1.5554     6.49  |    Q    |   V     |         |         |
 7+20      1.6030     6.90  |    Q    |   V     |         |         |
 7+25      1.6532     7.29  |    Q    |    V    |         |         |
 7+30      1.7039     7.36  |    Q    |    V    |         |         |
 7+35      1.7550     7.43  |    Q    |     V   |         |         |
 7+40      1.8103     8.02  |     Q   |     V   |         |         |
 7+45      1.8722     8.99  |      Q  |      V  |         |         |
 7+50      1.9454    10.64  |       Q |       V |         |         |
 7+55      2.0353    13.04  |         Q       V |         |         |
 8+ 0      2.1511    16.83  |          |  Q      V         |         |
 8+ 5      2.3280    25.68  |          |         QV        |         |
 8+10      2.6317    44.10  |          |          |   V    |    Q    |
 8+15      2.9429    45.18  |          |          |      V |     Q   |
 8+20      3.1205    25.78  |          |          Q        V|         |
 8+25      3.2456    18.17  |          |    Q     |         V         |
 8+30      3.3417    13.96  |          |Q         |         |V        |
 8+35      3.4184    11.13  |        Q |          |         |V        |
 8+40      3.4788     8.77  |       Q  |          |         | V       |
 8+45      3.5297     7.40  |     Q    |          |         | V       |
 8+50      3.5745     6.51  |     Q    |          |         |  V      |
 8+55      3.6150     5.87  |    Q     |          |         |  V      |
 9+ 0      3.6510     5.22  |    Q     |          |         |   V     |
 9+ 5      3.6835     4.73  |   Q      |          |         |   V     |
 9+10      3.7138     4.40  |   Q      |          |         |   V     |
 9+15      3.7426     4.18  |   Q      |          |         |   V     |
 9+20      3.7702     4.00  |   Q      |          |         |    V    |
 9+25      3.7966     3.83  |   Q      |          |         |    V    |
 9+30      3.8220     3.69  | Q        |          |         |    V    |
 9+35      3.8466     3.57  | Q        |          |         |    V    |
 9+40      3.8703     3.45  | Q        |          |         |     V   |
 9+45      3.8934     3.35  | Q        |          |         |     V   |
 9+50      3.9158     3.25  | Q        |          |         |     V   |
 9+55      3.9376     3.17  | Q        |          |         |     V   |
10+ 0      3.9588     3.09  | Q        |          |         |     V   |
10+ 5      3.9793     2.97  | Q        |          |         |      V  |
10+10      3.9979     2.70  | Q        |          |         |      V  |
10+15      4.0143     2.39  |Q         |          |         |      V  |
10+20      4.0298     2.24  |Q         |          |         |      V  |
10+25      4.0445     2.14  |Q         |          |         |      V  |
10+30      4.0587     2.05  |Q         |          |         |      V  |
10+35      4.0724     1.99  |Q         |          |         |      V  |
10+40      4.0857     1.94  |Q         |          |         |       V |
10+45      4.0987     1.89  |Q         |          |         |       V |
10+50      4.1115     1.85  |Q         |          |         |       V |
10+55      4.1239     1.81  |Q         |          |         |       V |
11+ 0      4.1361     1.77  |Q         |          |         |       V |
11+ 5      4.1481     1.74  |Q         |          |         |       V |
11+10      4.1598     1.71  |Q         |          |         |       V |
11+15      4.1714     1.68  |Q         |          |         |       V |
11+20      4.1827     1.65  |Q         |          |         |        V|
11+25      4.1939     1.62  |Q         |          |         |        V|
11+30      4.2048     1.59  |Q         |          |         |        V|
11+35      4.2156     1.57  |Q         |          |         |        V|
11+40      4.2262     1.54  |Q         |          |         |        V|
11+45      4.2367     1.52  |Q         |          |         |        V|
11+50      4.2470     1.50  |Q         |          |         |        V|
11+55      4.2572     1.47  |Q         |          |         |        V|
12+ 0      4.2672     1.45  |Q         |          |         |        V|
12+ 5      4.2765     1.36  |Q         |          |         |        V|
12+10      4.2829     0.93  Q          |          |         |        V|
12+15      4.2859     0.43  Q          |          |         |        V|
12+20      4.2876     0.25  Q          |          |         |        V|
12+25      4.2886     0.14  Q          |          |         |        V|
12+30      4.2892     0.08  Q          |          |         |        V|
12+35      4.2894     0.04  Q          |          |         |        V|
12+40      4.2896     0.02  Q          |          |         |        V|
12+45      4.2897     0.02  Q          |          |         |        V|
12+50      4.2898     0.01  Q          |          |         |        V|
12+55      4.2898     0.00  Q          |          |         |        V|
```

```
  13+ 0       4.2898      0.00  Q         |         |         |         V
--------------------------------------------------------------------------
```

- 25 Year 24 Hour Post-Development Unit Hydrograph – Area 'B'

```
        U n i t   H y d r o g r a p h   A n a l y s i s

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        Study date  10/05/16   File Name PRB02524.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'B' - 25 YEAR 24 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

        Storm Event Year = 25

        Antecedent Moisture Condition = 2

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 70.7       7.8          0.40     D     0.200     0.500    0.100
 70.7      11.8          0.60     C     0.250     0.500    0.125

Area-averaged adjusted loss rate Fm (In/Hr) =  0.115

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC2)          Yield Fr
     3.92   0.200         70.7      70.7       4.14     0.382
     3.92   0.200         98.0      98.0       0.20     0.947

     5.88   0.300         70.7      70.7       4.14     0.382
     5.88   0.300         98.0      98.0       0.20     0.947

Area-averaged catchment yield fraction, Y =  0.665
Area-averaged low loss fraction, Yb =  0.335
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.180 (hours)
Watershed area =      19.60(Ac.)
Catchment Lag time =   0.144 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 57.9670
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.115(In/Hr)
Average low loss rate fraction (Yb) = 0.335 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.400(In)
Computed peak 30-minute rainfall =  0.870(In)
Specified peak 1-hour rainfall =  1.150(In)
Computed peak 3-hour rainfall =  1.940(In)
Specified peak 6-hour rainfall =  2.710(In)
Specified peak 24-hour rainfall =  4.490(In)
```

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Rainfall depth area reduction factors:
Using a total area of      19.60(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.400(In)
30-minute factor = 0.999    Adjusted rainfall =  0.869(In)
1-hour factor = 0.999       Adjusted rainfall =  1.149(In)
3-hour factor = 1.000       Adjusted rainfall =  1.940(In)
6-hour factor = 1.000       Adjusted rainfall =  2.710(In)
24-hour factor = 1.000 Adjusted rainfall =  4.490(In)
```

U n i t H y d r o g r a p h

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 237.04 (CFS))	
1	5.310	12.587
2	34.747	69.777
3	69.797	83.080
4	82.570	30.278
5	89.943	17.477
6	94.518	10.845
7	97.168	6.282
8	98.314	2.715
9	98.911	1.416
10	99.319	0.968
11	99.720	0.951
12	99.931	0.498
13	100.000	0.164

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.3996	0.3996
2	0.5398	0.1401
3	0.6435	0.1038
4	0.7290	0.0855
5	0.8031	0.0741
6	0.8692	0.0661
7	0.9248	0.0556
8	0.9759	0.0511
9	1.0233	0.0474
10	1.0676	0.0443
11	1.1094	0.0418
12	1.1489	0.0395
13	1.1936	0.0447
14	1.2366	0.0429
15	1.2779	0.0413
16	1.3178	0.0399
17	1.3565	0.0386
18	1.3939	0.0375
19	1.4303	0.0364
20	1.4657	0.0354
21	1.5002	0.0345
22	1.5339	0.0336
23	1.5667	0.0329
24	1.5988	0.0321
25	1.6303	0.0314
26	1.6610	0.0308
27	1.6912	0.0302
28	1.7208	0.0296
29	1.7498	0.0290
30	1.7783	0.0285
31	1.8063	0.0280
32	1.8339	0.0275
33	1.8610	0.0271
34	1.8876	0.0267
35	1.9139	0.0263
36	1.9398	0.0259
37	1.9656	0.0258

38	1.9910	0.0254
39	2.0161	0.0251
40	2.0409	0.0248
41	2.0653	0.0245
42	2.0895	0.0241
43	2.1133	0.0238
44	2.1369	0.0236
45	2.1602	0.0233
46	2.1832	0.0230
47	2.2060	0.0228
48	2.2285	0.0225
49	2.2508	0.0223
50	2.2728	0.0220
51	2.2946	0.0218
52	2.3162	0.0216
53	2.3376	0.0214
54	2.3588	0.0212
55	2.3797	0.0210
56	2.4005	0.0208
57	2.4211	0.0206
58	2.4415	0.0204
59	2.4617	0.0202
60	2.4817	0.0200
61	2.5016	0.0199
62	2.5213	0.0197
63	2.5408	0.0195
64	2.5602	0.0194
65	2.5794	0.0192
66	2.5985	0.0191
67	2.6174	0.0189
68	2.6361	0.0188
69	2.6548	0.0186
70	2.6733	0.0185
71	2.6916	0.0184
72	2.7098	0.0182
73	2.7235	0.0136
74	2.7370	0.0135
75	2.7504	0.0134
76	2.7637	0.0133
77	2.7769	0.0132
78	2.7900	0.0131
79	2.8030	0.0130
80	2.8158	0.0129
81	2.8286	0.0128
82	2.8413	0.0127
83	2.8539	0.0126
84	2.8663	0.0125
85	2.8787	0.0124
86	2.8910	0.0123
87	2.9032	0.0122
88	2.9153	0.0121
89	2.9273	0.0120
90	2.9393	0.0119
91	2.9511	0.0119
92	2.9629	0.0118
93	2.9746	0.0117
94	2.9862	0.0116
95	2.9977	0.0115
96	3.0092	0.0115
97	3.0206	0.0114
98	3.0319	0.0113
99	3.0431	0.0112
100	3.0543	0.0112
101	3.0654	0.0111
102	3.0764	0.0110
103	3.0873	0.0110
104	3.0982	0.0109
105	3.1090	0.0108
106	3.1198	0.0108
107	3.1305	0.0107
108	3.1411	0.0106

109	3.1517	0.0106
110	3.1622	0.0105
111	3.1726	0.0104
112	3.1830	0.0104
113	3.1933	0.0103
114	3.2036	0.0103
115	3.2138	0.0102
116	3.2239	0.0102
117	3.2340	0.0101
118	3.2441	0.0100
119	3.2541	0.0100
120	3.2640	0.0099
121	3.2739	0.0099
122	3.2837	0.0098
123	3.2935	0.0098
124	3.3032	0.0097
125	3.3129	0.0097
126	3.3225	0.0096
127	3.3321	0.0096
128	3.3416	0.0095
129	3.3511	0.0095
130	3.3605	0.0094
131	3.3699	0.0094
132	3.3793	0.0093
133	3.3886	0.0093
134	3.3978	0.0093
135	3.4071	0.0092
136	3.4162	0.0092
137	3.4254	0.0091
138	3.4344	0.0091
139	3.4435	0.0090
140	3.4525	0.0090
141	3.4615	0.0090
142	3.4704	0.0089
143	3.4793	0.0089
144	3.4881	0.0088
145	3.4969	0.0088
146	3.5057	0.0088
147	3.5144	0.0087
148	3.5231	0.0087
149	3.5317	0.0087
150	3.5404	0.0086
151	3.5489	0.0086
152	3.5575	0.0085
153	3.5660	0.0085
154	3.5745	0.0085
155	3.5829	0.0084
156	3.5913	0.0084
157	3.5997	0.0084
158	3.6080	0.0083
159	3.6163	0.0083
160	3.6246	0.0083
161	3.6328	0.0082
162	3.6410	0.0082
163	3.6492	0.0082
164	3.6573	0.0081
165	3.6654	0.0081
166	3.6735	0.0081
167	3.6815	0.0080
168	3.6896	0.0080
169	3.6975	0.0080
170	3.7055	0.0080
171	3.7134	0.0079
172	3.7213	0.0079
173	3.7292	0.0079
174	3.7370	0.0078
175	3.7448	0.0078
176	3.7526	0.0078
177	3.7604	0.0078
178	3.7681	0.0077
179	3.7758	0.0077

180	3.7834	0.0077
181	3.7911	0.0076
182	3.7987	0.0076
183	3.8063	0.0076
184	3.8139	0.0076
185	3.8214	0.0075
186	3.8289	0.0075
187	3.8364	0.0075
188	3.8438	0.0075
189	3.8513	0.0074
190	3.8587	0.0074
191	3.8661	0.0074
192	3.8734	0.0074
193	3.8808	0.0073
194	3.8881	0.0073
195	3.8954	0.0073
196	3.9026	0.0073
197	3.9099	0.0072
198	3.9171	0.0072
199	3.9243	0.0072
200	3.9315	0.0072
201	3.9386	0.0071
202	3.9457	0.0071
203	3.9528	0.0071
204	3.9599	0.0071
205	3.9670	0.0071
206	3.9740	0.0070
207	3.9810	0.0070
208	3.9880	0.0070
209	3.9950	0.0070
210	4.0020	0.0070
211	4.0089	0.0069
212	4.0158	0.0069
213	4.0227	0.0069
214	4.0296	0.0069
215	4.0364	0.0068
216	4.0432	0.0068
217	4.0500	0.0068
218	4.0568	0.0068
219	4.0636	0.0068
220	4.0703	0.0067
221	4.0771	0.0067
222	4.0838	0.0067
223	4.0905	0.0067
224	4.0971	0.0067
225	4.1038	0.0067
226	4.1104	0.0066
227	4.1170	0.0066
228	4.1236	0.0066
229	4.1302	0.0066
230	4.1368	0.0066
231	4.1433	0.0065
232	4.1498	0.0065
233	4.1564	0.0065
234	4.1628	0.0065
235	4.1693	0.0065
236	4.1758	0.0065
237	4.1822	0.0064
238	4.1886	0.0064
239	4.1950	0.0064
240	4.2014	0.0064
241	4.2078	0.0064
242	4.2141	0.0064
243	4.2205	0.0063
244	4.2268	0.0063
245	4.2331	0.0063
246	4.2394	0.0063
247	4.2456	0.0063
248	4.2519	0.0063
249	4.2581	0.0062
250	4.2643	0.0062

251	4.2706	0.0062
252	4.2767	0.0062
253	4.2829	0.0062
254	4.2891	0.0062
255	4.2952	0.0061
256	4.3013	0.0061
257	4.3075	0.0061
258	4.3136	0.0061
259	4.3196	0.0061
260	4.3257	0.0061
261	4.3318	0.0061
262	4.3378	0.0060
263	4.3438	0.0060
264	4.3498	0.0060
265	4.3558	0.0060
266	4.3618	0.0060
267	4.3678	0.0060
268	4.3737	0.0060
269	4.3797	0.0059
270	4.3856	0.0059
271	4.3915	0.0059
272	4.3974	0.0059
273	4.4033	0.0059
274	4.4091	0.0059
275	4.4150	0.0059
276	4.4208	0.0058
277	4.4267	0.0058
278	4.4325	0.0058
279	4.4383	0.0058
280	4.4441	0.0058
281	4.4498	0.0058
282	4.4556	0.0058
283	4.4613	0.0057
284	4.4671	0.0057
285	4.4728	0.0057
286	4.4785	0.0057
287	4.4842	0.0057
288	4.4899	0.0057

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0057	0.0019	0.0038
2	0.0057	0.0019	0.0038
3	0.0057	0.0019	0.0038
4	0.0057	0.0019	0.0038
5	0.0058	0.0019	0.0038
6	0.0058	0.0019	0.0038
7	0.0058	0.0019	0.0039
8	0.0058	0.0019	0.0039
9	0.0058	0.0020	0.0039
10	0.0059	0.0020	0.0039
11	0.0059	0.0020	0.0039
12	0.0059	0.0020	0.0039
13	0.0059	0.0020	0.0039
14	0.0059	0.0020	0.0039
15	0.0060	0.0020	0.0040
16	0.0060	0.0020	0.0040
17	0.0060	0.0020	0.0040
18	0.0060	0.0020	0.0040
19	0.0061	0.0020	0.0040
20	0.0061	0.0020	0.0040
21	0.0061	0.0020	0.0041
22	0.0061	0.0020	0.0041
23	0.0061	0.0021	0.0041
24	0.0062	0.0021	0.0041
25	0.0062	0.0021	0.0041
26	0.0062	0.0021	0.0041
27	0.0062	0.0021	0.0041
28	0.0063	0.0021	0.0042

29	0.0063	0.0021	0.0042
30	0.0063	0.0021	0.0042
31	0.0063	0.0021	0.0042
32	0.0064	0.0021	0.0042
33	0.0064	0.0021	0.0042
34	0.0064	0.0021	0.0043
35	0.0064	0.0022	0.0043
36	0.0065	0.0022	0.0043
37	0.0065	0.0022	0.0043
38	0.0065	0.0022	0.0043
39	0.0065	0.0022	0.0044
40	0.0066	0.0022	0.0044
41	0.0066	0.0022	0.0044
42	0.0066	0.0022	0.0044
43	0.0067	0.0022	0.0044
44	0.0067	0.0022	0.0044
45	0.0067	0.0022	0.0045
46	0.0067	0.0023	0.0045
47	0.0068	0.0023	0.0045
48	0.0068	0.0023	0.0045
49	0.0068	0.0023	0.0045
50	0.0068	0.0023	0.0046
51	0.0069	0.0023	0.0046
52	0.0069	0.0023	0.0046
53	0.0070	0.0023	0.0046
54	0.0070	0.0023	0.0046
55	0.0070	0.0024	0.0047
56	0.0070	0.0024	0.0047
57	0.0071	0.0024	0.0047
58	0.0071	0.0024	0.0047
59	0.0071	0.0024	0.0048
60	0.0072	0.0024	0.0048
61	0.0072	0.0024	0.0048
62	0.0072	0.0024	0.0048
63	0.0073	0.0024	0.0048
64	0.0073	0.0024	0.0049
65	0.0074	0.0025	0.0049
66	0.0074	0.0025	0.0049
67	0.0074	0.0025	0.0049
68	0.0075	0.0025	0.0050
69	0.0075	0.0025	0.0050
70	0.0075	0.0025	0.0050
71	0.0076	0.0025	0.0050
72	0.0076	0.0026	0.0051
73	0.0077	0.0026	0.0051
74	0.0077	0.0026	0.0051
75	0.0078	0.0026	0.0052
76	0.0078	0.0026	0.0052
77	0.0078	0.0026	0.0052
78	0.0079	0.0026	0.0052
79	0.0079	0.0027	0.0053
80	0.0080	0.0027	0.0053
81	0.0080	0.0027	0.0053
82	0.0080	0.0027	0.0053
83	0.0081	0.0027	0.0054
84	0.0081	0.0027	0.0054
85	0.0082	0.0027	0.0055
86	0.0082	0.0028	0.0055
87	0.0083	0.0028	0.0055
88	0.0083	0.0028	0.0055
89	0.0084	0.0028	0.0056
90	0.0084	0.0028	0.0056
91	0.0085	0.0029	0.0057
92	0.0085	0.0029	0.0057
93	0.0086	0.0029	0.0057
94	0.0087	0.0029	0.0058
95	0.0087	0.0029	0.0058
96	0.0088	0.0029	0.0058
97	0.0088	0.0030	0.0059
98	0.0089	0.0030	0.0059
99	0.0090	0.0030	0.0060

100	0.0090	0.0030	0.0060
101	0.0091	0.0030	0.0060
102	0.0091	0.0031	0.0061
103	0.0092	0.0031	0.0061
104	0.0093	0.0031	0.0062
105	0.0093	0.0031	0.0062
106	0.0094	0.0031	0.0062
107	0.0095	0.0032	0.0063
108	0.0095	0.0032	0.0063
109	0.0096	0.0032	0.0064
110	0.0097	0.0032	0.0064
111	0.0098	0.0033	0.0065
112	0.0098	0.0033	0.0065
113	0.0099	0.0033	0.0066
114	0.0100	0.0033	0.0066
115	0.0101	0.0034	0.0067
116	0.0102	0.0034	0.0067
117	0.0103	0.0034	0.0068
118	0.0103	0.0035	0.0069
119	0.0104	0.0035	0.0069
120	0.0105	0.0035	0.0070
121	0.0106	0.0036	0.0071
122	0.0107	0.0036	0.0071
123	0.0108	0.0036	0.0072
124	0.0109	0.0036	0.0072
125	0.0110	0.0037	0.0073
126	0.0111	0.0037	0.0074
127	0.0112	0.0038	0.0075
128	0.0113	0.0038	0.0075
129	0.0115	0.0038	0.0076
130	0.0115	0.0039	0.0077
131	0.0117	0.0039	0.0078
132	0.0118	0.0039	0.0078
133	0.0119	0.0040	0.0079
134	0.0120	0.0040	0.0080
135	0.0122	0.0041	0.0081
136	0.0123	0.0041	0.0082
137	0.0125	0.0042	0.0083
138	0.0126	0.0042	0.0084
139	0.0128	0.0043	0.0085
140	0.0129	0.0043	0.0086
141	0.0131	0.0044	0.0087
142	0.0132	0.0044	0.0088
143	0.0134	0.0045	0.0089
144	0.0135	0.0045	0.0090
145	0.0182	0.0061	0.0121
146	0.0184	0.0061	0.0122
147	0.0186	0.0062	0.0124
148	0.0188	0.0063	0.0125
149	0.0191	0.0064	0.0127
150	0.0192	0.0064	0.0128
151	0.0195	0.0065	0.0130
152	0.0197	0.0066	0.0131
153	0.0200	0.0067	0.0133
154	0.0202	0.0068	0.0134
155	0.0206	0.0069	0.0137
156	0.0208	0.0070	0.0138
157	0.0212	0.0071	0.0141
158	0.0214	0.0072	0.0142
159	0.0218	0.0073	0.0145
160	0.0220	0.0074	0.0147
161	0.0225	0.0075	0.0150
162	0.0228	0.0076	0.0151
163	0.0233	0.0078	0.0155
164	0.0236	0.0079	0.0157
165	0.0241	0.0081	0.0161
166	0.0245	0.0082	0.0163
167	0.0251	0.0084	0.0167
168	0.0254	0.0085	0.0169
169	0.0259	0.0087	0.0172
170	0.0263	0.0088	0.0175

171	0.0271	0.0091	0.0180
172	0.0275	0.0092	0.0183
173	0.0285	0.0096	0.0190
174	0.0290	0.0096	0.0194
175	0.0302	0.0096	0.0206
176	0.0308	0.0096	0.0212
177	0.0321	0.0096	0.0225
178	0.0329	0.0096	0.0233
179	0.0345	0.0096	0.0249
180	0.0354	0.0096	0.0258
181	0.0375	0.0096	0.0279
182	0.0386	0.0096	0.0291
183	0.0413	0.0096	0.0318
184	0.0429	0.0096	0.0333
185	0.0395	0.0096	0.0300
186	0.0418	0.0096	0.0322
187	0.0474	0.0096	0.0378
188	0.0511	0.0096	0.0415
189	0.0661	0.0096	0.0565
190	0.0741	0.0096	0.0645
191	0.1038	0.0096	0.0942
192	0.1401	0.0096	0.1306
193	0.3996	0.0096	0.3900
194	0.0855	0.0096	0.0759
195	0.0556	0.0096	0.0461
196	0.0443	0.0096	0.0348
197	0.0447	0.0096	0.0351
198	0.0399	0.0096	0.0303
199	0.0364	0.0096	0.0268
200	0.0336	0.0096	0.0241
201	0.0314	0.0096	0.0218
202	0.0296	0.0096	0.0200
203	0.0280	0.0094	0.0186
204	0.0267	0.0089	0.0177
205	0.0258	0.0086	0.0172
206	0.0248	0.0083	0.0165
207	0.0238	0.0080	0.0159
208	0.0230	0.0077	0.0153
209	0.0223	0.0075	0.0148
210	0.0216	0.0072	0.0144
211	0.0210	0.0070	0.0139
212	0.0204	0.0068	0.0136
213	0.0199	0.0067	0.0132
214	0.0194	0.0065	0.0129
215	0.0189	0.0063	0.0126
216	0.0185	0.0062	0.0123
217	0.0136	0.0046	0.0091
218	0.0133	0.0045	0.0088
219	0.0130	0.0043	0.0086
220	0.0127	0.0042	0.0084
221	0.0124	0.0041	0.0082
222	0.0121	0.0041	0.0081
223	0.0119	0.0040	0.0079
224	0.0116	0.0039	0.0077
225	0.0114	0.0038	0.0076
226	0.0112	0.0037	0.0074
227	0.0110	0.0037	0.0073
228	0.0108	0.0036	0.0071
229	0.0106	0.0035	0.0070
230	0.0104	0.0035	0.0069
231	0.0102	0.0034	0.0068
232	0.0100	0.0034	0.0067
233	0.0099	0.0033	0.0066
234	0.0097	0.0033	0.0065
235	0.0096	0.0032	0.0064
236	0.0094	0.0032	0.0063
237	0.0093	0.0031	0.0062
238	0.0092	0.0031	0.0061
239	0.0090	0.0030	0.0060
240	0.0089	0.0030	0.0059
241	0.0088	0.0029	0.0059

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      242              0.0087          0.0029              0.0058
      243              0.0086          0.0029              0.0057
      244              0.0085          0.0028              0.0056
      245              0.0084          0.0028              0.0056
      246              0.0083          0.0028              0.0055
      247              0.0082          0.0027              0.0054
      248              0.0081          0.0027              0.0054
      249              0.0080          0.0027              0.0053
      250              0.0079          0.0026              0.0052
      251              0.0078          0.0026              0.0052
      252              0.0077          0.0026              0.0051
      253              0.0076          0.0026              0.0051
      254              0.0076          0.0025              0.0050
      255              0.0075          0.0025              0.0050
      256              0.0074          0.0025              0.0049
      257              0.0073          0.0025              0.0049
      258              0.0073          0.0024              0.0048
      259              0.0072          0.0024              0.0048
      260              0.0071          0.0024              0.0047
      261              0.0071          0.0024              0.0047
      262              0.0070          0.0023              0.0047
      263              0.0069          0.0023              0.0046
      264              0.0069          0.0023              0.0046
      265              0.0068          0.0023              0.0045
      266              0.0067          0.0023              0.0045
      267              0.0067          0.0022              0.0044
      268              0.0066          0.0022              0.0044
      269              0.0066          0.0022              0.0044
      270              0.0065          0.0022              0.0043
      271              0.0065          0.0022              0.0043
      272              0.0064          0.0022              0.0043
      273              0.0064          0.0021              0.0042
      274              0.0063          0.0021              0.0042
      275              0.0063          0.0021              0.0042
      276              0.0062          0.0021              0.0041
      277              0.0062          0.0021              0.0041
      278              0.0061          0.0021              0.0041
      279              0.0061          0.0020              0.0040
      280              0.0060          0.0020              0.0040
      281              0.0060          0.0020              0.0040
      282              0.0060          0.0020              0.0040
      283              0.0059          0.0020              0.0039
      284              0.0059          0.0020              0.0039
      285              0.0058          0.0020              0.0039
      286              0.0058          0.0019              0.0038
      287              0.0057          0.0019              0.0038
      288              0.0057          0.0019              0.0038
      ---------------------------------------------------------------------
      ---------------------------------------------------------------------
      Total soil rain loss =      1.20(In)
      Total effective rainfall =      3.29(In)
      Peak flow rate in flood hydrograph =     45.18(CFS)
      ---------------------------------------------------------------------
      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          24 - H O U R    S T O R M
                    R u n o f f      H y d r o g r a p h
      ---------------------------------------------------------------------
                 Hydrograph in   5   Minute intervals ((CFS))

      ---------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0       12.5      25.0      37.5      50.0
---------------------------------------------------------------------------
  0+ 5       0.0003      0.05  Q         |         |         |         |
  0+10       0.0025      0.31  Q         |         |         |         |
  0+15       0.0068      0.63  Q         |         |         |         |
  0+20       0.0119      0.74  Q         |         |         |         |
  0+25       0.0175      0.81  Q         |         |         |         |
  0+30       0.0234      0.85  Q         |         |         |         |
  0+35       0.0294      0.88  Q         |         |         |         |
  0+40       0.0356      0.89  Q         |         |         |         |
  0+45       0.0418      0.90  Q         |         |         |         |
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0+50       0.0481      0.91  Q          |          |          |          |
0+55       0.0544      0.92  Q          |          |          |          |
1+ 0       0.0608      0.92  Q          |          |          |          |
1+ 5       0.0671      0.93  Q          |          |          |          |
1+10       0.0735      0.93  Q          |          |          |          |
1+15       0.0800      0.93  Q          |          |          |          |
1+20       0.0864      0.94  Q          |          |          |          |
1+25       0.0929      0.94  Q          |          |          |          |
1+30       0.0993      0.94  Q          |          |          |          |
1+35       0.1059      0.95  Q          |          |          |          |
1+40       0.1124      0.95  Q          |          |          |          |
1+45       0.1190      0.95  Q          |          |          |          |
1+50       0.1255      0.96  Q          |          |          |          |
1+55       0.1321      0.96  Q          |          |          |          |
2+ 0       0.1388      0.96  QV         |          |          |          |
2+ 5       0.1454      0.97  QV         |          |          |          |
2+10       0.1521      0.97  QV         |          |          |          |
2+15       0.1588      0.97  QV         |          |          |          |
2+20       0.1656      0.98  QV         |          |          |          |
2+25       0.1723      0.98  QV         |          |          |          |
2+30       0.1791      0.99  QV         |          |          |          |
2+35       0.1859      0.99  QV         |          |          |          |
2+40       0.1927      0.99  QV         |          |          |          |
2+45       0.1996      1.00  QV         |          |          |          |
2+50       0.2065      1.00  QV         |          |          |          |
2+55       0.2134      1.00  QV         |          |          |          |
3+ 0       0.2204      1.01  QV         |          |          |          |
3+ 5       0.2273      1.01  QV         |          |          |          |
3+10       0.2343      1.02  QV         |          |          |          |
3+15       0.2414      1.02  QV         |          |          |          |
3+20       0.2484      1.03  QV         |          |          |          |
3+25       0.2555      1.03  QV         |          |          |          |
3+30       0.2626      1.03  QV         |          |          |          |
3+35       0.2698      1.04  Q V        |          |          |          |
3+40       0.2770      1.04  Q V        |          |          |          |
3+45       0.2842      1.05  Q V        |          |          |          |
3+50       0.2914      1.05  Q V        |          |          |          |
3+55       0.2987      1.06  Q V        |          |          |          |
4+ 0       0.3060      1.06  Q V        |          |          |          |
4+ 5       0.3133      1.06  Q V        |          |          |          |
4+10       0.3207      1.07  Q V        |          |          |          |
4+15       0.3281      1.07  Q V        |          |          |          |
4+20       0.3355      1.08  Q V        |          |          |          |
4+25       0.3430      1.08  Q V        |          |          |          |
4+30       0.3505      1.09  Q V        |          |          |          |
4+35       0.3580      1.09  Q V        |          |          |          |
4+40       0.3656      1.10  Q V        |          |          |          |
4+45       0.3732      1.10  Q V        |          |          |          |
4+50       0.3808      1.11  Q V        |          |          |          |
4+55       0.3885      1.11  Q V        |          |          |          |
5+ 0       0.3962      1.12  Q V        |          |          |          |
5+ 5       0.4039      1.12  Q  V       |          |          |          |
5+10       0.4117      1.13  Q  V       |          |          |          |
5+15       0.4195      1.14  Q  V       |          |          |          |
5+20       0.4274      1.14  Q  V       |          |          |          |
5+25       0.4353      1.15  Q  V       |          |          |          |
5+30       0.4432      1.15  Q  V       |          |          |          |
5+35       0.4512      1.16  Q  V       |          |          |          |
5+40       0.4592      1.16  Q  V       |          |          |          |
5+45       0.4672      1.17  Q  V       |          |          |          |
5+50       0.4753      1.18  Q  V       |          |          |          |
5+55       0.4835      1.18  Q  V       |          |          |          |
6+ 0       0.4916      1.19  Q  V       |          |          |          |
6+ 5       0.4999      1.19  Q  V       |          |          |          |
6+10       0.5081      1.20  Q  V       |          |          |          |
6+15       0.5164      1.21  Q  V       |          |          |          |
6+20       0.5248      1.21  Q  V       |          |          |          |
6+25       0.5332      1.22  Q  V       |          |          |          |
6+30       0.5416      1.23  Q   V      |          |          |          |
6+35       0.5501      1.23  Q   V      |          |          |          |
6+40       0.5586      1.24  Q   V      |          |          |          |
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 6+45      0.5672      1.25  Q   V     |         |         |         |
 6+50      0.5759      1.25  |Q  V     |         |         |         |
 6+55      0.5845      1.26  |Q  V     |         |         |         |
 7+ 0      0.5933      1.27  |Q  V     |         |         |         |
 7+ 5      0.6020      1.27  |Q  V     |         |         |         |
 7+10      0.6109      1.28  |Q  V     |         |         |         |
 7+15      0.6197      1.29  |Q  V     |         |         |         |
 7+20      0.6287      1.30  |Q  V     |         |         |         |
 7+25      0.6377      1.30  |Q  V     |         |         |         |
 7+30      0.6467      1.31  |Q  V     |         |         |         |
 7+35      0.6558      1.32  |Q  V     |         |         |         |
 7+40      0.6650      1.33  |Q  V     |         |         |         |
 7+45      0.6742      1.34  |Q   V    |         |         |         |
 7+50      0.6834      1.35  |Q   V    |         |         |         |
 7+55      0.6928      1.35  |Q   V    |         |         |         |
 8+ 0      0.7021      1.36  |Q   V    |         |         |         |
 8+ 5      0.7116      1.37  |Q   V    |         |         |         |
 8+10      0.7211      1.38  |Q   V    |         |         |         |
 8+15      0.7307      1.39  |Q   V    |         |         |         |
 8+20      0.7403      1.40  |Q   V    |         |         |         |
 8+25      0.7500      1.41  |Q   V    |         |         |         |
 8+30      0.7598      1.42  |Q   V    |         |         |         |
 8+35      0.7696      1.43  |Q   V    |         |         |         |
 8+40      0.7795      1.44  |Q   V    |         |         |         |
 8+45      0.7895      1.45  |Q   V    |         |         |         |
 8+50      0.7995      1.46  |Q   V    |         |         |         |
 8+55      0.8096      1.47  |Q    V   |         |         |         |
 9+ 0      0.8198      1.48  |Q    V   |         |         |         |
 9+ 5      0.8301      1.49  |Q    V   |         |         |         |
 9+10      0.8404      1.50  |Q    V   |         |         |         |
 9+15      0.8508      1.51  |Q    V   |         |         |         |
 9+20      0.8613      1.52  |Q    V   |         |         |         |
 9+25      0.8719      1.54  |Q    V   |         |         |         |
 9+30      0.8826      1.55  |Q    V   |         |         |         |
 9+35      0.8933      1.56  |Q    V   |         |         |         |
 9+40      0.9042      1.57  |Q    V   |         |         |         |
 9+45      0.9151      1.59  |Q    V   |         |         |         |
 9+50      0.9261      1.60  |Q    V   |         |         |         |
 9+55      0.9372      1.61  |Q    V   |         |         |         |
10+ 0      0.9484      1.63  |Q     V  |         |         |         |
10+ 5      0.9597      1.64  |Q     V  |         |         |         |
10+10      0.9711      1.65  |Q     V  |         |         |         |
10+15      0.9826      1.67  |Q     V  |         |         |         |
10+20      0.9941      1.68  |Q     V  |         |         |         |
10+25      1.0058      1.70  |Q     V  |         |         |         |
10+30      1.0177      1.71  |Q     V  |         |         |         |
10+35      1.0296      1.73  |Q     V  |         |         |         |
10+40      1.0416      1.75  |Q     V  |         |         |         |
10+45      1.0537      1.76  |Q     V  |         |         |         |
10+50      1.0660      1.78  |Q     V  |         |         |         |
10+55      1.0784      1.80  |Q      V |         |         |         |
11+ 0      1.0909      1.82  |Q      V |         |         |         |
11+ 5      1.1035      1.83  |Q      V |         |         |         |
11+10      1.1163      1.85  |Q      V |         |         |         |
11+15      1.1292      1.87  |Q      V |         |         |         |
11+20      1.1422      1.89  |Q      V |         |         |         |
11+25      1.1554      1.91  |Q      V |         |         |         |
11+30      1.1687      1.94  |Q      V |         |         |         |
11+35      1.1822      1.96  |Q      V |         |         |         |
11+40      1.1958      1.98  |Q      V |         |         |         |
11+45      1.2096      2.00  |Q      V |         |         |         |
11+50      1.2236      2.03  |Q       V|         |         |         |
11+55      1.2377      2.05  |Q       V|         |         |         |
12+ 0      1.2520      2.08  |Q       V|         |         |         |
12+ 5      1.2668      2.14  |Q       V|         |         |         |
12+10      1.2831      2.37  |Q       V|         |         |         |
12+15      1.3014      2.65  | Q      V|         |         |         |
12+20      1.3204      2.77  | Q      V|         |         |         |
12+25      1.3401      2.85  | Q      V|         |         |         |
12+30      1.3602      2.92  | Q       V        |         |         |
12+35      1.3806      2.97  | Q       V        |         |         |
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12+40      1.4014     3.01  | Q       V         |         |         |
12+45      1.4224     3.06  | Q       V         |         |         |
12+50      1.4437     3.10  | Q       V         |         |         |
12+55      1.4654     3.14  | Q       V         |         |         |
13+ 0      1.4873     3.18  | Q       |V        |         |         |
13+ 5      1.5095     3.23  | Q       |V        |         |         |
13+10      1.5320     3.27  | Q       |V        |         |         |
13+15      1.5549     3.32  | Q       |V        |         |         |
13+20      1.5781     3.37  | Q       |V        |         |         |
13+25      1.6016     3.42  | Q       |V        |         |         |
13+30      1.6255     3.47  | Q       | V       |         |         |
13+35      1.6498     3.53  | Q       | V       |         |         |
13+40      1.6744     3.58  | Q       | V       |         |         |
13+45      1.6996     3.65  | Q       | V       |         |         |
13+50      1.7251     3.71  | Q       | V       |         |         |
13+55      1.7511     3.78  |  Q      |  V      |         |         |
14+ 0      1.7776     3.85  |  Q      |  V      |         |         |
14+ 5      1.8047     3.92  |  Q      |  V      |         |         |
14+10      1.8321     3.99  |  Q      |  V      |         |         |
14+15      1.8601     4.06  |  Q      |  V      |         |         |
14+20      1.8886     4.14  |  Q      |   V     |         |         |
14+25      1.9178     4.24  |  Q      |   V     |         |         |
14+30      1.9477     4.34  |  Q      |   V     |         |         |
14+35      1.9785     4.47  |  Q      |   V     |         |         |
14+40      2.0104     4.63  |  Q      |   V     |         |         |
14+45      2.0436     4.82  |  Q      |    V    |         |         |
14+50      2.0782     5.03  |   Q     |    V    |         |         |
14+55      2.1144     5.26  |   Q     |    V    |         |         |
15+ 0      2.1524     5.52  |   Q     |     V   |         |         |
15+ 5      2.1924     5.81  |   Q     |     V   |         |         |
15+10      2.2346     6.13  |   Q     |     V   |         |         |
15+15      2.2793     6.49  |    Q    |     V   |         |         |
15+20      2.3268     6.90  |    Q    |      V  |         |         |
15+25      2.3771     7.29  |    Q    |      V  |         |         |
15+30      2.4277     7.36  |    Q    |       V |         |         |
15+35      2.4789     7.43  |    Q    |       V |         |         |
15+40      2.5341     8.02  |     Q   |       V |         |         |
15+45      2.5960     8.99  |      Q  |        V|         |         |
15+50      2.6693    10.64  |       Q |        V|         |         |
15+55      2.7591    13.04  |         Q         V         |         |
16+ 0      2.8750    16.83  |         |  Q      |V        |         |
16+ 5      3.0519    25.68  |         |         Q V       |         |
16+10      3.3556    44.10  |         |         |   V     |    Q    |
16+15      3.6668    45.18  |         |         |      V  |     Q   |
16+20      3.8443    25.78  |         |         Q       V |         |
16+25      3.9694    18.17  |         |   Q     |        V|         |
16+30      4.0655    13.96  |         |Q        |         V         |
16+35      4.1422    11.13  |       Q |         |         V         |
16+40      4.2026     8.77  |      Q  |         |         |V        |
16+45      4.2536     7.40  |    Q    |         |         |V        |
16+50      4.2984     6.51  |    Q    |         |         |V        |
16+55      4.3388     5.87  |   Q     |         |         | V       |
17+ 0      4.3748     5.22  |   Q     |         |         | V       |
17+ 5      4.4074     4.73  |  Q      |         |         | V       |
17+10      4.4377     4.40  |  Q      |         |         |  V      |
17+15      4.4665     4.18  |  Q      |         |         |  V      |
17+20      4.4940     4.00  |  Q      |         |         |  V      |
17+25      4.5204     3.83  |  Q      |         |         |  V      |
17+30      4.5458     3.69  | Q       |         |         |  V      |
17+35      4.5704     3.57  | Q       |         |         |  V      |
17+40      4.5942     3.45  | Q       |         |         |   V     |
17+45      4.6172     3.35  | Q       |         |         |   V     |
17+50      4.6396     3.25  | Q       |         |         |   V     |
17+55      4.6614     3.17  | Q       |         |         |   V     |
18+ 0      4.6827     3.09  | Q       |         |         |   V     |
18+ 5      4.7032     2.97  | Q       |         |         |   V     |
18+10      4.7217     2.70  | Q       |         |         |    V    |
18+15      4.7382     2.39  |Q        |         |         |    V    |
18+20      4.7536     2.24  |Q        |         |         |    V    |
18+25      4.7683     2.14  |Q        |         |         |    V    |
18+30      4.7825     2.05  |Q        |         |         |    V    |
```

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18+35      4.7962     1.99  |Q        |         |         |    V    |
18+40      4.8095     1.94  |Q        |         |         |    V    |
18+45      4.8226     1.89  |Q        |         |         |    V    |
18+50      4.8353     1.85  |Q        |         |         |    V    |
18+55      4.8478     1.81  |Q        |         |         |     V   |
19+ 0      4.8600     1.77  |Q        |         |         |     V   |
19+ 5      4.8719     1.74  |Q        |         |         |     V   |
19+10      4.8837     1.71  |Q        |         |         |     V   |
19+15      4.8952     1.68  |Q        |         |         |     V   |
19+20      4.9066     1.65  |Q        |         |         |     V   |
19+25      4.9177     1.62  |Q        |         |         |     V   |
19+30      4.9287     1.59  |Q        |         |         |     V   |
19+35      4.9395     1.57  |Q        |         |         |     V   |
19+40      4.9501     1.54  |Q        |         |         |     V   |
19+45      4.9605     1.52  |Q        |         |         |     V   |
19+50      4.9709     1.50  |Q        |         |         |     V   |
19+55      4.9810     1.47  |Q        |         |         |      V  |
20+ 0      4.9910     1.45  |Q        |         |         |      V  |
20+ 5      5.0009     1.43  |Q        |         |         |      V  |
20+10      5.0106     1.41  |Q        |         |         |      V  |
20+15      5.0202     1.39  |Q        |         |         |      V  |
20+20      5.0297     1.38  |Q        |         |         |      V  |
20+25      5.0390     1.36  |Q        |         |         |      V  |
20+30      5.0483     1.34  |Q        |         |         |      V  |
20+35      5.0574     1.32  |Q        |         |         |      V  |
20+40      5.0664     1.31  |Q        |         |         |      V  |
20+45      5.0753     1.29  |Q        |         |         |      V  |
20+50      5.0841     1.28  |Q        |         |         |      V  |
20+55      5.0928     1.26  |Q        |         |         |      V  |
21+ 0      5.1014     1.25  Q         |         |         |      V  |
21+ 5      5.1099     1.24  Q         |         |         |       V |
21+10      5.1183     1.22  Q         |         |         |       V |
21+15      5.1267     1.21  Q         |         |         |       V |
21+20      5.1349     1.20  Q         |         |         |       V |
21+25      5.1431     1.18  Q         |         |         |       V |
21+30      5.1511     1.17  Q         |         |         |       V |
21+35      5.1591     1.16  Q         |         |         |       V |
21+40      5.1670     1.15  Q         |         |         |       V |
21+45      5.1749     1.14  Q         |         |         |       V |
21+50      5.1826     1.13  Q         |         |         |       V |
21+55      5.1903     1.12  Q         |         |         |       V |
22+ 0      5.1979     1.11  Q         |         |         |       V |
22+ 5      5.2055     1.10  Q         |         |         |       V |
22+10      5.2130     1.09  Q         |         |         |       V |
22+15      5.2204     1.08  Q         |         |         |       V |
22+20      5.2277     1.07  Q         |         |         |       V |
22+25      5.2350     1.06  Q         |         |         |       V |
22+30      5.2422     1.05  Q         |         |         |       V |
22+35      5.2494     1.04  Q         |         |         |        V|
22+40      5.2565     1.03  Q         |         |         |        V|
22+45      5.2635     1.02  Q         |         |         |        V|
22+50      5.2705     1.01  Q         |         |         |        V|
22+55      5.2774     1.01  Q         |         |         |        V|
23+ 0      5.2843     1.00  Q         |         |         |        V|
23+ 5      5.2911     0.99  Q         |         |         |        V|
23+10      5.2979     0.98  Q         |         |         |        V|
23+15      5.3046     0.98  Q         |         |         |        V|
23+20      5.3113     0.97  Q         |         |         |        V|
23+25      5.3179     0.96  Q         |         |         |        V|
23+30      5.3245     0.95  Q         |         |         |        V|
23+35      5.3310     0.95  Q         |         |         |        V|
23+40      5.3375     0.94  Q         |         |         |        V|
23+45      5.3439     0.93  Q         |         |         |        V|
23+50      5.3503     0.93  Q         |         |         |        V|
23+55      5.3566     0.92  Q         |         |         |        V|
24+ 0      5.3629     0.91  Q         |         |         |        V|
24+ 5      5.3689     0.86  Q         |         |         |        V|
24+10      5.3729     0.59  Q         |         |         |        V|
24+15      5.3748     0.27  Q         |         |         |        V|
24+20      5.3759     0.16  Q         |         |         |        V|
24+25      5.3765     0.09  Q         |         |         |        V|
```

```
   24+30       5.3769      0.05  Q         |         |         |        V|
   24+35       5.3771      0.03  Q         |         |         |        V|
   24+40       5.3772      0.02  Q         |         |         |        V|
   24+45       5.3772      0.01  Q         |         |         |        V|
   24+50       5.3773      0.01  Q         |         |         |        V|
   24+55       5.3773      0.00  Q         |         |         |        V|
   25+ 0       5.3773      0.00  Q         |         |         |         V
-------------------------------------------------------------------------
```

- 100 Year 3 Hour Post-Development Unit Hydrograph – Area 'B'

```
        U n i t   H y d r o g r a p h   A n a l y s i s

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        Study date  10/05/16   File Name prb10003.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'B' - 100 YEAR 3 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

        Storm Event Year = 100

        Antecedent Moisture Condition = 3

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 70.7       7.8          0.40     D     0.200     0.500    0.100
 70.7      11.8          0.60     C     0.250     0.500    0.125

Area-averaged adjusted loss rate Fm (In/Hr) =  0.115

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC3)          Yield Fr
     3.92   0.200         70.7      87.6       1.42     0.750
     3.92   0.200         98.0      98.0       0.20     0.958

     5.88   0.300         70.7      87.6       1.42     0.750
     5.88   0.300         98.0      98.0       0.20     0.958

Area-averaged catchment yield fraction, Y =  0.854
Area-averaged low loss fraction, Yb =  0.146
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.179 (hours)
Watershed area =      19.60(Ac.)
Catchment Lag time =   0.144 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 58.0316
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.115(In/Hr)
Average low loss rate fraction (Yb) = 0.146 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.520(In)
Computed peak 30-minute rainfall =  1.090(In)
Specified peak 1-hour rainfall =  1.450(In)
Computed peak 3-hour rainfall =  2.430(In)
Specified peak 6-hour rainfall =  3.360(In)
Specified peak 24-hour rainfall =  5.630(In)
```

```
Rainfall depth area reduction factors:
Using a total area of      19.60(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.520(In)
30-minute factor = 0.999    Adjusted rainfall =  1.089(In)
1-hour factor = 0.999       Adjusted rainfall =  1.449(In)
3-hour factor = 1.000       Adjusted rainfall =  2.430(In)
6-hour factor = 1.000       Adjusted rainfall =  3.360(In)
24-hour factor = 1.000 Adjusted rainfall =  5.630(In)
------------------------------------------------------------------------

                      U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
------------------------------------------------------------------------
               (K =       237.04 (CFS))

  1                5.319                  12.608
  2               34.827                  69.944
  3               69.845                  83.007
  4               82.606                  30.248
  5               89.972                  17.461
  6               94.540                  10.827
  7               97.182                   6.263
  8               98.319                   2.696
  9               98.916                   1.413
 10               99.324                   0.967
 11               99.724                   0.949
 12               99.932                   0.494
 13              100.000                   0.160
------------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.5195               0.5195
  2              0.6917               0.1722
  3              0.8179               0.1261
  4              0.9211               0.1032
  5              1.0100               0.0889
  6              1.0890               0.0790
  7              1.1604               0.0714
  8              1.2259               0.0656
  9              1.2869               0.0609
 10              1.3439               0.0571
 11              1.3977               0.0538
 12              1.4487               0.0510
 13              1.5043               0.0556
 14              1.5577               0.0534
 15              1.6091               0.0514
 16              1.6587               0.0496
 17              1.7068               0.0480
 18              1.7533               0.0465
 19              1.7985               0.0452
 20              1.8425               0.0440
 21              1.8853               0.0428
 22              1.9270               0.0417
 23              1.9677               0.0407
 24              2.0076               0.0398
 25              2.0465               0.0389
 26              2.0846               0.0381
 27              2.1220               0.0374
 28              2.1586               0.0366
 29              2.1946               0.0360
 30              2.2299               0.0353
 31              2.2646               0.0347
 32              2.2987               0.0341
 33              2.3322               0.0335
 34              2.3652               0.0330
 35              2.3977               0.0325
 36              2.4297               0.0320
------------------------------------------------------------------------
```

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0320	0.0047	0.0273
2	0.0325	0.0047	0.0277
3	0.0335	0.0049	0.0286
4	0.0341	0.0050	0.0291
5	0.0353	0.0052	0.0301
6	0.0360	0.0053	0.0307
7	0.0374	0.0055	0.0319
8	0.0381	0.0056	0.0326
9	0.0398	0.0058	0.0340
10	0.0407	0.0059	0.0348
11	0.0428	0.0063	0.0366
12	0.0440	0.0064	0.0375
13	0.0465	0.0068	0.0397
14	0.0480	0.0070	0.0410
15	0.0514	0.0075	0.0439
16	0.0534	0.0078	0.0456
17	0.0510	0.0074	0.0435
18	0.0538	0.0079	0.0459
19	0.0609	0.0089	0.0520
20	0.0656	0.0096	0.0560
21	0.0790	0.0096	0.0694
22	0.0889	0.0096	0.0793
23	0.1261	0.0096	0.1165
24	0.1722	0.0096	0.1626
25	0.5195	0.0096	0.5099
26	0.1032	0.0096	0.0936
27	0.0714	0.0096	0.0618
28	0.0571	0.0083	0.0487
29	0.0556	0.0081	0.0475
30	0.0496	0.0072	0.0424
31	0.0452	0.0066	0.0386
32	0.0417	0.0061	0.0356
33	0.0389	0.0057	0.0333
34	0.0366	0.0054	0.0313
35	0.0347	0.0051	0.0296
36	0.0330	0.0048	0.0282

Total soil rain loss = 0.25(In)
Total effective rainfall = 2.18(In)
Peak flow rate in flood hydrograph = 58.24(CFS)

3 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	15.0	30.0	45.0	60.0
0+ 5	0.0024	0.34	Q	|	|	|	|
0+10	0.0179	2.26	VQ	|	|	|	|
0+15	0.0494	4.57	V Q	|	|	|	|
0+20	0.0873	5.50	V Q	|	|	|	|
0+25	0.1294	6.11	|V Q	|	|	|	|
0+30	0.1746	6.56	|V Q	|	|	|	|
0+35	0.2221	6.90	| V Q	|	|	|	|
0+40	0.2715	7.17	| VQ	|	|	|	|
0+45	0.3226	7.42	| VQ	|	|	|	|
0+50	0.3754	7.67	| VQ	|	|	|	|
0+55	0.4302	7.95	| VQ	|	|	|	|
1+ 0	0.4870	8.24	| Q	|	|	|	|
1+ 5	0.5459	8.56	| QV	|	|	|	|
1+10	0.6072	8.90	| QV	|	|	|	|
1+15	0.6712	9.29	| QV	|	|	|	|
1+20	0.7383	9.74	| Q V	|	|	|	|

```
   1+25       0.8084     10.18  |     Q  V|         |         |         |
   1+30       0.8797     10.35  |     Q  V|         |         |         |
   1+35       0.9524     10.56  |      Q  V         |         |         |
   1+40       1.0299     11.25  |      Q  |V        |         |         |
   1+45       1.1145     12.29  |       Q | V       |         |         |
   1+50       1.2103     13.91  |        Q|  V      |         |         |
   1+55       1.3236     16.44  |         Q   V     |         |         |
   2+ 0       1.4682     21.01  |          |   Q V  |         |         |
   2+ 5       1.6908     32.32  |          |        V|Q        |         |
   2+10       2.0812     56.68  |          |         |  V      |      Q  |
   2+15       2.4823     58.24  |          |         |      V  |       Q |
   2+20       2.7104     33.12  |          |         | Q       V         |
   2+25       2.8743     23.81  |          |    Q    |         | V       |
   2+30       3.0019     18.52  |          | Q       |         |  V      |
   2+35       3.1048     14.94  |         Q|         |         |   V     |
   2+40       3.1877     12.05  |        Q |         |         |    V    |
   2+45       3.2596     10.43  |     Q    |         |         |     V   |
   2+50       3.3245      9.42  |     Q    |         |         |      V  |
   2+55       3.3846      8.72  |    Q     |         |         |       V |
   3+ 0       3.4394      7.96  |    Q     |         |         |       V |
   3+ 5       3.4876      7.00  |   Q      |         |         |        V|
   3+10       3.5197      4.67  |  Q       |         |         |        V|
   3+15       3.5348      2.19  |Q         |         |         |        V|
   3+20       3.5435      1.26  Q          |         |         |        V|
   3+25       3.5484      0.72  Q          |         |         |        V|
   3+30       3.5511      0.39  Q          |         |         |        V|
   3+35       3.5525      0.20  Q          |         |         |        V|
   3+40       3.5534      0.12  Q          |         |         |        V|
   3+45       3.5539      0.08  Q          |         |         |        V|
   3+50       3.5542      0.05  Q          |         |         |        V|
   3+55       3.5543      0.02  Q          |         |         |        V|
   4+ 0       3.5544      0.00  Q          |         |         |        V|
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```

- 100 Year 6 Hour Post-Development Unit Hydrograph – Area 'B'

```
        U n i t   H y d r o g r a p h   A n a l y s i s

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        Study date  10/05/16   File Name prb10006.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

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RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'B' - 100 YEAR 6 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

        Storm Event Year = 100

        Antecedent Moisture Condition = 3

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 70.7       7.8          0.40     D     0.200     0.500    0.100
 70.7      11.8          0.60     C     0.250     0.500    0.125

Area-averaged adjusted loss rate Fm (In/Hr) =  0.115

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC3)          Yield Fr
     3.92   0.200         70.7      87.6       1.42     0.750
     3.92   0.200         98.0      98.0       0.20     0.958

     5.88   0.300         70.7      87.6       1.42     0.750
     5.88   0.300         98.0      98.0       0.20     0.958

Area-averaged catchment yield fraction, Y =  0.854
Area-averaged low loss fraction, Yb =  0.146
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.179 (hours)
Watershed area =      19.60(Ac.)
Catchment Lag time =   0.144 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 58.0316
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.115(In/Hr)
Average low loss rate fraction (Yb) = 0.146 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.520(In)
Computed peak 30-minute rainfall =  1.090(In)
Specified peak 1-hour rainfall =  1.450(In)
Computed peak 3-hour rainfall =  2.430(In)
Specified peak 6-hour rainfall =  3.360(In)
Specified peak 24-hour rainfall =  5.630(In)
```

```
Rainfall depth area reduction factors:
Using a total area of      19.60(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.520(In)
30-minute factor = 0.999    Adjusted rainfall =  1.089(In)
1-hour factor = 0.999       Adjusted rainfall =  1.449(In)
3-hour factor = 1.000       Adjusted rainfall =  2.430(In)
6-hour factor = 1.000       Adjusted rainfall =  3.360(In)
24-hour factor = 1.000 Adjusted rainfall =  5.630(In)
```

U n i t H y d r o g r a p h

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
(K =	237.04 (CFS))	
1	5.319	12.608
2	34.827	69.944
3	69.845	83.007
4	82.606	30.248
5	89.972	17.461
6	94.540	10.827
7	97.182	6.263
8	98.319	2.696
9	98.916	1.413
10	99.324	0.967
11	99.724	0.949
12	99.932	0.494
13	100.000	0.160

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.5195	0.5195
2	0.6917	0.1722
3	0.8179	0.1261
4	0.9211	0.1032
5	1.0100	0.0889
6	1.0890	0.0790
7	1.1604	0.0714
8	1.2259	0.0656
9	1.2869	0.0609
10	1.3439	0.0571
11	1.3977	0.0538
12	1.4487	0.0510
13	1.5043	0.0556
14	1.5577	0.0534
15	1.6091	0.0514
16	1.6587	0.0496
17	1.7068	0.0480
18	1.7533	0.0465
19	1.7985	0.0452
20	1.8425	0.0440
21	1.8853	0.0428
22	1.9270	0.0417
23	1.9677	0.0407
24	2.0076	0.0398
25	2.0465	0.0389
26	2.0846	0.0381
27	2.1220	0.0374
28	2.1586	0.0366
29	2.1946	0.0360
30	2.2299	0.0353
31	2.2646	0.0347
32	2.2987	0.0341
33	2.3322	0.0335
34	2.3652	0.0330
35	2.3977	0.0325
36	2.4297	0.0320
37	2.4610	0.0313

38	2.4919	0.0309
39	2.5224	0.0305
40	2.5524	0.0300
41	2.5821	0.0296
42	2.6113	0.0293
43	2.6402	0.0289
44	2.6687	0.0285
45	2.6969	0.0282
46	2.7248	0.0279
47	2.7523	0.0275
48	2.7796	0.0272
49	2.8065	0.0269
50	2.8331	0.0266
51	2.8595	0.0264
52	2.8856	0.0261
53	2.9114	0.0258
54	2.9369	0.0256
55	2.9622	0.0253
56	2.9873	0.0251
57	3.0121	0.0248
58	3.0367	0.0246
59	3.0611	0.0244
60	3.0852	0.0242
61	3.1092	0.0239
62	3.1329	0.0237
63	3.1564	0.0235
64	3.1798	0.0233
65	3.2029	0.0231
66	3.2258	0.0229
67	3.2486	0.0228
68	3.2712	0.0226
69	3.2936	0.0224
70	3.3158	0.0222
71	3.3379	0.0221
72	3.3598	0.0219

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0219	0.0032	0.0187
2	0.0221	0.0032	0.0188
3	0.0224	0.0033	0.0191
4	0.0226	0.0033	0.0193
5	0.0229	0.0034	0.0196
6	0.0231	0.0034	0.0198
7	0.0235	0.0034	0.0201
8	0.0237	0.0035	0.0203
9	0.0242	0.0035	0.0206
10	0.0244	0.0036	0.0208
11	0.0248	0.0036	0.0212
12	0.0251	0.0037	0.0214
13	0.0256	0.0037	0.0218
14	0.0258	0.0038	0.0220
15	0.0264	0.0038	0.0225
16	0.0266	0.0039	0.0227
17	0.0272	0.0040	0.0233
18	0.0275	0.0040	0.0235
19	0.0282	0.0041	0.0241
20	0.0285	0.0042	0.0244
21	0.0293	0.0043	0.0250
22	0.0296	0.0043	0.0253
23	0.0305	0.0044	0.0260
24	0.0309	0.0045	0.0264
25	0.0320	0.0047	0.0273
26	0.0325	0.0047	0.0277
27	0.0335	0.0049	0.0286
28	0.0341	0.0050	0.0291
29	0.0353	0.0052	0.0301
30	0.0360	0.0053	0.0307
31	0.0374	0.0055	0.0319

32	0.0381	0.0056	0.0326
33	0.0398	0.0058	0.0340
34	0.0407	0.0059	0.0348
35	0.0428	0.0063	0.0366
36	0.0440	0.0064	0.0375
37	0.0465	0.0068	0.0397
38	0.0480	0.0070	0.0410
39	0.0514	0.0075	0.0439
40	0.0534	0.0078	0.0456
41	0.0510	0.0074	0.0435
42	0.0538	0.0079	0.0459
43	0.0609	0.0089	0.0520
44	0.0656	0.0096	0.0560
45	0.0790	0.0096	0.0694
46	0.0889	0.0096	0.0793
47	0.1261	0.0096	0.1165
48	0.1722	0.0096	0.1626
49	0.5195	0.0096	0.5099
50	0.1032	0.0096	0.0936
51	0.0714	0.0096	0.0618
52	0.0571	0.0083	0.0487
53	0.0556	0.0081	0.0475
54	0.0496	0.0072	0.0424
55	0.0452	0.0066	0.0386
56	0.0417	0.0061	0.0356
57	0.0389	0.0057	0.0333
58	0.0366	0.0054	0.0313
59	0.0347	0.0051	0.0296
60	0.0330	0.0048	0.0282
61	0.0313	0.0046	0.0268
62	0.0300	0.0044	0.0257
63	0.0289	0.0042	0.0247
64	0.0279	0.0041	0.0238
65	0.0269	0.0039	0.0230
66	0.0261	0.0038	0.0223
67	0.0253	0.0037	0.0216
68	0.0246	0.0036	0.0210
69	0.0239	0.0035	0.0204
70	0.0233	0.0034	0.0199
71	0.0228	0.0033	0.0194
72	0.0222	0.0032	0.0190

Total soil rain loss = 0.39(In)
Total effective rainfall = 2.97(In)
Peak flow rate in flood hydrograph = 58.24(CFS)

++

6 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	15.0	30.0	45.0	60.0
0+ 5	0.0016	0.24	Q	|	|	|	|
0+10	0.0123	1.55	VQ	|	|	|	|
0+15	0.0337	3.11	V Q	|	|	|	|
0+20	0.0593	3.71	V Q	|	|	|	|
0+25	0.0874	4.08	V Q	|	|	|	|
0+30	0.1172	4.33	V Q	|	|	|	|
0+35	0.1482	4.50	|V Q	|	|	|	|
0+40	0.1799	4.61	|V Q	|	|	|	|
0+45	0.2122	4.69	|V Q	|	|	|	|
0+50	0.2451	4.77	| VQ	|	|	|	|
0+55	0.2785	4.85	| VQ	|	|	|	|
1+ 0	0.3124	4.92	| VQ	|	|	|	|
1+ 5	0.3468	5.00	| VQ	|	|	|	|
1+10	0.3817	5.07	| Q	|	|	|	|
1+15	0.4171	5.14	| Q	|	|	|	|

```
   1+20       0.4531      5.22  |  Q       |         |         |         |
   1+25       0.4896      5.30  |  QV      |         |         |         |
   1+30       0.5267      5.39  |  QV      |         |         |         |
   1+35       0.5644      5.48  |  QV      |         |         |         |
   1+40       0.6027      5.57  |  QV      |         |         |         |
   1+45       0.6418      5.67  |  Q V     |         |         |         |
   1+50       0.6815      5.77  |  Q V     |         |         |         |
   1+55       0.7220      5.88  |  Q V     |         |         |         |
   2+ 0       0.7633      5.99  |  Q  V    |         |         |         |
   2+ 5       0.8054      6.12  |   Q V    |         |         |         |
   2+10       0.8485      6.26  |   Q V    |         |         |         |
   2+15       0.8927      6.41  |   Q  V   |         |         |         |
   2+20       0.9379      6.56  |   Q  V   |         |         |         |
   2+25       0.9842      6.72  |   Q   V  |         |         |         |
   2+30       1.0316      6.89  |   Q   V  |         |         |         |
   2+35       1.0804      7.08  |   Q   V  |         |         |         |
   2+40       1.1305      7.27  |   Q    V |         |         |         |
   2+45       1.1820      7.48  |   Q    V |         |         |         |
   2+50       1.2351      7.71  |    Q    V|         |         |         |
   2+55       1.2900      7.97  |    Q    V|         |         |         |
   3+ 0       1.3468      8.25  |    Q     V         |         |         |
   3+ 5       1.4058      8.56  |    Q     V         |         |         |
   3+10       1.4671      8.90  |    Q     | V       |         |         |
   3+15       1.5311      9.29  |     Q    | V       |         |         |
   3+20       1.5982      9.74  |     Q    |  V      |         |         |
   3+25       1.6682     10.18  |     Q    |  V      |         |         |
   3+30       1.7395     10.35  |     Q    |   V     |         |         |
   3+35       1.8123     10.56  |      Q   |   V     |         |         |
   3+40       1.8898     11.25  |      Q   |    V    |         |         |
   3+45       1.9744     12.29  |       Q  |     V   |         |         |
   3+50       2.0702     13.91  |        Q |      V  |         |         |
   3+55       2.1834     16.44  |         Q|       V |         |         |
   4+ 0       2.3281     21.01  |          |   Q    V|         |         |
   4+ 5       2.5507     32.32  |          |         |Q        |         |
   4+10       2.9411     56.68  |          |         |   V     |       Q |
   4+15       3.3422     58.24  |          |         |      V  |        Q|
   4+20       3.5703     33.12  |          |         | Q      V|         |
   4+25       3.7342     23.81  |          |    Q    |         V         |
   4+30       3.8618     18.52  |          |  Q      |          V        |
   4+35       3.9646     14.94  |         Q|         |          | V      |
   4+40       4.0476     12.05  |        Q |         |          |  V     |
   4+45       4.1195     10.43  |      Q   |         |          |  V     |
   4+50       4.1844      9.42  |      Q   |         |          |   V    |
   4+55       4.2444      8.72  |     Q    |         |          |   V    |
   5+ 0       4.2993      7.96  |     Q    |         |          |    V   |
   5+ 5       4.3498      7.34  |    Q     |         |          |    V   |
   5+10       4.3970      6.86  |    Q     |         |          |     V  |
   5+15       4.4419      6.51  |    Q     |         |          |     V  |
   5+20       4.4847      6.22  |    Q     |         |          |     V  |
   5+25       4.5258      5.97  |   Q      |         |          |      V |
   5+30       4.5654      5.74  |   Q      |         |          |      V |
   5+35       4.6035      5.54  |   Q      |         |          |      V |
   5+40       4.6404      5.36  |   Q      |         |          |       V|
   5+45       4.6762      5.19  |   Q      |         |          |       V|
   5+50       4.7109      5.04  |   Q      |         |          |       V|
   5+55       4.7446      4.90  |   Q      |         |          |        V|
   6+ 0       4.7775      4.77  |   Q      |         |          |        V|
   6+ 5       4.8079      4.42  |  Q       |         |          |        V|
   6+10       4.8287      3.02  |  Q       |         |          |        V|
   6+15       4.8384      1.40  Q          |         |          |        V|
   6+20       4.8439      0.81  Q          |         |          |        V|
   6+25       4.8471      0.47  Q          |         |          |        V|
   6+30       4.8489      0.25  Q          |         |          |        V|
   6+35       4.8498      0.13  Q          |         |          |        V|
   6+40       4.8503      0.08  Q          |         |          |        V|
   6+45       4.8507      0.05  Q          |         |          |        V|
   6+50       4.8509      0.03  Q          |         |          |        V|
   6+55       4.8510      0.01  Q          |         |          |        V|
   7+ 0       4.8510      0.00  Q          |         |          |         V
-------------------------------------------------------------------------
```

- 100 Year 12 Hour Post-Development Unit Hydrograph – Area 'B'

```
        U n i t   H y d r o g r a p h   A n a l y s i s

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        Study date  10/05/16   File Name prb10012.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'B' - 100 YEAR 12 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

        Storm Event Year = 100

        Antecedent Moisture Condition = 3

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 70.7       7.8          0.40     D     0.200     0.500    0.100
 70.7      11.8          0.60     C     0.250     0.500    0.125

Area-averaged adjusted loss rate Fm (In/Hr) =  0.115

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC3)          Yield Fr
     3.92   0.200         70.7      87.6       1.42     0.750
     3.92   0.200         98.0      98.0       0.20     0.958

     5.88   0.300         70.7      87.6       1.42     0.750
     5.88   0.300         98.0      98.0       0.20     0.958

Area-averaged catchment yield fraction, Y =  0.854
Area-averaged low loss fraction, Yb =  0.146
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.179 (hours)
Watershed area =      19.60(Ac.)
Catchment Lag time =   0.144 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 58.0316
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.115(In/Hr)
Average low loss rate fraction (Yb) = 0.146 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.520(In)
Computed peak 30-minute rainfall =  1.090(In)
Specified peak 1-hour rainfall =  1.450(In)
Computed peak 3-hour rainfall =  2.430(In)
Specified peak 6-hour rainfall =  3.360(In)
Specified peak 24-hour rainfall =  5.630(In)
```

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Rainfall depth area reduction factors:
Using a total area of      19.60(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.520(In)
30-minute factor = 0.999    Adjusted rainfall =  1.089(In)
1-hour factor = 0.999       Adjusted rainfall =  1.449(In)
3-hour factor = 1.000       Adjusted rainfall =  2.430(In)
6-hour factor = 1.000       Adjusted rainfall =  3.360(In)
24-hour factor = 1.000 Adjusted rainfall =  5.630(In)
```

U n i t H y d r o g r a p h

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
(K = 237.04 (CFS))		
1	5.319	12.608
2	34.827	69.944
3	69.845	83.007
4	82.606	30.248
5	89.972	17.461
6	94.540	10.827
7	97.182	6.263
8	98.319	2.696
9	98.916	1.413
10	99.324	0.967
11	99.724	0.949
12	99.932	0.494
13	100.000	0.160

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.5195	0.5195
2	0.6917	0.1722
3	0.8179	0.1261
4	0.9211	0.1032
5	1.0100	0.0889
6	1.0890	0.0790
7	1.1604	0.0714
8	1.2259	0.0656
9	1.2869	0.0609
10	1.3439	0.0571
11	1.3977	0.0538
12	1.4487	0.0510
13	1.5043	0.0556
14	1.5577	0.0534
15	1.6091	0.0514
16	1.6587	0.0496
17	1.7068	0.0480
18	1.7533	0.0465
19	1.7985	0.0452
20	1.8425	0.0440
21	1.8853	0.0428
22	1.9270	0.0417
23	1.9677	0.0407
24	2.0076	0.0398
25	2.0465	0.0389
26	2.0846	0.0381
27	2.1220	0.0374
28	2.1586	0.0366
29	2.1946	0.0360
30	2.2299	0.0353
31	2.2646	0.0347
32	2.2987	0.0341
33	2.3322	0.0335
34	2.3652	0.0330
35	2.3977	0.0325
36	2.4297	0.0320
37	2.4610	0.0313

38	2.4919	0.0309
39	2.5224	0.0305
40	2.5524	0.0300
41	2.5821	0.0296
42	2.6113	0.0293
43	2.6402	0.0289
44	2.6687	0.0285
45	2.6969	0.0282
46	2.7248	0.0279
47	2.7523	0.0275
48	2.7796	0.0272
49	2.8065	0.0269
50	2.8331	0.0266
51	2.8595	0.0264
52	2.8856	0.0261
53	2.9114	0.0258
54	2.9369	0.0256
55	2.9622	0.0253
56	2.9873	0.0251
57	3.0121	0.0248
58	3.0367	0.0246
59	3.0611	0.0244
60	3.0852	0.0242
61	3.1092	0.0239
62	3.1329	0.0237
63	3.1564	0.0235
64	3.1798	0.0233
65	3.2029	0.0231
66	3.2258	0.0229
67	3.2486	0.0228
68	3.2712	0.0226
69	3.2936	0.0224
70	3.3158	0.0222
71	3.3379	0.0221
72	3.3598	0.0219
73	3.3771	0.0173
74	3.3942	0.0172
75	3.4113	0.0170
76	3.4281	0.0169
77	3.4448	0.0167
78	3.4614	0.0166
79	3.4779	0.0165
80	3.4942	0.0163
81	3.5104	0.0162
82	3.5265	0.0161
83	3.5425	0.0160
84	3.5583	0.0158
85	3.5740	0.0157
86	3.5896	0.0156
87	3.6051	0.0155
88	3.6205	0.0154
89	3.6357	0.0153
90	3.6509	0.0152
91	3.6659	0.0151
92	3.6809	0.0149
93	3.6957	0.0148
94	3.7105	0.0147
95	3.7251	0.0146
96	3.7397	0.0146
97	3.7541	0.0145
98	3.7685	0.0144
99	3.7828	0.0143
100	3.7970	0.0142
101	3.8111	0.0141
102	3.8251	0.0140
103	3.8390	0.0139
104	3.8528	0.0138
105	3.8666	0.0138
106	3.8803	0.0137
107	3.8938	0.0136
108	3.9074	0.0135

109	3.9208	0.0134
110	3.9341	0.0134
111	3.9474	0.0133
112	3.9606	0.0132
113	3.9738	0.0131
114	3.9868	0.0131
115	3.9998	0.0130
116	4.0127	0.0129
117	4.0256	0.0128
118	4.0383	0.0128
119	4.0511	0.0127
120	4.0637	0.0126
121	4.0763	0.0126
122	4.0888	0.0125
123	4.1012	0.0124
124	4.1136	0.0124
125	4.1259	0.0123
126	4.1382	0.0123
127	4.1504	0.0122
128	4.1625	0.0121
129	4.1746	0.0121
130	4.1866	0.0120
131	4.1986	0.0120
132	4.2105	0.0119
133	4.2224	0.0118
134	4.2341	0.0118
135	4.2459	0.0117
136	4.2576	0.0117
137	4.2692	0.0116
138	4.2808	0.0116
139	4.2923	0.0115
140	4.3038	0.0115
141	4.3152	0.0114
142	4.3266	0.0114
143	4.3379	0.0113
144	4.3492	0.0113

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0113	0.0016	0.0096
2	0.0113	0.0017	0.0097
3	0.0114	0.0017	0.0098
4	0.0115	0.0017	0.0098
5	0.0116	0.0017	0.0099
6	0.0116	0.0017	0.0099
7	0.0117	0.0017	0.0100
8	0.0118	0.0017	0.0101
9	0.0119	0.0017	0.0102
10	0.0120	0.0017	0.0102
11	0.0121	0.0018	0.0103
12	0.0121	0.0018	0.0104
13	0.0123	0.0018	0.0105
14	0.0123	0.0018	0.0105
15	0.0124	0.0018	0.0106
16	0.0125	0.0018	0.0107
17	0.0126	0.0018	0.0108
18	0.0127	0.0019	0.0109
19	0.0128	0.0019	0.0110
20	0.0129	0.0019	0.0110
21	0.0131	0.0019	0.0112
22	0.0131	0.0019	0.0112
23	0.0133	0.0019	0.0113
24	0.0134	0.0020	0.0114
25	0.0135	0.0020	0.0115
26	0.0136	0.0020	0.0116
27	0.0138	0.0020	0.0117
28	0.0138	0.0020	0.0118
29	0.0140	0.0020	0.0120
30	0.0141	0.0021	0.0120

31	0.0143	0.0021	0.0122
32	0.0144	0.0021	0.0123
33	0.0146	0.0021	0.0124
34	0.0146	0.0021	0.0125
35	0.0148	0.0022	0.0127
36	0.0149	0.0022	0.0128
37	0.0152	0.0022	0.0129
38	0.0153	0.0022	0.0130
39	0.0155	0.0023	0.0132
40	0.0156	0.0023	0.0133
41	0.0158	0.0023	0.0135
42	0.0160	0.0023	0.0136
43	0.0162	0.0024	0.0138
44	0.0163	0.0024	0.0139
45	0.0166	0.0024	0.0142
46	0.0167	0.0024	0.0143
47	0.0170	0.0025	0.0145
48	0.0172	0.0025	0.0146
49	0.0219	0.0032	0.0187
50	0.0221	0.0032	0.0188
51	0.0224	0.0033	0.0191
52	0.0226	0.0033	0.0193
53	0.0229	0.0034	0.0196
54	0.0231	0.0034	0.0198
55	0.0235	0.0034	0.0201
56	0.0237	0.0035	0.0203
57	0.0242	0.0035	0.0206
58	0.0244	0.0036	0.0208
59	0.0248	0.0036	0.0212
60	0.0251	0.0037	0.0214
61	0.0256	0.0037	0.0218
62	0.0258	0.0038	0.0220
63	0.0264	0.0038	0.0225
64	0.0266	0.0039	0.0227
65	0.0272	0.0040	0.0233
66	0.0275	0.0040	0.0235
67	0.0282	0.0041	0.0241
68	0.0285	0.0042	0.0244
69	0.0293	0.0043	0.0250
70	0.0296	0.0043	0.0253
71	0.0305	0.0044	0.0260
72	0.0309	0.0045	0.0264
73	0.0320	0.0047	0.0273
74	0.0325	0.0047	0.0277
75	0.0335	0.0049	0.0286
76	0.0341	0.0050	0.0291
77	0.0353	0.0052	0.0301
78	0.0360	0.0053	0.0307
79	0.0374	0.0055	0.0319
80	0.0381	0.0056	0.0326
81	0.0398	0.0058	0.0340
82	0.0407	0.0059	0.0348
83	0.0428	0.0063	0.0366
84	0.0440	0.0064	0.0375
85	0.0465	0.0068	0.0397
86	0.0480	0.0070	0.0410
87	0.0514	0.0075	0.0439
88	0.0534	0.0078	0.0456
89	0.0510	0.0074	0.0435
90	0.0538	0.0079	0.0459
91	0.0609	0.0089	0.0520
92	0.0656	0.0096	0.0560
93	0.0790	0.0096	0.0694
94	0.0889	0.0096	0.0793
95	0.1261	0.0096	0.1165
96	0.1722	0.0096	0.1626
97	0.5195	0.0096	0.5099
98	0.1032	0.0096	0.0936
99	0.0714	0.0096	0.0618
100	0.0571	0.0083	0.0487
101	0.0556	0.0081	0.0475

```
      102              0.0496           0.0072              0.0424
      103              0.0452           0.0066              0.0386
      104              0.0417           0.0061              0.0356
      105              0.0389           0.0057              0.0333
      106              0.0366           0.0054              0.0313
      107              0.0347           0.0051              0.0296
      108              0.0330           0.0048              0.0282
      109              0.0313           0.0046              0.0268
      110              0.0300           0.0044              0.0257
      111              0.0289           0.0042              0.0247
      112              0.0279           0.0041              0.0238
      113              0.0269           0.0039              0.0230
      114              0.0261           0.0038              0.0223
      115              0.0253           0.0037              0.0216
      116              0.0246           0.0036              0.0210
      117              0.0239           0.0035              0.0204
      118              0.0233           0.0034              0.0199
      119              0.0228           0.0033              0.0194
      120              0.0222           0.0032              0.0190
      121              0.0173           0.0025              0.0148
      122              0.0169           0.0025              0.0144
      123              0.0165           0.0024              0.0141
      124              0.0161           0.0023              0.0137
      125              0.0157           0.0023              0.0134
      126              0.0154           0.0022              0.0131
      127              0.0151           0.0022              0.0129
      128              0.0147           0.0022              0.0126
      129              0.0145           0.0021              0.0123
      130              0.0142           0.0021              0.0121
      131              0.0139           0.0020              0.0119
      132              0.0137           0.0020              0.0117
      133              0.0134           0.0020              0.0115
      134              0.0132           0.0019              0.0113
      135              0.0130           0.0019              0.0111
      136              0.0128           0.0019              0.0109
      137              0.0126           0.0018              0.0107
      138              0.0124           0.0018              0.0106
      139              0.0122           0.0018              0.0104
      140              0.0120           0.0018              0.0103
      141              0.0118           0.0017              0.0101
      142              0.0117           0.0017              0.0100
      143              0.0115           0.0017              0.0098
      144              0.0114           0.0017              0.0097
      ------------------------------------------------------------------------
      ------------------------------------------------------------------------
      Total soil rain loss =      0.53(In)
      Total effective rainfall =      3.82(In)
      Peak flow rate in flood hydrograph =     58.24(CFS)
      ------------------------------------------------------------------------
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          12 - H O U R    S T O R M
                     R u n o f f      H y d r o g r a p h
      ------------------------------------------------------------------------
                  Hydrograph in   5   Minute intervals ((CFS))

      ------------------------------------------------------------------------
 Time(h+m) Volume Ac.Ft   Q(CFS)  0       15.0      30.0      45.0      60.0
 ------------------------------------------------------------------------
   0+ 5       0.0008      0.12  Q         |         |         |         |
   0+10       0.0063      0.80  Q         |         |         |         |
   0+15       0.0173      1.60  VQ        |         |         |         |
   0+20       0.0304      1.90  VQ        |         |         |         |
   0+25       0.0447      2.08  VQ        |         |         |         |
   0+30       0.0599      2.20  VQ        |         |         |         |
   0+35       0.0755      2.27  VQ        |         |         |         |
   0+40       0.0915      2.31  VQ        |         |         |         |
   0+45       0.1076      2.34  VQ        |         |         |         |
   0+50       0.1239      2.37  VQ        |         |         |         |
   0+55       0.1404      2.40  VQ        |         |         |         |
   1+ 0       0.1571      2.42  |Q        |         |         |         |
   1+ 5       0.1739      2.44  |Q        |         |         |         |
```

```
1+10       0.1908      2.46  |Q        |         |         |         |
1+15       0.2078      2.47  |Q        |         |         |         |
1+20       0.2250      2.49  |Q        |         |         |         |
1+25       0.2423      2.51  |Q        |         |         |         |
1+30       0.2597      2.53  |Q        |         |         |         |
1+35       0.2773      2.55  |Q        |         |         |         |
1+40       0.2950      2.57  |Q        |         |         |         |
1+45       0.3128      2.59  |QV       |         |         |         |
1+50       0.3308      2.61  |QV       |         |         |         |
1+55       0.3490      2.63  |QV       |         |         |         |
2+ 0       0.3673      2.66  |QV       |         |         |         |
2+ 5       0.3857      2.68  |QV       |         |         |         |
2+10       0.4043      2.70  |QV       |         |         |         |
2+15       0.4231      2.72  |QV       |         |         |         |
2+20       0.4420      2.75  |QV       |         |         |         |
2+25       0.4611      2.77  |QV       |         |         |         |
2+30       0.4804      2.80  |Q V      |         |         |         |
2+35       0.4998      2.82  |Q V      |         |         |         |
2+40       0.5195      2.85  |Q V      |         |         |         |
2+45       0.5393      2.88  |Q V      |         |         |         |
2+50       0.5593      2.91  |Q V      |         |         |         |
2+55       0.5795      2.93  |Q V      |         |         |         |
3+ 0       0.5999      2.96  |Q V      |         |         |         |
3+ 5       0.6205      2.99  |Q V      |         |         |         |
3+10       0.6413      3.02  | Q V     |         |         |         |
3+15       0.6624      3.05  | Q V     |         |         |         |
3+20       0.6836      3.09  | Q V     |         |         |         |
3+25       0.7051      3.12  | Q V     |         |         |         |
3+30       0.7268      3.15  | Q V     |         |         |         |
3+35       0.7488      3.19  | Q V     |         |         |         |
3+40       0.7710      3.23  | Q V     |         |         |         |
3+45       0.7935      3.26  | Q  V    |         |         |         |
3+50       0.8162      3.30  | Q  V    |         |         |         |
3+55       0.8392      3.34  | Q  V    |         |         |         |
4+ 0       0.8625      3.38  | Q  V    |         |         |         |
4+ 5       0.8865      3.47  | Q  V    |         |         |         |
4+10       0.9125      3.78  | Q  V    |         |         |         |
4+15       0.9410      4.14  | Q   V   |         |         |         |
4+20       0.9707      4.31  | Q   V   |         |         |         |
4+25       1.0012      4.42  | Q   V   |         |         |         |
4+30       1.0323      4.52  |  Q  V   |         |         |         |
4+35       1.0639      4.60  |  Q  V   |         |         |         |
4+40       1.0961      4.66  |  Q   V  |         |         |         |
4+45       1.1286      4.73  |  Q   V  |         |         |         |
4+50       1.1616      4.79  |  Q   V  |         |         |         |
4+55       1.1951      4.86  |  Q   V  |         |         |         |
5+ 0       1.2290      4.93  |  Q   V  |         |         |         |
5+ 5       1.2634      5.00  |  Q    V |         |         |         |
5+10       1.2983      5.07  |  Q    V |         |         |         |
5+15       1.3338      5.14  |  Q    V |         |         |         |
5+20       1.3697      5.22  |  Q    V |         |         |         |
5+25       1.4062      5.30  |  Q     V|         |         |         |
5+30       1.4433      5.39  |  Q     V|         |         |         |
5+35       1.4810      5.48  |  Q     V|         |         |         |
5+40       1.5194      5.57  |  Q     V|         |         |         |
5+45       1.5584      5.67  |  Q      V         |         |         |
5+50       1.5981      5.77  |  Q      V         |         |         |
5+55       1.6386      5.88  |  Q      V         |         |         |
6+ 0       1.6799      5.99  |  Q      V         |         |         |
6+ 5       1.7220      6.12  |   Q     |V        |         |         |
6+10       1.7652      6.26  |   Q     |V        |         |         |
6+15       1.8093      6.41  |   Q     |V        |         |         |
6+20       1.8545      6.56  |   Q     |V        |         |         |
6+25       1.9008      6.72  |   Q     | V       |         |         |
6+30       1.9483      6.89  |   Q     | V       |         |         |
6+35       1.9970      7.08  |   Q     | V       |         |         |
6+40       2.0471      7.27  |   Q     |  V      |         |         |
6+45       2.0987      7.48  |   Q     |  V      |         |         |
6+50       2.1518      7.71  |    Q    |  V      |         |         |
6+55       2.2067      7.97  |    Q    |   V     |         |         |
7+ 0       2.2635      8.25  |    Q    |   V     |         |         |
```

```
 7+ 5      2.3224     8.56  |    Q    |   V     |         |         |
 7+10      2.3837     8.90  |    Q    |    V    |         |         |
 7+15      2.4477     9.29  |     Q   |    V    |         |         |
 7+20      2.5148     9.74  |     Q   |     V   |         |         |
 7+25      2.5849    10.18  |     Q   |     V   |         |         |
 7+30      2.6562    10.35  |     Q   |      V  |         |         |
 7+35      2.7289    10.56  |      Q  |      V  |         |         |
 7+40      2.8064    11.25  |      Q  |       V |         |         |
 7+45      2.8911    12.29  |       Q |       V |         |         |
 7+50      2.9869    13.91  |         Q|        V|         |         |
 7+55      3.1001    16.44  |          Q        V|         |         |
 8+ 0      3.2448    21.01  |          |   Q     V         |         |
 8+ 5      3.4674    32.32  |          |         |QV       |         |
 8+10      3.8577    56.68  |          |         |   V     |       Q |
 8+15      4.2588    58.24  |          |         |      V  |        Q|
 8+20      4.4869    33.12  |          |         | Q     V |         |
 8+25      4.6509    23.81  |          |    Q    |        V|         |
 8+30      4.7784    18.52  |          | Q       |         V         |
 8+35      4.8813    14.94  |         Q|         |          |V       |
 8+40      4.9643    12.05  |        Q |         |          |V       |
 8+45      5.0361    10.43  |      Q   |         |          | V      |
 8+50      5.1010     9.42  |      Q   |         |          | V      |
 8+55      5.1611     8.72  |     Q    |         |          |  V     |
 9+ 0      5.2159     7.96  |     Q    |         |          |  V     |
 9+ 5      5.2664     7.34  |    Q     |         |          |  V     |
 9+10      5.3137     6.86  |    Q     |         |          |   V    |
 9+15      5.3586     6.51  |    Q     |         |          |   V    |
 9+20      5.4014     6.22  |    Q     |         |          |   V    |
 9+25      5.4425     5.97  |   Q      |         |          |   V    |
 9+30      5.4820     5.74  |   Q      |         |          |    V   |
 9+35      5.5202     5.54  |   Q      |         |          |    V   |
 9+40      5.5571     5.36  |   Q      |         |          |    V   |
 9+45      5.5928     5.19  |   Q      |         |          |    V   |
 9+50      5.6275     5.04  |   Q      |         |          |     V  |
 9+55      5.6613     4.90  |   Q      |         |          |     V  |
10+ 0      5.6941     4.77  |   Q      |         |          |     V  |
10+ 5      5.7259     4.61  |   Q      |         |          |     V  |
10+10      5.7550     4.23  | Q        |         |          |     V  |
10+15      5.7813     3.81  | Q        |         |          |      V |
10+20      5.8061     3.61  | Q        |         |          |      V |
10+25      5.8299     3.46  | Q        |         |          |      V |
10+30      5.8529     3.33  | Q        |         |          |      V |
10+35      5.8752     3.23  | Q        |         |          |      V |
10+40      5.8969     3.15  | Q        |         |          |      V |
10+45      5.9181     3.08  | Q        |         |          |      V |
10+50      5.9389     3.01  | Q        |         |          |       V|
10+55      5.9592     2.95  |Q         |         |          |       V|
11+ 0      5.9791     2.89  |Q         |         |          |       V|
11+ 5      5.9986     2.84  |Q         |         |          |       V|
11+10      6.0178     2.79  |Q         |         |          |       V|
11+15      6.0367     2.74  |Q         |         |          |       V|
11+20      6.0552     2.69  |Q         |         |          |       V|
11+25      6.0734     2.64  |Q         |         |          |       V|
11+30      6.0913     2.60  |Q         |         |          |        V|
11+35      6.1090     2.56  |Q         |         |          |        V|
11+40      6.1263     2.52  |Q         |         |          |        V|
11+45      6.1434     2.48  |Q         |         |          |        V|
11+50      6.1603     2.45  |Q         |         |          |        V|
11+55      6.1769     2.41  |Q         |         |          |        V|
12+ 0      6.1932     2.38  |Q         |         |          |        V|
12+ 5      6.2085     2.22  |Q         |         |          |        V|
12+10      6.2190     1.52  |Q         |         |          |        V|
12+15      6.2239     0.71  Q          |         |          |        V|
12+20      6.2267     0.41  Q          |         |          |        V|
12+25      6.2283     0.23  Q          |         |          |        V|
12+30      6.2292     0.13  Q          |         |          |        V|
12+35      6.2297     0.07  Q          |         |          |        V|
12+40      6.2299     0.04  Q          |         |          |        V|
12+45      6.2301     0.03  Q          |         |          |        V|
12+50      6.2302     0.02  Q          |         |          |        V|
12+55      6.2302     0.01  Q          |         |          |        V|
```

```
  13+ 0       6.2303      0.00  Q         |         |         |         V
--------------------------------------------------------------------------
```

- 100 Year 24 Hour Post-Development Unit Hydrograph – Area 'B'

```
        U n i t   H y d r o g r a p h   A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989-2012, Version 7.2

        Study date  10/05/16   File Name prb10024.out


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------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'B' - 100 YEAR 24 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

        Storm Event Year = 100

        Antecedent Moisture Condition = 3

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 70.7       7.8          0.40     D     0.200     0.500    0.100
 70.7      11.8          0.60     C     0.250     0.500    0.125

Area-averaged adjusted loss rate Fm (In/Hr) =  0.115

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC3)          Yield Fr
     3.92   0.200         70.7      87.6       1.42     0.750
     3.92   0.200         98.0      98.0       0.20     0.958

     5.88   0.300         70.7      87.6       1.42     0.750
     5.88   0.300         98.0      98.0       0.20     0.958

Area-averaged catchment yield fraction, Y =  0.854
Area-averaged low loss fraction, Yb =  0.146
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.179 (hours)
Watershed area =      19.60(Ac.)
Catchment Lag time =   0.144 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 58.0316
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.115(In/Hr)
Average low loss rate fraction (Yb) = 0.146 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.520(In)
Computed peak 30-minute rainfall =  1.090(In)
Specified peak 1-hour rainfall =  1.450(In)
Computed peak 3-hour rainfall =  2.430(In)
Specified peak 6-hour rainfall =  3.360(In)
Specified peak 24-hour rainfall =  5.630(In)
```

```
Rainfall depth area reduction factors:
Using a total area of      19.60(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999     Adjusted rainfall =  0.520(In)
30-minute factor = 0.999    Adjusted rainfall =  1.089(In)
1-hour factor = 0.999       Adjusted rainfall =  1.449(In)
3-hour factor = 1.000       Adjusted rainfall =  2.430(In)
6-hour factor = 1.000       Adjusted rainfall =  3.360(In)
24-hour factor = 1.000 Adjusted rainfall =  5.630(In)
------------------------------------------------------------------------

                      U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
------------------------------------------------------------------------
               (K =       237.04 (CFS))

  1                5.319                  12.608
  2               34.827                  69.944
  3               69.845                  83.007
  4               82.606                  30.248
  5               89.972                  17.461
  6               94.540                  10.827
  7               97.182                   6.263
  8               98.319                   2.696
  9               98.916                   1.413
 10               99.324                   0.967
 11               99.724                   0.949
 12               99.932                   0.494
 13              100.000                   0.160
------------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.5195              0.5195
  2              0.6917              0.1722
  3              0.8179              0.1261
  4              0.9211              0.1032
  5              1.0100              0.0889
  6              1.0890              0.0790
  7              1.1604              0.0714
  8              1.2259              0.0656
  9              1.2869              0.0609
 10              1.3439              0.0571
 11              1.3977              0.0538
 12              1.4487              0.0510
 13              1.5043              0.0556
 14              1.5577              0.0534
 15              1.6091              0.0514
 16              1.6587              0.0496
 17              1.7068              0.0480
 18              1.7533              0.0465
 19              1.7985              0.0452
 20              1.8425              0.0440
 21              1.8853              0.0428
 22              1.9270              0.0417
 23              1.9677              0.0407
 24              2.0076              0.0398
 25              2.0465              0.0389
 26              2.0846              0.0381
 27              2.1220              0.0374
 28              2.1586              0.0366
 29              2.1946              0.0360
 30              2.2299              0.0353
 31              2.2646              0.0347
 32              2.2987              0.0341
 33              2.3322              0.0335
 34              2.3652              0.0330
 35              2.3977              0.0325
 36              2.4297              0.0320
 37              2.4610              0.0313
```

38	2.4919	0.0309
39	2.5224	0.0305
40	2.5524	0.0300
41	2.5821	0.0296
42	2.6113	0.0293
43	2.6402	0.0289
44	2.6687	0.0285
45	2.6969	0.0282
46	2.7248	0.0279
47	2.7523	0.0275
48	2.7796	0.0272
49	2.8065	0.0269
50	2.8331	0.0266
51	2.8595	0.0264
52	2.8856	0.0261
53	2.9114	0.0258
54	2.9369	0.0256
55	2.9622	0.0253
56	2.9873	0.0251
57	3.0121	0.0248
58	3.0367	0.0246
59	3.0611	0.0244
60	3.0852	0.0242
61	3.1092	0.0239
62	3.1329	0.0237
63	3.1564	0.0235
64	3.1798	0.0233
65	3.2029	0.0231
66	3.2258	0.0229
67	3.2486	0.0228
68	3.2712	0.0226
69	3.2936	0.0224
70	3.3158	0.0222
71	3.3379	0.0221
72	3.3598	0.0219
73	3.3771	0.0173
74	3.3942	0.0172
75	3.4113	0.0170
76	3.4281	0.0169
77	3.4448	0.0167
78	3.4614	0.0166
79	3.4779	0.0165
80	3.4942	0.0163
81	3.5104	0.0162
82	3.5265	0.0161
83	3.5425	0.0160
84	3.5583	0.0158
85	3.5740	0.0157
86	3.5896	0.0156
87	3.6051	0.0155
88	3.6205	0.0154
89	3.6357	0.0153
90	3.6509	0.0152
91	3.6659	0.0151
92	3.6809	0.0149
93	3.6957	0.0148
94	3.7105	0.0147
95	3.7251	0.0146
96	3.7397	0.0146
97	3.7541	0.0145
98	3.7685	0.0144
99	3.7828	0.0143
100	3.7970	0.0142
101	3.8111	0.0141
102	3.8251	0.0140
103	3.8390	0.0139
104	3.8528	0.0138
105	3.8666	0.0138
106	3.8803	0.0137
107	3.8938	0.0136
108	3.9074	0.0135

109	3.9208	0.0134
110	3.9341	0.0134
111	3.9474	0.0133
112	3.9606	0.0132
113	3.9738	0.0131
114	3.9868	0.0131
115	3.9998	0.0130
116	4.0127	0.0129
117	4.0256	0.0128
118	4.0383	0.0128
119	4.0511	0.0127
120	4.0637	0.0126
121	4.0763	0.0126
122	4.0888	0.0125
123	4.1012	0.0124
124	4.1136	0.0124
125	4.1259	0.0123
126	4.1382	0.0123
127	4.1504	0.0122
128	4.1625	0.0121
129	4.1746	0.0121
130	4.1866	0.0120
131	4.1986	0.0120
132	4.2105	0.0119
133	4.2224	0.0118
134	4.2341	0.0118
135	4.2459	0.0117
136	4.2576	0.0117
137	4.2692	0.0116
138	4.2808	0.0116
139	4.2923	0.0115
140	4.3038	0.0115
141	4.3152	0.0114
142	4.3266	0.0114
143	4.3379	0.0113
144	4.3492	0.0113
145	4.3604	0.0112
146	4.3716	0.0112
147	4.3827	0.0111
148	4.3938	0.0111
149	4.4048	0.0110
150	4.4158	0.0110
151	4.4267	0.0109
152	4.4376	0.0109
153	4.4485	0.0108
154	4.4593	0.0108
155	4.4700	0.0108
156	4.4807	0.0107
157	4.4914	0.0107
158	4.5020	0.0106
159	4.5126	0.0106
160	4.5232	0.0105
161	4.5337	0.0105
162	4.5441	0.0105
163	4.5546	0.0104
164	4.5650	0.0104
165	4.5753	0.0103
166	4.5856	0.0103
167	4.5959	0.0103
168	4.6061	0.0102
169	4.6163	0.0102
170	4.6264	0.0102
171	4.6366	0.0101
172	4.6466	0.0101
173	4.6567	0.0100
174	4.6667	0.0100
175	4.6767	0.0100
176	4.6866	0.0099
177	4.6965	0.0099
178	4.7063	0.0099
179	4.7162	0.0098

180	4.7260	0.0098
181	4.7357	0.0098
182	4.7455	0.0097
183	4.7551	0.0097
184	4.7648	0.0097
185	4.7744	0.0096
186	4.7840	0.0096
187	4.7936	0.0096
188	4.8031	0.0095
189	4.8126	0.0095
190	4.8221	0.0095
191	4.8315	0.0094
192	4.8409	0.0094
193	4.8503	0.0094
194	4.8596	0.0093
195	4.8689	0.0093
196	4.8782	0.0093
197	4.8875	0.0093
198	4.8967	0.0092
199	4.9059	0.0092
200	4.9151	0.0092
201	4.9242	0.0091
202	4.9333	0.0091
203	4.9424	0.0091
204	4.9514	0.0091
205	4.9605	0.0090
206	4.9695	0.0090
207	4.9784	0.0090
208	4.9874	0.0089
209	4.9963	0.0089
210	5.0052	0.0089
211	5.0140	0.0089
212	5.0229	0.0088
213	5.0317	0.0088
214	5.0405	0.0088
215	5.0492	0.0088
216	5.0580	0.0087
217	5.0667	0.0087
218	5.0753	0.0087
219	5.0840	0.0087
220	5.0926	0.0086
221	5.1012	0.0086
222	5.1098	0.0086
223	5.1184	0.0086
224	5.1269	0.0085
225	5.1354	0.0085
226	5.1439	0.0085
227	5.1524	0.0085
228	5.1608	0.0084
229	5.1692	0.0084
230	5.1776	0.0084
231	5.1860	0.0084
232	5.1943	0.0083
233	5.2027	0.0083
234	5.2110	0.0083
235	5.2193	0.0083
236	5.2275	0.0083
237	5.2358	0.0082
238	5.2440	0.0082
239	5.2522	0.0082
240	5.2603	0.0082
241	5.2685	0.0082
242	5.2766	0.0081
243	5.2847	0.0081
244	5.2928	0.0081
245	5.3009	0.0081
246	5.3089	0.0080
247	5.3170	0.0080
248	5.3250	0.0080
249	5.3329	0.0080
250	5.3409	0.0080

251	5.3489	0.0079
252	5.3568	0.0079
253	5.3647	0.0079
254	5.3726	0.0079
255	5.3804	0.0079
256	5.3883	0.0078
257	5.3961	0.0078
258	5.4039	0.0078
259	5.4117	0.0078
260	5.4195	0.0078
261	5.4272	0.0078
262	5.4350	0.0077
263	5.4427	0.0077
264	5.4504	0.0077
265	5.4581	0.0077
266	5.4657	0.0077
267	5.4734	0.0076
268	5.4810	0.0076
269	5.4886	0.0076
270	5.4962	0.0076
271	5.5038	0.0076
272	5.5113	0.0076
273	5.5188	0.0075
274	5.5264	0.0075
275	5.5339	0.0075
276	5.5413	0.0075
277	5.5488	0.0075
278	5.5563	0.0075
279	5.5637	0.0074
280	5.5711	0.0074
281	5.5785	0.0074
282	5.5859	0.0074
283	5.5933	0.0074
284	5.6006	0.0074
285	5.6080	0.0073
286	5.6153	0.0073
287	5.6226	0.0073
288	5.6299	0.0073

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0073	0.0011	0.0062
2	0.0073	0.0011	0.0062
3	0.0073	0.0011	0.0063
4	0.0074	0.0011	0.0063
5	0.0074	0.0011	0.0063
6	0.0074	0.0011	0.0063
7	0.0074	0.0011	0.0063
8	0.0075	0.0011	0.0064
9	0.0075	0.0011	0.0064
10	0.0075	0.0011	0.0064
11	0.0075	0.0011	0.0064
12	0.0076	0.0011	0.0065
13	0.0076	0.0011	0.0065
14	0.0076	0.0011	0.0065
15	0.0076	0.0011	0.0065
16	0.0077	0.0011	0.0065
17	0.0077	0.0011	0.0066
18	0.0077	0.0011	0.0066
19	0.0078	0.0011	0.0066
20	0.0078	0.0011	0.0066
21	0.0078	0.0011	0.0067
22	0.0078	0.0011	0.0067
23	0.0079	0.0011	0.0067
24	0.0079	0.0012	0.0067
25	0.0079	0.0012	0.0068
26	0.0079	0.0012	0.0068
27	0.0080	0.0012	0.0068
28	0.0080	0.0012	0.0068

29	0.0080	0.0012	0.0069
30	0.0081	0.0012	0.0069
31	0.0081	0.0012	0.0069
32	0.0081	0.0012	0.0069
33	0.0082	0.0012	0.0070
34	0.0082	0.0012	0.0070
35	0.0082	0.0012	0.0070
36	0.0083	0.0012	0.0071
37	0.0083	0.0012	0.0071
38	0.0083	0.0012	0.0071
39	0.0084	0.0012	0.0071
40	0.0084	0.0012	0.0072
41	0.0084	0.0012	0.0072
42	0.0085	0.0012	0.0072
43	0.0085	0.0012	0.0073
44	0.0085	0.0012	0.0073
45	0.0086	0.0013	0.0073
46	0.0086	0.0013	0.0074
47	0.0087	0.0013	0.0074
48	0.0087	0.0013	0.0074
49	0.0087	0.0013	0.0075
50	0.0088	0.0013	0.0075
51	0.0088	0.0013	0.0075
52	0.0088	0.0013	0.0075
53	0.0089	0.0013	0.0076
54	0.0089	0.0013	0.0076
55	0.0090	0.0013	0.0077
56	0.0090	0.0013	0.0077
57	0.0091	0.0013	0.0077
58	0.0091	0.0013	0.0078
59	0.0091	0.0013	0.0078
60	0.0092	0.0013	0.0078
61	0.0092	0.0013	0.0079
62	0.0093	0.0014	0.0079
63	0.0093	0.0014	0.0080
64	0.0093	0.0014	0.0080
65	0.0094	0.0014	0.0080
66	0.0094	0.0014	0.0081
67	0.0095	0.0014	0.0081
68	0.0095	0.0014	0.0081
69	0.0096	0.0014	0.0082
70	0.0096	0.0014	0.0082
71	0.0097	0.0014	0.0083
72	0.0097	0.0014	0.0083
73	0.0098	0.0014	0.0084
74	0.0098	0.0014	0.0084
75	0.0099	0.0014	0.0085
76	0.0099	0.0015	0.0085
77	0.0100	0.0015	0.0085
78	0.0100	0.0015	0.0086
79	0.0101	0.0015	0.0086
80	0.0102	0.0015	0.0087
81	0.0102	0.0015	0.0087
82	0.0103	0.0015	0.0088
83	0.0103	0.0015	0.0088
84	0.0104	0.0015	0.0089
85	0.0105	0.0015	0.0089
86	0.0105	0.0015	0.0090
87	0.0106	0.0015	0.0090
88	0.0106	0.0016	0.0091
89	0.0107	0.0016	0.0092
90	0.0108	0.0016	0.0092
91	0.0108	0.0016	0.0093
92	0.0109	0.0016	0.0093
93	0.0110	0.0016	0.0094
94	0.0110	0.0016	0.0094
95	0.0111	0.0016	0.0095
96	0.0112	0.0016	0.0095
97	0.0113	0.0016	0.0096
98	0.0113	0.0017	0.0097
99	0.0114	0.0017	0.0098

100	0.0115	0.0017	0.0098
101	0.0116	0.0017	0.0099
102	0.0116	0.0017	0.0099
103	0.0117	0.0017	0.0100
104	0.0118	0.0017	0.0101
105	0.0119	0.0017	0.0102
106	0.0120	0.0017	0.0102
107	0.0121	0.0018	0.0103
108	0.0121	0.0018	0.0104
109	0.0123	0.0018	0.0105
110	0.0123	0.0018	0.0105
111	0.0124	0.0018	0.0106
112	0.0125	0.0018	0.0107
113	0.0126	0.0018	0.0108
114	0.0127	0.0019	0.0109
115	0.0128	0.0019	0.0110
116	0.0129	0.0019	0.0110
117	0.0131	0.0019	0.0112
118	0.0131	0.0019	0.0112
119	0.0133	0.0019	0.0113
120	0.0134	0.0020	0.0114
121	0.0135	0.0020	0.0115
122	0.0136	0.0020	0.0116
123	0.0138	0.0020	0.0117
124	0.0138	0.0020	0.0118
125	0.0140	0.0020	0.0120
126	0.0141	0.0021	0.0120
127	0.0143	0.0021	0.0122
128	0.0144	0.0021	0.0123
129	0.0146	0.0021	0.0124
130	0.0146	0.0021	0.0125
131	0.0148	0.0022	0.0127
132	0.0149	0.0022	0.0128
133	0.0152	0.0022	0.0129
134	0.0153	0.0022	0.0130
135	0.0155	0.0023	0.0132
136	0.0156	0.0023	0.0133
137	0.0158	0.0023	0.0135
138	0.0160	0.0023	0.0136
139	0.0162	0.0024	0.0138
140	0.0163	0.0024	0.0139
141	0.0166	0.0024	0.0142
142	0.0167	0.0024	0.0143
143	0.0170	0.0025	0.0145
144	0.0172	0.0025	0.0146
145	0.0219	0.0032	0.0187
146	0.0221	0.0032	0.0188
147	0.0224	0.0033	0.0191
148	0.0226	0.0033	0.0193
149	0.0229	0.0034	0.0196
150	0.0231	0.0034	0.0198
151	0.0235	0.0034	0.0201
152	0.0237	0.0035	0.0203
153	0.0242	0.0035	0.0206
154	0.0244	0.0036	0.0208
155	0.0248	0.0036	0.0212
156	0.0251	0.0037	0.0214
157	0.0256	0.0037	0.0218
158	0.0258	0.0038	0.0220
159	0.0264	0.0038	0.0225
160	0.0266	0.0039	0.0227
161	0.0272	0.0040	0.0233
162	0.0275	0.0040	0.0235
163	0.0282	0.0041	0.0241
164	0.0285	0.0042	0.0244
165	0.0293	0.0043	0.0250
166	0.0296	0.0043	0.0253
167	0.0305	0.0044	0.0260
168	0.0309	0.0045	0.0264
169	0.0320	0.0047	0.0273
170	0.0325	0.0047	0.0277

171	0.0335	0.0049	0.0286
172	0.0341	0.0050	0.0291
173	0.0353	0.0052	0.0301
174	0.0360	0.0053	0.0307
175	0.0374	0.0055	0.0319
176	0.0381	0.0056	0.0326
177	0.0398	0.0058	0.0340
178	0.0407	0.0059	0.0348
179	0.0428	0.0063	0.0366
180	0.0440	0.0064	0.0375
181	0.0465	0.0068	0.0397
182	0.0480	0.0070	0.0410
183	0.0514	0.0075	0.0439
184	0.0534	0.0078	0.0456
185	0.0510	0.0074	0.0435
186	0.0538	0.0079	0.0459
187	0.0609	0.0089	0.0520
188	0.0656	0.0096	0.0560
189	0.0790	0.0096	0.0694
190	0.0889	0.0096	0.0793
191	0.1261	0.0096	0.1165
192	0.1722	0.0096	0.1626
193	0.5195	0.0096	0.5099
194	0.1032	0.0096	0.0936
195	0.0714	0.0096	0.0618
196	0.0571	0.0083	0.0487
197	0.0556	0.0081	0.0475
198	0.0496	0.0072	0.0424
199	0.0452	0.0066	0.0386
200	0.0417	0.0061	0.0356
201	0.0389	0.0057	0.0333
202	0.0366	0.0054	0.0313
203	0.0347	0.0051	0.0296
204	0.0330	0.0048	0.0282
205	0.0313	0.0046	0.0268
206	0.0300	0.0044	0.0257
207	0.0289	0.0042	0.0247
208	0.0279	0.0041	0.0238
209	0.0269	0.0039	0.0230
210	0.0261	0.0038	0.0223
211	0.0253	0.0037	0.0216
212	0.0246	0.0036	0.0210
213	0.0239	0.0035	0.0204
214	0.0233	0.0034	0.0199
215	0.0228	0.0033	0.0194
216	0.0222	0.0032	0.0190
217	0.0173	0.0025	0.0148
218	0.0169	0.0025	0.0144
219	0.0165	0.0024	0.0141
220	0.0161	0.0023	0.0137
221	0.0157	0.0023	0.0134
222	0.0154	0.0022	0.0131
223	0.0151	0.0022	0.0129
224	0.0147	0.0022	0.0126
225	0.0145	0.0021	0.0123
226	0.0142	0.0021	0.0121
227	0.0139	0.0020	0.0119
228	0.0137	0.0020	0.0117
229	0.0134	0.0020	0.0115
230	0.0132	0.0019	0.0113
231	0.0130	0.0019	0.0111
232	0.0128	0.0019	0.0109
233	0.0126	0.0018	0.0107
234	0.0124	0.0018	0.0106
235	0.0122	0.0018	0.0104
236	0.0120	0.0018	0.0103
237	0.0118	0.0017	0.0101
238	0.0117	0.0017	0.0100
239	0.0115	0.0017	0.0098
240	0.0114	0.0017	0.0097
241	0.0112	0.0016	0.0096

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      242              0.0111           0.0016              0.0095
      243              0.0109           0.0016              0.0093
      244              0.0108           0.0016              0.0092
      245              0.0107           0.0016              0.0091
      246              0.0105           0.0015              0.0090
      247              0.0104           0.0015              0.0089
      248              0.0103           0.0015              0.0088
      249              0.0102           0.0015              0.0087
      250              0.0101           0.0015              0.0086
      251              0.0100           0.0015              0.0085
      252              0.0099           0.0014              0.0084
      253              0.0098           0.0014              0.0083
      254              0.0097           0.0014              0.0082
      255              0.0096           0.0014              0.0082
      256              0.0095           0.0014              0.0081
      257              0.0094           0.0014              0.0080
      258              0.0093           0.0014              0.0079
      259              0.0092           0.0013              0.0079
      260              0.0091           0.0013              0.0078
      261              0.0090           0.0013              0.0077
      262              0.0089           0.0013              0.0076
      263              0.0089           0.0013              0.0076
      264              0.0088           0.0013              0.0075
      265              0.0087           0.0013              0.0074
      266              0.0086           0.0013              0.0074
      267              0.0086           0.0012              0.0073
      268              0.0085           0.0012              0.0072
      269              0.0084           0.0012              0.0072
      270              0.0083           0.0012              0.0071
      271              0.0083           0.0012              0.0071
      272              0.0082           0.0012              0.0070
      273              0.0082           0.0012              0.0070
      274              0.0081           0.0012              0.0069
      275              0.0080           0.0012              0.0069
      276              0.0080           0.0012              0.0068
      277              0.0079           0.0012              0.0068
      278              0.0078           0.0011              0.0067
      279              0.0078           0.0011              0.0067
      280              0.0077           0.0011              0.0066
      281              0.0077           0.0011              0.0066
      282              0.0076           0.0011              0.0065
      283              0.0076           0.0011              0.0065
      284              0.0075           0.0011              0.0064
      285              0.0075           0.0011              0.0064
      286              0.0074           0.0011              0.0063
      287              0.0074           0.0011              0.0063
      288              0.0073           0.0011              0.0063
      ------------------------------------------------------------------------
      ------------------------------------------------------------------------
      Total soil rain loss =      0.72(In)
      Total effective rainfall =      4.91(In)
      Peak flow rate in flood hydrograph =     58.24(CFS)
      ------------------------------------------------------------------------
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          24 - H O U R    S T O R M
                     R u n o f f      H y d r o g r a p h
      ------------------------------------------------------------------------
                  Hydrograph in   5   Minute intervals ((CFS))

      ------------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0       15.0      30.0      45.0      60.0
----------------------------------------------------------------------------
  0+ 5       0.0005      0.08  Q         |         |         |         |
  0+10       0.0041      0.51  Q         |         |         |         |
  0+15       0.0112      1.03  Q         |         |         |         |
  0+20       0.0196      1.22  Q         |         |         |         |
  0+25       0.0288      1.34  Q         |         |         |         |
  0+30       0.0385      1.41  Q         |         |         |         |
  0+35       0.0485      1.45  Q         |         |         |         |
  0+40       0.0586      1.47  Q         |         |         |         |
  0+45       0.0689      1.49  Q         |         |         |         |
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0+50       0.0792      1.50  Q          |          |          |          |
0+55       0.0896      1.51  VQ         |          |          |          |
1+ 0       0.1000      1.52  VQ         |          |          |          |
1+ 5       0.1105      1.52  VQ         |          |          |          |
1+10       0.1210      1.53  VQ         |          |          |          |
1+15       0.1316      1.53  VQ         |          |          |          |
1+20       0.1422      1.54  VQ         |          |          |          |
1+25       0.1528      1.54  VQ         |          |          |          |
1+30       0.1635      1.55  VQ         |          |          |          |
1+35       0.1742      1.56  VQ         |          |          |          |
1+40       0.1850      1.56  VQ         |          |          |          |
1+45       0.1958      1.57  VQ         |          |          |          |
1+50       0.2066      1.57  |Q         |          |          |          |
1+55       0.2175      1.58  |Q         |          |          |          |
2+ 0       0.2284      1.58  |Q         |          |          |          |
2+ 5       0.2393      1.59  |Q         |          |          |          |
2+10       0.2503      1.60  |Q         |          |          |          |
2+15       0.2614      1.60  |Q         |          |          |          |
2+20       0.2724      1.61  |Q         |          |          |          |
2+25       0.2835      1.61  |Q         |          |          |          |
2+30       0.2947      1.62  |Q         |          |          |          |
2+35       0.3059      1.63  |Q         |          |          |          |
2+40       0.3171      1.63  |Q         |          |          |          |
2+45       0.3284      1.64  |Q         |          |          |          |
2+50       0.3397      1.64  |Q         |          |          |          |
2+55       0.3511      1.65  |Q         |          |          |          |
3+ 0       0.3625      1.66  |Q         |          |          |          |
3+ 5       0.3740      1.66  |Q         |          |          |          |
3+10       0.3855      1.67  |Q         |          |          |          |
3+15       0.3971      1.68  |Q         |          |          |          |
3+20       0.4087      1.68  |QV        |          |          |          |
3+25       0.4203      1.69  |QV        |          |          |          |
3+30       0.4320      1.70  |QV        |          |          |          |
3+35       0.4438      1.71  |QV        |          |          |          |
3+40       0.4555      1.71  |QV        |          |          |          |
3+45       0.4674      1.72  |QV        |          |          |          |
3+50       0.4793      1.73  |QV        |          |          |          |
3+55       0.4912      1.73  |QV        |          |          |          |
4+ 0       0.5032      1.74  |QV        |          |          |          |
4+ 5       0.5153      1.75  |QV        |          |          |          |
4+10       0.5274      1.76  |QV        |          |          |          |
4+15       0.5395      1.76  |QV        |          |          |          |
4+20       0.5517      1.77  |QV        |          |          |          |
4+25       0.5640      1.78  |QV        |          |          |          |
4+30       0.5763      1.79  |QV        |          |          |          |
4+35       0.5886      1.80  |QV        |          |          |          |
4+40       0.6011      1.80  |QV        |          |          |          |
4+45       0.6135      1.81  |Q V       |          |          |          |
4+50       0.6261      1.82  |Q V       |          |          |          |
4+55       0.6387      1.83  |Q V       |          |          |          |
5+ 0       0.6513      1.84  |Q V       |          |          |          |
5+ 5       0.6640      1.85  |Q V       |          |          |          |
5+10       0.6768      1.85  |Q V       |          |          |          |
5+15       0.6896      1.86  |Q V       |          |          |          |
5+20       0.7025      1.87  |Q V       |          |          |          |
5+25       0.7155      1.88  |Q V       |          |          |          |
5+30       0.7285      1.89  |Q V       |          |          |          |
5+35       0.7416      1.90  |Q V       |          |          |          |
5+40       0.7547      1.91  |Q V       |          |          |          |
5+45       0.7679      1.92  |Q V       |          |          |          |
5+50       0.7812      1.93  |Q V       |          |          |          |
5+55       0.7946      1.94  |Q V       |          |          |          |
6+ 0       0.8080      1.95  |Q  V      |          |          |          |
6+ 5       0.8215      1.96  |Q  V      |          |          |          |
6+10       0.8350      1.97  |Q  V      |          |          |          |
6+15       0.8486      1.98  |Q  V      |          |          |          |
6+20       0.8623      1.99  |Q  V      |          |          |          |
6+25       0.8761      2.00  |Q  V      |          |          |          |
6+30       0.8899      2.01  |Q  V      |          |          |          |
6+35       0.9038      2.02  |Q  V      |          |          |          |
6+40       0.9178      2.03  |Q  V      |          |          |          |
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 6+45       0.9319      2.04  |Q  V     |          |          |          |
 6+50       0.9460      2.05  |Q  V     |          |          |          |
 6+55       0.9603      2.07  |Q  V     |          |          |          |
 7+ 0       0.9746      2.08  |Q  V     |          |          |          |
 7+ 5       0.9890      2.09  |Q  V     |          |          |          |
 7+10       1.0034      2.10  |Q   V    |          |          |          |
 7+15       1.0180      2.11  |Q   V    |          |          |          |
 7+20       1.0326      2.13  |Q   V    |          |          |          |
 7+25       1.0473      2.14  |Q   V    |          |          |          |
 7+30       1.0622      2.15  |Q   V    |          |          |          |
 7+35       1.0771      2.16  |Q   V    |          |          |          |
 7+40       1.0920      2.18  |Q   V    |          |          |          |
 7+45       1.1071      2.19  |Q   V    |          |          |          |
 7+50       1.1223      2.20  |Q   V    |          |          |          |
 7+55       1.1376      2.22  |Q   V    |          |          |          |
 8+ 0       1.1529      2.23  |Q   V    |          |          |          |
 8+ 5       1.1684      2.25  |Q   V    |          |          |          |
 8+10       1.1840      2.26  |Q   V    |          |          |          |
 8+15       1.1996      2.28  |Q   V    |          |          |          |
 8+20       1.2154      2.29  |Q    V   |          |          |          |
 8+25       1.2313      2.31  |Q    V   |          |          |          |
 8+30       1.2473      2.32  |Q    V   |          |          |          |
 8+35       1.2634      2.34  |Q    V   |          |          |          |
 8+40       1.2796      2.35  |Q    V   |          |          |          |
 8+45       1.2959      2.37  |Q    V   |          |          |          |
 8+50       1.3123      2.39  |Q    V   |          |          |          |
 8+55       1.3289      2.40  |Q    V   |          |          |          |
 9+ 0       1.3455      2.42  |Q    V   |          |          |          |
 9+ 5       1.3623      2.44  |Q    V   |          |          |          |
 9+10       1.3792      2.46  |Q    V   |          |          |          |
 9+15       1.3963      2.47  |Q    V   |          |          |          |
 9+20       1.4134      2.49  |Q     V  |          |          |          |
 9+25       1.4307      2.51  |Q     V  |          |          |          |
 9+30       1.4482      2.53  |Q     V  |          |          |          |
 9+35       1.4657      2.55  |Q     V  |          |          |          |
 9+40       1.4834      2.57  |Q     V  |          |          |          |
 9+45       1.5013      2.59  |Q     V  |          |          |          |
 9+50       1.5193      2.61  |Q     V  |          |          |          |
 9+55       1.5374      2.63  |Q     V  |          |          |          |
10+ 0       1.5557      2.66  |Q     V  |          |          |          |
10+ 5       1.5741      2.68  |Q     V  |          |          |          |
10+10       1.5927      2.70  |Q     V  |          |          |          |
10+15       1.6115      2.72  |Q      V |          |          |          |
10+20       1.6304      2.75  |Q      V |          |          |          |
10+25       1.6495      2.77  |Q      V |          |          |          |
10+30       1.6688      2.80  |Q      V |          |          |          |
10+35       1.6883      2.82  |Q      V |          |          |          |
10+40       1.7079      2.85  |Q      V |          |          |          |
10+45       1.7277      2.88  |Q      V |          |          |          |
10+50       1.7477      2.91  |Q      V |          |          |          |
10+55       1.7679      2.93  |Q      V |          |          |          |
11+ 0       1.7883      2.96  |Q      V |          |          |          |
11+ 5       1.8089      2.99  |Q       V|          |          |          |
11+10       1.8298      3.02  | Q      V|          |          |          |
11+15       1.8508      3.05  | Q      V|          |          |          |
11+20       1.8721      3.09  | Q      V|          |          |          |
11+25       1.8935      3.12  | Q      V|          |          |          |
11+30       1.9153      3.15  | Q      V|          |          |          |
11+35       1.9372      3.19  | Q      V|          |          |          |
11+40       1.9595      3.23  | Q      V|          |          |          |
11+45       1.9819      3.26  | Q      V|          |          |          |
11+50       2.0047      3.30  | Q       V          |          |          |
11+55       2.0277      3.34  | Q       V          |          |          |
12+ 0       2.0510      3.38  | Q       V          |          |          |
12+ 5       2.0749      3.47  | Q       V          |          |          |
12+10       2.1009      3.78  | Q       V          |          |          |
12+15       2.1295      4.14  | Q       V          |          |          |
12+20       2.1591      4.31  | Q       V          |          |          |
12+25       2.1896      4.42  | Q       V          |          |          |
12+30       2.2207      4.52  |  Q      |V         |          |          |
12+35       2.2524      4.60  |  Q      |V         |          |          |
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12+40      2.2845     4.66  |  Q      |V        |         |         |
12+45      2.3171     4.73  |  Q      |V        |         |         |
12+50      2.3501     4.79  |  Q      |V        |         |         |
12+55      2.3835     4.86  |  Q      |V        |         |         |
13+ 0      2.4175     4.93  |  Q      | V       |         |         |
13+ 5      2.4519     5.00  |  Q      | V       |         |         |
13+10      2.4868     5.07  |  Q      | V       |         |         |
13+15      2.5222     5.14  |  Q      | V       |         |         |
13+20      2.5582     5.22  |  Q      | V       |         |         |
13+25      2.5947     5.30  |  Q      | V       |         |         |
13+30      2.6318     5.39  |  Q      |  V      |         |         |
13+35      2.6695     5.48  |  Q      |  V      |         |         |
13+40      2.7078     5.57  |  Q      |  V      |         |         |
13+45      2.7468     5.67  |  Q      |  V      |         |         |
13+50      2.7866     5.77  |  Q      |  V      |         |         |
13+55      2.8271     5.88  |  Q      |   V     |         |         |
14+ 0      2.8683     5.99  |  Q      |   V     |         |         |
14+ 5      2.9105     6.12  |   Q     |   V     |         |         |
14+10      2.9536     6.26  |   Q     |   V     |         |         |
14+15      2.9978     6.41  |   Q     |   V     |         |         |
14+20      3.0430     6.56  |   Q     |    V    |         |         |
14+25      3.0893     6.72  |   Q     |    V    |         |         |
14+30      3.1367     6.89  |   Q     |    V    |         |         |
14+35      3.1855     7.08  |   Q     |    V    |         |         |
14+40      3.2356     7.27  |   Q     |     V   |         |         |
14+45      3.2871     7.48  |   Q     |     V   |         |         |
14+50      3.3402     7.71  |    Q    |     V   |         |         |
14+55      3.3951     7.97  |    Q    |     V   |         |         |
15+ 0      3.4519     8.25  |    Q    |      V  |         |         |
15+ 5      3.5109     8.56  |    Q    |      V  |         |         |
15+10      3.5722     8.90  |    Q    |      V  |         |         |
15+15      3.6362     9.29  |     Q   |       V |         |         |
15+20      3.7033     9.74  |     Q   |       V |         |         |
15+25      3.7733    10.18  |     Q   |       V |         |         |
15+30      3.8446    10.35  |     Q   |        V|         |         |
15+35      3.9174    10.56  |      Q  |        V|         |         |
15+40      3.9949    11.25  |      Q  |        V|         |         |
15+45      4.0795    12.29  |       Q |         V         |         |
15+50      4.1753    13.91  |        Q|         V         |         |
15+55      4.2885    16.44  |         Q         |V        |         |
16+ 0      4.4332    21.01  |           |   Q   | V       |         |
16+ 5      4.6558    32.32  |           |       |Q V      |         |
16+10      5.0461    56.68  |           |       |    V    |      Q  |
16+15      5.4473    58.24  |           |       |      V  |       Q |
16+20      5.6754    33.12  |           |       | Q     V |         |
16+25      5.8393    23.81  |           |    Q  |         V|        |
16+30      5.9669    18.52  |           | Q     |         V|        |
16+35      6.0697    14.94  |         Q|      |          V         |
16+40      6.1527    12.05  |        Q |      |          V         |
16+45      6.2246    10.43  |     Q    |      |          |V        |
16+50      6.2895     9.42  |     Q    |      |          |V        |
16+55      6.3495     8.72  |    Q     |      |          |V        |
17+ 0      6.4043     7.96  |    Q     |      |          |V        |
17+ 5      6.4549     7.34  |   Q      |      |          | V       |
17+10      6.5021     6.86  |   Q      |      |          | V       |
17+15      6.5470     6.51  |   Q      |      |          | V       |
17+20      6.5898     6.22  |   Q      |      |          | V       |
17+25      6.6309     5.97  |  Q       |      |          |  V      |
17+30      6.6705     5.74  |  Q       |      |          |  V      |
17+35      6.7086     5.54  |  Q       |      |          |  V      |
17+40      6.7455     5.36  |  Q       |      |          |  V      |
17+45      6.7812     5.19  |  Q       |      |          |  V      |
17+50      6.8160     5.04  |  Q       |      |          |   V     |
17+55      6.8497     4.90  |  Q       |      |          |   V     |
18+ 0      6.8826     4.77  |  Q       |      |          |   V     |
18+ 5      6.9143     4.61  |  Q       |      |          |   V     |
18+10      6.9434     4.23  | Q        |      |          |   V     |
18+15      6.9697     3.81  | Q        |      |          |   V     |
18+20      6.9946     3.61  | Q        |      |          |   V     |
18+25      7.0184     3.46  | Q        |      |          |    V    |
18+30      7.0413     3.33  | Q        |      |          |    V    |
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18+35       7.0636      3.23  | Q       |         |         |    V    |
18+40       7.0853      3.15  | Q       |         |         |    V    |
18+45       7.1065      3.08  | Q       |         |         |    V    |
18+50       7.1273      3.01  | Q       |         |         |    V    |
18+55       7.1476      2.95  |Q        |         |         |    V    |
19+ 0       7.1675      2.89  |Q        |         |         |    V    |
19+ 5       7.1871      2.84  |Q        |         |         |    V    |
19+10       7.2063      2.79  |Q        |         |         |    V    |
19+15       7.2251      2.74  |Q        |         |         |     V   |
19+20       7.2436      2.69  |Q        |         |         |     V   |
19+25       7.2618      2.64  |Q        |         |         |     V   |
19+30       7.2798      2.60  |Q        |         |         |     V   |
19+35       7.2974      2.56  |Q        |         |         |     V   |
19+40       7.3147      2.52  |Q        |         |         |     V   |
19+45       7.3318      2.48  |Q        |         |         |     V   |
19+50       7.3487      2.45  |Q        |         |         |     V   |
19+55       7.3653      2.41  |Q        |         |         |     V   |
20+ 0       7.3817      2.38  |Q        |         |         |     V   |
20+ 5       7.3978      2.34  |Q        |         |         |     V   |
20+10       7.4137      2.31  |Q        |         |         |     V   |
20+15       7.4294      2.28  |Q        |         |         |      V  |
20+20       7.4450      2.25  |Q        |         |         |      V  |
20+25       7.4603      2.22  |Q        |         |         |      V  |
20+30       7.4754      2.20  |Q        |         |         |      V  |
20+35       7.4903      2.17  |Q        |         |         |      V  |
20+40       7.5051      2.14  |Q        |         |         |      V  |
20+45       7.5197      2.12  |Q        |         |         |      V  |
20+50       7.5341      2.09  |Q        |         |         |      V  |
20+55       7.5484      2.07  |Q        |         |         |      V  |
21+ 0       7.5625      2.05  |Q        |         |         |      V  |
21+ 5       7.5764      2.03  |Q        |         |         |      V  |
21+10       7.5902      2.00  |Q        |         |         |      V  |
21+15       7.6039      1.98  |Q        |         |         |      V  |
21+20       7.6174      1.96  |Q        |         |         |       V |
21+25       7.6308      1.94  |Q        |         |         |       V |
21+30       7.6440      1.92  |Q        |         |         |       V |
21+35       7.6571      1.90  |Q        |         |         |       V |
21+40       7.6701      1.89  |Q        |         |         |       V |
21+45       7.6830      1.87  |Q        |         |         |       V |
21+50       7.6957      1.85  |Q        |         |         |       V |
21+55       7.7083      1.83  |Q        |         |         |       V |
22+ 0       7.7208      1.82  |Q        |         |         |       V |
22+ 5       7.7332      1.80  |Q        |         |         |       V |
22+10       7.7455      1.78  |Q        |         |         |       V |
22+15       7.7577      1.77  |Q        |         |         |       V |
22+20       7.7697      1.75  |Q        |         |         |       V |
22+25       7.7817      1.74  |Q        |         |         |       V |
22+30       7.7936      1.72  |Q        |         |         |       V |
22+35       7.8053      1.71  |Q        |         |         |       V |
22+40       7.8170      1.69  |Q        |         |         |        V|
22+45       7.8286      1.68  |Q        |         |         |        V|
22+50       7.8401      1.67  |Q        |         |         |        V|
22+55       7.8514      1.65  |Q        |         |         |        V|
23+ 0       7.8628      1.64  |Q        |         |         |        V|
23+ 5       7.8740      1.63  |Q        |         |         |        V|
23+10       7.8851      1.62  |Q        |         |         |        V|
23+15       7.8961      1.60  |Q        |         |         |        V|
23+20       7.9071      1.59  |Q        |         |         |        V|
23+25       7.9180      1.58  |Q        |         |         |        V|
23+30       7.9288      1.57  |Q        |         |         |        V|
23+35       7.9395      1.56  |Q        |         |         |        V|
23+40       7.9502      1.55  |Q        |         |         |        V|
23+45       7.9608      1.54  |Q        |         |         |        V|
23+50       7.9713      1.53  |Q        |         |         |        V|
23+55       7.9817      1.51  |Q        |         |         |        V|
24+ 0       7.9921      1.50  |Q        |         |         |        V|
24+ 5       8.0018      1.42  Q         |         |         |        V|
24+10       8.0085      0.97  Q         |         |         |        V|
24+15       8.0116      0.45  Q         |         |         |        V|
24+20       8.0134      0.26  Q         |         |         |        V|
24+25       8.0144      0.15  Q         |         |         |        V|
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   24+30       8.0150      0.08  Q         |         |         |        V|
   24+35       8.0153      0.04  Q         |         |         |        V|
   24+40       8.0155      0.03  Q         |         |         |        V|
   24+45       8.0156      0.02  Q         |         |         |        V|
   24+50       8.0157      0.01  Q         |         |         |        V|
   24+55       8.0157      0.00  Q         |         |         |        V|
   25+ 0       8.0157      0.00  Q         |         |         |         V
-------------------------------------------------------------------------
```

Area 'C' Calculations

- 2 Year Pre-Development Rational Method – Area 'C'

```
                  Orange County Rational Hydrology Program

               (Hydrology Manual Date(s) October 1986 & November 1996)

 CIVILCADD/CIVILDESIGN  Engineering Software, (c) 1989-2012 Version 8.2
       Rational Hydrology Study, Date: 10/07/16  File Name: exc002.roc
--------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION RATIONAL METHOD - AREA 'C' - 2 YEAR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
--------------------------------------------------------------------------


Program License Serial Number 4094

--------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

--------------------------------------------------------------------------

Rational hydrology study storm event year is     2.0

Decimal fraction of study above 2000 ft., 600M  =     0.0000
English Units Used for input data


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      300.000 to Point/Station      301.000
**** INITIAL AREA EVALUATION ****
__________________________________________________________________________
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Initial subarea data:
Initial area flow distance =   298.000(Ft.)
Top (of initial area) elevation =   383.000(Ft.)
Bottom (of initial area) elevation =   324.000(Ft.)
Difference in elevation =    59.000(Ft.)
Slope =    0.19799  s(%)=      19.80
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.532 min.
Rainfall intensity =      1.563(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.756
Subarea runoff =      1.312(CFS)
Total initial stream area =        1.110(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      301.000 to Point/Station      302.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
__________________________________________________________________________
Estimated mean flow rate at midpoint of channel =      2.820(CFS)
Depth of flow =   0.147(Ft.), Average velocity =   2.598(Ft/s)
       ******* Irregular Channel Data ***********
--------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2             50.00              0.00
       3            100.00              1.00
Manning's 'N' friction factor =   0.030
--------------------------------------------------------------------
Sub-Channel flow  =      2.820(CFS)
  '     '       flow top width =     14.734(Ft.)
```

```
  '     '    velocity=    2.598(Ft/s)
  '     '       area =      1.085(Sq.Ft)
  '     '       Froude number =     1.687

Upstream point elevation =   324.000(Ft.)
Downstream point elevation =   279.000(Ft.)
Flow length =   505.000(Ft.)
Travel time  =    3.24 min.
Time of concentration =   12.77 min.
Depth of flow =   0.147(Ft.)
Average velocity =   2.598(Ft/s)
Total irregular channel flow =     2.820(CFS)
Irregular channel normal depth above invert elev. =   0.147(Ft.)
Average velocity of channel(s) =   2.598(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Rainfall intensity =      1.321(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.730
Subarea runoff =      2.950(CFS) for    3.310(Ac.)
Total runoff =      4.262(CFS)       Total area =        4.42(Ac.)
Area averaged Fm value =    0.250(In/Hr)
Depth of flow =   0.172(Ft.), Average velocity =   2.881(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      302.000 to Point/Station      303.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =     10.464(CFS)
Depth of flow =   0.255(Ft.), Average velocity =   3.219(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2             50.00              0.00
       3            100.00              1.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =     10.464(CFS)
  '     '       flow top width =     25.499(Ft.)
  '     '    velocity=    3.219(Ft/s)
  '     '       area =      3.251(Sq.Ft)
  '     '       Froude number =     1.589

Upstream point elevation =   279.000(Ft.)
Downstream point elevation =   216.000(Ft.)
Flow length =   957.000(Ft.)
Travel time  =    4.96 min.
Time of concentration =   17.73 min.
Depth of flow =   0.255(Ft.)
Average velocity =   3.219(Ft/s)
Total irregular channel flow =    10.464(CFS)
Irregular channel normal depth above invert elev. =   0.255(Ft.)
Average velocity of channel(s) =   3.219(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
```

```
Max Catchment Loss (Fm) =     0.250(In/Hr)
Rainfall intensity =      1.095(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.694
Subarea runoff =     12.320(CFS) for   17.390(Ac.)
Total runoff =     16.582(CFS)       Total area =       21.81(Ac.)
Area averaged Fm value =    0.250(In/Hr)
Depth of flow =   0.303(Ft.), Average velocity =   3.611(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      303.000 to Point/Station      304.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =     19.857(CFS)
Depth of flow =   0.455(Ft.), Average velocity =   1.915(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2             50.00              0.00
       3            100.00              1.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =     19.857(CFS)
  '     '       flow top width =     45.539(Ft.)
  '     '    velocity=    1.915(Ft/s)
  '     '       area =     10.369(Sq.Ft)
  '     '       Froude number =     0.707

Upstream point elevation =   216.000(Ft.)
Downstream point elevation =   198.000(Ft.)
Flow length =  1674.000(Ft.)
Travel time  =   14.57 min.
Time of concentration =   32.30 min.
Depth of flow =   0.455(Ft.)
Average velocity =   1.915(Ft/s)
Total irregular channel flow =    19.857(CFS)
Irregular channel normal depth above invert elev. =   0.455(Ft.)
Average velocity of channel(s) =   1.915(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.050
Decimal fraction soil group C = 0.950
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 78.50
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.253(In/Hr)
Max Catchment Loss (Fm) =     0.253(In/Hr)
Rainfall intensity =      0.776(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.608
Subarea runoff =      6.472(CFS) for   27.030(Ac.)
Total runoff =     23.054(CFS)       Total area =       48.84(Ac.)
Area averaged Fm value =    0.251(In/Hr)
Depth of flow =   0.482(Ft.), Average velocity =   1.988(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      303.000 to Point/Station      304.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     48.840(Ac.)
Runoff from this stream =     23.054(CFS)
Time of concentration =   32.30 min.
Rainfall intensity =     0.776(In/Hr)
Area averaged loss rate (Fm) =    0.2514(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
```

```
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      305.000 to Point/Station      306.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   380.000(Ft.)
Bottom (of initial area) elevation =   310.000(Ft.)
Difference in elevation =    70.000(Ft.)
Slope =    0.23333  s(%)=      23.33
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.248 min.
Rainfall intensity =      1.590(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.759
Subarea runoff =      1.399(CFS)
Total initial stream area =        1.160(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      306.000 to Point/Station      307.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
------------------------------------------------------------------------
Estimated mean flow rate at midpoint of channel =      4.743(CFS)
Depth of flow =   0.170(Ft.), Average velocity =   3.296(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1             0.00              1.00
       2            50.00              0.00
       3           100.00              1.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =      4.743(CFS)
  '     '       flow top width =     16.966(Ft.)
  '     '    velocity=    3.296(Ft/s)
  '     '       area =      1.439(Sq.Ft)
  '     '       Froude number =     1.994

Upstream point elevation =   310.000(Ft.)
Downstream point elevation =   231.000(Ft.)
Flow length =   665.000(Ft.)
Travel time  =    3.36 min.
Time of concentration =   12.61 min.
Depth of flow =   0.170(Ft.)
Average velocity =   3.296(Ft/s)
Total irregular channel flow =     4.743(CFS)
Irregular channel normal depth above invert elev. =   0.170(Ft.)
Average velocity of channel(s) =   3.296(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Rainfall intensity =      1.331(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
```

```
rational method)(Q=KCIA) is C = 0.731
Subarea runoff =      6.618(CFS) for    7.080(Ac.)
Total runoff =      8.017(CFS)       Total area =        8.24(Ac.)
Area averaged Fm value =    0.250(In/Hr)
Depth of flow =   0.207(Ft.), Average velocity =   3.758(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      307.000 to Point/Station      304.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
____________________________________________________________________________
Estimated mean flow rate at midpoint of channel =     12.765(CFS)
Depth of flow =   0.320(Ft.), Average velocity =   2.498(Ft/s)
       ******* Irregular Channel Data ***********
----------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1             0.00              1.00
       2            50.00              0.00
       3           100.00              1.00
Manning's 'N' friction factor =   0.030
----------------------------------------------------------------
Sub-Channel flow  =     12.766(CFS)
  '     '       flow top width =     31.968(Ft.)
  '     '    velocity=    2.498(Ft/s)
  '     '       area =      5.110(Sq.Ft)
  '     '       Froude number =     1.101

Upstream point elevation =   231.000(Ft.)
Downstream point elevation =   198.000(Ft.)
Flow length =  1125.000(Ft.)
Travel time  =    7.51 min.
Time of concentration =   20.12 min.
Depth of flow =   0.320(Ft.)
Average velocity =   2.498(Ft/s)
Total irregular channel flow =    12.765(CFS)
Irregular channel normal depth above invert elev. =   0.320(Ft.)
Average velocity of channel(s) =   2.498(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Rainfall intensity =      1.018(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.679
Subarea runoff =      9.424(CFS) for   16.990(Ac.)
Total runoff =     17.441(CFS)       Total area =       25.23(Ac.)
Area averaged Fm value =    0.250(In/Hr)
Depth of flow =   0.359(Ft.), Average velocity =   2.701(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      307.000 to Point/Station      304.000
**** CONFLUENCE OF MAIN STREAMS ****
____________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =     25.230(Ac.)
Runoff from this stream =     17.441(CFS)
Time of concentration =   20.12 min.
Rainfall intensity =     1.018(In/Hr)
Area averaged loss rate (Fm) =    0.2500(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Program is now starting with Main Stream No. 3
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      309.000 to Point/Station      310.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   540.000(Ft.)
Bottom (of initial area) elevation =   485.000(Ft.)
Difference in elevation =    55.000(Ft.)
Slope =    0.18333  s(%)=      18.33
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.705 min.
Rainfall intensity =      1.547(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.755
Subarea runoff =      1.588(CFS)
Total initial stream area =        1.360(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      310.000 to Point/Station      311.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
------------------------------------------------------------------------
Estimated mean flow rate at midpoint of channel =      5.473(CFS)
Depth of flow =   0.183(Ft.), Average velocity =   3.264(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1             0.00              1.00
       2            50.00              0.00
       3           100.00              1.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =      5.473(CFS)
  '     '       flow top width =     18.313(Ft.)
  '     '    velocity=    3.264(Ft/s)
  '     '       area =      1.677(Sq.Ft)
  '     '       Froude number =     1.901

Upstream point elevation =   485.000(Ft.)
Downstream point elevation =   415.000(Ft.)
Flow length =   665.000(Ft.)
Travel time  =    3.40 min.
Time of concentration =   13.10 min.
Depth of flow =   0.183(Ft.)
Average velocity =   3.264(Ft/s)
Total irregular channel flow =     5.473(CFS)
Irregular channel normal depth above invert elev. =   0.183(Ft.)
Average velocity of channel(s) =   3.264(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Rainfall intensity =      1.302(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.727
Subarea runoff =      7.694(CFS) for    8.440(Ac.)
Total runoff =      9.281(CFS)       Total area =        9.80(Ac.)
```

```
Area averaged Fm value =    0.250(In/Hr)
Depth of flow =   0.223(Ft.), Average velocity =   3.725(Ft/s)


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Process from Point/Station      311.000 to Point/Station      312.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =     20.310(CFS)
Depth of flow =   0.286(Ft.), Average velocity =   4.963(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1             0.00              1.00
       2            50.00              0.00
       3           100.00              1.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =     20.310(CFS)
  '     '       flow top width =     28.609(Ft.)
  '     '    velocity=    4.963(Ft/s)
  '     '       area =      4.092(Sq.Ft)
  '     '       Froude number =     2.312

Upstream point elevation =   415.000(Ft.)
Downstream point elevation =   273.000(Ft.)
Flow length =  1058.000(Ft.)
Travel time  =    3.55 min.
Time of concentration =   16.65 min.
Depth of flow =   0.286(Ft.)
Average velocity =   4.963(Ft/s)
Total irregular channel flow =    20.310(CFS)
Irregular channel normal depth above invert elev. =   0.286(Ft.)
Average velocity of channel(s) =   4.963(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Rainfall intensity =      1.135(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.702
Subarea runoff =     22.003(CFS) for   29.490(Ac.)
Total runoff =     31.284(CFS)       Total area =       39.29(Ac.)
Area averaged Fm value =    0.250(In/Hr)
Depth of flow =   0.336(Ft.), Average velocity =   5.529(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      312.000 to Point/Station      313.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
________________________________________________________________________
Upstream point/station elevation =   267.000(Ft.)
Downstream point/station elevation =   266.000(Ft.)
Pipe length  =   111.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    31.284(CFS)
Given pipe size =     48.00(In.)
Calculated individual pipe flow  =    31.284(CFS)
Normal flow depth in pipe =   15.64(In.)
Flow top width inside pipe =   44.99(In.)
Critical Depth =   19.91(In.)
Pipe flow velocity =      8.81(Ft/s)
Travel time through pipe =    0.21 min.
Time of concentration (TC) =    16.86 min.
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Process from Point/Station      312.000 to Point/Station      313.000
**** CONFLUENCE OF MINOR STREAMS ****
----------------------------------------------------------------------------
Along Main Stream number: 3 in normal stream number 1
Stream flow area =     39.290(Ac.)
Runoff from this stream =     31.284(CFS)
Time of concentration =   16.86 min.
Rainfall intensity =     1.127(In/Hr)
Area averaged loss rate (Fm) =    0.2500(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      314.000 to Point/Station      315.000
**** INITIAL AREA EVALUATION ****
----------------------------------------------------------------------------
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   597.000(Ft.)
Top (of initial area) elevation =   407.000(Ft.)
Bottom (of initial area) elevation =   380.000(Ft.)
Difference in elevation =    27.000(Ft.)
Slope =    0.04523  s(%)=       4.52
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.317 min.
NOTE: Distance EXCEEDS recommended maximum value of   328.084(Ft.)
for this Development Type
Rainfall intensity =      1.584(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.829
Subarea runoff =     10.056(CFS)
Total initial stream area =        7.660(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      315.000 to Point/Station      313.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
----------------------------------------------------------------------------
Upstream point/station elevation =   374.000(Ft.)
Downstream point/station elevation =   266.000(Ft.)
Pipe length  =   750.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    10.056(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =    10.056(CFS)
Normal flow depth in pipe =    6.16(In.)
Flow top width inside pipe =   17.08(In.)
Critical Depth =   14.67(In.)
Pipe flow velocity =     18.80(Ft/s)
Travel time through pipe =    0.66 min.
Time of concentration (TC) =     9.98 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      315.000 to Point/Station      313.000
**** CONFLUENCE OF MINOR STREAMS ****
----------------------------------------------------------------------------
Along Main Stream number: 3 in normal stream number 2
Stream flow area =      7.660(Ac.)
Runoff from this stream =     10.056(CFS)
Time of concentration =    9.98 min.
Rainfall intensity =     1.522(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000
Summary of stream data:
```

```
Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1     39.29    31.284     16.86    0.250      1.127
2      7.66    10.056      9.98    0.125      1.522
Qmax(1) =
          1.000 *    1.000 *    31.284) +
          0.717 *    1.000 *    10.056) + =      38.492
Qmax(2) =
          1.451 *    0.592 *    31.284) +
          1.000 *    1.000 *    10.056) + =      36.932

Total of 2 streams to confluence:
Flow rates before confluence point:
      31.284      10.056
Maximum flow rates at confluence using above data:
       38.492       36.932
Area of streams before confluence:
       39.290        7.660
Effective area values after confluence:
       46.950       30.916
Results of confluence:
Total flow rate =     38.492(CFS)
Time of concentration =    16.864 min.
Effective stream area after confluence =     46.950(Ac.)
Study area average Pervious fraction(Ap) =  0.918
Study area average soil loss rate(Fm) =    0.230(In/Hr)
Study area total (this main stream) =      46.95(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      313.000 to Point/Station      304.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
________________________________________________________________________
Upstream point/station elevation =   266.000(Ft.)
Downstream point/station elevation =   198.000(Ft.)
Pipe length  =  1125.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    38.492(CFS)
Given pipe size =     48.00(In.)
Calculated individual pipe flow  =    38.492(CFS)
Normal flow depth in pipe =   10.70(In.)
Flow top width inside pipe =   39.96(In.)
Critical Depth =   22.20(In.)
Pipe flow velocity =     18.43(Ft/s)
Travel time through pipe =    1.02 min.
Time of concentration (TC) =    17.88 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      313.000 to Point/Station      304.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 3
Stream flow area =     46.950(Ac.)
Runoff from this stream =     38.492(CFS)
Time of concentration =   17.88 min.
Rainfall intensity =     1.089(In/Hr)
Area averaged loss rate (Fm) =    0.2296(In/Hr)
Area averaged Pervious ratio (Ap) = 0.9184
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1     48.84    23.054     32.30    0.251      0.776
2     25.23    17.441     20.12    0.250      1.018
3     46.95    38.492     17.88    0.230      1.089
```

```
Qmax(1) =
          1.000 *    1.000 *    23.054) +
          0.685 *    1.000 *    17.441) +
          0.635 *    1.000 *    38.492) + =      59.452
Qmax(2) =
          1.462 *    0.623 *    23.054) +
          1.000 *    1.000 *    17.441) +
          0.917 *    1.000 *    38.492) + =      73.737
Qmax(3) =
          1.598 *    0.554 *    23.054) +
          1.093 *    0.889 *    17.441) +
          1.000 *    1.000 *    38.492) + =      75.826

Total of 3 main streams to confluence:
Flow rates before confluence point:
      24.054      18.441      39.492
Maximum flow rates at confluence using above data:
       59.452       73.737       75.826
Area of streams before confluence:
       48.840       25.230       46.950
Effective area values after confluence:
      121.020      102.602       96.418


Results of confluence:
Total flow rate =     75.826(CFS)
Time of concentration =    17.881 min.
Effective stream area after confluence  =     96.418(Ac.)
Study area average Pervious fraction(Ap) =  0.968
Study area average soil loss rate(Fm) =    0.243(In/Hr)
Study area total =     121.02(Ac.)
End of computations, total study area =          121.02 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.968
Area averaged SCS curve number (AMC 2) =  78.3
```

- 5 Year Pre-Development Rational Method – Area 'C'

```
                  Orange County Rational Hydrology Program

               (Hydrology Manual Date(s) October 1986 & November 1996)

 CIVILCADD/CIVILDESIGN  Engineering Software, (c) 1989-2012 Version 8.2
       Rational Hydrology Study, Date: 10/07/16  File Name: exc005.roc
--------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION RATIONAL METHOD - AREA 'C' - 5 YEAR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
--------------------------------------------------------------------------


Program License Serial Number 4094

--------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

--------------------------------------------------------------------------

Rational hydrology study storm event year is     5.0

Decimal fraction of study above 2000 ft., 600M  =     0.0000
English Units Used for input data


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      300.000 to Point/Station      301.000
**** INITIAL AREA EVALUATION ****
__________________________________________________________________________
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Initial subarea data:
Initial area flow distance =   298.000(Ft.)
Top (of initial area) elevation =   383.000(Ft.)
Bottom (of initial area) elevation =   324.000(Ft.)
Difference in elevation =    59.000(Ft.)
Slope =    0.19799  s(%)=      19.80
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.532 min.
Rainfall intensity =      2.217(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.798
Subarea runoff =      1.965(CFS)
Total initial stream area =        1.110(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      301.000 to Point/Station      302.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
__________________________________________________________________________
Estimated mean flow rate at midpoint of channel =      4.322(CFS)
Depth of flow =   0.173(Ft.), Average velocity =   2.891(Ft/s)
       ******* Irregular Channel Data ***********
--------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2             50.00              0.00
       3            100.00              1.00
Manning's 'N' friction factor =   0.030
--------------------------------------------------------------------
Sub-Channel flow  =      4.322(CFS)
  '     '       flow top width =     17.293(Ft.)
```

```
  '     '    velocity=    2.891(Ft/s)
  '     '       area =      1.495(Sq.Ft)
  '     '       Froude number =     1.733

Upstream point elevation =   324.000(Ft.)
Downstream point elevation =   279.000(Ft.)
Flow length =   505.000(Ft.)
Travel time  =    2.91 min.
Time of concentration =   12.44 min.
Depth of flow =   0.173(Ft.)
Average velocity =   2.891(Ft/s)
Total irregular channel flow =     4.322(CFS)
Irregular channel normal depth above invert elev. =   0.173(Ft.)
Average velocity of channel(s) =   2.891(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Rainfall intensity =      1.908(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.782
Subarea runoff =      4.632(CFS) for    3.310(Ac.)
Total runoff =      6.596(CFS)       Total area =        4.42(Ac.)
Area averaged Fm value =    0.250(In/Hr)
Depth of flow =   0.203(Ft.), Average velocity =   3.213(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      302.000 to Point/Station      303.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =     16.664(CFS)
Depth of flow =   0.304(Ft.), Average velocity =   3.616(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2             50.00              0.00
       3            100.00              1.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =     16.665(CFS)
  '     '       flow top width =     30.360(Ft.)
  '     '    velocity=    3.616(Ft/s)
  '     '       area =      4.609(Sq.Ft)
  '     '       Froude number =     1.636

Upstream point elevation =   279.000(Ft.)
Downstream point elevation =   216.000(Ft.)
Flow length =   957.000(Ft.)
Travel time  =    4.41 min.
Time of concentration =   16.85 min.
Depth of flow =   0.304(Ft.)
Average velocity =   3.616(Ft/s)
Total irregular channel flow =    16.664(CFS)
Irregular channel normal depth above invert elev. =   0.304(Ft.)
Average velocity of channel(s) =   3.616(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
```

```
Max Catchment Loss (Fm) =     0.250(In/Hr)
Rainfall intensity =      1.609(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.760
Subarea runoff =     20.080(CFS) for   17.390(Ac.)
Total runoff =     26.677(CFS)       Total area =       21.81(Ac.)
Area averaged Fm value =    0.250(In/Hr)
Depth of flow =   0.362(Ft.), Average velocity =   4.067(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      303.000 to Point/Station      304.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =     33.595(CFS)
Depth of flow =   0.555(Ft.), Average velocity =   2.184(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2             50.00              0.00
       3            100.00              1.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =     33.595(CFS)
  '     '       flow top width =     55.466(Ft.)
  '     '    velocity=    2.184(Ft/s)
  '     '       area =     15.382(Sq.Ft)
  '     '       Froude number =     0.731

Upstream point elevation =   216.000(Ft.)
Downstream point elevation =   198.000(Ft.)
Flow length =  1674.000(Ft.)
Travel time  =   12.77 min.
Time of concentration =   29.63 min.
Depth of flow =   0.555(Ft.)
Average velocity =   2.184(Ft/s)
Total irregular channel flow =    33.595(CFS)
Irregular channel normal depth above invert elev. =   0.555(Ft.)
Average velocity of channel(s) =   2.184(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.050
Decimal fraction soil group C = 0.950
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 78.50
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.253(In/Hr)
Max Catchment Loss (Fm) =     0.253(In/Hr)
Rainfall intensity =      1.172(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.707
Subarea runoff =     13.784(CFS) for   27.030(Ac.)
Total runoff =     40.460(CFS)       Total area =       48.84(Ac.)
Area averaged Fm value =    0.251(In/Hr)
Depth of flow =   0.595(Ft.), Average velocity =   2.288(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      303.000 to Point/Station      304.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     48.840(Ac.)
Runoff from this stream =     40.460(CFS)
Time of concentration =   29.63 min.
Rainfall intensity =     1.172(In/Hr)
Area averaged loss rate (Fm) =    0.2514(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
```

```
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      305.000 to Point/Station      306.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   380.000(Ft.)
Bottom (of initial area) elevation =   310.000(Ft.)
Difference in elevation =    70.000(Ft.)
Slope =    0.23333  s(%)=      23.33
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.248 min.
Rainfall intensity =      2.254(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.800
Subarea runoff =      2.093(CFS)
Total initial stream area =        1.160(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      306.000 to Point/Station      307.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
------------------------------------------------------------------------
Estimated mean flow rate at midpoint of channel =      7.295(CFS)
Depth of flow =   0.199(Ft.), Average velocity =   3.670(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1             0.00              1.00
       2            50.00              0.00
       3           100.00              1.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =      7.295(CFS)
  '     '       flow top width =     19.938(Ft.)
  '     '    velocity=    3.670(Ft/s)
  '     '       area =      1.988(Sq.Ft)
  '     '       Froude number =     2.048

Upstream point elevation =   310.000(Ft.)
Downstream point elevation =   231.000(Ft.)
Flow length =   665.000(Ft.)
Travel time  =    3.02 min.
Time of concentration =   12.27 min.
Depth of flow =   0.199(Ft.)
Average velocity =   3.670(Ft/s)
Total irregular channel flow =     7.295(CFS)
Irregular channel normal depth above invert elev. =   0.199(Ft.)
Average velocity of channel(s) =   3.670(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Rainfall intensity =      1.923(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area,(total area with modified
```

```
rational method)(Q=KCIA) is C = 0.783
Subarea runoff =     10.318(CFS) for    7.080(Ac.)
Total runoff =     12.410(CFS)       Total area =        8.24(Ac.)
Area averaged Fm value =    0.250(In/Hr)
Depth of flow =   0.243(Ft.), Average velocity =   4.191(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      307.000 to Point/Station      304.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =     20.526(CFS)
Depth of flow =   0.382(Ft.), Average velocity =   2.813(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1             0.00              1.00
       2            50.00              0.00
       3           100.00              1.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =     20.526(CFS)
  '     '       flow top width =     38.200(Ft.)
  '     '    velocity=    2.813(Ft/s)
  '     '       area =      7.296(Sq.Ft)
  '     '       Froude number =     1.134

Upstream point elevation =   231.000(Ft.)
Downstream point elevation =   198.000(Ft.)
Flow length =  1125.000(Ft.)
Travel time  =    6.66 min.
Time of concentration =   18.93 min.
Depth of flow =   0.382(Ft.)
Average velocity =   2.813(Ft/s)
Total irregular channel flow =    20.526(CFS)
Irregular channel normal depth above invert elev. =   0.382(Ft.)
Average velocity of channel(s) =   2.813(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Rainfall intensity =     1.507(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.751
Subarea runoff =     16.137(CFS) for   16.990(Ac.)
Total runoff =     28.548(CFS)       Total area =       25.23(Ac.)
Area averaged Fm value =    0.250(In/Hr)
Depth of flow =   0.432(Ft.), Average velocity =   3.055(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      307.000 to Point/Station      304.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =     25.230(Ac.)
Runoff from this stream =     28.548(CFS)
Time of concentration =   18.93 min.
Rainfall intensity =     1.507(In/Hr)
Area averaged loss rate (Fm) =    0.2500(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Program is now starting with Main Stream No. 3
```

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++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      309.000 to Point/Station      310.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   540.000(Ft.)
Bottom (of initial area) elevation =   485.000(Ft.)
Difference in elevation =    55.000(Ft.)
Slope =    0.18333  s(%)=      18.33
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.705 min.
Rainfall intensity =      2.194(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.797
Subarea runoff =      2.380(CFS)
Total initial stream area =        1.360(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      310.000 to Point/Station      311.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
------------------------------------------------------------------------
Estimated mean flow rate at midpoint of channel =      8.436(CFS)
Depth of flow =   0.215(Ft.), Average velocity =   3.637(Ft/s)
       ******* Irregular Channel Data ***********
-------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1             0.00              1.00
       2            50.00              0.00
       3           100.00              1.00
Manning's 'N' friction factor =   0.030
-------------------------------------------------------------------
Sub-Channel flow  =      8.436(CFS)
  '     '       flow top width =     21.538(Ft.)
  '     '    velocity=    3.637(Ft/s)
  '     '       area =      2.319(Sq.Ft)
  '     '       Froude number =     1.953

Upstream point elevation =   485.000(Ft.)
Downstream point elevation =   415.000(Ft.)
Flow length =   665.000(Ft.)
Travel time  =    3.05 min.
Time of concentration =   12.75 min.
Depth of flow =   0.215(Ft.)
Average velocity =   3.637(Ft/s)
Total irregular channel flow =     8.436(CFS)
Irregular channel normal depth above invert elev. =   0.215(Ft.)
Average velocity of channel(s) =   3.637(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Rainfall intensity =      1.882(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.780
Subarea runoff =     12.015(CFS) for    8.440(Ac.)
Total runoff =     14.395(CFS)       Total area =        9.80(Ac.)
```

```
Area averaged Fm value =    0.250(In/Hr)
Depth of flow =   0.263(Ft.), Average velocity =   4.157(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      311.000 to Point/Station      312.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =     32.188(CFS)
Depth of flow =   0.340(Ft.), Average velocity =   5.568(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1             0.00              1.00
       2            50.00              0.00
       3           100.00              1.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =     32.188(CFS)
  '     '       flow top width =     34.002(Ft.)
  '     '    velocity=    5.568(Ft/s)
  '     '       area =      5.781(Sq.Ft)
  '     '       Froude number =     2.380

Upstream point elevation =   415.000(Ft.)
Downstream point elevation =   273.000(Ft.)
Flow length =  1058.000(Ft.)
Travel time  =    3.17 min.
Time of concentration =   15.92 min.
Depth of flow =   0.340(Ft.)
Average velocity =   5.568(Ft/s)
Total irregular channel flow =    32.188(CFS)
Irregular channel normal depth above invert elev. =   0.340(Ft.)
Average velocity of channel(s) =   5.568(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Rainfall intensity =      1.661(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.765
Subarea runoff =     35.517(CFS) for   29.490(Ac.)
Total runoff =     49.911(CFS)       Total area =       39.29(Ac.)
Area averaged Fm value =    0.250(In/Hr)
Depth of flow =   0.401(Ft.), Average velocity =   6.214(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      312.000 to Point/Station      313.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
________________________________________________________________________
Upstream point/station elevation =   267.000(Ft.)
Downstream point/station elevation =   266.000(Ft.)
Pipe length  =   111.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    49.911(CFS)
Given pipe size =     48.00(In.)
Calculated individual pipe flow  =    49.911(CFS)
Normal flow depth in pipe =   20.09(In.)
Flow top width inside pipe =   47.36(In.)
Critical Depth =   25.43(In.)
Pipe flow velocity =     10.01(Ft/s)
Travel time through pipe =    0.18 min.
Time of concentration (TC) =    16.10 min.
```

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++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      312.000 to Point/Station      313.000
**** CONFLUENCE OF MINOR STREAMS ****
----------------------------------------------------------------------------
Along Main Stream number: 3 in normal stream number 1
Stream flow area =     39.290(Ac.)
Runoff from this stream =     49.911(CFS)
Time of concentration =   16.10 min.
Rainfall intensity =     1.651(In/Hr)
Area averaged loss rate (Fm) =    0.2500(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      314.000 to Point/Station      315.000
**** INITIAL AREA EVALUATION ****
----------------------------------------------------------------------------
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   597.000(Ft.)
Top (of initial area) elevation =   407.000(Ft.)
Bottom (of initial area) elevation =   380.000(Ft.)
Difference in elevation =    27.000(Ft.)
Slope =    0.04523  s(%)=       4.52
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.317 min.
NOTE: Distance EXCEEDS recommended maximum value of   328.084(Ft.)
for this Development Type
Rainfall intensity =      2.245(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.850
Subarea runoff =     14.616(CFS)
Total initial stream area =        7.660(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      315.000 to Point/Station      313.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
----------------------------------------------------------------------------
Upstream point/station elevation =   374.000(Ft.)
Downstream point/station elevation =   266.000(Ft.)
Pipe length  =   750.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    14.616(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =    14.616(CFS)
Normal flow depth in pipe =    7.54(In.)
Flow top width inside pipe =   17.76(In.)
Critical Depth =   16.76(In.)
Pipe flow velocity =     20.82(Ft/s)
Travel time through pipe =    0.60 min.
Time of concentration (TC) =     9.92 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      315.000 to Point/Station      313.000
**** CONFLUENCE OF MINOR STREAMS ****
----------------------------------------------------------------------------
Along Main Stream number: 3 in normal stream number 2
Stream flow area =      7.660(Ac.)
Runoff from this stream =     14.616(CFS)
Time of concentration =    9.92 min.
Rainfall intensity =     2.168(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000
Summary of stream data:
```

```
Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1     39.29    49.911     16.10    0.250      1.651
2      7.66    14.616      9.92    0.125      2.168
Qmax(1) =
          1.000 *    1.000 *    49.911) +
          0.747 *    1.000 *    14.616) + =      60.828
Qmax(2) =
          1.369 *    0.616 *    49.911) +
          1.000 *    1.000 *    14.616) + =      56.697

Total of 2 streams to confluence:
Flow rates before confluence point:
      49.911      14.616
Maximum flow rates at confluence using above data:
       60.828       56.697
Area of streams before confluence:
       39.290        7.660
Effective area values after confluence:
       46.950       31.855
Results of confluence:
Total flow rate =     60.828(CFS)
Time of concentration =    16.104 min.
Effective stream area after confluence =     46.950(Ac.)
Study area average Pervious fraction(Ap) =  0.918
Study area average soil loss rate(Fm) =    0.230(In/Hr)
Study area total (this main stream) =      46.95(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      313.000 to Point/Station      304.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
________________________________________________________________________
Upstream point/station elevation =   266.000(Ft.)
Downstream point/station elevation =   198.000(Ft.)
Pipe length  =  1125.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    60.828(CFS)
Given pipe size =     48.00(In.)
Calculated individual pipe flow  =    60.828(CFS)
Normal flow depth in pipe =   13.48(In.)
Flow top width inside pipe =   43.14(In.)
Critical Depth =   28.20(In.)
Pipe flow velocity =     21.03(Ft/s)
Travel time through pipe =    0.89 min.
Time of concentration (TC) =    17.00 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      313.000 to Point/Station      304.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 3
Stream flow area =     46.950(Ac.)
Runoff from this stream =     60.828(CFS)
Time of concentration =   17.00 min.
Rainfall intensity =     1.601(In/Hr)
Area averaged loss rate (Fm) =    0.2296(In/Hr)
Area averaged Pervious ratio (Ap) = 0.9184
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1     48.84    40.460     29.63    0.251      1.172
2     25.23    28.548     18.93    0.250      1.507
3     46.95    60.828     17.00    0.230      1.601
```

```
Qmax(1) =
          1.000 *    1.000 *    40.460) +
          0.733 *    1.000 *    28.548) +
          0.687 *    1.000 *    60.828) + =     103.171
Qmax(2) =
          1.364 *    0.639 *    40.460) +
          1.000 *    1.000 *    28.548) +
          0.931 *    1.000 *    60.828) + =     120.471
Qmax(3) =
          1.467 *    0.574 *    40.460) +
          1.075 *    0.898 *    28.548) +
          1.000 *    1.000 *    60.828) + =     122.418

Total of 3 main streams to confluence:
Flow rates before confluence point:
      41.460      29.548      61.828
Maximum flow rates at confluence using above data:
      103.171      120.471      122.418
Area of streams before confluence:
       48.840       25.230       46.950
Effective area values after confluence:
      121.020      103.389       97.614


Results of confluence:
Total flow rate =    122.418(CFS)
Time of concentration =    16.996 min.
Effective stream area after confluence  =     97.614(Ac.)
Study area average Pervious fraction(Ap) =  0.968
Study area average soil loss rate(Fm) =    0.243(In/Hr)
Study area total =     121.02(Ac.)
End of computations, total study area =          121.02 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.968
Area averaged SCS curve number (AMC 2) =  78.3
```

- 25 Year Pre-Development Rational Method – Area 'C'

```
                  Orange County Rational Hydrology Program

               (Hydrology Manual Date(s) October 1986 & November 1996)

 CIVILCADD/CIVILDESIGN  Engineering Software, (c) 1989-2012 Version 8.2
       Rational Hydrology Study, Date: 10/07/16  File Name: exc025.roc
--------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION RATIONAL METHOD - AREA 'C' - 25 YEAR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
--------------------------------------------------------------------------


Program License Serial Number 4094

--------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

--------------------------------------------------------------------------

Rational hydrology study storm event year is    25.0

Decimal fraction of study above 2000 ft., 600M  =     0.0000
English Units Used for input data


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      300.000 to Point/Station      301.000
**** INITIAL AREA EVALUATION ****
__________________________________________________________________________
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Initial subarea data:
Initial area flow distance =   298.000(Ft.)
Top (of initial area) elevation =   383.000(Ft.)
Bottom (of initial area) elevation =   324.000(Ft.)
Difference in elevation =    59.000(Ft.)
Slope =    0.19799  s(%)=      19.80
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.532 min.
Rainfall intensity =      3.348(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.833
Subarea runoff =      3.095(CFS)
Total initial stream area =        1.110(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      301.000 to Point/Station      302.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
__________________________________________________________________________
Estimated mean flow rate at midpoint of channel =      6.891(CFS)
Depth of flow =   0.206(Ft.), Average velocity =   3.248(Ft/s)
       ******* Irregular Channel Data ***********
--------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2             50.00              0.00
       3            100.00              1.00
Manning's 'N' friction factor =   0.030
--------------------------------------------------------------------
Sub-Channel flow  =      6.891(CFS)
  '     '       flow top width =     20.598(Ft.)
```

```
  '     '    velocity=    3.248(Ft/s)
  '     '       area =      2.121(Sq.Ft)
  '     '       Froude number =     1.784

Upstream point elevation =   324.000(Ft.)
Downstream point elevation =   279.000(Ft.)
Flow length =   505.000(Ft.)
Travel time  =    2.59 min.
Time of concentration =   12.12 min.
Depth of flow =   0.206(Ft.)
Average velocity =   3.248(Ft/s)
Total irregular channel flow =     6.891(CFS)
Irregular channel normal depth above invert elev. =   0.206(Ft.)
Average velocity of channel(s) =   3.248(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Rainfall intensity =      2.922(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.823
Subarea runoff =      7.534(CFS) for    3.310(Ac.)
Total runoff =     10.629(CFS)       Total area =        4.42(Ac.)
Area averaged Fm value =    0.250(In/Hr)
Depth of flow =   0.242(Ft.), Average velocity =   3.620(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      302.000 to Point/Station      303.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =     27.394(CFS)
Depth of flow =   0.366(Ft.), Average velocity =   4.094(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2             50.00              0.00
       3            100.00              1.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =     27.394(CFS)
  '     '       flow top width =     36.580(Ft.)
  '     '    velocity=    4.094(Ft/s)
  '     '       area =      6.691(Sq.Ft)
  '     '       Froude number =     1.687

Upstream point elevation =   279.000(Ft.)
Downstream point elevation =   216.000(Ft.)
Flow length =   957.000(Ft.)
Travel time  =    3.90 min.
Time of concentration =   16.02 min.
Depth of flow =   0.366(Ft.)
Average velocity =   4.094(Ft/s)
Total irregular channel flow =    27.394(CFS)
Irregular channel normal depth above invert elev. =   0.366(Ft.)
Average velocity of channel(s) =   4.094(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
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Max Catchment Loss (Fm) =     0.250(In/Hr)
Rainfall intensity =      2.496(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.810
Subarea runoff =     33.451(CFS) for   17.390(Ac.)
Total runoff =     44.081(CFS)       Total area =       21.81(Ac.)
Area averaged Fm value =    0.250(In/Hr)
Depth of flow =   0.437(Ft.), Average velocity =   4.612(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      303.000 to Point/Station      304.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =     57.199(CFS)
Depth of flow =   0.677(Ft.), Average velocity =   2.495(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2             50.00              0.00
       3            100.00              1.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =     57.199(CFS)
  '     '       flow top width =     67.716(Ft.)
  '     '    velocity=    2.495(Ft/s)
  '     '       area =     22.927(Sq.Ft)
  '     '       Froude number =     0.756

Upstream point elevation =   216.000(Ft.)
Downstream point elevation =   198.000(Ft.)
Flow length =  1674.000(Ft.)
Travel time  =   11.18 min.
Time of concentration =   27.20 min.
Depth of flow =   0.677(Ft.)
Average velocity =   2.495(Ft/s)
Total irregular channel flow =    57.199(CFS)
Irregular channel normal depth above invert elev. =   0.677(Ft.)
Average velocity of channel(s) =   2.495(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.050
Decimal fraction soil group C = 0.950
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 78.50
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.253(In/Hr)
Max Catchment Loss (Fm) =     0.253(In/Hr)
Rainfall intensity =      1.849(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.778
Subarea runoff =     26.160(CFS) for   27.030(Ac.)
Total runoff =     70.241(CFS)       Total area =       48.84(Ac.)
Area averaged Fm value =    0.251(In/Hr)
Depth of flow =   0.731(Ft.), Average velocity =   2.626(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      303.000 to Point/Station      304.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     48.840(Ac.)
Runoff from this stream =     70.241(CFS)
Time of concentration =   27.20 min.
Rainfall intensity =     1.849(In/Hr)
Area averaged loss rate (Fm) =    0.2514(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
```

```
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      305.000 to Point/Station      306.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   380.000(Ft.)
Bottom (of initial area) elevation =   310.000(Ft.)
Difference in elevation =    70.000(Ft.)
Slope =    0.23333  s(%)=      23.33
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.248 min.
Rainfall intensity =      3.406(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.834
Subarea runoff =      3.295(CFS)
Total initial stream area =        1.160(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      306.000 to Point/Station      307.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
------------------------------------------------------------------------
Estimated mean flow rate at midpoint of channel =     11.683(CFS)
Depth of flow =   0.238(Ft.), Average velocity =   4.129(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1             0.00              1.00
       2            50.00              0.00
       3           100.00              1.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =     11.683(CFS)
  '     '       flow top width =     23.790(Ft.)
  '     '    velocity=    4.129(Ft/s)
  '     '       area =      2.830(Sq.Ft)
  '     '       Froude number =     2.110

Upstream point elevation =   310.000(Ft.)
Downstream point elevation =   231.000(Ft.)
Flow length =   665.000(Ft.)
Travel time  =    2.68 min.
Time of concentration =   11.93 min.
Depth of flow =   0.238(Ft.)
Average velocity =   4.129(Ft/s)
Total irregular channel flow =    11.683(CFS)
Irregular channel normal depth above invert elev. =   0.238(Ft.)
Average velocity of channel(s) =   4.129(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Rainfall intensity =      2.948(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area,(total area with modified
```

```
rational method)(Q=KCIA) is C = 0.824
Subarea runoff =     16.716(CFS) for    7.080(Ac.)
Total runoff =     20.010(CFS)       Total area =        8.24(Ac.)
Area averaged Fm value =    0.250(In/Hr)
Depth of flow =   0.291(Ft.), Average velocity =   4.723(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      307.000 to Point/Station      304.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =     33.883(CFS)
Depth of flow =   0.461(Ft.), Average velocity =   3.189(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1             0.00              1.00
       2            50.00              0.00
       3           100.00              1.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =     33.883(CFS)
  '     '       flow top width =     46.099(Ft.)
  '     '    velocity=    3.189(Ft/s)
  '     '       area =     10.626(Sq.Ft)
  '     '       Froude number =     1.170

Upstream point elevation =   231.000(Ft.)
Downstream point elevation =   198.000(Ft.)
Flow length =  1125.000(Ft.)
Travel time  =    5.88 min.
Time of concentration =   17.81 min.
Depth of flow =   0.461(Ft.)
Average velocity =   3.189(Ft/s)
Total irregular channel flow =    33.883(CFS)
Irregular channel normal depth above invert elev. =   0.461(Ft.)
Average velocity of channel(s) =   3.189(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Rainfall intensity =     2.350(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.804
Subarea runoff =     27.677(CFS) for   16.990(Ac.)
Total runoff =     47.687(CFS)       Total area =       25.23(Ac.)
Area averaged Fm value =    0.250(In/Hr)
Depth of flow =   0.524(Ft.), Average velocity =   3.473(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      307.000 to Point/Station      304.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =     25.230(Ac.)
Runoff from this stream =     47.687(CFS)
Time of concentration =   17.81 min.
Rainfall intensity =     2.350(In/Hr)
Area averaged loss rate (Fm) =    0.2500(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Program is now starting with Main Stream No. 3
```

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++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      309.000 to Point/Station      310.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   540.000(Ft.)
Bottom (of initial area) elevation =   485.000(Ft.)
Difference in elevation =    55.000(Ft.)
Slope =    0.18333  s(%)=      18.33
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.705 min.
Rainfall intensity =      3.314(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.832
Subarea runoff =      3.750(CFS)
Total initial stream area =        1.360(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      310.000 to Point/Station      311.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
------------------------------------------------------------------------
Estimated mean flow rate at midpoint of channel =     13.521(CFS)
Depth of flow =   0.257(Ft.), Average velocity =   4.092(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1             0.00              1.00
       2            50.00              0.00
       3           100.00              1.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =     13.521(CFS)
  '     '       flow top width =     25.706(Ft.)
  '     '    velocity=    4.092(Ft/s)
  '     '       area =      3.304(Sq.Ft)
  '     '       Froude number =     2.012

Upstream point elevation =   485.000(Ft.)
Downstream point elevation =   415.000(Ft.)
Flow length =   665.000(Ft.)
Travel time  =    2.71 min.
Time of concentration =   12.41 min.
Depth of flow =   0.257(Ft.)
Average velocity =   4.092(Ft/s)
Total irregular channel flow =    13.521(CFS)
Irregular channel normal depth above invert elev. =   0.257(Ft.)
Average velocity of channel(s) =   4.092(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Rainfall intensity =      2.883(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.822
Subarea runoff =     19.473(CFS) for    8.440(Ac.)
Total runoff =     23.224(CFS)       Total area =        9.80(Ac.)
```

```
Area averaged Fm value =    0.250(In/Hr)
Depth of flow =   0.315(Ft.), Average velocity =   4.685(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      311.000 to Point/Station      312.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =     52.672(CFS)
Depth of flow =   0.409(Ft.), Average velocity =   6.298(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1             0.00              1.00
       2            50.00              0.00
       3           100.00              1.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =     52.672(CFS)
  '     '       flow top width =     40.899(Ft.)
  '     '    velocity=    6.298(Ft/s)
  '     '       area =      8.364(Sq.Ft)
  '     '       Froude number =     2.454

Upstream point elevation =   415.000(Ft.)
Downstream point elevation =   273.000(Ft.)
Flow length =  1058.000(Ft.)
Travel time  =    2.80 min.
Time of concentration =   15.21 min.
Depth of flow =   0.409(Ft.)
Average velocity =   6.298(Ft/s)
Total irregular channel flow =    52.672(CFS)
Irregular channel normal depth above invert elev. =   0.409(Ft.)
Average velocity of channel(s) =   6.298(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Rainfall intensity =      2.570(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.812
Subarea runoff =     58.799(CFS) for   29.490(Ac.)
Total runoff =     82.022(CFS)       Total area =       39.29(Ac.)
Area averaged Fm value =    0.250(In/Hr)
Depth of flow =   0.483(Ft.), Average velocity =   7.035(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      312.000 to Point/Station      313.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
________________________________________________________________________
Upstream point/station elevation =   267.000(Ft.)
Downstream point/station elevation =   266.000(Ft.)
Pipe length  =   111.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    82.022(CFS)
Given pipe size =     48.00(In.)
Calculated individual pipe flow  =    82.022(CFS)
Normal flow depth in pipe =   26.84(In.)
Flow top width inside pipe =   47.66(In.)
Critical Depth =   32.93(In.)
Pipe flow velocity =     11.35(Ft/s)
Travel time through pipe =    0.16 min.
Time of concentration (TC) =    15.38 min.
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      312.000 to Point/Station      313.000
**** CONFLUENCE OF MINOR STREAMS ****
----------------------------------------------------------------------------
Along Main Stream number: 3 in normal stream number 1
Stream flow area =     39.290(Ac.)
Runoff from this stream =     82.022(CFS)
Time of concentration =   15.38 min.
Rainfall intensity =     2.554(In/Hr)
Area averaged loss rate (Fm) =    0.2500(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      314.000 to Point/Station      315.000
**** INITIAL AREA EVALUATION ****
----------------------------------------------------------------------------
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   597.000(Ft.)
Top (of initial area) elevation =   407.000(Ft.)
Bottom (of initial area) elevation =   380.000(Ft.)
Difference in elevation =    27.000(Ft.)
Slope =    0.04523  s(%)=       4.52
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.317 min.
NOTE: Distance EXCEEDS recommended maximum value of   328.084(Ft.)
for this Development Type
Rainfall intensity =      3.392(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.867
Subarea runoff =     22.520(CFS)
Total initial stream area =        7.660(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      315.000 to Point/Station      313.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
----------------------------------------------------------------------------
Upstream point/station elevation =   374.000(Ft.)
Downstream point/station elevation =   266.000(Ft.)
Pipe length  =   750.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    22.520(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =    22.520(CFS)
Normal flow depth in pipe =    9.68(In.)
Flow top width inside pipe =   17.95(In.)
Critical depth could not be calculated.
Pipe flow velocity =     23.24(Ft/s)
Travel time through pipe =    0.54 min.
Time of concentration (TC) =     9.85 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      315.000 to Point/Station      313.000
**** CONFLUENCE OF MINOR STREAMS ****
----------------------------------------------------------------------------
Along Main Stream number: 3 in normal stream number 2
Stream flow area =      7.660(Ac.)
Runoff from this stream =     22.520(CFS)
Time of concentration =    9.85 min.
Rainfall intensity =     3.286(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000
Summary of stream data:
```

```
Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1     39.29    82.022     15.38    0.250      2.554
2      7.66    22.520      9.85    0.125      3.286
Qmax(1) =
          1.000 *    1.000 *    82.022) +
          0.769 *    1.000 *    22.520) + =      99.331
Qmax(2) =
          1.317 *    0.641 *    82.022) +
          1.000 *    1.000 *    22.520) + =      91.773

Total of 2 streams to confluence:
Flow rates before confluence point:
      82.022      22.520
Maximum flow rates at confluence using above data:
       99.331       91.773
Area of streams before confluence:
       39.290        7.660
Effective area values after confluence:
       46.950       32.840
Results of confluence:
Total flow rate =     99.331(CFS)
Time of concentration =    15.376 min.
Effective stream area after confluence =     46.950(Ac.)
Study area average Pervious fraction(Ap) =  0.918
Study area average soil loss rate(Fm) =    0.230(In/Hr)
Study area total (this main stream) =      46.95(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      313.000 to Point/Station      304.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
________________________________________________________________________
Upstream point/station elevation =   266.000(Ft.)
Downstream point/station elevation =   198.000(Ft.)
Pipe length  =  1125.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    99.331(CFS)
Given pipe size =     48.00(In.)
Calculated individual pipe flow  =    99.331(CFS)
Normal flow depth in pipe =   17.41(In.)
Flow top width inside pipe =   46.16(In.)
Critical Depth =   36.26(In.)
Pipe flow velocity =     24.14(Ft/s)
Travel time through pipe =    0.78 min.
Time of concentration (TC) =    16.15 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      313.000 to Point/Station      304.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 3
Stream flow area =     46.950(Ac.)
Runoff from this stream =     99.331(CFS)
Time of concentration =   16.15 min.
Rainfall intensity =     2.484(In/Hr)
Area averaged loss rate (Fm) =    0.2296(In/Hr)
Area averaged Pervious ratio (Ap) = 0.9184
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1     48.84    70.241     27.20    0.251      1.849
2     25.23    47.687     17.81    0.250      2.350
3     46.95    99.331     16.15    0.230      2.484
```

```
Qmax(1) =
          1.000 *    1.000 *    70.241) +
          0.762 *    1.000 *    47.687) +
          0.719 *    1.000 *    99.331) + =     177.930
Qmax(2) =
          1.313 *    0.655 *    70.241) +
          1.000 *    1.000 *    47.687) +
          0.941 *    1.000 *    99.331) + =     201.535
Qmax(3) =
          1.397 *    0.594 *    70.241) +
          1.064 *    0.907 *    47.687) +
          1.000 *    1.000 *    99.331) + =     203.603

Total of 3 main streams to confluence:
Flow rates before confluence point:
      71.241      48.687     100.331
Maximum flow rates at confluence using above data:
      177.930      201.535      203.603
Area of streams before confluence:
       48.840       25.230       46.950
Effective area values after confluence:
      121.020      104.163       98.833


Results of confluence:
Total flow rate =    203.603(CFS)
Time of concentration =    16.153 min.
Effective stream area after confluence  =     98.833(Ac.)
Study area average Pervious fraction(Ap) =  0.968
Study area average soil loss rate(Fm) =    0.243(In/Hr)
Study area total =     121.02(Ac.)
End of computations, total study area =          121.02 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.968
Area averaged SCS curve number (AMC 2) =  78.3
```

- 100 Year Pre-Development Rational Method – Area 'C'

```
                  Orange County Rational Hydrology Program

               (Hydrology Manual Date(s) October 1986 & November 1996)

 CIVILCADD/CIVILDESIGN  Engineering Software, (c) 1989-2012 Version 8.2
       Rational Hydrology Study, Date: 10/07/16  File Name: exc100.roc
--------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION RATIONAL METHOD - AREA 'C' - 100 YEAR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
--------------------------------------------------------------------------


Program License Serial Number 4094

--------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

--------------------------------------------------------------------------

Rational hydrology study storm event year is   100.0

Decimal fraction of study above 2000 ft., 600M  =     0.0000
English Units Used for input data


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Process from Point/Station      300.000 to Point/Station      301.000
**** INITIAL AREA EVALUATION ****
__________________________________________________________________________
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Initial subarea data:
Initial area flow distance =   298.000(Ft.)
Top (of initial area) elevation =   383.000(Ft.)
Bottom (of initial area) elevation =   324.000(Ft.)
Difference in elevation =    59.000(Ft.)
Slope =    0.19799  s(%)=      19.80
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.532 min.
Rainfall intensity =      4.275(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.847
Subarea runoff =      4.021(CFS)
Total initial stream area =        1.110(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      301.000 to Point/Station      302.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
__________________________________________________________________________
Estimated mean flow rate at midpoint of channel =      9.017(CFS)
Depth of flow =   0.228(Ft.), Average velocity =   3.474(Ft/s)
       ******* Irregular Channel Data **********
--------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2             50.00              0.00
       3            100.00              1.00
Manning's 'N' friction factor =   0.030
--------------------------------------------------------------------
Sub-Channel flow  =      9.017(CFS)
  '     '       flow top width =     22.783(Ft.)
```

```
  '     '    velocity=    3.474(Ft/s)
  '     '       area =      2.595(Sq.Ft)
  '     '       Froude number =     1.814

Upstream point elevation =   324.000(Ft.)
Downstream point elevation =   279.000(Ft.)
Flow length =   505.000(Ft.)
Travel time  =    2.42 min.
Time of concentration =   11.95 min.
Depth of flow =   0.228(Ft.)
Average velocity =   3.474(Ft/s)
Total irregular channel flow =     9.017(CFS)
Irregular channel normal depth above invert elev. =   0.228(Ft.)
Average velocity of channel(s) =   3.474(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Rainfall intensity =      3.755(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.840
Subarea runoff =      9.921(CFS) for    3.310(Ac.)
Total runoff =     13.942(CFS)       Total area =        4.42(Ac.)
Area averaged Fm value =    0.250(In/Hr)
Depth of flow =   0.268(Ft.), Average velocity =   3.874(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      302.000 to Point/Station      303.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =     36.219(CFS)
Depth of flow =   0.406(Ft.), Average velocity =   4.391(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2             50.00              0.00
       3            100.00              1.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =     36.219(CFS)
  '     '       flow top width =     40.619(Ft.)
  '     '    velocity=    4.391(Ft/s)
  '     '       area =      8.249(Sq.Ft)
  '     '       Froude number =     1.717

Upstream point elevation =   279.000(Ft.)
Downstream point elevation =   216.000(Ft.)
Flow length =   957.000(Ft.)
Travel time  =    3.63 min.
Time of concentration =   15.59 min.
Depth of flow =   0.406(Ft.)
Average velocity =   4.391(Ft/s)
Total irregular channel flow =    36.219(CFS)
Irregular channel normal depth above invert elev. =   0.406(Ft.)
Average velocity of channel(s) =   4.391(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
```

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Max Catchment Loss (Fm) =     0.250(In/Hr)
Rainfall intensity =      3.225(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.830
Subarea runoff =     44.458(CFS) for   17.390(Ac.)
Total runoff =     58.400(CFS)       Total area =       21.81(Ac.)
Area averaged Fm value =    0.250(In/Hr)
Depth of flow =   0.486(Ft.), Average velocity =   4.947(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      303.000 to Point/Station      304.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =     76.614(CFS)
Depth of flow =   0.756(Ft.), Average velocity =   2.684(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2             50.00              0.00
       3            100.00              1.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =     76.615(CFS)
  '     '       flow top width =     75.559(Ft.)
  '     '    velocity=    2.684(Ft/s)
  '     '       area =     28.546(Sq.Ft)
  '     '       Froude number =     0.770

Upstream point elevation =   216.000(Ft.)
Downstream point elevation =   198.000(Ft.)
Flow length =  1674.000(Ft.)
Travel time  =   10.40 min.
Time of concentration =   25.98 min.
Depth of flow =   0.756(Ft.)
Average velocity =   2.684(Ft/s)
Total irregular channel flow =    76.614(CFS)
Irregular channel normal depth above invert elev. =   0.756(Ft.)
Average velocity of channel(s) =   2.684(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.050
Decimal fraction soil group C = 0.950
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 78.50
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.253(In/Hr)
Max Catchment Loss (Fm) =     0.253(In/Hr)
Rainfall intensity =      2.407(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.806
Subarea runoff =     36.333(CFS) for   27.030(Ac.)
Total runoff =     94.734(CFS)       Total area =       48.84(Ac.)
Area averaged Fm value =    0.251(In/Hr)
Depth of flow =   0.818(Ft.), Average velocity =   2.830(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      303.000 to Point/Station      304.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     48.840(Ac.)
Runoff from this stream =     94.734(CFS)
Time of concentration =   25.98 min.
Rainfall intensity =     2.407(In/Hr)
Area averaged loss rate (Fm) =    0.2514(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
```

```
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      305.000 to Point/Station      306.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   380.000(Ft.)
Bottom (of initial area) elevation =   310.000(Ft.)
Difference in elevation =    70.000(Ft.)
Slope =    0.23333  s(%)=      23.33
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.248 min.
Rainfall intensity =      4.350(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.848
Subarea runoff =      4.280(CFS)
Total initial stream area =        1.160(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      306.000 to Point/Station      307.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
------------------------------------------------------------------------
Estimated mean flow rate at midpoint of channel =     15.306(CFS)
Depth of flow =   0.263(Ft.), Average velocity =   4.417(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1             0.00              1.00
       2            50.00              0.00
       3           100.00              1.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =     15.306(CFS)
  '     '       flow top width =     26.326(Ft.)
  '     '    velocity=    4.417(Ft/s)
  '     '       area =      3.465(Sq.Ft)
  '     '       Froude number =     2.146

Upstream point elevation =   310.000(Ft.)
Downstream point elevation =   231.000(Ft.)
Flow length =   665.000(Ft.)
Travel time  =    2.51 min.
Time of concentration =   11.76 min.
Depth of flow =   0.263(Ft.)
Average velocity =   4.417(Ft/s)
Total irregular channel flow =    15.306(CFS)
Irregular channel normal depth above invert elev. =   0.263(Ft.)
Average velocity of channel(s) =   4.417(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Rainfall intensity =      3.791(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
```

```
rational method)(Q=KCIA) is C = 0.841
Subarea runoff =     21.978(CFS) for    7.080(Ac.)
Total runoff =     26.258(CFS)       Total area =        8.24(Ac.)
Area averaged Fm value =    0.250(In/Hr)
Depth of flow =   0.322(Ft.), Average velocity =   5.055(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      307.000 to Point/Station      304.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =     44.897(CFS)
Depth of flow =   0.512(Ft.), Average velocity =   3.421(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1             0.00              1.00
       2            50.00              0.00
       3           100.00              1.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =     44.897(CFS)
  '     '       flow top width =     51.231(Ft.)
  '     '    velocity=    3.421(Ft/s)
  '     '       area =     13.123(Sq.Ft)
  '     '       Froude number =     1.191

Upstream point elevation =   231.000(Ft.)
Downstream point elevation =   198.000(Ft.)
Flow length =  1125.000(Ft.)
Travel time  =    5.48 min.
Time of concentration =   17.24 min.
Depth of flow =   0.512(Ft.)
Average velocity =   3.421(Ft/s)
Total irregular channel flow =    44.897(CFS)
Irregular channel normal depth above invert elev. =   0.512(Ft.)
Average velocity of channel(s) =   3.421(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Rainfall intensity =     3.044(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.826
Subarea runoff =     37.195(CFS) for   16.990(Ac.)
Total runoff =     63.453(CFS)       Total area =       25.23(Ac.)
Area averaged Fm value =    0.250(In/Hr)
Depth of flow =   0.583(Ft.), Average velocity =   3.730(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      307.000 to Point/Station      304.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =     25.230(Ac.)
Runoff from this stream =     63.453(CFS)
Time of concentration =   17.24 min.
Rainfall intensity =     3.044(In/Hr)
Area averaged loss rate (Fm) =    0.2500(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Program is now starting with Main Stream No. 3
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      309.000 to Point/Station      310.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   540.000(Ft.)
Bottom (of initial area) elevation =   485.000(Ft.)
Difference in elevation =    55.000(Ft.)
Slope =    0.18333  s(%)=      18.33
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.705 min.
Rainfall intensity =      4.231(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.847
Subarea runoff =      4.873(CFS)
Total initial stream area =        1.360(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      310.000 to Point/Station      311.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
------------------------------------------------------------------------------
Estimated mean flow rate at midpoint of channel =     17.714(CFS)
Depth of flow =   0.284(Ft.), Average velocity =   4.378(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1             0.00              1.00
       2            50.00              0.00
       3           100.00              1.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =     17.714(CFS)
  '     '       flow top width =     28.446(Ft.)
  '     '    velocity=    4.378(Ft/s)
  '     '       area =      4.046(Sq.Ft)
  '     '       Froude number =     2.046

Upstream point elevation =   485.000(Ft.)
Downstream point elevation =   415.000(Ft.)
Flow length =   665.000(Ft.)
Travel time  =    2.53 min.
Time of concentration =   12.24 min.
Depth of flow =   0.284(Ft.)
Average velocity =   4.378(Ft/s)
Total irregular channel flow =    17.714(CFS)
Irregular channel normal depth above invert elev. =   0.284(Ft.)
Average velocity of channel(s) =   4.378(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Rainfall intensity =      3.705(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.839
Subarea runoff =     25.600(CFS) for    8.440(Ac.)
Total runoff =     30.472(CFS)       Total area =        9.80(Ac.)
```

```
Area averaged Fm value =    0.250(In/Hr)
Depth of flow =   0.349(Ft.), Average velocity =   5.014(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      311.000 to Point/Station      312.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =     69.477(CFS)
Depth of flow =   0.454(Ft.), Average velocity =   6.749(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1             0.00              1.00
       2            50.00              0.00
       3           100.00              1.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =     69.477(CFS)
  '     '       flow top width =     45.374(Ft.)
  '     '    velocity=    6.749(Ft/s)
  '     '       area =     10.294(Sq.Ft)
  '     '       Froude number =     2.497

Upstream point elevation =   415.000(Ft.)
Downstream point elevation =   273.000(Ft.)
Flow length =  1058.000(Ft.)
Travel time  =    2.61 min.
Time of concentration =   14.85 min.
Depth of flow =   0.454(Ft.)
Average velocity =   6.749(Ft/s)
Total irregular channel flow =    69.477(CFS)
Irregular channel normal depth above invert elev. =   0.454(Ft.)
Average velocity of channel(s) =   6.749(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Rainfall intensity =      3.316(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.832
Subarea runoff =     77.947(CFS) for   29.490(Ac.)
Total runoff =    108.419(CFS)       Total area =       39.29(Ac.)
Area averaged Fm value =    0.250(In/Hr)
Depth of flow =   0.536(Ft.), Average velocity =   7.543(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      312.000 to Point/Station      313.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
________________________________________________________________________
Upstream point/station elevation =   267.000(Ft.)
Downstream point/station elevation =   266.000(Ft.)
Pipe length  =   111.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =   108.419(CFS)
Given pipe size =     48.00(In.)
Calculated individual pipe flow  =   108.419(CFS)
Normal flow depth in pipe =   32.33(In.)
Flow top width inside pipe =   45.01(In.)
Critical Depth =   37.76(In.)
Pipe flow velocity =     12.04(Ft/s)
Travel time through pipe =    0.15 min.
Time of concentration (TC) =    15.00 min.
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      312.000 to Point/Station      313.000
**** CONFLUENCE OF MINOR STREAMS ****
----------------------------------------------------------------------------
Along Main Stream number: 3 in normal stream number 1
Stream flow area =     39.290(Ac.)
Runoff from this stream =    108.419(CFS)
Time of concentration =   15.00 min.
Rainfall intensity =     3.297(In/Hr)
Area averaged loss rate (Fm) =    0.2500(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      314.000 to Point/Station      315.000
**** INITIAL AREA EVALUATION ****
----------------------------------------------------------------------------
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   597.000(Ft.)
Top (of initial area) elevation =   407.000(Ft.)
Bottom (of initial area) elevation =   380.000(Ft.)
Difference in elevation =    27.000(Ft.)
Slope =    0.04523  s(%)=       4.52
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.317 min.
NOTE: Distance EXCEEDS recommended maximum value of   328.084(Ft.)
for this Development Type
Rainfall intensity =      4.331(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.874
Subarea runoff =     28.999(CFS)
Total initial stream area =        7.660(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      315.000 to Point/Station      313.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
----------------------------------------------------------------------------
Upstream point/station elevation =   374.000(Ft.)
Downstream point/station elevation =   266.000(Ft.)
Pipe length  =   750.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    28.999(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =    28.999(CFS)
Normal flow depth in pipe =   11.39(In.)
Flow top width inside pipe =   17.35(In.)
Critical depth could not be calculated.
Pipe flow velocity =     24.60(Ft/s)
Travel time through pipe =    0.51 min.
Time of concentration (TC) =     9.82 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      315.000 to Point/Station      313.000
**** CONFLUENCE OF MINOR STREAMS ****
----------------------------------------------------------------------------
Along Main Stream number: 3 in normal stream number 2
Stream flow area =      7.660(Ac.)
Runoff from this stream =     28.999(CFS)
Time of concentration =    9.82 min.
Rainfall intensity =     4.202(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000
Summary of stream data:
```

```
Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1     39.29   108.419     15.00    0.250      3.297
2      7.66    28.999      9.82    0.125      4.202
Qmax(1) =
          1.000 *    1.000 *   108.419) +
          0.778 *    1.000 *    28.999) + =     130.980
Qmax(2) =
          1.297 *    0.655 *   108.419) +
          1.000 *    1.000 *    28.999) + =     121.088

Total of 2 streams to confluence:
Flow rates before confluence point:
     108.419      28.999
Maximum flow rates at confluence using above data:
      130.980      121.088
Area of streams before confluence:
       39.290        7.660
Effective area values after confluence:
       46.950       33.389
Results of confluence:
Total flow rate =    130.980(CFS)
Time of concentration =    15.003 min.
Effective stream area after confluence =     46.950(Ac.)
Study area average Pervious fraction(Ap) =  0.918
Study area average soil loss rate(Fm) =    0.230(In/Hr)
Study area total (this main stream) =      46.95(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      313.000 to Point/Station      304.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
________________________________________________________________________
Upstream point/station elevation =   266.000(Ft.)
Downstream point/station elevation =   198.000(Ft.)
Pipe length  =  1125.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =   130.980(CFS)
Given pipe size =     48.00(In.)
Calculated individual pipe flow  =   130.980(CFS)
Normal flow depth in pipe =   20.24(In.)
Flow top width inside pipe =   47.41(In.)
Critical Depth =   41.06(In.)
Pipe flow velocity =     26.01(Ft/s)
Travel time through pipe =    0.72 min.
Time of concentration (TC) =    15.72 min.


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Process from Point/Station      313.000 to Point/Station      304.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 3
Stream flow area =     46.950(Ac.)
Runoff from this stream =    130.980(CFS)
Time of concentration =   15.72 min.
Rainfall intensity =     3.209(In/Hr)
Area averaged loss rate (Fm) =    0.2296(In/Hr)
Area averaged Pervious ratio (Ap) = 0.9184
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1     48.84    94.734     25.98    0.251      2.407
2     25.23    63.453     17.24    0.250      3.044
3     46.95   130.980     15.72    0.230      3.209
```

```
Qmax(1) =
          1.000 *    1.000 *    94.734) +
          0.772 *    1.000 *    63.453) +
          0.731 *    1.000 *   130.980) + =     239.404
Qmax(2) =
          1.296 *    0.663 *    94.734) +
          1.000 *    1.000 *    63.453) +
          0.945 *    1.000 *   130.980) + =     268.645
Qmax(3) =
          1.372 *    0.605 *    94.734) +
          1.059 *    0.912 *    63.453) +
          1.000 *    1.000 *   130.980) + =     270.948

Total of 3 main streams to confluence:
Flow rates before confluence point:
      95.734      64.453     131.980
Maximum flow rates at confluence using above data:
      239.404      268.645      270.948
Area of streams before confluence:
       48.840       25.230       46.950
Effective area values after confluence:
      121.020      104.583       99.520


Results of confluence:
Total flow rate =    270.948(CFS)
Time of concentration =    15.724 min.
Effective stream area after confluence  =     99.520(Ac.)
Study area average Pervious fraction(Ap) =  0.968
Study area average soil loss rate(Fm) =    0.243(In/Hr)
Study area total =     121.02(Ac.)
End of computations, total study area =          121.02 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.968
Area averaged SCS curve number (AMC 2) =  78.3
```

- 2 Year Post-Development Rational Method – Area 'C'

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                    Orange County Rational Hydrology Program

                (Hydrology Manual Date(s) October 1986 & November 1996)

 CIVILCADD/CIVILDESIGN  Engineering Software, (c) 1989-2012 Version 8.2
       Rational Hydrology Study, Date: 10/13/16  File Name: PRC002.roc
--------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION RATIONAL METHOD - AREA 'C' - 2 YEAR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
--------------------------------------------------------------------------


Program License Serial Number 4094

--------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

--------------------------------------------------------------------------

Rational hydrology study storm event year is     2.0

Decimal fraction of study above 2000 ft., 600M  =     0.0000
English Units Used for input data


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Process from Point/Station      300.000 to Point/Station      301.000
**** INITIAL AREA EVALUATION ****
__________________________________________________________________________
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   383.000(Ft.)
Bottom (of initial area) elevation =   321.000(Ft.)
Difference in elevation =    62.000(Ft.)
Slope =    0.20667  s(%)=      20.67
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.475 min.
Rainfall intensity =      1.568(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.757
Subarea runoff =      1.246(CFS)
Total initial stream area =        1.050(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      301.000 to Point/Station      302.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
__________________________________________________________________________
Upstream point/station elevation =   321.000(Ft.)
Downstream point/station elevation =   297.000(Ft.)
Pipe length  =    63.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.246(CFS)
Given pipe size =      8.00(In.)
Calculated individual pipe flow  =     1.246(CFS)
Normal flow depth in pipe =    2.21(In.)
Flow top width inside pipe =    7.16(In.)
Critical Depth =    6.34(In.)
Pipe flow velocity =     15.85(Ft/s)
Travel time through pipe =    0.07 min.
Time of concentration (TC) =     9.54 min.
```

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++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      302.000 to Point/Station      303.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
______________________________________________________________________________
Top of street segment elevation =   297.000(Ft.)
End of street segment elevation =   286.000(Ft.)
Length of street segment  =   341.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      2.363(CFS)
Depth of flow =   0.274(Ft.), Average velocity =   3.512(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =   7.390(Ft.)
Flow velocity =   3.51(Ft/s)
Travel time =    1.62 min.     TC =   11.16  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      1.428(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.794
Subarea runoff =      2.154(CFS) for    1.950(Ac.)
Total runoff =      3.399(CFS)       Total area =        3.00(Ac.)
Area averaged Fm value =    0.169(In/Hr)
Street flow at end of street =      3.399(CFS)
Half street flow at end of street =      3.399(CFS)
Depth of flow =   0.302(Ft.), Average velocity =   3.798(Ft/s)
Flow width (from curb towards crown)=   8.766(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      303.000 to Point/Station      304.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   280.000(Ft.)
Downstream point/station elevation =   279.000(Ft.)
Pipe length  =    23.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     3.399(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =     3.399(CFS)
Normal flow depth in pipe =    4.79(In.)
Flow top width inside pipe =   15.91(In.)
Critical Depth =    8.42(In.)
Pipe flow velocity =      9.00(Ft/s)
Travel time through pipe =    0.04 min.
Time of concentration (TC) =    11.20 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      303.000 to Point/Station      304.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
```

```
Stream flow area =      3.000(Ac.)
Runoff from this stream =      3.399(CFS)
Time of concentration =   11.20 min.
Rainfall intensity =     1.425(In/Hr)
Area averaged loss rate (Fm) =    0.1687(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6750


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Process from Point/Station      305.000 to Point/Station      306.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   233.000(Ft.)
Top (of initial area) elevation =   334.000(Ft.)
Bottom (of initial area) elevation =   297.000(Ft.)
Difference in elevation =    37.000(Ft.)
Slope =    0.15880  s(%)=      15.88
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    4.974 min.
Rainfall intensity =      2.270(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.850
Subarea runoff =      1.023(CFS)
Total initial stream area =        0.530(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      306.000 to Point/Station      307.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------------
Top of street segment elevation =   297.000(Ft.)
End of street segment elevation =   286.000(Ft.)
Length of street segment  =   303.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      1.586(CFS)
Depth of flow =   0.243(Ft.), Average velocity =   3.407(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =   5.822(Ft.)
Flow velocity =   3.41(Ft/s)
Travel time =    1.48 min.     TC =    6.46  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      1.955(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
```

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rational method)(Q=KCIA) is C = 0.842
Subarea runoff =      1.035(CFS) for    0.720(Ac.)
Total runoff =      2.058(CFS)       Total area =        1.25(Ac.)
Area averaged Fm value =    0.125(In/Hr)
Street flow at end of street =      2.058(CFS)
Half street flow at end of street =      2.058(CFS)
Depth of flow =   0.261(Ft.), Average velocity =   3.579(Ft/s)
Flow width (from curb towards crown)=   6.697(Ft.)


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Process from Point/Station      307.000 to Point/Station      304.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   280.000(Ft.)
Downstream point/station elevation =   279.000(Ft.)
Pipe length  =    37.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     2.058(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =     2.058(CFS)
Normal flow depth in pipe =    4.20(In.)
Flow top width inside pipe =   15.22(In.)
Critical Depth =    6.48(In.)
Pipe flow velocity =      6.58(Ft/s)
Travel time through pipe =    0.09 min.
Time of concentration (TC) =     6.55 min.


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Process from Point/Station      307.000 to Point/Station      304.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      1.250(Ac.)
Runoff from this stream =      2.058(CFS)
Time of concentration =    6.55 min.
Rainfall intensity =     1.939(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1      3.00     3.399     11.20    0.169      1.425
2      1.25     2.058      6.55    0.125      1.939
Qmax(1) =
          1.000 *    1.000 *     3.399) +
          0.717 *    1.000 *     2.058) + =       4.875
Qmax(2) =
          1.409 *    0.585 *     3.399) +
          1.000 *    1.000 *     2.058) + =       4.860

Total of 2 streams to confluence:
Flow rates before confluence point:
       3.399       2.058
Maximum flow rates at confluence using above data:
        4.875        4.860
Area of streams before confluence:
        3.000        1.250
Effective area values after confluence:
        4.250        3.004
Results of confluence:
Total flow rate =      4.875(CFS)
Time of concentration =    11.203 min.
Effective stream area after confluence =      4.250(Ac.)
Study area average Pervious fraction(Ap) =  0.624
Study area average soil loss rate(Fm) =    0.156(In/Hr)
Study area total (this main stream) =       4.25(Ac.)
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Process from Point/Station      304.000 to Point/Station      308.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
------------------------------------------------------------------------
Upstream point/station elevation =   279.000(Ft.)
Downstream point/station elevation =   259.000(Ft.)
Pipe length  =   247.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     4.875(CFS)
Given pipe size =     24.00(In.)
Calculated individual pipe flow  =     4.875(CFS)
Normal flow depth in pipe =    4.47(In.)
Flow top width inside pipe =   18.68(In.)
Critical Depth =    9.32(In.)
Pipe flow velocity =     12.08(Ft/s)
Travel time through pipe =    0.34 min.
Time of concentration (TC) =    11.54 min.


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Process from Point/Station      304.000 to Point/Station      308.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      4.250(Ac.)
Runoff from this stream =      4.875(CFS)
Time of concentration =   11.54 min.
Rainfall intensity =     1.400(In/Hr)
Area averaged loss rate (Fm) =    0.1559(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6235


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Process from Point/Station      300.000 to Point/Station      309.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   383.000(Ft.)
Bottom (of initial area) elevation =   324.000(Ft.)
Difference in elevation =    59.000(Ft.)
Slope =    0.19667  s(%)=      19.67
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.570 min.
Rainfall intensity =      1.560(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.756
Subarea runoff =      1.308(CFS)
Total initial stream area =        1.110(Ac.)


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Process from Point/Station      309.000 to Point/Station      310.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
------------------------------------------------------------------------
Upstream point/station elevation =   324.000(Ft.)
Downstream point/station elevation =   299.000(Ft.)
Pipe length  =   140.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.308(CFS)
Given pipe size =      8.00(In.)
Calculated individual pipe flow  =     1.308(CFS)
Normal flow depth in pipe =    2.76(In.)
Flow top width inside pipe =    7.61(In.)
Critical Depth =    6.48(In.)
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Pipe flow velocity =     12.24(Ft/s)
Travel time through pipe =    0.19 min.
Time of concentration (TC) =     9.76 min.


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Process from Point/Station      310.000 to Point/Station      311.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------
Top of street segment elevation =   299.000(Ft.)
End of street segment elevation =   266.000(Ft.)
Length of street segment  =   717.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [2] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      3.832(CFS)
Depth of flow =   0.248(Ft.), Average velocity =   3.885(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =   6.054(Ft.)
Flow velocity =   3.89(Ft/s)
Travel time =    3.08 min.     TC =   12.84  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      1.318(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.798
Subarea runoff =      4.857(CFS) for    4.750(Ac.)
Total runoff =      6.165(CFS)       Total area =        5.86(Ac.)
Area averaged Fm value =    0.149(In/Hr)
Street flow at end of street =      6.165(CFS)
Half street flow at end of street =      3.082(CFS)
Depth of flow =   0.281(Ft.), Average velocity =   4.273(Ft/s)
Flow width (from curb towards crown)=   7.711(Ft.)


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Process from Point/Station      311.000 to Point/Station      308.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
------------------------------------------------------------------------
Upstream point/station elevation =   260.000(Ft.)
Downstream point/station elevation =   259.000(Ft.)
Pipe length  =    26.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     6.165(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =     6.165(CFS)
Normal flow depth in pipe =    6.75(In.)
Flow top width inside pipe =   17.43(In.)
Critical Depth =   11.52(In.)
Pipe flow velocity =     10.18(Ft/s)
Travel time through pipe =    0.04 min.
Time of concentration (TC) =    12.88 min.


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Process from Point/Station      311.000 to Point/Station      308.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      5.860(Ac.)
Runoff from this stream =      6.165(CFS)
Time of concentration =   12.88 min.
Rainfall intensity =     1.315(In/Hr)
Area averaged loss rate (Fm) =    0.1487(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5947


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Process from Point/Station      312.000 to Point/Station      313.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   350.000(Ft.)
Bottom (of initial area) elevation =   280.000(Ft.)
Difference in elevation =    70.000(Ft.)
Slope =    0.23333  s(%)=      23.33
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.096 min.
Rainfall intensity =      2.239(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.850
Subarea runoff =      4.814(CFS)
Total initial stream area =        2.530(Ac.)


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Process from Point/Station      313.000 to Point/Station      314.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------
Top of street segment elevation =   280.000(Ft.)
End of street segment elevation =   266.000(Ft.)
Length of street segment  =   609.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [2] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      6.598(CFS)
Depth of flow =   0.313(Ft.), Average velocity =   3.307(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =   9.332(Ft.)
Flow velocity =   3.31(Ft/s)
Travel time =    3.07 min.     TC =    8.16  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
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Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      1.708(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.834
Subarea runoff =      3.380(CFS) for    3.220(Ac.)
Total runoff =      8.194(CFS)       Total area =        5.75(Ac.)
Area averaged Fm value =    0.125(In/Hr)
Street flow at end of street =      8.194(CFS)
Half street flow at end of street =      4.097(CFS)
Depth of flow =   0.332(Ft.), Average velocity =   3.474(Ft/s)
Flow width (from curb towards crown)=  10.259(Ft.)


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Process from Point/Station      314.000 to Point/Station      308.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
________________________________________________________________________
Upstream point/station elevation =   260.000(Ft.)
Downstream point/station elevation =   259.000(Ft.)
Pipe length  =    36.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     8.194(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =     8.194(CFS)
Normal flow depth in pipe =    8.66(In.)
Flow top width inside pipe =   17.99(In.)
Critical Depth =   13.30(In.)
Pipe flow velocity =      9.74(Ft/s)
Travel time through pipe =    0.06 min.
Time of concentration (TC) =     8.23 min.


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Process from Point/Station      314.000 to Point/Station      308.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 3
Stream flow area =      5.750(Ac.)
Runoff from this stream =      8.194(CFS)
Time of concentration =    8.23 min.
Rainfall intensity =     1.701(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1      4.25     4.875     11.54    0.156      1.400
2      5.86     6.165     12.88    0.149      1.315
3      5.75     8.194      8.23    0.125      1.701
Qmax(1) =
          1.000 *    1.000 *     4.875) +
          1.073 *    0.896 *     6.165) +
          0.809 *    1.000 *     8.194) + =      17.435
Qmax(2) =
          0.931 *    1.000 *     4.875) +
          1.000 *    1.000 *     6.165) +
          0.755 *    1.000 *     8.194) + =      16.893
Qmax(3) =
          1.242 *    0.713 *     4.875) +
          1.331 *    0.639 *     6.165) +
          1.000 *    1.000 *     8.194) + =      17.747

Total of 3 streams to confluence:
Flow rates before confluence point:
       4.875       6.165       8.194
Maximum flow rates at confluence using above data:
       17.435       16.893       17.747
Area of streams before confluence:
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        4.250        5.860        5.750
Effective area values after confluence:
       15.252       15.860       12.522
Results of confluence:
Total flow rate =     17.747(CFS)
Time of concentration =     8.226 min.
Effective stream area after confluence =     12.522(Ac.)
Study area average Pervious fraction(Ap) =  0.568
Study area average soil loss rate(Fm) =    0.142(In/Hr)
Study area total (this main stream) =      15.86(Ac.)


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Process from Point/Station      308.000 to Point/Station      315.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   259.000(Ft.)
Downstream point/station elevation =   241.500(Ft.)
Pipe length  =  1077.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    17.747(CFS)
Given pipe size =     36.00(In.)
Calculated individual pipe flow  =    17.747(CFS)
Normal flow depth in pipe =   11.16(In.)
Flow top width inside pipe =   33.30(In.)
Critical Depth =   16.21(In.)
Pipe flow velocity =      9.51(Ft/s)
Travel time through pipe =    1.89 min.
Time of concentration (TC) =    10.11 min.


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Process from Point/Station      308.000 to Point/Station      315.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =     12.522(Ac.)
Runoff from this stream =     17.747(CFS)
Time of concentration =   10.11 min.
Rainfall intensity =     1.511(In/Hr)
Area averaged loss rate (Fm) =    0.1420(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5681


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Process from Point/Station      316.000 to Point/Station      317.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   280.000(Ft.)
Bottom (of initial area) elevation =   270.000(Ft.)
Difference in elevation =    10.000(Ft.)
Slope =    0.03333  s(%)=       3.33
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    7.520 min.
Rainfall intensity =      1.791(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.837
Subarea runoff =      1.469(CFS)
Total initial stream area =        0.980(Ac.)


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Process from Point/Station      317.000 to Point/Station      318.000
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**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------
Top of street segment elevation =   270.000(Ft.)
End of street segment elevation =   255.000(Ft.)
Length of street segment  =   599.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      2.549(CFS)
Depth of flow =   0.289(Ft.), Average velocity =   3.230(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =   8.139(Ft.)
Flow velocity =   3.23(Ft/s)
Travel time =    3.09 min.     TC =   10.61  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      1.470(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.823
Subarea runoff =      2.101(CFS) for    1.970(Ac.)
Total runoff =      3.570(CFS)       Total area =        2.95(Ac.)
Area averaged Fm value =    0.125(In/Hr)
Street flow at end of street =      3.570(CFS)
Half street flow at end of street =      3.570(CFS)
Depth of flow =   0.316(Ft.), Average velocity =   3.480(Ft/s)
Flow width (from curb towards crown)=   9.483(Ft.)


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Process from Point/Station      318.000 to Point/Station      319.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------
Top of street segment elevation =   255.000(Ft.)
End of street segment elevation =   248.000(Ft.)
Length of street segment  =   653.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      6.169(CFS)
Depth of flow =   0.412(Ft.), Average velocity =   2.858(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  14.254(Ft.)
Flow velocity =   2.86(Ft/s)
Travel time =    3.81 min.     TC =   14.42  min.
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 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      1.233(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.809
Subarea runoff =      5.132(CFS) for    5.780(Ac.)
Total runoff =      8.702(CFS)       Total area =        8.73(Ac.)
Area averaged Fm value =    0.125(In/Hr)
Street flow at end of street =      8.702(CFS)
Half street flow at end of street =      8.702(CFS)
Depth of flow =   0.454(Ft.), Average velocity =   3.105(Ft/s)
Flow width (from curb towards crown)=  16.357(Ft.)


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Process from Point/Station      319.000 to Point/Station      315.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
________________________________________________________________________
Upstream point/station elevation =   242.000(Ft.)
Downstream point/station elevation =   241.500(Ft.)
Pipe length  =    18.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     8.702(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =     8.702(CFS)
Normal flow depth in pipe =    8.97(In.)
Flow top width inside pipe =   18.00(In.)
Critical Depth =   13.71(In.)
Pipe flow velocity =      9.89(Ft/s)
Travel time through pipe =    0.03 min.
Time of concentration (TC) =    14.45 min.


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Process from Point/Station      319.000 to Point/Station      315.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      8.730(Ac.)
Runoff from this stream =      8.702(CFS)
Time of concentration =   14.45 min.
Rainfall intensity =     1.231(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1     12.52    17.747     10.11    0.142      1.511
2      8.73     8.702     14.45    0.125      1.231
Qmax(1) =
          1.000 *    1.000 *    17.747) +
          1.253 *    0.700 *     8.702) + =      25.379
Qmax(2) =
          0.796 *    1.000 *    17.747) +
          1.000 *    1.000 *     8.702) + =      22.823

Total of 2 streams to confluence:
Flow rates before confluence point:
      17.747       8.702
Maximum flow rates at confluence using above data:
       25.379       22.823
Area of streams before confluence:
```

```
       12.522        8.730
Effective area values after confluence:
       18.633       21.252
Results of confluence:
Total flow rate =     25.379(CFS)
Time of concentration =    10.114 min.
Effective stream area after confluence =     18.633(Ac.)
Study area average Pervious fraction(Ap) =  0.540
Study area average soil loss rate(Fm) =    0.135(In/Hr)
Study area total (this main stream) =      21.25(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      315.000 to Point/Station      320.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
------------------------------------------------------------------------
Upstream point/station elevation =   241.500(Ft.)
Downstream point/station elevation =   241.000(Ft.)
Pipe length  =    34.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    25.379(CFS)
Given pipe size =     36.00(In.)
Calculated individual pipe flow  =    25.379(CFS)
Normal flow depth in pipe =   13.85(In.)
Flow top width inside pipe =   35.03(In.)
Critical Depth =   19.49(In.)
Pipe flow velocity =     10.13(Ft/s)
Travel time through pipe =    0.06 min.
Time of concentration (TC) =    10.17 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      315.000 to Point/Station      320.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     18.633(Ac.)
Runoff from this stream =     25.379(CFS)
Time of concentration =   10.17 min.
Rainfall intensity =     1.506(In/Hr)
Area averaged loss rate (Fm) =    0.1350(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5401
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      321.000 to Point/Station      322.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   396.000(Ft.)
Bottom (of initial area) elevation =   355.000(Ft.)
Difference in elevation =    41.000(Ft.)
Slope =    0.13667  s(%)=      13.67
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   10.292 min.
Rainfall intensity =      1.496(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.750
Subarea runoff =      0.561(CFS)
Total initial stream area =        0.500(Ac.)
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      322.000 to Point/Station      323.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =   355.000(Ft.)
Downstream point/station elevation =   288.000(Ft.)
Pipe length  =   207.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     0.561(CFS)
Given pipe size =     12.00(In.)
Calculated individual pipe flow  =     0.561(CFS)
Normal flow depth in pipe =    1.37(In.)
Flow top width inside pipe =    7.64(In.)
Critical Depth =    3.73(In.)
Pipe flow velocity =     11.27(Ft/s)
Travel time through pipe =    0.31 min.
Time of concentration (TC) =    10.60 min.


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Process from Point/Station      323.000 to Point/Station      324.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------------
Top of street segment elevation =   288.000(Ft.)
End of street segment elevation =   267.000(Ft.)
Length of street segment  =   240.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      0.908(CFS)
Depth of flow =   0.172(Ft.), Average velocity =   5.116(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =   2.255(Ft.)
Flow velocity =   5.12(Ft/s)
Travel time =    0.78 min.     TC =   11.38  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      1.412(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.785
Subarea runoff =      0.680(CFS) for    0.620(Ac.)
Total runoff =      1.241(CFS)       Total area =        1.12(Ac.)
Area averaged Fm value =    0.181(In/Hr)
Street flow at end of street =      1.241(CFS)
Half street flow at end of street =      1.241(CFS)
Depth of flow =   0.199(Ft.), Average velocity =   4.850(Ft/s)
Flow width (from curb towards crown)=   3.594(Ft.)


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Process from Point/Station      324.000 to Point/Station      325.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =   261.000(Ft.)
Downstream point/station elevation =   260.000(Ft.)
```

```
Pipe length  =    20.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.241(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =     1.241(CFS)
Normal flow depth in pipe =    2.81(In.)
Flow top width inside pipe =   13.07(In.)
Critical Depth =    4.99(In.)
Pipe flow velocity =      7.04(Ft/s)
Travel time through pipe =    0.05 min.
Time of concentration (TC) =    11.43 min.


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Process from Point/Station      324.000 to Point/Station      325.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------------
Along Main Stream number: 2 in normal stream number 1
Stream flow area =      1.120(Ac.)
Runoff from this stream =      1.241(CFS)
Time of concentration =   11.43 min.
Rainfall intensity =     1.408(In/Hr)
Area averaged loss rate (Fm) =    0.1808(In/Hr)
Area averaged Pervious ratio (Ap) = 0.7232


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Process from Point/Station      326.000 to Point/Station      327.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   250.000(Ft.)
Top (of initial area) elevation =   297.000(Ft.)
Bottom (of initial area) elevation =   288.000(Ft.)
Difference in elevation =     9.000(Ft.)
Slope =    0.03600  s(%)=       3.60
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.884 min.
Rainfall intensity =      1.884(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.840
Subarea runoff =      0.902(CFS)
Total initial stream area =        0.570(Ac.)


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Process from Point/Station      327.000 to Point/Station      328.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------------
Top of street segment elevation =   288.000(Ft.)
End of street segment elevation =   267.000(Ft.)
Length of street segment  =   293.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
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Estimated mean flow rate at midpoint of street =      1.734(CFS)
Depth of flow =   0.227(Ft.), Average velocity =   4.591(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =   5.010(Ft.)
Flow velocity =   4.59(Ft/s)
Travel time =    1.06 min.     TC =    7.95  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      1.735(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.835
Subarea runoff =      1.604(CFS) for    1.160(Ac.)
Total runoff =      2.507(CFS)        Total area =        1.73(Ac.)
Area averaged Fm value =    0.125(In/Hr)
Street flow at end of street =      2.507(CFS)
Half street flow at end of street =      2.507(CFS)
Depth of flow =   0.251(Ft.), Average velocity =   4.891(Ft/s)
Flow width (from curb towards crown)=   6.211(Ft.)


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Process from Point/Station      328.000 to Point/Station      325.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   261.000(Ft.)
Downstream point/station elevation =   260.000(Ft.)
Pipe length  =    32.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     2.507(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =     2.507(CFS)
Normal flow depth in pipe =    4.47(In.)
Flow top width inside pipe =   15.55(In.)
Critical Depth =    7.19(In.)
Pipe flow velocity =      7.33(Ft/s)
Travel time through pipe =    0.07 min.
Time of concentration (TC) =     8.02 min.


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Process from Point/Station      328.000 to Point/Station      325.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 2 in normal stream number 2
Stream flow area =      1.730(Ac.)
Runoff from this stream =      2.507(CFS)
Time of concentration =    8.02 min.
Rainfall intensity =     1.726(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1      1.12     1.241     11.43    0.181      1.408
2      1.73     2.507      8.02    0.125      1.726
Qmax(1) =
          1.000 *    1.000 *     1.241) +
          0.802 *    1.000 *     2.507) + =       3.251
Qmax(2) =
          1.259 *    0.702 *     1.241) +
          1.000 *    1.000 *     2.507) + =       3.603
```

```
Total of 2 streams to confluence:
Flow rates before confluence point:
       1.241       2.507
Maximum flow rates at confluence using above data:
        3.251        3.603
Area of streams before confluence:
        1.120        1.730
Effective area values after confluence:
        2.850        2.516
Results of confluence:
Total flow rate =      3.603(CFS)
Time of concentration =     8.021 min.
Effective stream area after confluence =      2.516(Ac.)
Study area average Pervious fraction(Ap) =  0.588
Study area average soil loss rate(Fm) =    0.147(In/Hr)
Study area total (this main stream) =       2.85(Ac.)


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Process from Point/Station      325.000 to Point/Station      320.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
________________________________________________________________________
Upstream point/station elevation =   260.000(Ft.)
Downstream point/station elevation =   241.000(Ft.)
Pipe length  =   220.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     3.603(CFS)
Given pipe size =     24.00(In.)
Calculated individual pipe flow  =     3.603(CFS)
Normal flow depth in pipe =    3.79(In.)
Flow top width inside pipe =   17.51(In.)
Critical Depth =    7.97(In.)
Pipe flow velocity =     11.30(Ft/s)
Travel time through pipe =    0.32 min.
Time of concentration (TC) =     8.35 min.


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Process from Point/Station      325.000 to Point/Station      320.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      2.516(Ac.)
Runoff from this stream =      3.603(CFS)
Time of concentration =    8.35 min.
Rainfall intensity =     1.687(In/Hr)
Area averaged loss rate (Fm) =    0.1469(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5877
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1     18.63    25.379     10.17    0.135      1.506
2      2.52     3.603      8.35    0.147      1.687
Qmax(1) =
          1.000 *    1.000 *    25.379) +
          0.882 *    1.000 *     3.603) + =      28.558
Qmax(2) =
          1.132 *    0.821 *    25.379) +
          1.000 *    1.000 *     3.603) + =      27.178

Total of 2 main streams to confluence:
Flow rates before confluence point:
      26.379       4.603
Maximum flow rates at confluence using above data:
       28.558       27.178
Area of streams before confluence:
       18.633        2.516
Effective area values after confluence:
```

```
       21.149       17.805


Results of confluence:
Total flow rate =     28.558(CFS)
Time of concentration =    10.170 min.
Effective stream area after confluence  =     21.149(Ac.)
Study area average Pervious fraction(Ap) =  0.546
Study area average soil loss rate(Fm) =    0.136(In/Hr)
Study area total =      21.15(Ac.)


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Process from Point/Station      320.000 to Point/Station      329.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
____________________________________________________________________________
Upstream point/station elevation =   241.000(Ft.)
Downstream point/station elevation =   240.000(Ft.)
Pipe length  =    64.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    28.558(CFS)
Given pipe size =     48.00(In.)
Calculated individual pipe flow  =    28.558(CFS)
Normal flow depth in pipe =   12.94(In.)
Flow top width inside pipe =   42.60(In.)
Critical Depth =   18.98(In.)
Pipe flow velocity =     10.45(Ft/s)
Travel time through pipe =    0.10 min.
Time of concentration (TC) =    10.27 min.


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Process from Point/Station      320.000 to Point/Station      329.000
**** CONFLUENCE OF MINOR STREAMS ****
____________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =     21.149(Ac.)
Runoff from this stream =     28.558(CFS)
Time of concentration =   10.27 min.
Rainfall intensity =     1.497(In/Hr)
Area averaged loss rate (Fm) =    0.1364(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5458


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Process from Point/Station      328.000 to Point/Station      330.000
**** INITIAL AREA EVALUATION ****
____________________________________________________________________________
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   210.000(Ft.)
Top (of initial area) elevation =   267.000(Ft.)
Bottom (of initial area) elevation =   247.000(Ft.)
Difference in elevation =    20.000(Ft.)
Slope =    0.09524  s(%)=       9.52
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.285 min.
Rainfall intensity =      2.193(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.849
Subarea runoff =      0.763(CFS)
Total initial stream area =        0.410(Ac.)


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Process from Point/Station      330.000 to Point/Station      329.000
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**** PIPEFLOW TRAVEL TIME (User specified size) ****
------------------------------------------------------------------------
Upstream point/station elevation =   241.000(Ft.)
Downstream point/station elevation =   240.000(Ft.)
Pipe length  =    29.00(Ft.)   Manning's N = 0.015
No. of pipes = 1  Required pipe flow  =     0.763(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =     0.763(CFS)
Normal flow depth in pipe =    2.60(In.)
Flow top width inside pipe =   12.67(In.)
Critical Depth =    3.90(In.)
Pipe flow velocity =      4.84(Ft/s)
Travel time through pipe =    0.10 min.
Time of concentration (TC) =     5.39 min.


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Process from Point/Station      330.000 to Point/Station      329.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.410(Ac.)
Runoff from this stream =      0.763(CFS)
Time of concentration =    5.39 min.
Rainfall intensity =     2.169(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      331.000 to Point/Station      332.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   280.000(Ft.)
Bottom (of initial area) elevation =   270.000(Ft.)
Difference in elevation =    10.000(Ft.)
Slope =    0.03333  s(%)=       3.33
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    7.520 min.
Rainfall intensity =      1.791(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.837
Subarea runoff =      2.699(CFS)
Total initial stream area =        1.800(Ac.)


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Process from Point/Station      332.000 to Point/Station      333.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------
Top of street segment elevation =   270.000(Ft.)
End of street segment elevation =   255.000(Ft.)
Length of street segment  =   601.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
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Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      3.670(CFS)
Depth of flow =   0.291(Ft.), Average velocity =   4.577(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =   8.217(Ft.)
Flow velocity =   4.58(Ft/s)
Travel time =    1.10 min.     TC =    8.62  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      1.656(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.832
Subarea runoff =      1.891(CFS) for    1.530(Ac.)
Total runoff =      4.590(CFS)       Total area =        3.33(Ac.)
Area averaged Fm value =    0.125(In/Hr)
Street flow at end of street =      4.590(CFS)
Half street flow at end of street =      4.590(CFS)
Depth of flow =   0.309(Ft.), Average velocity =   4.808(Ft/s)
Flow width (from curb towards crown)=   9.099(Ft.)


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Process from Point/Station      333.000 to Point/Station      334.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
____________________________________________________________________________
Top of street segment elevation =   255.000(Ft.)
End of street segment elevation =   247.000(Ft.)
Length of street segment  =   708.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      5.089(CFS)
Depth of flow =   0.387(Ft.), Average velocity =   2.785(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  13.041(Ft.)
Flow velocity =   2.78(Ft/s)
Travel time =    4.24 min.     TC =   12.85  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      1.317(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.815
Subarea runoff =      0.944(CFS) for    1.830(Ac.)
Total runoff =      5.534(CFS)       Total area =        5.16(Ac.)
```

```
Area averaged Fm value =    0.125(In/Hr)
Street flow at end of street =      5.534(CFS)
Half street flow at end of street =      5.534(CFS)
Depth of flow =   0.397(Ft.), Average velocity =   2.841(Ft/s)
Flow width (from curb towards crown)=  13.495(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      334.000 to Point/Station      329.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
________________________________________________________________________
Upstream point/station elevation =   241.000(Ft.)
Downstream point/station elevation =   240.000(Ft.)
Pipe length  =    41.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     5.534(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =     5.534(CFS)
Normal flow depth in pipe =    7.20(In.)
Flow top width inside pipe =   17.64(In.)
Critical Depth =   10.88(In.)
Pipe flow velocity =      8.38(Ft/s)
Travel time through pipe =    0.08 min.
Time of concentration (TC) =    12.94 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      334.000 to Point/Station      329.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 3
Stream flow area =      5.160(Ac.)
Runoff from this stream =      5.534(CFS)
Time of concentration =   12.94 min.
Rainfall intensity =     1.312(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1     21.15    28.558     10.27    0.136      1.497
2      0.41     0.763      5.39    0.125      2.169
3      5.16     5.534     12.94    0.125      1.312
Qmax(1) =
          1.000 *    1.000 *    28.558) +
          0.671 *    1.000 *     0.763) +
          1.156 *    0.794 *     5.534) + =      34.152
Qmax(2) =
          1.494 *    0.524 *    28.558) +
          1.000 *    1.000 *     0.763) +
          1.722 *    0.416 *     5.534) + =      27.095
Qmax(3) =
          0.864 *    1.000 *    28.558) +
          0.581 *    1.000 *     0.763) +
          1.000 *    1.000 *     5.534) + =      30.641

Total of 3 streams to confluence:
Flow rates before confluence point:
      28.558       0.763       5.534
Maximum flow rates at confluence using above data:
       34.152       27.095       30.641
Area of streams before confluence:
       21.149        0.410        5.160
Effective area values after confluence:
       25.657       13.645       26.719
Results of confluence:
Total flow rate =     34.152(CFS)
Time of concentration =    10.273 min.
Effective stream area after confluence =     25.657(Ac.)
```

```
Study area average Pervious fraction(Ap) =  0.536
Study area average soil loss rate(Fm) =    0.134(In/Hr)
Study area total (this main stream) =      26.72(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      329.000 to Point/Station      335.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =   240.000(Ft.)
Downstream point/station elevation =   201.800(Ft.)
Pipe length  =   393.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    34.152(CFS)
Given pipe size =     48.00(In.)
Calculated individual pipe flow  =    34.152(CFS)
Normal flow depth in pipe =    8.97(In.)
Flow top width inside pipe =   37.42(In.)
Critical Depth =   20.85(In.)
Pipe flow velocity =     21.05(Ft/s)
Travel time through pipe =    0.31 min.
Time of concentration (TC) =    10.58 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      329.000 to Point/Station      335.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     25.657(Ac.)
Runoff from this stream =     34.152(CFS)
Time of concentration =   10.58 min.
Rainfall intensity =     1.472(In/Hr)
Area averaged loss rate (Fm) =    0.1341(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5362
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      336.000 to Point/Station      337.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.100
Decimal fraction soil group C = 0.900
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 67.70
Pervious ratio(Ap) = 0.1000  Max loss rate(Fp)=     0.255(In/Hr)
Max Catchment Loss (Fm) =     0.026(In/Hr)
Initial subarea data:
Initial area flow distance =   416.000(Ft.)
Top (of initial area) elevation =   227.000(Ft.)
Bottom (of initial area) elevation =   211.000(Ft.)
Difference in elevation =    16.000(Ft.)
Slope =    0.03846  s(%)=       3.85
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.509 min.
NOTE: Distance EXCEEDS recommended maximum value of   328.084(Ft.)
for this Development Type
Rainfall intensity =      1.946(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.888
Subarea runoff =      4.804(CFS)
Total initial stream area =        2.780(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      337.000 to Point/Station      338.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =   206.900(Ft.)
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Downstream point/station elevation =   204.500(Ft.)
Pipe length  =   470.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     4.804(CFS)
Given pipe size =     24.00(In.)
Calculated individual pipe flow  =     4.804(CFS)
Normal flow depth in pipe =    8.97(In.)
Flow top width inside pipe =   23.22(In.)
Critical Depth =    9.24(In.)
Pipe flow velocity =      4.49(Ft/s)
Travel time through pipe =    1.75 min.
Time of concentration (TC) =     8.25 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      337.000 to Point/Station      338.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 2 in normal stream number 1
Stream flow area =      2.780(Ac.)
Runoff from this stream =      4.804(CFS)
Time of concentration =    8.25 min.
Rainfall intensity =     1.698(In/Hr)
Area averaged loss rate (Fm) =    0.0255(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      336.000 to Point/Station      339.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
APARTMENT subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.2000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.050(In/Hr)
Initial subarea data:
Initial area flow distance =   364.000(Ft.)
Top (of initial area) elevation =   227.000(Ft.)
Bottom (of initial area) elevation =   223.500(Ft.)
Difference in elevation =     3.500(Ft.)
Slope =    0.00962  s(%)=       0.96
TC = k(0.324)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.677 min.
NOTE: Distance EXCEEDS recommended maximum value of   328.084(Ft.)
for this Development Type
Rainfall intensity =      1.650(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.873
Subarea runoff =      3.657(CFS)
Total initial stream area =        2.540(Ac.)


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Process from Point/Station      339.000 to Point/Station      338.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   216.000(Ft.)
Downstream point/station elevation =   204.500(Ft.)
Pipe length  =   164.00(Ft.)   Manning's N = 0.015
No. of pipes = 1  Required pipe flow  =     3.657(CFS)
Given pipe size =     24.00(In.)
Calculated individual pipe flow  =     3.657(CFS)
Normal flow depth in pipe =    4.31(In.)
Flow top width inside pipe =   18.43(In.)
Critical Depth =    8.02(In.)
Pipe flow velocity =      9.53(Ft/s)
Travel time through pipe =    0.29 min.
Time of concentration (TC) =     8.96 min.
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Process from Point/Station      339.000 to Point/Station      338.000
**** CONFLUENCE OF MINOR STREAMS ****
----------------------------------------------------------------------------
Along Main Stream number: 2 in normal stream number 2
Stream flow area =      2.540(Ac.)
Runoff from this stream =      3.657(CFS)
Time of concentration =    8.96 min.
Rainfall intensity =     1.619(In/Hr)
Area averaged loss rate (Fm) =    0.0500(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1      2.78     4.804      8.25    0.025      1.698
2      2.54     3.657      8.96    0.050      1.619
Qmax(1) =
          1.000 *    1.000 *     4.804) +
          1.050 *    0.921 *     3.657) + =       8.340
Qmax(2) =
          0.953 *    1.000 *     4.804) +
          1.000 *    1.000 *     3.657) + =       8.236

Total of 2 streams to confluence:
Flow rates before confluence point:
       4.804       3.657
Maximum flow rates at confluence using above data:
        8.340        8.236
Area of streams before confluence:
        2.780        2.540
Effective area values after confluence:
        5.119        5.320
Results of confluence:
Total flow rate =      8.340(CFS)
Time of concentration =     8.255 min.
Effective stream area after confluence =      5.119(Ac.)
Study area average Pervious fraction(Ap) =  0.148
Study area average soil loss rate(Fm) =    0.037(In/Hr)
Study area total (this main stream) =       5.32(Ac.)


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Process from Point/Station      338.000 to Point/Station      340.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
----------------------------------------------------------------------------
Upstream point/station elevation =   204.500(Ft.)
Downstream point/station elevation =   202.400(Ft.)
Pipe length  =   286.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     8.340(CFS)
Given pipe size =     24.00(In.)
Calculated individual pipe flow  =     8.340(CFS)
Normal flow depth in pipe =   11.00(In.)
Flow top width inside pipe =   23.92(In.)
Critical Depth =   12.36(In.)
Pipe flow velocity =      5.94(Ft/s)
Travel time through pipe =    0.80 min.
Time of concentration (TC) =     9.06 min.


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Process from Point/Station      338.000 to Point/Station      340.000
**** CONFLUENCE OF MINOR STREAMS ****
----------------------------------------------------------------------------
Along Main Stream number: 2 in normal stream number 1
Stream flow area =      5.119(Ac.)
Runoff from this stream =      8.340(CFS)
Time of concentration =    9.06 min.
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Rainfall intensity =     1.610(In/Hr)
Area averaged loss rate (Fm) =    0.0372(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1477


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Process from Point/Station      341.000 to Point/Station      342.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
APARTMENT subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.2000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.050(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   252.000(Ft.)
Bottom (of initial area) elevation =   221.500(Ft.)
Difference in elevation =    30.500(Ft.)
Slope =    0.10167  s(%)=      10.17
TC = k(0.324)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.011 min.
Rainfall intensity =      2.261(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.880
Subarea runoff =      2.348(CFS)
Total initial stream area =        1.180(Ac.)


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Process from Point/Station      342.000 to Point/Station      343.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------------
Top of street segment elevation =   221.500(Ft.)
End of street segment elevation =   219.000(Ft.)
Length of street segment  =   215.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [2] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      3.883(CFS)
Depth of flow =   0.298(Ft.), Average velocity =   2.255(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =   8.568(Ft.)
Flow velocity =   2.26(Ft/s)
Travel time =    1.59 min.     TC =    6.60  min.
 Adding area flow to street
APARTMENT subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.2000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.050(In/Hr)
Rainfall intensity =      1.930(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.877
Subarea runoff =      2.949(CFS) for    1.950(Ac.)
Total runoff =      5.296(CFS)       Total area =        3.13(Ac.)
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Area averaged Fm value =    0.050(In/Hr)
Street flow at end of street =      5.296(CFS)
Half street flow at end of street =      2.648(CFS)
Depth of flow =   0.324(Ft.), Average velocity =   2.418(Ft/s)
Flow width (from curb towards crown)=   9.842(Ft.)


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Process from Point/Station      343.000 to Point/Station      340.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   211.000(Ft.)
Downstream point/station elevation =   202.400(Ft.)
Pipe length  =    45.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     5.296(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =     5.296(CFS)
Normal flow depth in pipe =    4.13(In.)
Flow top width inside pipe =   15.13(In.)
Critical Depth =   10.65(In.)
Pipe flow velocity =     17.32(Ft/s)
Travel time through pipe =    0.04 min.
Time of concentration (TC) =     6.64 min.


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Process from Point/Station      343.000 to Point/Station      340.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 2 in normal stream number 2
Stream flow area =      3.130(Ac.)
Runoff from this stream =      5.296(CFS)
Time of concentration =    6.64 min.
Rainfall intensity =     1.923(In/Hr)
Area averaged loss rate (Fm) =    0.0500(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000


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Process from Point/Station      344.000 to Point/Station      345.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
APARTMENT subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.2000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.050(In/Hr)
Initial subarea data:
Initial area flow distance =   263.000(Ft.)
Top (of initial area) elevation =   225.000(Ft.)
Bottom (of initial area) elevation =   221.500(Ft.)
Difference in elevation =     3.500(Ft.)
Slope =    0.01331  s(%)=       1.33
TC = k(0.324)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    7.140 min.
Rainfall intensity =      1.845(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.876
Subarea runoff =      1.519(CFS)
Total initial stream area =        0.940(Ac.)


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Process from Point/Station      345.000 to Point/Station      346.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
______________________________________________________________________________
Top of street segment elevation =   221.500(Ft.)
End of street segment elevation =   219.000(Ft.)
Length of street segment  =   241.000(Ft.)
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Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  22.000(Ft.)
Distance from crown to crossfall grade break  =  18.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.025
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      3.213(CFS)
Depth of flow =   0.346(Ft.), Average velocity =   2.419(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  10.963(Ft.)
Flow velocity =   2.42(Ft/s)
Travel time =    1.66 min.     TC =    8.80  min.
 Adding area flow to street
APARTMENT subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.2000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.050(In/Hr)
Rainfall intensity =      1.636(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.872
Subarea runoff =      3.307(CFS) for    2.440(Ac.)
Total runoff =      4.826(CFS)       Total area =        3.38(Ac.)
Area averaged Fm value =    0.050(In/Hr)
Street flow at end of street =      4.826(CFS)
Half street flow at end of street =      4.826(CFS)
Depth of flow =   0.386(Ft.), Average velocity =   2.662(Ft/s)
Flow width (from curb towards crown)=  12.986(Ft.)


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Process from Point/Station      346.000 to Point/Station      340.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
________________________________________________________________________
Upstream point/station elevation =   211.000(Ft.)
Downstream point/station elevation =   202.400(Ft.)
Pipe length  =    42.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     4.826(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =     4.826(CFS)
Normal flow depth in pipe =    3.87(In.)
Flow top width inside pipe =   14.79(In.)
Critical Depth =   10.14(In.)
Pipe flow velocity =     17.28(Ft/s)
Travel time through pipe =    0.04 min.
Time of concentration (TC) =     8.84 min.


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Process from Point/Station      346.000 to Point/Station      340.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 2 in normal stream number 3
Stream flow area =      3.380(Ac.)
Runoff from this stream =      4.826(CFS)
Time of concentration =    8.84 min.
Rainfall intensity =     1.632(In/Hr)
Area averaged loss rate (Fm) =    0.0500(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000
Summary of stream data:
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Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1      5.12     8.340      9.06    0.037      1.610
2      3.13     5.296      6.64    0.050      1.923
3      3.38     4.826      8.84    0.050      1.632
Qmax(1) =
          1.000 *    1.000 *     8.340) +
          0.833 *    1.000 *     5.296) +
          0.986 *    1.000 *     4.826) + =      17.507
Qmax(2) =
          1.199 *    0.733 *     8.340) +
          1.000 *    1.000 *     5.296) +
          1.184 *    0.751 *     4.826) + =      16.926
Qmax(3) =
          1.014 *    0.976 *     8.340) +
          0.845 *    1.000 *     5.296) +
          1.000 *    1.000 *     4.826) + =      17.557

Total of 3 streams to confluence:
Flow rates before confluence point:
       8.340       5.296       4.826
Maximum flow rates at confluence using above data:
       17.507       16.926       17.557
Area of streams before confluence:
        5.119        3.130        3.380
Effective area values after confluence:
       11.629        9.425       11.507
Results of confluence:
Total flow rate =     17.557(CFS)
Time of concentration =     8.841 min.
Effective stream area after confluence =     11.507(Ac.)
Study area average Pervious fraction(Ap) =  0.177
Study area average soil loss rate(Fm) =    0.044(In/Hr)
Study area total (this main stream) =      11.63(Ac.)


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Process from Point/Station      340.000 to Point/Station      335.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
____________________________________________________________________________
Upstream point/station elevation =   202.400(Ft.)
Downstream point/station elevation =   201.800(Ft.)
Pipe length  =   260.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    17.557(CFS)
Given pipe size =     36.00(In.)
Calculated individual pipe flow  =    17.557(CFS)
Normal flow depth in pipe =   19.01(In.)
Flow top width inside pipe =   35.94(In.)
Critical Depth =   16.09(In.)
Pipe flow velocity =      4.64(Ft/s)
Travel time through pipe =    0.93 min.
Time of concentration (TC) =     9.78 min.


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Process from Point/Station      340.000 to Point/Station      335.000
**** CONFLUENCE OF MAIN STREAMS ****
____________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =     11.507(Ac.)
Runoff from this stream =     17.557(CFS)
Time of concentration =    9.78 min.
Rainfall intensity =     1.541(In/Hr)
Area averaged loss rate (Fm) =    0.0444(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1770
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
```

```
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1     25.66    34.152     10.58    0.134      1.472
2     11.51    17.557      9.78    0.044      1.541
Qmax(1) =
          1.000 *    1.000 *    34.152) +
          0.954 *    1.000 *    17.557) + =      50.903
Qmax(2) =
          1.051 *    0.924 *    34.152) +
          1.000 *    1.000 *    17.557) + =      50.720

Total of 2 main streams to confluence:
Flow rates before confluence point:
      35.152      18.557
Maximum flow rates at confluence using above data:
       50.903       50.720
Area of streams before confluence:
       25.657       11.507
Effective area values after confluence:
       37.163       35.205


Results of confluence:
Total flow rate =     50.903(CFS)
Time of concentration =    10.584 min.
Effective stream area after confluence  =     37.163(Ac.)
Study area average Pervious fraction(Ap) =  0.425
Study area average soil loss rate(Fm) =    0.106(In/Hr)
Study area total =      37.16(Ac.)


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Process from Point/Station      335.000 to Point/Station      347.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
________________________________________________________________________
Upstream point/station elevation =   201.800(Ft.)
Downstream point/station elevation =   200.700(Ft.)
Pipe length  =   133.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    50.903(CFS)
Given pipe size =     48.00(In.)
Calculated individual pipe flow  =    50.903(CFS)
Normal flow depth in pipe =   20.80(In.)
Flow top width inside pipe =   47.57(In.)
Critical Depth =   25.69(In.)
Pipe flow velocity =      9.75(Ft/s)
Travel time through pipe =    0.23 min.
Time of concentration (TC) =    10.81 min.


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Process from Point/Station      335.000 to Point/Station      347.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =     37.163(Ac.)
Runoff from this stream =     50.903(CFS)
Time of concentration =   10.81 min.
Rainfall intensity =     1.454(In/Hr)
Area averaged loss rate (Fm) =    0.1063(In/Hr)
Area averaged Pervious ratio (Ap) = 0.4250


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Process from Point/Station      330.000 to Point/Station      348.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
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Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   250.000(Ft.)
Top (of initial area) elevation =   247.000(Ft.)
Bottom (of initial area) elevation =   229.000(Ft.)
Difference in elevation =    18.000(Ft.)
Slope =    0.07200  s(%)=       7.20
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.993 min.
Rainfall intensity =      2.040(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.845
Subarea runoff =      0.862(CFS)
Total initial stream area =        0.500(Ac.)


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Process from Point/Station      348.000 to Point/Station      349.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of street segment elevation =   229.000(Ft.)
End of street segment elevation =   213.000(Ft.)
Length of street segment  =   254.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      1.443(CFS)
Depth of flow =   0.219(Ft.), Average velocity =   4.232(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =   4.630(Ft.)
Flow velocity =   4.23(Ft/s)
Travel time =    1.00 min.     TC =    6.99  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      1.867(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.840
Subarea runoff =      1.067(CFS) for    0.730(Ac.)
Total runoff =      1.929(CFS)       Total area =        1.23(Ac.)
Area averaged Fm value =    0.125(In/Hr)
Street flow at end of street =      1.929(CFS)
Half street flow at end of street =      1.929(CFS)
Depth of flow =   0.238(Ft.), Average velocity =   4.425(Ft/s)
Flow width (from curb towards crown)=   5.560(Ft.)


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Process from Point/Station      349.000 to Point/Station      347.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
________________________________________________________________________
Upstream point/station elevation =   201.500(Ft.)
Downstream point/station elevation =   200.700(Ft.)
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Pipe length  =    34.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.929(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =     1.929(CFS)
Normal flow depth in pipe =    4.20(In.)
Flow top width inside pipe =   15.23(In.)
Critical Depth =    6.27(In.)
Pipe flow velocity =      6.14(Ft/s)
Travel time through pipe =    0.09 min.
Time of concentration (TC) =     7.09 min.


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Process from Point/Station      349.000 to Point/Station      347.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      1.230(Ac.)
Runoff from this stream =      1.929(CFS)
Time of concentration =    7.09 min.
Rainfall intensity =     1.853(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000


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Process from Point/Station      334.000 to Point/Station      350.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   250.000(Ft.)
Top (of initial area) elevation =   247.000(Ft.)
Bottom (of initial area) elevation =   229.000(Ft.)
Difference in elevation =    18.000(Ft.)
Slope =    0.07200  s(%)=       7.20
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.993 min.
Rainfall intensity =      2.040(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.845
Subarea runoff =      0.362(CFS)
Total initial stream area =        0.210(Ac.)


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Process from Point/Station      350.000 to Point/Station      351.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
______________________________________________________________________________
Top of street segment elevation =   229.000(Ft.)
End of street segment elevation =   213.000(Ft.)
Length of street segment  =   266.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  22.000(Ft.)
Distance from crown to crossfall grade break  =  18.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.025
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
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Estimated mean flow rate at midpoint of street =      0.560(CFS)
Depth of flow =   0.151(Ft.), Average velocity =   4.103(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =   2.000(Ft.)
Flow velocity =   4.10(Ft/s)
Travel time =    1.08 min.     TC =    7.07  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      1.855(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.839
Subarea runoff =      0.323(CFS) for    0.230(Ac.)
Total runoff =      0.685(CFS)       Total area =        0.44(Ac.)
Area averaged Fm value =    0.125(In/Hr)
Street flow at end of street =      0.685(CFS)
Half street flow at end of street =      0.685(CFS)
Depth of flow =   0.163(Ft.), Average velocity =   4.315(Ft/s)
Flow width (from curb towards crown)=   2.000(Ft.)


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Process from Point/Station      351.000 to Point/Station      347.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
____________________________________________________________________________
Upstream point/station elevation =   201.500(Ft.)
Downstream point/station elevation =   200.700(Ft.)
Pipe length  =    43.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     0.685(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =     0.685(CFS)
Normal flow depth in pipe =    2.68(In.)
Flow top width inside pipe =   12.81(In.)
Critical depth could not be calculated.
Pipe flow velocity =      4.17(Ft/s)
Travel time through pipe =    0.17 min.
Time of concentration (TC) =     7.25 min.


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Process from Point/Station      351.000 to Point/Station      347.000
**** CONFLUENCE OF MINOR STREAMS ****
____________________________________________________________________________
Along Main Stream number: 1 in normal stream number 3
Stream flow area =      0.440(Ac.)
Runoff from this stream =      0.685(CFS)
Time of concentration =    7.25 min.
Rainfall intensity =     1.830(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1     37.16    50.903     10.81    0.106      1.454
2      1.23     1.929      7.09    0.125      1.853
3      0.44     0.685      7.25    0.125      1.830
Qmax(1) =
          1.000 *    1.000 *    50.903) +
          0.769 *    1.000 *     1.929) +
          0.780 *    1.000 *     0.685) + =      52.921
Qmax(2) =
          1.296 *    0.655 *    50.903) +
```

```
          1.000 *    1.000 *     1.929) +
          1.014 *    0.978 *     0.685) + =      45.849
Qmax(3) =
          1.279 *    0.670 *    50.903) +
          0.986 *    1.000 *     1.929) +
          1.000 *    1.000 *     0.685) + =      46.207

Total of 3 streams to confluence:
Flow rates before confluence point:
      50.903       1.929       0.685
Maximum flow rates at confluence using above data:
       52.921       45.849       46.207
Area of streams before confluence:
       37.163        1.230        0.440
Effective area values after confluence:
       38.833       26.018       26.577
Results of confluence:
Total flow rate =     52.921(CFS)
Time of concentration =    10.811 min.
Effective stream area after confluence =     38.833(Ac.)
Study area average Pervious fraction(Ap) =  0.428
Study area average soil loss rate(Fm) =    0.107(In/Hr)
Study area total (this main stream) =      38.83(Ac.)


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Process from Point/Station      347.000 to Point/Station      352.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   200.700(Ft.)
Downstream point/station elevation =   200.000(Ft.)
Pipe length  =   227.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    52.921(CFS)
Given pipe size =     48.00(In.)
Calculated individual pipe flow  =    52.921(CFS)
Normal flow depth in pipe =   28.57(In.)
Flow top width inside pipe =   47.12(In.)
Critical Depth =   26.21(In.)
Pipe flow velocity =      6.79(Ft/s)
Travel time through pipe =    0.56 min.
Time of concentration (TC) =    11.37 min.


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Process from Point/Station      347.000 to Point/Station      352.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     38.833(Ac.)
Runoff from this stream =     52.921(CFS)
Time of concentration =   11.37 min.
Rainfall intensity =     1.413(In/Hr)
Area averaged loss rate (Fm) =    0.1071(In/Hr)
Area averaged Pervious ratio (Ap) = 0.4282
Program is now starting with Main Stream No. 2


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Process from Point/Station      353.000 to Point/Station      354.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Initial subarea data:
```

```
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   380.000(Ft.)
Bottom (of initial area) elevation =   310.000(Ft.)
Difference in elevation =    70.000(Ft.)
Slope =    0.23333  s(%)=      23.33
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.248 min.
Rainfall intensity =      1.590(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.759
Subarea runoff =      1.399(CFS)
Total initial stream area =        1.160(Ac.)


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Process from Point/Station      354.000 to Point/Station      355.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =      4.743(CFS)
Depth of flow =   0.170(Ft.), Average velocity =   3.296(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2             50.00              0.00
       3            100.00              1.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =      4.743(CFS)
  '     '       flow top width =     16.966(Ft.)
  '     '    velocity=    3.296(Ft/s)
  '     '       area =      1.439(Sq.Ft)
  '     '       Froude number =     1.994

Upstream point elevation =   310.000(Ft.)
Downstream point elevation =   231.000(Ft.)
Flow length =   665.000(Ft.)
Travel time  =    3.36 min.
Time of concentration =   12.61 min.
Depth of flow =   0.170(Ft.)
Average velocity =   3.296(Ft/s)
Total irregular channel flow =     4.743(CFS)
Irregular channel normal depth above invert elev. =   0.170(Ft.)
Average velocity of channel(s) =   3.296(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Rainfall intensity =      1.331(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.731
Subarea runoff =      6.618(CFS) for    7.080(Ac.)
Total runoff =      8.017(CFS)       Total area =        8.24(Ac.)
Area averaged Fm value =    0.250(In/Hr)
Depth of flow =   0.207(Ft.), Average velocity =   3.758(Ft/s)


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Process from Point/Station      355.000 to Point/Station      352.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =     11.054(CFS)
Depth of flow =   0.273(Ft.), Average velocity =   2.967(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
```

```
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2             50.00              0.00
       3            100.00              1.00
Manning's 'N' friction factor =   0.030
-----------------------------------------------------------------
Sub-Channel flow  =     11.054(CFS)
  '     '       flow top width =     27.297(Ft.)
  '     '    velocity=    2.967(Ft/s)
  '     '       area =      3.726(Sq.Ft)
  '     '       Froude number =     1.415

Upstream point elevation =   231.000(Ft.)
Downstream point elevation =   200.000(Ft.)
Flow length =   607.000(Ft.)
Travel time  =    3.41 min.
Time of concentration =   16.02 min.
Depth of flow =   0.273(Ft.)
Average velocity =   2.967(Ft/s)
Total irregular channel flow =    11.054(CFS)
Irregular channel normal depth above invert elev. =   0.273(Ft.)
Average velocity of channel(s) =   2.967(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Rainfall intensity =      1.160(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.706
Subarea runoff =      5.983(CFS) for    8.850(Ac.)
Total runoff =     14.000(CFS)       Total area =       17.09(Ac.)
Area averaged Fm value =    0.250(In/Hr)
Depth of flow =   0.298(Ft.), Average velocity =   3.147(Ft/s)


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Process from Point/Station      355.000 to Point/Station      352.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =     17.090(Ac.)
Runoff from this stream =     14.000(CFS)
Time of concentration =   16.02 min.
Rainfall intensity =     1.160(In/Hr)
Area averaged loss rate (Fm) =    0.2500(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Program is now starting with Main Stream No. 3


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      356.000 to Point/Station      357.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   540.000(Ft.)
Bottom (of initial area) elevation =   485.000(Ft.)
```

```
Difference in elevation =    55.000(Ft.)
Slope =    0.18333  s(%)=      18.33
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.705 min.
Rainfall intensity =      1.547(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.755
Subarea runoff =      1.588(CFS)
Total initial stream area =        1.360(Ac.)


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Process from Point/Station      357.000 to Point/Station      358.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =      5.526(CFS)
Depth of flow =   0.182(Ft.), Average velocity =   3.329(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2             50.00              0.00
       3            100.00              1.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =      5.526(CFS)
  '     '       flow top width =     18.220(Ft.)
  '     '    velocity=    3.329(Ft/s)
  '     '       area =      1.660(Sq.Ft)
  '     '       Froude number =     1.944

Upstream point elevation =   485.000(Ft.)
Downstream point elevation =   415.000(Ft.)
Flow length =   635.000(Ft.)
Travel time  =    3.18 min.
Time of concentration =   12.88 min.
Depth of flow =   0.182(Ft.)
Average velocity =   3.329(Ft/s)
Total irregular channel flow =     5.526(CFS)
Irregular channel normal depth above invert elev. =   0.182(Ft.)
Average velocity of channel(s) =   3.329(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Rainfall intensity =      1.315(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.729
Subarea runoff =      7.804(CFS) for    8.440(Ac.)
Total runoff =      9.391(CFS)       Total area =        9.80(Ac.)
Area averaged Fm value =    0.250(In/Hr)
Depth of flow =   0.222(Ft.), Average velocity =   3.801(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      358.000 to Point/Station      359.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =     20.524(CFS)
Depth of flow =   0.287(Ft.), Average velocity =   4.976(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2             50.00              0.00
```

```
       3            100.00              1.00
Manning's 'N' friction factor =   0.030
-----------------------------------------------------------------
Sub-Channel flow  =     20.524(CFS)
  '     '       flow top width =     28.722(Ft.)
  '     '    velocity=    4.976(Ft/s)
  '     '       area =      4.125(Sq.Ft)
  '     '       Froude number =     2.314

Upstream point elevation =   415.000(Ft.)
Downstream point elevation =   273.000(Ft.)
Flow length =  1058.000(Ft.)
Travel time  =    3.54 min.
Time of concentration =   16.43 min.
Depth of flow =   0.287(Ft.)
Average velocity =   4.976(Ft/s)
Total irregular channel flow =    20.524(CFS)
Irregular channel normal depth above invert elev. =   0.287(Ft.)
Average velocity of channel(s) =   4.976(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Rainfall intensity =      1.144(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.703
Subarea runoff =     22.208(CFS) for   29.490(Ac.)
Total runoff =     31.599(CFS)       Total area =       39.29(Ac.)
Area averaged Fm value =    0.250(In/Hr)
Depth of flow =   0.338(Ft.), Average velocity =   5.543(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      359.000 to Point/Station      360.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
________________________________________________________________________
Upstream point/station elevation =   267.000(Ft.)
Downstream point/station elevation =   266.000(Ft.)
Pipe length  =   111.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    31.599(CFS)
Given pipe size =     48.00(In.)
Calculated individual pipe flow  =    31.599(CFS)
Normal flow depth in pipe =   15.72(In.)
Flow top width inside pipe =   45.05(In.)
Critical Depth =   20.02(In.)
Pipe flow velocity =      8.83(Ft/s)
Travel time through pipe =    0.21 min.
Time of concentration (TC) =    16.64 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      359.000 to Point/Station      360.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 3 in normal stream number 1
Stream flow area =     39.290(Ac.)
Runoff from this stream =     31.599(CFS)
Time of concentration =   16.64 min.
Rainfall intensity =     1.135(In/Hr)
Area averaged loss rate (Fm) =    0.2500(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      361.000 to Point/Station      362.000
**** INITIAL AREA EVALUATION ****
```

```
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   597.000(Ft.)
Top (of initial area) elevation =   407.000(Ft.)
Bottom (of initial area) elevation =   380.000(Ft.)
Difference in elevation =    27.000(Ft.)
Slope =    0.04523  s(%)=       4.52
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.317 min.
NOTE: Distance EXCEEDS recommended maximum value of   328.084(Ft.)
for this Development Type
Rainfall intensity =      1.584(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.829
Subarea runoff =     10.056(CFS)
Total initial stream area =        7.660(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      362.000 to Point/Station      360.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
------------------------------------------------------------------------
Upstream point/station elevation =   372.000(Ft.)
Downstream point/station elevation =   266.000(Ft.)
Pipe length  =   750.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    10.056(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =    10.056(CFS)
Normal flow depth in pipe =    6.19(In.)
Flow top width inside pipe =   17.10(In.)
Critical Depth =   14.67(In.)
Pipe flow velocity =     18.67(Ft/s)
Travel time through pipe =    0.67 min.
Time of concentration (TC) =     9.99 min.


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Process from Point/Station      362.000 to Point/Station      360.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------
Along Main Stream number: 3 in normal stream number 2
Stream flow area =      7.660(Ac.)
Runoff from this stream =     10.056(CFS)
Time of concentration =    9.99 min.
Rainfall intensity =     1.522(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1     39.29    31.599     16.64    0.250      1.135
2      7.66    10.056      9.99    0.125      1.522
Qmax(1) =
          1.000 *    1.000 *    31.599) +
          0.723 *    1.000 *    10.056) + =      38.873
Qmax(2) =
          1.437 *    0.600 *    31.599) +
          1.000 *    1.000 *    10.056) + =      37.303

Total of 2 streams to confluence:
Flow rates before confluence point:
```

```
      31.599      10.056
Maximum flow rates at confluence using above data:
       38.873       37.303
Area of streams before confluence:
       39.290        7.660
Effective area values after confluence:
       46.950       31.243
Results of confluence:
Total flow rate =     38.873(CFS)
Time of concentration =    16.637 min.
Effective stream area after confluence =     46.950(Ac.)
Study area average Pervious fraction(Ap) =  0.918
Study area average soil loss rate(Fm) =    0.230(In/Hr)
Study area total (this main stream) =      46.95(Ac.)


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Process from Point/Station      360.000 to Point/Station      352.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   266.000(Ft.)
Downstream point/station elevation =   200.000(Ft.)
Pipe length  =  1386.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    38.873(CFS)
Given pipe size =     36.00(In.)
Calculated individual pipe flow  =    38.873(CFS)
Normal flow depth in pipe =   12.70(In.)
Flow top width inside pipe =   34.41(In.)
Critical Depth =   24.36(In.)
Pipe flow velocity =     17.43(Ft/s)
Travel time through pipe =    1.33 min.
Time of concentration (TC) =    17.96 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      360.000 to Point/Station      352.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 3
Stream flow area =     46.950(Ac.)
Runoff from this stream =     38.873(CFS)
Time of concentration =   17.96 min.
Rainfall intensity =     1.086(In/Hr)
Area averaged loss rate (Fm) =    0.2296(In/Hr)
Area averaged Pervious ratio (Ap) = 0.9184
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1     38.83    52.921     11.37    0.107      1.413
2     17.09    14.000     16.02    0.250      1.160
3     46.95    38.873     17.96    0.230      1.086
Qmax(1) =
          1.000 *    1.000 *    52.921) +
          1.277 *    0.710 *    14.000) +
          1.381 *    0.633 *    38.873) + =      99.581
Qmax(2) =
          0.807 *    1.000 *    52.921) +
          1.000 *    1.000 *    14.000) +
          1.086 *    0.892 *    38.873) + =      94.340
Qmax(3) =
          0.750 *    1.000 *    52.921) +
          0.919 *    1.000 *    14.000) +
          1.000 *    1.000 *    38.873) + =      91.436

Total of 3 main streams to confluence:
Flow rates before confluence point:
      53.921      15.000      39.873
```

```
Maximum flow rates at confluence using above data:
       99.581       94.340       91.436
Area of streams before confluence:
       38.833       17.090       46.950
Effective area values after confluence:
       80.675       97.799      102.873


Results of confluence:
Total flow rate =     99.581(CFS)
Time of concentration =    11.368 min.
Effective stream area after confluence  =     80.675(Ac.)
Study area average Pervious fraction(Ap) =  0.747
Study area average soil loss rate(Fm) =    0.187(In/Hr)
Study area total =     102.87(Ac.)


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Process from Point/Station      360.000 to Point/Station      352.000
**** SUBAREA FLOW ADDITION ****
________________________________________________________________________
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
The area added to the existing stream with this TC
does not add flow per Para 6b, Page D-15 of the OCHM,
therefore the upstream flow rate of Q =     99.581(CFS) is being used
Time of concentration =    11.37 min.
Rainfall intensity =      1.413(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.778
Subarea runoff =      0.000(CFS) for    6.730(Ac.)
Total runoff =     99.581(CFS)        Total area =       87.40(Ac.)
Area averaged Fm value =    0.192(In/Hr)
End of computations, total study area =          117.28 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.748
Area averaged SCS curve number (AMC 2) =  74.6
```

- 5 Year Post-Development Rational Method – Area 'C'

```
                    Orange County Rational Hydrology Program

                (Hydrology Manual Date(s) October 1986 & November 1996)

 CIVILCADD/CIVILDESIGN  Engineering Software, (c) 1989-2012 Version 8.2
       Rational Hydrology Study, Date: 10/13/16  File Name: PRC005.roc
---------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION RATIONAL METHOD - AREA 'C' - 5 YEAR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
---------------------------------------------------------------------------


Program License Serial Number 4094

---------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

---------------------------------------------------------------------------

Rational hydrology study storm event year is     5.0

Decimal fraction of study above 2000 ft., 600M  =     0.0000
English Units Used for input data


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Process from Point/Station      300.000 to Point/Station      301.000
**** INITIAL AREA EVALUATION ****
___________________________________________________________________________
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   383.000(Ft.)
Bottom (of initial area) elevation =   321.000(Ft.)
Difference in elevation =    62.000(Ft.)
Slope =    0.20667  s(%)=      20.67
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.475 min.
Rainfall intensity =      2.224(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.799
Subarea runoff =      1.865(CFS)
Total initial stream area =        1.050(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      301.000 to Point/Station      302.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
___________________________________________________________________________
Upstream point/station elevation =   321.000(Ft.)
Downstream point/station elevation =   297.000(Ft.)
Pipe length  =    63.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.865(CFS)
Given pipe size =      8.00(In.)
Calculated individual pipe flow  =     1.865(CFS)
Normal flow depth in pipe =    2.73(In.)
Flow top width inside pipe =    7.58(In.)
Critical Depth =    7.39(In.)
Pipe flow velocity =     17.76(Ft/s)
Travel time through pipe =    0.06 min.
Time of concentration (TC) =     9.53 min.
```

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++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      302.000 to Point/Station      303.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
______________________________________________________________________________
Top of street segment elevation =   297.000(Ft.)
End of street segment elevation =   286.000(Ft.)
Length of street segment  =   341.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      3.497(CFS)
Depth of flow =   0.304(Ft.), Average velocity =   3.822(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =   8.879(Ft.)
Flow velocity =   3.82(Ft/s)
Travel time =    1.49 min.     TC =   11.02  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      2.043(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.826
Subarea runoff =      3.195(CFS) for    1.950(Ac.)
Total runoff =      5.060(CFS)       Total area =        3.00(Ac.)
Area averaged Fm value =    0.169(In/Hr)
Street flow at end of street =      5.060(CFS)
Half street flow at end of street =      5.060(CFS)
Depth of flow =   0.336(Ft.), Average velocity =   4.155(Ft/s)
Flow width (from curb towards crown)=  10.445(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      303.000 to Point/Station      304.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   280.000(Ft.)
Downstream point/station elevation =   279.000(Ft.)
Pipe length  =    23.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     5.060(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =     5.060(CFS)
Normal flow depth in pipe =    5.88(In.)
Flow top width inside pipe =   16.89(In.)
Critical Depth =   10.39(In.)
Pipe flow velocity =     10.08(Ft/s)
Travel time through pipe =    0.04 min.
Time of concentration (TC) =    11.06 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      303.000 to Point/Station      304.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
```

```
Stream flow area =      3.000(Ac.)
Runoff from this stream =      5.060(CFS)
Time of concentration =   11.06 min.
Rainfall intensity =     2.039(In/Hr)
Area averaged loss rate (Fm) =    0.1687(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6750


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Process from Point/Station      305.000 to Point/Station      306.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   233.000(Ft.)
Top (of initial area) elevation =   334.000(Ft.)
Bottom (of initial area) elevation =   297.000(Ft.)
Difference in elevation =    37.000(Ft.)
Slope =    0.15880  s(%)=      15.88
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    4.974 min.
Rainfall intensity =      3.195(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.865
Subarea runoff =      1.464(CFS)
Total initial stream area =        0.530(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      306.000 to Point/Station      307.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------------
Top of street segment elevation =   297.000(Ft.)
End of street segment elevation =   286.000(Ft.)
Length of street segment  =   303.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      2.257(CFS)
Depth of flow =   0.267(Ft.), Average velocity =   3.646(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =   7.017(Ft.)
Flow velocity =   3.65(Ft/s)
Travel time =    1.39 min.     TC =    6.36  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      2.783(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area,(total area with modified
```

```
rational method)(Q=KCIA) is C = 0.860
Subarea runoff =      1.526(CFS) for    0.720(Ac.)
Total runoff =      2.990(CFS)       Total area =        1.25(Ac.)
Area averaged Fm value =    0.125(In/Hr)
Street flow at end of street =      2.990(CFS)
Half street flow at end of street =      2.990(CFS)
Depth of flow =   0.287(Ft.), Average velocity =   3.867(Ft/s)
Flow width (from curb towards crown)=   8.040(Ft.)


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Process from Point/Station      307.000 to Point/Station      304.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   280.000(Ft.)
Downstream point/station elevation =   279.000(Ft.)
Pipe length  =    37.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     2.990(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =     2.990(CFS)
Normal flow depth in pipe =    5.07(In.)
Flow top width inside pipe =   16.19(In.)
Critical Depth =    7.89(In.)
Pipe flow velocity =      7.32(Ft/s)
Travel time through pipe =    0.08 min.
Time of concentration (TC) =     6.44 min.


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Process from Point/Station      307.000 to Point/Station      304.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      1.250(Ac.)
Runoff from this stream =      2.990(CFS)
Time of concentration =    6.44 min.
Rainfall intensity =     2.762(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1      3.00     5.060     11.06    0.169      2.039
2      1.25     2.990      6.44    0.125      2.762
Qmax(1) =
          1.000 *    1.000 *     5.060) +
          0.726 *    1.000 *     2.990) + =       7.230
Qmax(2) =
          1.387 *    0.583 *     5.060) +
          1.000 *    1.000 *     2.990) + =       7.078

Total of 2 streams to confluence:
Flow rates before confluence point:
       5.060       2.990
Maximum flow rates at confluence using above data:
        7.230        7.078
Area of streams before confluence:
        3.000        1.250
Effective area values after confluence:
        4.250        2.998
Results of confluence:
Total flow rate =      7.230(CFS)
Time of concentration =    11.060 min.
Effective stream area after confluence =      4.250(Ac.)
Study area average Pervious fraction(Ap) =  0.624
Study area average soil loss rate(Fm) =    0.156(In/Hr)
Study area total (this main stream) =       4.25(Ac.)
```

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++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      304.000 to Point/Station      308.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
------------------------------------------------------------------------
Upstream point/station elevation =   279.000(Ft.)
Downstream point/station elevation =   259.000(Ft.)
Pipe length  =   247.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     7.230(CFS)
Given pipe size =     24.00(In.)
Calculated individual pipe flow  =     7.230(CFS)
Normal flow depth in pipe =    5.43(In.)
Flow top width inside pipe =   20.08(In.)
Critical Depth =   11.46(In.)
Pipe flow velocity =     13.55(Ft/s)
Travel time through pipe =    0.30 min.
Time of concentration (TC) =    11.36 min.


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Process from Point/Station      304.000 to Point/Station      308.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      4.250(Ac.)
Runoff from this stream =      7.230(CFS)
Time of concentration =   11.36 min.
Rainfall intensity =     2.008(In/Hr)
Area averaged loss rate (Fm) =    0.1559(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6235


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Process from Point/Station      300.000 to Point/Station      309.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   383.000(Ft.)
Bottom (of initial area) elevation =   324.000(Ft.)
Difference in elevation =    59.000(Ft.)
Slope =    0.19667  s(%)=      19.67
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.570 min.
Rainfall intensity =      2.212(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.798
Subarea runoff =      1.960(CFS)
Total initial stream area =        1.110(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      309.000 to Point/Station      310.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
------------------------------------------------------------------------
Upstream point/station elevation =   324.000(Ft.)
Downstream point/station elevation =   299.000(Ft.)
Pipe length  =   140.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.960(CFS)
Given pipe size =      8.00(In.)
Calculated individual pipe flow  =     1.960(CFS)
Normal flow depth in pipe =    3.44(In.)
Flow top width inside pipe =    7.92(In.)
Critical Depth =    7.48(In.)
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Pipe flow velocity =     13.66(Ft/s)
Travel time through pipe =    0.17 min.
Time of concentration (TC) =     9.74 min.


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Process from Point/Station      310.000 to Point/Station      311.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
----------------------------------------------------------------------------
Top of street segment elevation =   299.000(Ft.)
End of street segment elevation =   266.000(Ft.)
Length of street segment  =   717.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [2] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      5.661(CFS)
Depth of flow =   0.275(Ft.), Average velocity =   4.197(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =   7.401(Ft.)
Flow velocity =   4.20(Ft/s)
Travel time =    2.85 min.     TC =   12.59  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      1.896(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.829
Subarea runoff =      7.255(CFS) for    4.750(Ac.)
Total runoff =      9.215(CFS)       Total area =        5.86(Ac.)
Area averaged Fm value =    0.149(In/Hr)
Street flow at end of street =      9.215(CFS)
Half street flow at end of street =      4.607(CFS)
Depth of flow =   0.312(Ft.), Average velocity =   4.666(Ft/s)
Flow width (from curb towards crown)=   9.277(Ft.)


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Process from Point/Station      311.000 to Point/Station      308.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
----------------------------------------------------------------------------
Upstream point/station elevation =   260.000(Ft.)
Downstream point/station elevation =   259.000(Ft.)
Pipe length  =    26.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     9.215(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =     9.215(CFS)
Normal flow depth in pipe =    8.44(In.)
Flow top width inside pipe =   17.96(In.)
Critical Depth =   14.08(In.)
Pipe flow velocity =     11.33(Ft/s)
Travel time through pipe =    0.04 min.
Time of concentration (TC) =    12.63 min.


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Process from Point/Station      311.000 to Point/Station      308.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      5.860(Ac.)
Runoff from this stream =      9.215(CFS)
Time of concentration =   12.63 min.
Rainfall intensity =     1.893(In/Hr)
Area averaged loss rate (Fm) =    0.1487(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5947


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Process from Point/Station      312.000 to Point/Station      313.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   350.000(Ft.)
Bottom (of initial area) elevation =   280.000(Ft.)
Difference in elevation =    70.000(Ft.)
Slope =    0.23333  s(%)=      23.33
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.096 min.
Rainfall intensity =      3.152(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.864
Subarea runoff =      6.891(CFS)
Total initial stream area =        2.530(Ac.)


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Process from Point/Station      313.000 to Point/Station      314.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------
Top of street segment elevation =   280.000(Ft.)
End of street segment elevation =   266.000(Ft.)
Length of street segment  =   609.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [2] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      9.552(CFS)
Depth of flow =   0.346(Ft.), Average velocity =   3.600(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  10.955(Ft.)
Flow velocity =   3.60(Ft/s)
Travel time =    2.82 min.     TC =    7.92  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
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Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      2.461(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.854
Subarea runoff =      5.195(CFS) for    3.220(Ac.)
Total runoff =     12.086(CFS)       Total area =        5.75(Ac.)
Area averaged Fm value =    0.125(In/Hr)
Street flow at end of street =     12.086(CFS)
Half street flow at end of street =      6.043(CFS)
Depth of flow =   0.369(Ft.), Average velocity =   3.803(Ft/s)
Flow width (from curb towards crown)=  12.092(Ft.)


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Process from Point/Station      314.000 to Point/Station      308.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   260.000(Ft.)
Downstream point/station elevation =   259.000(Ft.)
Pipe length  =    36.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    12.086(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =    12.086(CFS)
Normal flow depth in pipe =   11.00(In.)
Flow top width inside pipe =   17.55(In.)
Critical Depth =   15.82(In.)
Pipe flow velocity =     10.69(Ft/s)
Travel time through pipe =    0.06 min.
Time of concentration (TC) =     7.97 min.


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Process from Point/Station      314.000 to Point/Station      308.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 3
Stream flow area =      5.750(Ac.)
Runoff from this stream =     12.086(CFS)
Time of concentration =    7.97 min.
Rainfall intensity =     2.451(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1      4.25     7.230     11.36    0.156      2.008
2      5.86     9.215     12.63    0.149      1.893
3      5.75    12.086      7.97    0.125      2.451
Qmax(1) =
          1.000 *    1.000 *     7.230) +
          1.066 *    0.900 *     9.215) +
          0.810 *    1.000 *    12.086) + =      25.858
Qmax(2) =
          0.938 *    1.000 *     7.230) +
          1.000 *    1.000 *     9.215) +
          0.760 *    1.000 *    12.086) + =      25.180
Qmax(3) =
          1.239 *    0.702 *     7.230) +
          1.320 *    0.631 *     9.215) +
          1.000 *    1.000 *    12.086) + =      26.051

Total of 3 streams to confluence:
Flow rates before confluence point:
       7.230       9.215      12.086
Maximum flow rates at confluence using above data:
       25.858       25.180       26.051
Area of streams before confluence:
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        4.250        5.860        5.750
Effective area values after confluence:
       15.274       15.860       12.431
Results of confluence:
Total flow rate =     26.051(CFS)
Time of concentration =     7.972 min.
Effective stream area after confluence =     12.431(Ac.)
Study area average Pervious fraction(Ap) =  0.568
Study area average soil loss rate(Fm) =    0.142(In/Hr)
Study area total (this main stream) =      15.86(Ac.)


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Process from Point/Station      308.000 to Point/Station      315.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
________________________________________________________________________
Upstream point/station elevation =   259.000(Ft.)
Downstream point/station elevation =   241.500(Ft.)
Pipe length  =  1077.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    26.051(CFS)
Given pipe size =     36.00(In.)
Calculated individual pipe flow  =    26.051(CFS)
Normal flow depth in pipe =   13.67(In.)
Flow top width inside pipe =   34.95(In.)
Critical Depth =   19.77(In.)
Pipe flow velocity =     10.57(Ft/s)
Travel time through pipe =    1.70 min.
Time of concentration (TC) =     9.67 min.


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Process from Point/Station      308.000 to Point/Station      315.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =     12.431(Ac.)
Runoff from this stream =     26.051(CFS)
Time of concentration =    9.67 min.
Rainfall intensity =     2.199(In/Hr)
Area averaged loss rate (Fm) =    0.1420(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5681


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Process from Point/Station      316.000 to Point/Station      317.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   280.000(Ft.)
Bottom (of initial area) elevation =   270.000(Ft.)
Difference in elevation =    10.000(Ft.)
Slope =    0.03333  s(%)=       3.33
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    7.520 min.
Rainfall intensity =      2.532(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.856
Subarea runoff =      2.123(CFS)
Total initial stream area =        0.980(Ac.)


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Process from Point/Station      317.000 to Point/Station      318.000
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**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------
Top of street segment elevation =   270.000(Ft.)
End of street segment elevation =   255.000(Ft.)
Length of street segment  =   599.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      3.741(CFS)
Depth of flow =   0.320(Ft.), Average velocity =   3.517(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =   9.680(Ft.)
Flow velocity =   3.52(Ft/s)
Travel time =    2.84 min.     TC =   10.36  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      2.115(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.847
Subarea runoff =      3.161(CFS) for    1.970(Ac.)
Total runoff =      5.284(CFS)       Total area =        2.95(Ac.)
Area averaged Fm value =    0.125(In/Hr)
Street flow at end of street =      5.284(CFS)
Half street flow at end of street =      5.284(CFS)
Depth of flow =   0.351(Ft.), Average velocity =   3.808(Ft/s)
Flow width (from curb towards crown)=  11.229(Ft.)


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Process from Point/Station      318.000 to Point/Station      319.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------
Top of street segment elevation =   255.000(Ft.)
End of street segment elevation =   248.000(Ft.)
Length of street segment  =   653.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      9.264(CFS)
Depth of flow =   0.462(Ft.), Average velocity =   3.153(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  16.767(Ft.)
Flow velocity =   3.15(Ft/s)
Travel time =    3.45 min.     TC =   13.81  min.
```

```
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      1.800(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.837
Subarea runoff =      7.873(CFS) for    5.780(Ac.)
Total runoff =     13.158(CFS)       Total area =        8.73(Ac.)
Area averaged Fm value =    0.125(In/Hr)
Street flow at end of street =     13.158(CFS)
Half street flow at end of street =     13.158(CFS)
Depth of flow =   0.509(Ft.), Average velocity =   3.493(Ft/s)
Warning: depth of flow exceeds top of curb
Note:  depth of flow exceeds top of street crown.
Distance that curb overflow reaches into property =    0.44(Ft.)
Flow width (from curb towards crown)=  18.000(Ft.)


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Process from Point/Station      319.000 to Point/Station      315.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
________________________________________________________________________
Upstream point/station elevation =   242.000(Ft.)
Downstream point/station elevation =   241.500(Ft.)
Pipe length  =    18.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    13.158(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =    13.158(CFS)
Normal flow depth in pipe =   11.65(In.)
Flow top width inside pipe =   17.20(In.)
Critical Depth =   16.27(In.)
Pipe flow velocity =     10.88(Ft/s)
Travel time through pipe =    0.03 min.
Time of concentration (TC) =    13.84 min.


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Process from Point/Station      319.000 to Point/Station      315.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      8.730(Ac.)
Runoff from this stream =     13.158(CFS)
Time of concentration =   13.84 min.
Rainfall intensity =     1.798(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1     12.43    26.051      9.67    0.142      2.199
2      8.73    13.158     13.84    0.125      1.798
Qmax(1) =
          1.000 *    1.000 *    26.051) +
          1.240 *    0.699 *    13.158) + =      37.450
Qmax(2) =
          0.805 *    1.000 *    26.051) +
          1.000 *    1.000 *    13.158) + =      34.126

Total of 2 streams to confluence:
Flow rates before confluence point:
      26.051      13.158
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Maximum flow rates at confluence using above data:
       37.450       34.126
Area of streams before confluence:
       12.431        8.730
Effective area values after confluence:
       18.531       21.161
Results of confluence:
Total flow rate =     37.450(CFS)
Time of concentration =     9.669 min.
Effective stream area after confluence =     18.531(Ac.)
Study area average Pervious fraction(Ap) =  0.540
Study area average soil loss rate(Fm) =    0.135(In/Hr)
Study area total (this main stream) =      21.16(Ac.)


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Process from Point/Station      315.000 to Point/Station      320.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   241.500(Ft.)
Downstream point/station elevation =   241.000(Ft.)
Pipe length  =    34.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    37.450(CFS)
Given pipe size =     36.00(In.)
Calculated individual pipe flow  =    37.450(CFS)
Normal flow depth in pipe =   17.21(In.)
Flow top width inside pipe =   35.97(In.)
Critical Depth =   23.88(In.)
Pipe flow velocity =     11.22(Ft/s)
Travel time through pipe =    0.05 min.
Time of concentration (TC) =     9.72 min.


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Process from Point/Station      315.000 to Point/Station      320.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     18.531(Ac.)
Runoff from this stream =     37.450(CFS)
Time of concentration =    9.72 min.
Rainfall intensity =     2.192(In/Hr)
Area averaged loss rate (Fm) =    0.1350(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5400
Program is now starting with Main Stream No. 2


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Process from Point/Station      321.000 to Point/Station      322.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   396.000(Ft.)
Bottom (of initial area) elevation =   355.000(Ft.)
Difference in elevation =    41.000(Ft.)
Slope =    0.13667  s(%)=      13.67
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   10.292 min.
Rainfall intensity =      2.123(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.794
Subarea runoff =      0.843(CFS)
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Total initial stream area =        0.500(Ac.)


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Process from Point/Station      322.000 to Point/Station      323.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
________________________________________________________________________
Upstream point/station elevation =   355.000(Ft.)
Downstream point/station elevation =   288.000(Ft.)
Pipe length  =   207.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     0.843(CFS)
Given pipe size =     12.00(In.)
Calculated individual pipe flow  =     0.843(CFS)
Normal flow depth in pipe =    1.67(In.)
Flow top width inside pipe =    8.31(In.)
Critical Depth =    4.60(In.)
Pipe flow velocity =     12.73(Ft/s)
Travel time through pipe =    0.27 min.
Time of concentration (TC) =    10.56 min.


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Process from Point/Station      323.000 to Point/Station      324.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of street segment elevation =   288.000(Ft.)
End of street segment elevation =   267.000(Ft.)
Length of street segment  =   240.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      1.365(CFS)
Depth of flow =   0.205(Ft.), Average velocity =   4.874(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =   3.917(Ft.)
Flow velocity =   4.87(Ft/s)
Travel time =    0.82 min.     TC =   11.38  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      2.006(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.819
Subarea runoff =      0.997(CFS) for    0.620(Ac.)
Total runoff =      1.840(CFS)       Total area =        1.12(Ac.)
Area averaged Fm value =    0.181(In/Hr)
Street flow at end of street =      1.840(CFS)
Half street flow at end of street =      1.840(CFS)
Depth of flow =   0.224(Ft.), Average velocity =   5.042(Ft/s)
Flow width (from curb towards crown)=   4.881(Ft.)


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Process from Point/Station      324.000 to Point/Station      325.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
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```
Upstream point/station elevation =   261.000(Ft.)
Downstream point/station elevation =   260.000(Ft.)
Pipe length  =    20.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.840(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =     1.840(CFS)
Normal flow depth in pipe =    3.41(In.)
Flow top width inside pipe =   14.10(In.)
Critical Depth =    6.12(In.)
Pipe flow velocity =      7.91(Ft/s)
Travel time through pipe =    0.04 min.
Time of concentration (TC) =    11.43 min.


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Process from Point/Station      324.000 to Point/Station      325.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------------
Along Main Stream number: 2 in normal stream number 1
Stream flow area =      1.120(Ac.)
Runoff from this stream =      1.840(CFS)
Time of concentration =   11.43 min.
Rainfall intensity =     2.002(In/Hr)
Area averaged loss rate (Fm) =    0.1808(In/Hr)
Area averaged Pervious ratio (Ap) = 0.7232


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Process from Point/Station      326.000 to Point/Station      327.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   250.000(Ft.)
Top (of initial area) elevation =   297.000(Ft.)
Bottom (of initial area) elevation =   288.000(Ft.)
Difference in elevation =     9.000(Ft.)
Slope =    0.03600  s(%)=       3.60
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.884 min.
Rainfall intensity =      2.661(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.858
Subarea runoff =      1.301(CFS)
Total initial stream area =        0.570(Ac.)


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Process from Point/Station      327.000 to Point/Station      328.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------------
Top of street segment elevation =   288.000(Ft.)
End of street segment elevation =   267.000(Ft.)
Length of street segment  =   293.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
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 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      2.512(CFS)
Depth of flow =   0.251(Ft.), Average velocity =   4.893(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =   6.218(Ft.)
Flow velocity =   4.89(Ft/s)
Travel time =    1.00 min.     TC =    7.88  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      2.466(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.854
Subarea runoff =      2.344(CFS) for    1.160(Ac.)
Total runoff =      3.645(CFS)       Total area =        1.73(Ac.)
Area averaged Fm value =    0.125(In/Hr)
Street flow at end of street =      3.645(CFS)
Half street flow at end of street =      3.645(CFS)
Depth of flow =   0.277(Ft.), Average velocity =   5.273(Ft/s)
Flow width (from curb towards crown)=   7.515(Ft.)


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Process from Point/Station      328.000 to Point/Station      325.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
____________________________________________________________________________
Upstream point/station elevation =   261.000(Ft.)
Downstream point/station elevation =   260.000(Ft.)
Pipe length  =    32.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     3.645(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =     3.645(CFS)
Normal flow depth in pipe =    5.41(In.)
Flow top width inside pipe =   16.50(In.)
Critical Depth =    8.75(In.)
Pipe flow velocity =      8.16(Ft/s)
Travel time through pipe =    0.07 min.
Time of concentration (TC) =     7.95 min.


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Process from Point/Station      328.000 to Point/Station      325.000
**** CONFLUENCE OF MINOR STREAMS ****
____________________________________________________________________________
Along Main Stream number: 2 in normal stream number 2
Stream flow area =      1.730(Ac.)
Runoff from this stream =      3.645(CFS)
Time of concentration =    7.95 min.
Rainfall intensity =     2.455(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1      1.12     1.840     11.43    0.181      2.002
2      1.73     3.645      7.95    0.125      2.455
Qmax(1) =
          1.000 *    1.000 *     1.840) +
          0.806 *    1.000 *     3.645) + =       4.776
Qmax(2) =
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          1.249 *    0.696 *     1.840) +
          1.000 *    1.000 *     3.645) + =       5.244

Total of 2 streams to confluence:
Flow rates before confluence point:
       1.840       3.645
Maximum flow rates at confluence using above data:
        4.776        5.244
Area of streams before confluence:
        1.120        1.730
Effective area values after confluence:
        2.850        2.509
Results of confluence:
Total flow rate =      5.244(CFS)
Time of concentration =     7.948 min.
Effective stream area after confluence =      2.509(Ac.)
Study area average Pervious fraction(Ap) =  0.588
Study area average soil loss rate(Fm) =    0.147(In/Hr)
Study area total (this main stream) =       2.85(Ac.)


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Process from Point/Station      325.000 to Point/Station      320.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
________________________________________________________________________
Upstream point/station elevation =   260.000(Ft.)
Downstream point/station elevation =   241.000(Ft.)
Pipe length  =   220.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     5.244(CFS)
Given pipe size =     24.00(In.)
Calculated individual pipe flow  =     5.244(CFS)
Normal flow depth in pipe =    4.56(In.)
Flow top width inside pipe =   18.83(In.)
Critical Depth =    9.69(In.)
Pipe flow velocity =     12.62(Ft/s)
Travel time through pipe =    0.29 min.
Time of concentration (TC) =     8.24 min.


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Process from Point/Station      325.000 to Point/Station      320.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      2.509(Ac.)
Runoff from this stream =      5.244(CFS)
Time of concentration =    8.24 min.
Rainfall intensity =     2.406(In/Hr)
Area averaged loss rate (Fm) =    0.1469(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5877
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1     18.53    37.450      9.72    0.135      2.192
2      2.51     5.244      8.24    0.147      2.406
Qmax(1) =
          1.000 *    1.000 *    37.450) +
          0.905 *    1.000 *     5.244) + =      42.198
Qmax(2) =
          1.104 *    0.848 *    37.450) +
          1.000 *    1.000 *     5.244) + =      40.280

Total of 2 main streams to confluence:
Flow rates before confluence point:
      38.450       6.244
Maximum flow rates at confluence using above data:
       42.198       40.280
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Area of streams before confluence:
       18.531        2.509
Effective area values after confluence:
       21.040       18.216


Results of confluence:
Total flow rate =     42.198(CFS)
Time of concentration =     9.720 min.
Effective stream area after confluence  =     21.040(Ac.)
Study area average Pervious fraction(Ap) =  0.546
Study area average soil loss rate(Fm) =    0.136(In/Hr)
Study area total =      21.04(Ac.)


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Process from Point/Station      320.000 to Point/Station      329.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   241.000(Ft.)
Downstream point/station elevation =   240.000(Ft.)
Pipe length  =    64.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    42.198(CFS)
Given pipe size =     48.00(In.)
Calculated individual pipe flow  =    42.198(CFS)
Normal flow depth in pipe =   15.83(In.)
Flow top width inside pipe =   45.14(In.)
Critical Depth =   23.29(In.)
Pipe flow velocity =     11.67(Ft/s)
Travel time through pipe =    0.09 min.
Time of concentration (TC) =     9.81 min.


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Process from Point/Station      320.000 to Point/Station      329.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =     21.040(Ac.)
Runoff from this stream =     42.198(CFS)
Time of concentration =    9.81 min.
Rainfall intensity =     2.181(In/Hr)
Area averaged loss rate (Fm) =    0.1364(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5457


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Process from Point/Station      328.000 to Point/Station      330.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   210.000(Ft.)
Top (of initial area) elevation =   267.000(Ft.)
Bottom (of initial area) elevation =   247.000(Ft.)
Difference in elevation =    20.000(Ft.)
Slope =    0.09524  s(%)=       9.52
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.285 min.
Rainfall intensity =      3.087(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.864
Subarea runoff =      1.093(CFS)
Total initial stream area =        0.410(Ac.)
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Process from Point/Station      330.000 to Point/Station      329.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   241.000(Ft.)
Downstream point/station elevation =   240.000(Ft.)
Pipe length  =    29.00(Ft.)   Manning's N = 0.015
No. of pipes = 1  Required pipe flow  =     1.093(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =     1.093(CFS)
Normal flow depth in pipe =    3.10(In.)
Flow top width inside pipe =   13.60(In.)
Critical depth could not be calculated.
Pipe flow velocity =      5.38(Ft/s)
Travel time through pipe =    0.09 min.
Time of concentration (TC) =     5.38 min.


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Process from Point/Station      330.000 to Point/Station      329.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.410(Ac.)
Runoff from this stream =      1.093(CFS)
Time of concentration =    5.38 min.
Rainfall intensity =     3.058(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000


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Process from Point/Station      331.000 to Point/Station      332.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   280.000(Ft.)
Bottom (of initial area) elevation =   270.000(Ft.)
Difference in elevation =    10.000(Ft.)
Slope =    0.03333  s(%)=       3.33
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    7.520 min.
Rainfall intensity =      2.532(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.856
Subarea runoff =      3.900(CFS)
Total initial stream area =        1.800(Ac.)


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Process from Point/Station      332.000 to Point/Station      333.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
______________________________________________________________________________
Top of street segment elevation =   270.000(Ft.)
End of street segment elevation =   255.000(Ft.)
Length of street segment  =   601.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
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Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      5.331(CFS)
Depth of flow =   0.321(Ft.), Average velocity =   4.973(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =   9.723(Ft.)
Flow velocity =   4.97(Ft/s)
Travel time =    1.01 min.     TC =    8.53  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      2.359(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.852
Subarea runoff =      2.797(CFS) for    1.530(Ac.)
Total runoff =      6.697(CFS)       Total area =        3.33(Ac.)
Area averaged Fm value =    0.125(In/Hr)
Street flow at end of street =      6.697(CFS)
Half street flow at end of street =      6.697(CFS)
Depth of flow =   0.341(Ft.), Average velocity =   5.240(Ft/s)
Flow width (from curb towards crown)=  10.730(Ft.)


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Process from Point/Station      333.000 to Point/Station      334.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
____________________________________________________________________________
Top of street segment elevation =   255.000(Ft.)
End of street segment elevation =   247.000(Ft.)
Length of street segment  =   708.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      7.536(CFS)
Depth of flow =   0.432(Ft.), Average velocity =   3.060(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  15.285(Ft.)
Flow velocity =   3.06(Ft/s)
Travel time =    3.86 min.     TC =   12.39  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      1.913(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area,(total area with modified
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rational method)(Q=KCIA) is C = 0.841
Subarea runoff =      1.608(CFS) for    1.830(Ac.)
Total runoff =      8.304(CFS)       Total area =        5.16(Ac.)
Area averaged Fm value =    0.125(In/Hr)
Street flow at end of street =      8.304(CFS)
Half street flow at end of street =      8.304(CFS)
Depth of flow =   0.444(Ft.), Average velocity =   3.132(Ft/s)
Flow width (from curb towards crown)=  15.889(Ft.)


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Process from Point/Station      334.000 to Point/Station      329.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   241.000(Ft.)
Downstream point/station elevation =   240.000(Ft.)
Pipe length  =    41.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     8.304(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =     8.304(CFS)
Normal flow depth in pipe =    9.07(In.)
Flow top width inside pipe =   18.00(In.)
Critical Depth =   13.40(In.)
Pipe flow velocity =      9.31(Ft/s)
Travel time through pipe =    0.07 min.
Time of concentration (TC) =    12.46 min.


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Process from Point/Station      334.000 to Point/Station      329.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 3
Stream flow area =      5.160(Ac.)
Runoff from this stream =      8.304(CFS)
Time of concentration =   12.46 min.
Rainfall intensity =     1.907(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1     21.04    42.198      9.81    0.136      2.181
2      0.41     1.093      5.38    0.125      3.058
3      5.16     8.304     12.46    0.125      1.907
Qmax(1) =
          1.000 *    1.000 *    42.198) +
          0.701 *    1.000 *     1.093) +
          1.154 *    0.787 *     8.304) + =      50.509
Qmax(2) =
          1.429 *    0.548 *    42.198) +
          1.000 *    1.000 *     1.093) +
          1.646 *    0.431 *     8.304) + =      40.033
Qmax(3) =
          0.866 *    1.000 *    42.198) +
          0.607 *    1.000 *     1.093) +
          1.000 *    1.000 *     8.304) + =      45.510

Total of 3 streams to confluence:
Flow rates before confluence point:
      42.198       1.093       8.304
Maximum flow rates at confluence using above data:
       50.509       40.033       45.510
Area of streams before confluence:
       21.040        0.410        5.160
Effective area values after confluence:
       25.514       14.164       26.610
Results of confluence:
```

```
Total flow rate =     50.509(CFS)
Time of concentration =     9.811 min.
Effective stream area after confluence =     25.514(Ac.)
Study area average Pervious fraction(Ap) =  0.536
Study area average soil loss rate(Fm) =    0.134(In/Hr)
Study area total (this main stream) =      26.61(Ac.)


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Process from Point/Station      329.000 to Point/Station      335.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =   240.000(Ft.)
Downstream point/station elevation =   201.800(Ft.)
Pipe length  =   393.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    50.509(CFS)
Given pipe size =     48.00(In.)
Calculated individual pipe flow  =    50.509(CFS)
Normal flow depth in pipe =   10.88(In.)
Flow top width inside pipe =   40.20(In.)
Critical Depth =   25.61(In.)
Pipe flow velocity =     23.60(Ft/s)
Travel time through pipe =    0.28 min.
Time of concentration (TC) =    10.09 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      329.000 to Point/Station      335.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     25.514(Ac.)
Runoff from this stream =     50.509(CFS)
Time of concentration =   10.09 min.
Rainfall intensity =     2.147(In/Hr)
Area averaged loss rate (Fm) =    0.1340(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5361
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      336.000 to Point/Station      337.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.100
Decimal fraction soil group C = 0.900
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 67.70
Pervious ratio(Ap) = 0.1000  Max loss rate(Fp)=     0.255(In/Hr)
Max Catchment Loss (Fm) =     0.026(In/Hr)
Initial subarea data:
Initial area flow distance =   416.000(Ft.)
Top (of initial area) elevation =   227.000(Ft.)
Bottom (of initial area) elevation =   211.000(Ft.)
Difference in elevation =    16.000(Ft.)
Slope =    0.03846  s(%)=       3.85
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.509 min.
NOTE: Distance EXCEEDS recommended maximum value of   328.084(Ft.)
for this Development Type
Rainfall intensity =      2.747(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.892
Subarea runoff =      6.808(CFS)
Total initial stream area =        2.780(Ac.)


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Process from Point/Station      337.000 to Point/Station      338.000
```

```
**** PIPEFLOW TRAVEL TIME (User specified size) ****
------------------------------------------------------------------------
Upstream point/station elevation =   206.900(Ft.)
Downstream point/station elevation =   204.500(Ft.)
Pipe length  =   470.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     6.808(CFS)
Given pipe size =     24.00(In.)
Calculated individual pipe flow  =     6.808(CFS)
Normal flow depth in pipe =   10.87(In.)
Flow top width inside pipe =   23.89(In.)
Critical Depth =   11.10(In.)
Pipe flow velocity =      4.93(Ft/s)
Travel time through pipe =    1.59 min.
Time of concentration (TC) =     8.10 min.


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Process from Point/Station      337.000 to Point/Station      338.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------
Along Main Stream number: 2 in normal stream number 1
Stream flow area =      2.780(Ac.)
Runoff from this stream =      6.808(CFS)
Time of concentration =    8.10 min.
Rainfall intensity =     2.429(In/Hr)
Area averaged loss rate (Fm) =    0.0255(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      336.000 to Point/Station      339.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------
APARTMENT subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.2000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.050(In/Hr)
Initial subarea data:
Initial area flow distance =   364.000(Ft.)
Top (of initial area) elevation =   227.000(Ft.)
Bottom (of initial area) elevation =   223.500(Ft.)
Difference in elevation =     3.500(Ft.)
Slope =    0.00962  s(%)=       0.96
TC = k(0.324)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.677 min.
NOTE: Distance EXCEEDS recommended maximum value of   328.084(Ft.)
for this Development Type
Rainfall intensity =      2.337(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.881
Subarea runoff =      5.227(CFS)
Total initial stream area =        2.540(Ac.)


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Process from Point/Station      339.000 to Point/Station      338.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
------------------------------------------------------------------------
Upstream point/station elevation =   216.000(Ft.)
Downstream point/station elevation =   204.500(Ft.)
Pipe length  =   164.00(Ft.)   Manning's N = 0.015
No. of pipes = 1  Required pipe flow  =     5.227(CFS)
Given pipe size =     24.00(In.)
Calculated individual pipe flow  =     5.227(CFS)
Normal flow depth in pipe =    5.14(In.)
Flow top width inside pipe =   19.70(In.)
Critical Depth =    9.66(In.)
Pipe flow velocity =     10.59(Ft/s)
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Travel time through pipe =    0.26 min.
Time of concentration (TC) =     8.94 min.


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Process from Point/Station      339.000 to Point/Station      338.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 2 in normal stream number 2
Stream flow area =      2.540(Ac.)
Runoff from this stream =      5.227(CFS)
Time of concentration =    8.94 min.
Rainfall intensity =     2.298(In/Hr)
Area averaged loss rate (Fm) =    0.0500(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1      2.78     6.808      8.10    0.025      2.429
2      2.54     5.227      8.94    0.050      2.298
Qmax(1) =
          1.000 *    1.000 *     6.808) +
          1.058 *    0.906 *     5.227) + =      11.821
Qmax(2) =
          0.946 *    1.000 *     6.808) +
          1.000 *    1.000 *     5.227) + =      11.666

Total of 2 streams to confluence:
Flow rates before confluence point:
       6.808       5.227
Maximum flow rates at confluence using above data:
       11.821       11.666
Area of streams before confluence:
        2.780        2.540
Effective area values after confluence:
        5.082        5.320
Results of confluence:
Total flow rate =     11.821(CFS)
Time of concentration =     8.099 min.
Effective stream area after confluence =      5.082(Ac.)
Study area average Pervious fraction(Ap) =  0.148
Study area average soil loss rate(Fm) =    0.037(In/Hr)
Study area total (this main stream) =       5.32(Ac.)


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Process from Point/Station      338.000 to Point/Station      340.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   204.500(Ft.)
Downstream point/station elevation =   202.400(Ft.)
Pipe length  =   286.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    11.821(CFS)
Given pipe size =     24.00(In.)
Calculated individual pipe flow  =    11.821(CFS)
Normal flow depth in pipe =   13.54(In.)
Flow top width inside pipe =   23.80(In.)
Critical Depth =   14.81(In.)
Pipe flow velocity =      6.47(Ft/s)
Travel time through pipe =    0.74 min.
Time of concentration (TC) =     8.84 min.


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Process from Point/Station      338.000 to Point/Station      340.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 2 in normal stream number 1
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```
Stream flow area =      5.082(Ac.)
Runoff from this stream =     11.821(CFS)
Time of concentration =    8.84 min.
Rainfall intensity =     2.313(In/Hr)
Area averaged loss rate (Fm) =    0.0372(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1477


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Process from Point/Station      341.000 to Point/Station      342.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
APARTMENT subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.2000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.050(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   252.000(Ft.)
Bottom (of initial area) elevation =   221.500(Ft.)
Difference in elevation =    30.500(Ft.)
Slope =    0.10167  s(%)=      10.17
TC = k(0.324)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.011 min.
Rainfall intensity =      3.181(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.886
Subarea runoff =      3.325(CFS)
Total initial stream area =        1.180(Ac.)


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Process from Point/Station      342.000 to Point/Station      343.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------------
Top of street segment elevation =   221.500(Ft.)
End of street segment elevation =   219.000(Ft.)
Length of street segment  =   215.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [2] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      5.550(CFS)
Depth of flow =   0.328(Ft.), Average velocity =   2.443(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  10.044(Ft.)
Flow velocity =   2.44(Ft/s)
Travel time =    1.47 min.     TC =    6.48  min.
 Adding area flow to street
APARTMENT subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.2000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.050(In/Hr)
Rainfall intensity =      2.754(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area,(total area with modified
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rational method)(Q=KCIA) is C = 0.884
Subarea runoff =      4.292(CFS) for    1.950(Ac.)
Total runoff =      7.617(CFS)       Total area =        3.13(Ac.)
Area averaged Fm value =    0.050(In/Hr)
Street flow at end of street =      7.617(CFS)
Half street flow at end of street =      3.808(CFS)
Depth of flow =   0.357(Ft.), Average velocity =   2.629(Ft/s)
Flow width (from curb towards crown)=  11.497(Ft.)


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Process from Point/Station      343.000 to Point/Station      340.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   211.000(Ft.)
Downstream point/station elevation =   202.400(Ft.)
Pipe length  =    45.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     7.617(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =     7.617(CFS)
Normal flow depth in pipe =    4.96(In.)
Flow top width inside pipe =   16.08(In.)
Critical Depth =   12.84(In.)
Pipe flow velocity =     19.24(Ft/s)
Travel time through pipe =    0.04 min.
Time of concentration (TC) =     6.52 min.


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Process from Point/Station      343.000 to Point/Station      340.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 2 in normal stream number 2
Stream flow area =      3.130(Ac.)
Runoff from this stream =      7.617(CFS)
Time of concentration =    6.52 min.
Rainfall intensity =     2.745(In/Hr)
Area averaged loss rate (Fm) =    0.0500(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000


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Process from Point/Station      344.000 to Point/Station      345.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
APARTMENT subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.2000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.050(In/Hr)
Initial subarea data:
Initial area flow distance =   263.000(Ft.)
Top (of initial area) elevation =   225.000(Ft.)
Bottom (of initial area) elevation =   221.500(Ft.)
Difference in elevation =     3.500(Ft.)
Slope =    0.01331  s(%)=       1.33
TC = k(0.324)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    7.140 min.
Rainfall intensity =      2.607(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.883
Subarea runoff =      2.163(CFS)
Total initial stream area =        0.940(Ac.)


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Process from Point/Station      345.000 to Point/Station      346.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
______________________________________________________________________________
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```
Top of street segment elevation =   221.500(Ft.)
End of street segment elevation =   219.000(Ft.)
Length of street segment  =   241.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  22.000(Ft.)
Distance from crown to crossfall grade break  =  18.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.025
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      4.589(CFS)
Depth of flow =   0.381(Ft.), Average velocity =   2.630(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  12.721(Ft.)
Flow velocity =   2.63(Ft/s)
Travel time =    1.53 min.     TC =    8.67  min.
 Adding area flow to street
APARTMENT subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.2000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.050(In/Hr)
Rainfall intensity =      2.338(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.881
Subarea runoff =      4.797(CFS) for    2.440(Ac.)
Total runoff =      6.961(CFS)       Total area =        3.38(Ac.)
Area averaged Fm value =    0.050(In/Hr)
Street flow at end of street =      6.961(CFS)
Half street flow at end of street =      6.961(CFS)
Depth of flow =   0.428(Ft.), Average velocity =   2.906(Ft/s)
Flow width (from curb towards crown)=  15.063(Ft.)


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Process from Point/Station      346.000 to Point/Station      340.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
________________________________________________________________________
Upstream point/station elevation =   211.000(Ft.)
Downstream point/station elevation =   202.400(Ft.)
Pipe length  =    42.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     6.961(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =     6.961(CFS)
Normal flow depth in pipe =    4.65(In.)
Flow top width inside pipe =   15.76(In.)
Critical Depth =   12.25(In.)
Pipe flow velocity =     19.21(Ft/s)
Travel time through pipe =    0.04 min.
Time of concentration (TC) =     8.70 min.


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Process from Point/Station      346.000 to Point/Station      340.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 2 in normal stream number 3
Stream flow area =      3.380(Ac.)
Runoff from this stream =      6.961(CFS)
Time of concentration =    8.70 min.
Rainfall intensity =     2.333(In/Hr)
Area averaged loss rate (Fm) =    0.0500(In/Hr)
```

```
Area averaged Pervious ratio (Ap) = 0.2000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1      5.08    11.821      8.84    0.037      2.313
2      3.13     7.617      6.52    0.050      2.745
3      3.38     6.961      8.70    0.050      2.333
Qmax(1) =
          1.000 *    1.000 *    11.821) +
          0.840 *    1.000 *     7.617) +
          0.991 *    1.000 *     6.961) + =      25.119
Qmax(2) =
          1.190 *    0.738 *    11.821) +
          1.000 *    1.000 *     7.617) +
          1.180 *    0.749 *     6.961) + =      24.141
Qmax(3) =
          1.009 *    0.985 *    11.821) +
          0.847 *    1.000 *     7.617) +
          1.000 *    1.000 *     6.961) + =      25.158

Total of 3 streams to confluence:
Flow rates before confluence point:
      11.821       7.617       6.961
Maximum flow rates at confluence using above data:
       25.119       24.141       25.158
Area of streams before confluence:
        5.082        3.130        3.380
Effective area values after confluence:
       11.592        9.409       11.516
Results of confluence:
Total flow rate =     25.158(CFS)
Time of concentration =     8.704 min.
Effective stream area after confluence =     11.516(Ac.)
Study area average Pervious fraction(Ap) =  0.177
Study area average soil loss rate(Fm) =    0.044(In/Hr)
Study area total (this main stream) =      11.59(Ac.)


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Process from Point/Station      340.000 to Point/Station      335.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
________________________________________________________________________
Upstream point/station elevation =   202.400(Ft.)
Downstream point/station elevation =   201.800(Ft.)
Pipe length  =   260.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    25.158(CFS)
Given pipe size =     36.00(In.)
Calculated individual pipe flow  =    25.158(CFS)
Normal flow depth in pipe =   24.03(In.)
Flow top width inside pipe =   33.92(In.)
Critical Depth =   19.43(In.)
Pipe flow velocity =      5.02(Ft/s)
Travel time through pipe =    0.86 min.
Time of concentration (TC) =     9.57 min.


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Process from Point/Station      340.000 to Point/Station      335.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =     11.516(Ac.)
Runoff from this stream =     25.158(CFS)
Time of concentration =    9.57 min.
Rainfall intensity =     2.212(In/Hr)
Area averaged loss rate (Fm) =    0.0444(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1771
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Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1     25.51    50.509     10.09    0.134      2.147
2     11.52    25.158      9.57    0.044      2.212
Qmax(1) =
          1.000 *    1.000 *    50.509) +
          0.970 *    1.000 *    25.158) + =      74.913
Qmax(2) =
          1.032 *    0.948 *    50.509) +
          1.000 *    1.000 *    25.158) + =      74.604

Total of 2 main streams to confluence:
Flow rates before confluence point:
      51.509      26.158
Maximum flow rates at confluence using above data:
       74.913       74.604
Area of streams before confluence:
       25.514       11.516
Effective area values after confluence:
       37.030       35.712


Results of confluence:
Total flow rate =     74.913(CFS)
Time of concentration =    10.088 min.
Effective stream area after confluence  =     37.030(Ac.)
Study area average Pervious fraction(Ap) =  0.424
Study area average soil loss rate(Fm) =    0.106(In/Hr)
Study area total =      37.03(Ac.)


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Process from Point/Station      335.000 to Point/Station      347.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
________________________________________________________________________
Upstream point/station elevation =   201.800(Ft.)
Downstream point/station elevation =   200.700(Ft.)
Pipe length  =   133.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    74.913(CFS)
Given pipe size =     48.00(In.)
Calculated individual pipe flow  =    74.913(CFS)
Normal flow depth in pipe =   26.06(In.)
Flow top width inside pipe =   47.82(In.)
Critical Depth =   31.43(In.)
Pipe flow velocity =     10.75(Ft/s)
Travel time through pipe =    0.21 min.
Time of concentration (TC) =    10.29 min.


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Process from Point/Station      335.000 to Point/Station      347.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =     37.030(Ac.)
Runoff from this stream =     74.913(CFS)
Time of concentration =   10.29 min.
Rainfall intensity =     2.123(In/Hr)
Area averaged loss rate (Fm) =    0.1062(In/Hr)
Area averaged Pervious ratio (Ap) = 0.4245


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Process from Point/Station      330.000 to Point/Station      348.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
RESIDENTIAL(5 - 7 dwl/acre)
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Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   250.000(Ft.)
Top (of initial area) elevation =   247.000(Ft.)
Bottom (of initial area) elevation =   229.000(Ft.)
Difference in elevation =    18.000(Ft.)
Slope =    0.07200  s(%)=       7.20
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.993 min.
Rainfall intensity =      2.877(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.861
Subarea runoff =      1.238(CFS)
Total initial stream area =        0.500(Ac.)


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Process from Point/Station      348.000 to Point/Station      349.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of street segment elevation =   229.000(Ft.)
End of street segment elevation =   213.000(Ft.)
Length of street segment  =   254.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      2.048(CFS)
Depth of flow =   0.242(Ft.), Average velocity =   4.472(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =   5.757(Ft.)
Flow velocity =   4.47(Ft/s)
Travel time =    0.95 min.     TC =    6.94  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      2.649(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.858
Subarea runoff =      1.556(CFS) for    0.730(Ac.)
Total runoff =      2.794(CFS)       Total area =        1.23(Ac.)
Area averaged Fm value =    0.125(In/Hr)
Street flow at end of street =      2.794(CFS)
Half street flow at end of street =      2.794(CFS)
Depth of flow =   0.263(Ft.), Average velocity =   4.743(Ft/s)
Flow width (from curb towards crown)=   6.801(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      349.000 to Point/Station      347.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
```

```
Upstream point/station elevation =   201.500(Ft.)
Downstream point/station elevation =   200.700(Ft.)
Pipe length  =    34.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     2.794(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =     2.794(CFS)
Normal flow depth in pipe =    5.07(In.)
Flow top width inside pipe =   16.20(In.)
Critical Depth =    7.61(In.)
Pipe flow velocity =      6.84(Ft/s)
Travel time through pipe =    0.08 min.
Time of concentration (TC) =     7.02 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      349.000 to Point/Station      347.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      1.230(Ac.)
Runoff from this stream =      2.794(CFS)
Time of concentration =    7.02 min.
Rainfall intensity =     2.632(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000


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Process from Point/Station      334.000 to Point/Station      350.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   250.000(Ft.)
Top (of initial area) elevation =   247.000(Ft.)
Bottom (of initial area) elevation =   229.000(Ft.)
Difference in elevation =    18.000(Ft.)
Slope =    0.07200  s(%)=       7.20
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.993 min.
Rainfall intensity =      2.877(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.861
Subarea runoff =      0.520(CFS)
Total initial stream area =        0.210(Ac.)


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Process from Point/Station      350.000 to Point/Station      351.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------------
Top of street segment elevation =   229.000(Ft.)
End of street segment elevation =   213.000(Ft.)
Length of street segment  =   266.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  22.000(Ft.)
Distance from crown to crossfall grade break  =  18.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.025
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
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```
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      0.780(CFS)
Depth of flow =   0.176(Ft.), Average velocity =   4.157(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =   2.468(Ft.)
Flow velocity =   4.16(Ft/s)
Travel time =    1.07 min.     TC =    7.06  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      2.624(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.857
Subarea runoff =      0.469(CFS) for    0.230(Ac.)
Total runoff =      0.990(CFS)       Total area =        0.44(Ac.)
Area averaged Fm value =    0.125(In/Hr)
Street flow at end of street =      0.990(CFS)
Half street flow at end of street =      0.990(CFS)
Depth of flow =   0.196(Ft.), Average velocity =   4.018(Ft/s)
Flow width (from curb towards crown)=   3.458(Ft.)


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Process from Point/Station      351.000 to Point/Station      347.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   201.500(Ft.)
Downstream point/station elevation =   200.700(Ft.)
Pipe length  =    43.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     0.990(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =     0.990(CFS)
Normal flow depth in pipe =    3.20(In.)
Flow top width inside pipe =   13.77(In.)
Critical Depth =    4.44(In.)
Pipe flow velocity =      4.65(Ft/s)
Travel time through pipe =    0.15 min.
Time of concentration (TC) =     7.21 min.


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Process from Point/Station      351.000 to Point/Station      347.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 3
Stream flow area =      0.440(Ac.)
Runoff from this stream =      0.990(CFS)
Time of concentration =    7.21 min.
Rainfall intensity =     2.592(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1     37.03    74.913     10.29    0.106      2.123
2      1.23     2.794      7.02    0.125      2.632
3      0.44     0.990      7.21    0.125      2.592
Qmax(1) =
          1.000 *    1.000 *    74.913) +
          0.797 *    1.000 *     2.794) +
```

```
          0.810 *    1.000 *     0.990) + =      77.941
Qmax(2) =
          1.252 *    0.682 *    74.913) +
          1.000 *    1.000 *     2.794) +
          1.016 *    0.974 *     0.990) + =      67.777
Qmax(3) =
          1.233 *    0.701 *    74.913) +
          0.984 *    1.000 *     2.794) +
          1.000 *    1.000 *     0.990) + =      68.460

Total of 3 streams to confluence:
Flow rates before confluence point:
      74.913       2.794       0.990
Maximum flow rates at confluence using above data:
       77.941       67.777       68.460
Area of streams before confluence:
       37.030        1.230        0.440
Effective area values after confluence:
       38.700       26.920       27.619
Results of confluence:
Total flow rate =     77.941(CFS)
Time of concentration =    10.295 min.
Effective stream area after confluence =     38.700(Ac.)
Study area average Pervious fraction(Ap) =  0.428
Study area average soil loss rate(Fm) =    0.107(In/Hr)
Study area total (this main stream) =      38.70(Ac.)


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Process from Point/Station      347.000 to Point/Station      352.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   200.700(Ft.)
Downstream point/station elevation =   200.000(Ft.)
Pipe length  =   227.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    77.941(CFS)
Given pipe size =     48.00(In.)
Calculated individual pipe flow  =    77.941(CFS)
Normal flow depth in pipe =   38.39(In.)
Flow top width inside pipe =   38.42(In.)
Critical Depth =   32.06(In.)
Pipe flow velocity =      7.23(Ft/s)
Travel time through pipe =    0.52 min.
Time of concentration (TC) =    10.82 min.


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Process from Point/Station      347.000 to Point/Station      352.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     38.700(Ac.)
Runoff from this stream =     77.941(CFS)
Time of concentration =   10.82 min.
Rainfall intensity =     2.064(In/Hr)
Area averaged loss rate (Fm) =    0.1070(In/Hr)
Area averaged Pervious ratio (Ap) = 0.4277
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      353.000 to Point/Station      354.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
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```
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   380.000(Ft.)
Bottom (of initial area) elevation =   310.000(Ft.)
Difference in elevation =    70.000(Ft.)
Slope =    0.23333  s(%)=      23.33
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.248 min.
Rainfall intensity =      2.254(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.800
Subarea runoff =      2.093(CFS)
Total initial stream area =        1.160(Ac.)


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Process from Point/Station      354.000 to Point/Station      355.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
______________________________________________________________________________
Estimated mean flow rate at midpoint of channel =      7.295(CFS)
Depth of flow =   0.199(Ft.), Average velocity =   3.670(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2             50.00              0.00
       3            100.00              1.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------------------
Sub-Channel flow  =      7.295(CFS)
  '     '       flow top width =     19.938(Ft.)
  '     '    velocity=    3.670(Ft/s)
  '     '       area =      1.988(Sq.Ft)
  '     '       Froude number =     2.048

Upstream point elevation =   310.000(Ft.)
Downstream point elevation =   231.000(Ft.)
Flow length =   665.000(Ft.)
Travel time  =    3.02 min.
Time of concentration =   12.27 min.
Depth of flow =   0.199(Ft.)
Average velocity =   3.670(Ft/s)
Total irregular channel flow =     7.295(CFS)
Irregular channel normal depth above invert elev. =   0.199(Ft.)
Average velocity of channel(s) =   3.670(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Rainfall intensity =      1.923(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.783
Subarea runoff =     10.318(CFS) for    7.080(Ac.)
Total runoff =     12.410(CFS)       Total area =        8.24(Ac.)
Area averaged Fm value =    0.250(In/Hr)
Depth of flow =   0.243(Ft.), Average velocity =   4.191(Ft/s)


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Process from Point/Station      355.000 to Point/Station      352.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
______________________________________________________________________________
Estimated mean flow rate at midpoint of channel =     17.372(CFS)
Depth of flow =   0.323(Ft.), Average velocity =   3.322(Ft/s)
```

```
       ******* Irregular Channel Data ***********
-----------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2             50.00              0.00
       3            100.00              1.00
Manning's 'N' friction factor =   0.030
-----------------------------------------------------------------
Sub-Channel flow  =     17.372(CFS)
  '     '       flow top width =     32.340(Ft.)
  '     '    velocity=    3.322(Ft/s)
  '     '       area =      5.229(Sq.Ft)
  '     '       Froude number =     1.456

Upstream point elevation =   231.000(Ft.)
Downstream point elevation =   200.000(Ft.)
Flow length =   607.000(Ft.)
Travel time  =    3.05 min.
Time of concentration =   15.31 min.
Depth of flow =   0.323(Ft.)
Average velocity =   3.322(Ft/s)
Total irregular channel flow =    17.372(CFS)
Irregular channel normal depth above invert elev. =   0.323(Ft.)
Average velocity of channel(s) =   3.322(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Rainfall intensity =      1.698(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.767
Subarea runoff =      9.863(CFS) for    8.850(Ac.)
Total runoff =     22.273(CFS)       Total area =       17.09(Ac.)
Area averaged Fm value =    0.250(In/Hr)
Depth of flow =   0.355(Ft.), Average velocity =   3.535(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      355.000 to Point/Station      352.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =     17.090(Ac.)
Runoff from this stream =     22.273(CFS)
Time of concentration =   15.31 min.
Rainfall intensity =     1.698(In/Hr)
Area averaged loss rate (Fm) =    0.2500(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Program is now starting with Main Stream No. 3


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      356.000 to Point/Station      357.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Initial subarea data:
```

```
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   540.000(Ft.)
Bottom (of initial area) elevation =   485.000(Ft.)
Difference in elevation =    55.000(Ft.)
Slope =    0.18333  s(%)=      18.33
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.705 min.
Rainfall intensity =      2.194(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.797
Subarea runoff =      2.380(CFS)
Total initial stream area =        1.360(Ac.)


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Process from Point/Station      357.000 to Point/Station      358.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =      8.505(CFS)
Depth of flow =   0.214(Ft.), Average velocity =   3.708(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2             50.00              0.00
       3            100.00              1.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =      8.505(CFS)
  '     '       flow top width =     21.417(Ft.)
  '     '    velocity=    3.708(Ft/s)
  '     '       area =      2.294(Sq.Ft)
  '     '       Froude number =     1.997

Upstream point elevation =   485.000(Ft.)
Downstream point elevation =   415.000(Ft.)
Flow length =   635.000(Ft.)
Travel time  =    2.85 min.
Time of concentration =   12.56 min.
Depth of flow =   0.214(Ft.)
Average velocity =   3.708(Ft/s)
Total irregular channel flow =     8.505(CFS)
Irregular channel normal depth above invert elev. =   0.214(Ft.)
Average velocity of channel(s) =   3.708(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Rainfall intensity =      1.898(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.781
Subarea runoff =     12.158(CFS) for    8.440(Ac.)
Total runoff =     14.538(CFS)       Total area =        9.80(Ac.)
Area averaged Fm value =    0.250(In/Hr)
Depth of flow =   0.262(Ft.), Average velocity =   4.240(Ft/s)


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Process from Point/Station      358.000 to Point/Station      359.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =     32.470(CFS)
Depth of flow =   0.341(Ft.), Average velocity =   5.580(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
```

```
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2             50.00              0.00
       3            100.00              1.00
Manning's 'N' friction factor =   0.030
-----------------------------------------------------------------
Sub-Channel flow  =     32.470(CFS)
  '     '       flow top width =     34.113(Ft.)
  '     '    velocity=    5.580(Ft/s)
  '     '       area =      5.819(Sq.Ft)
  '     '       Froude number =     2.381

Upstream point elevation =   415.000(Ft.)
Downstream point elevation =   273.000(Ft.)
Flow length =  1058.000(Ft.)
Travel time  =    3.16 min.
Time of concentration =   15.72 min.
Depth of flow =   0.341(Ft.)
Average velocity =   5.580(Ft/s)
Total irregular channel flow =    32.470(CFS)
Irregular channel normal depth above invert elev. =   0.341(Ft.)
Average velocity of channel(s) =   5.580(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Rainfall intensity =      1.673(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.766
Subarea runoff =     35.793(CFS) for   29.490(Ac.)
Total runoff =     50.330(CFS)       Total area =       39.29(Ac.)
Area averaged Fm value =    0.250(In/Hr)
Depth of flow =   0.402(Ft.), Average velocity =   6.227(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      359.000 to Point/Station      360.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
________________________________________________________________________
Upstream point/station elevation =   267.000(Ft.)
Downstream point/station elevation =   266.000(Ft.)
Pipe length  =   111.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    50.330(CFS)
Given pipe size =     48.00(In.)
Calculated individual pipe flow  =    50.330(CFS)
Normal flow depth in pipe =   20.19(In.)
Flow top width inside pipe =   47.39(In.)
Critical Depth =   25.54(In.)
Pipe flow velocity =     10.03(Ft/s)
Travel time through pipe =    0.18 min.
Time of concentration (TC) =    15.90 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      359.000 to Point/Station      360.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 3 in normal stream number 1
Stream flow area =     39.290(Ac.)
Runoff from this stream =     50.330(CFS)
Time of concentration =   15.90 min.
Rainfall intensity =     1.662(In/Hr)
Area averaged loss rate (Fm) =    0.2500(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      361.000 to Point/Station      362.000
**** INITIAL AREA EVALUATION ****
----------------------------------------------------------------------
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   597.000(Ft.)
Top (of initial area) elevation =   407.000(Ft.)
Bottom (of initial area) elevation =   380.000(Ft.)
Difference in elevation =    27.000(Ft.)
Slope =    0.04523  s(%)=       4.52
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.317 min.
NOTE: Distance EXCEEDS recommended maximum value of   328.084(Ft.)
for this Development Type
Rainfall intensity =      2.245(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.850
Subarea runoff =     14.616(CFS)
Total initial stream area =        7.660(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      362.000 to Point/Station      360.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
----------------------------------------------------------------------
Upstream point/station elevation =   372.000(Ft.)
Downstream point/station elevation =   266.000(Ft.)
Pipe length  =   750.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    14.616(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =    14.616(CFS)
Normal flow depth in pipe =    7.58(In.)
Flow top width inside pipe =   17.78(In.)
Critical Depth =   16.76(In.)
Pipe flow velocity =     20.67(Ft/s)
Travel time through pipe =    0.60 min.
Time of concentration (TC) =     9.92 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      362.000 to Point/Station      360.000
**** CONFLUENCE OF MINOR STREAMS ****
----------------------------------------------------------------------
Along Main Stream number: 3 in normal stream number 2
Stream flow area =      7.660(Ac.)
Runoff from this stream =     14.616(CFS)
Time of concentration =    9.92 min.
Rainfall intensity =     2.167(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1     39.29    50.330     15.90    0.250      1.662
2      7.66    14.616      9.92    0.125      2.167
Qmax(1) =
          1.000 *    1.000 *    50.330) +
          0.753 *    1.000 *    14.616) + =      61.334
Qmax(2) =
          1.357 *    0.624 *    50.330) +
          1.000 *    1.000 *    14.616) + =      57.237
```

```
Total of 2 streams to confluence:
Flow rates before confluence point:
      50.330      14.616
Maximum flow rates at confluence using above data:
       61.334       57.237
Area of streams before confluence:
       39.290        7.660
Effective area values after confluence:
       46.950       32.171
Results of confluence:
Total flow rate =     61.334(CFS)
Time of concentration =    15.904 min.
Effective stream area after confluence =     46.950(Ac.)
Study area average Pervious fraction(Ap) =  0.918
Study area average soil loss rate(Fm) =    0.230(In/Hr)
Study area total (this main stream) =      46.95(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      360.000 to Point/Station      352.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   266.000(Ft.)
Downstream point/station elevation =   200.000(Ft.)
Pipe length  =  1386.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    61.334(CFS)
Given pipe size =     36.00(In.)
Calculated individual pipe flow  =    61.334(CFS)
Normal flow depth in pipe =   16.31(In.)
Flow top width inside pipe =   35.84(In.)
Critical Depth =   30.29(In.)
Pipe flow velocity =     19.71(Ft/s)
Travel time through pipe =    1.17 min.
Time of concentration (TC) =    17.08 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      360.000 to Point/Station      352.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 3
Stream flow area =     46.950(Ac.)
Runoff from this stream =     61.334(CFS)
Time of concentration =   17.08 min.
Rainfall intensity =     1.597(In/Hr)
Area averaged loss rate (Fm) =    0.2296(In/Hr)
Area averaged Pervious ratio (Ap) = 0.9184
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1     38.70    77.941     10.82    0.107      2.064
2     17.09    22.273     15.31    0.250      1.698
3     46.95    61.334     17.08    0.230      1.597
Qmax(1) =
          1.000 *    1.000 *    77.941) +
          1.253 *    0.706 *    22.273) +
          1.342 *    0.634 *    61.334) + =     149.782
Qmax(2) =
          0.813 *    1.000 *    77.941) +
          1.000 *    1.000 *    22.273) +
          1.074 *    0.897 *    61.334) + =     144.688
Qmax(3) =
          0.761 *    1.000 *    77.941) +
          0.930 *    1.000 *    22.273) +
          1.000 *    1.000 *    61.334) + =     141.397
```

```
Total of 3 main streams to confluence:
Flow rates before confluence point:
      78.941      23.273      62.334
Maximum flow rates at confluence using above data:
      149.782      144.688      141.397
Area of streams before confluence:
       38.700       17.090       46.950
Effective area values after confluence:
       80.516       97.895      102.740


Results of confluence:
Total flow rate =    149.782(CFS)
Time of concentration =    10.818 min.
Effective stream area after confluence  =     80.516(Ac.)
Study area average Pervious fraction(Ap) =  0.747
Study area average soil loss rate(Fm) =    0.187(In/Hr)
Study area total =     102.74(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      360.000 to Point/Station      352.000
**** SUBAREA FLOW ADDITION ****
________________________________________________________________________
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
The area added to the existing stream with this TC
does not add flow per Para 6b, Page D-15 of the OCHM,
therefore the upstream flow rate of Q =    149.782(CFS) is being used
Time of concentration =    10.82 min.
Rainfall intensity =      2.064(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.816
Subarea runoff =      0.000(CFS) for    6.730(Ac.)
Total runoff =    149.782(CFS)       Total area =       87.25(Ac.)
Area averaged Fm value =    0.192(In/Hr)
End of computations, total study area =          117.28 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.748
Area averaged SCS curve number (AMC 2) =  74.6
```

- 25 Year Post-Development Rational Method – Area 'C'

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                    Orange County Rational Hydrology Program

                (Hydrology Manual Date(s) October 1986 & November 1996)

 CIVILCADD/CIVILDESIGN  Engineering Software, (c) 1989-2012 Version 8.2
       Rational Hydrology Study, Date: 10/13/16  File Name: PRC025.roc
--------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION RATIONAL METHOD - AREA 'C' - 25 YEAR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
--------------------------------------------------------------------------


Program License Serial Number 4094

--------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

--------------------------------------------------------------------------

Rational hydrology study storm event year is    25.0

Decimal fraction of study above 2000 ft., 600M  =     0.0000
English Units Used for input data


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Process from Point/Station      300.000 to Point/Station      301.000
**** INITIAL AREA EVALUATION ****
__________________________________________________________________________
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   383.000(Ft.)
Bottom (of initial area) elevation =   321.000(Ft.)
Difference in elevation =    62.000(Ft.)
Slope =    0.20667  s(%)=      20.67
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.475 min.
Rainfall intensity =      3.359(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.833
Subarea runoff =      2.938(CFS)
Total initial stream area =        1.050(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      301.000 to Point/Station      302.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
__________________________________________________________________________
Upstream point/station elevation =   321.000(Ft.)
Downstream point/station elevation =   297.000(Ft.)
Pipe length  =    63.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     2.938(CFS)
Given pipe size =      8.00(In.)
Calculated individual pipe flow  =     2.938(CFS)
Normal flow depth in pipe =    3.49(In.)
Flow top width inside pipe =    7.93(In.)
Critical depth could not be calculated.
Pipe flow velocity =     20.10(Ft/s)
Travel time through pipe =    0.05 min.
Time of concentration (TC) =     9.53 min.
```

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Process from Point/Station      302.000 to Point/Station      303.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
______________________________________________________________________________
Top of street segment elevation =   297.000(Ft.)
End of street segment elevation =   286.000(Ft.)
Length of street segment  =   341.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      5.466(CFS)
Depth of flow =   0.343(Ft.), Average velocity =   4.230(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  10.796(Ft.)
Flow velocity =   4.23(Ft/s)
Travel time =    1.34 min.     TC =   10.87  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      3.108(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.851
Subarea runoff =      4.997(CFS) for    1.950(Ac.)
Total runoff =      7.936(CFS)       Total area =        3.00(Ac.)
Area averaged Fm value =    0.169(In/Hr)
Street flow at end of street =      7.936(CFS)
Half street flow at end of street =      7.936(CFS)
Depth of flow =   0.379(Ft.), Average velocity =   4.617(Ft/s)
Flow width (from curb towards crown)=  12.619(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      303.000 to Point/Station      304.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   280.000(Ft.)
Downstream point/station elevation =   279.000(Ft.)
Pipe length  =    23.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     7.936(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =     7.936(CFS)
Normal flow depth in pipe =    7.49(In.)
Flow top width inside pipe =   17.75(In.)
Critical Depth =   13.09(In.)
Pipe flow velocity =     11.40(Ft/s)
Travel time through pipe =    0.03 min.
Time of concentration (TC) =    10.90 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      303.000 to Point/Station      304.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
```

```
Stream flow area =      3.000(Ac.)
Runoff from this stream =      7.936(CFS)
Time of concentration =   10.90 min.
Rainfall intensity =     3.102(In/Hr)
Area averaged loss rate (Fm) =    0.1687(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6750


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      305.000 to Point/Station      306.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   233.000(Ft.)
Top (of initial area) elevation =   334.000(Ft.)
Bottom (of initial area) elevation =   297.000(Ft.)
Difference in elevation =    37.000(Ft.)
Slope =    0.15880  s(%)=      15.88
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    4.974 min.
Rainfall intensity =      4.838(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.877
Subarea runoff =      2.248(CFS)
Total initial stream area =        0.530(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      306.000 to Point/Station      307.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of street segment elevation =   297.000(Ft.)
End of street segment elevation =   286.000(Ft.)
Length of street segment  =   303.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      3.490(CFS)
Depth of flow =   0.299(Ft.), Average velocity =   4.000(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =   8.636(Ft.)
Flow velocity =   4.00(Ft/s)
Travel time =    1.26 min.     TC =    6.24  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      4.257(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area,(total area with modified
```

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rational method)(Q=KCIA) is C = 0.874
Subarea runoff =      2.400(CFS) for    0.720(Ac.)
Total runoff =      4.648(CFS)       Total area =        1.25(Ac.)
Area averaged Fm value =    0.125(In/Hr)
Street flow at end of street =      4.648(CFS)
Half street flow at end of street =      4.648(CFS)
Depth of flow =   0.323(Ft.), Average velocity =   4.265(Ft/s)
Flow width (from curb towards crown)=   9.814(Ft.)


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Process from Point/Station      307.000 to Point/Station      304.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   280.000(Ft.)
Downstream point/station elevation =   279.000(Ft.)
Pipe length  =    37.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     4.648(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =     4.648(CFS)
Normal flow depth in pipe =    6.38(In.)
Flow top width inside pipe =   17.22(In.)
Critical Depth =    9.94(In.)
Pipe flow velocity =      8.29(Ft/s)
Travel time through pipe =    0.07 min.
Time of concentration (TC) =     6.31 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      307.000 to Point/Station      304.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      1.250(Ac.)
Runoff from this stream =      4.648(CFS)
Time of concentration =    6.31 min.
Rainfall intensity =     4.228(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1      3.00     7.936     10.90    0.169      3.102
2      1.25     4.648      6.31    0.125      4.228
Qmax(1) =
          1.000 *    1.000 *     7.936) +
          0.726 *    1.000 *     4.648) + =      11.309
Qmax(2) =
          1.384 *    0.579 *     7.936) +
          1.000 *    1.000 *     4.648) + =      11.003

Total of 2 streams to confluence:
Flow rates before confluence point:
       7.936       4.648
Maximum flow rates at confluence using above data:
       11.309       11.003
Area of streams before confluence:
        3.000        1.250
Effective area values after confluence:
        4.250        2.986
Results of confluence:
Total flow rate =     11.309(CFS)
Time of concentration =    10.905 min.
Effective stream area after confluence =      4.250(Ac.)
Study area average Pervious fraction(Ap) =  0.624
Study area average soil loss rate(Fm) =    0.156(In/Hr)
Study area total (this main stream) =       4.25(Ac.)
```

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++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      304.000 to Point/Station      308.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
------------------------------------------------------------------------
Upstream point/station elevation =   279.000(Ft.)
Downstream point/station elevation =   259.000(Ft.)
Pipe length  =   247.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    11.309(CFS)
Given pipe size =     24.00(In.)
Calculated individual pipe flow  =    11.309(CFS)
Normal flow depth in pipe =    6.81(In.)
Flow top width inside pipe =   21.64(In.)
Critical Depth =   14.48(In.)
Pipe flow velocity =     15.42(Ft/s)
Travel time through pipe =    0.27 min.
Time of concentration (TC) =    11.17 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      304.000 to Point/Station      308.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      4.250(Ac.)
Runoff from this stream =     11.309(CFS)
Time of concentration =   11.17 min.
Rainfall intensity =     3.060(In/Hr)
Area averaged loss rate (Fm) =    0.1559(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6235


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Process from Point/Station      300.000 to Point/Station      309.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   383.000(Ft.)
Bottom (of initial area) elevation =   324.000(Ft.)
Difference in elevation =    59.000(Ft.)
Slope =    0.19667  s(%)=      19.67
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.570 min.
Rainfall intensity =      3.340(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.833
Subarea runoff =      3.087(CFS)
Total initial stream area =        1.110(Ac.)


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Process from Point/Station      309.000 to Point/Station      310.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
------------------------------------------------------------------------
Upstream point/station elevation =   324.000(Ft.)
Downstream point/station elevation =   299.000(Ft.)
Pipe length  =   140.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     3.087(CFS)
Given pipe size =      8.00(In.)
Calculated individual pipe flow  =     3.087(CFS)
Normal flow depth in pipe =    4.49(In.)
Flow top width inside pipe =    7.94(In.)
Critical depth could not be calculated.
```

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Pipe flow velocity =     15.32(Ft/s)
Travel time through pipe =    0.15 min.
Time of concentration (TC) =     9.72 min.


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Process from Point/Station      310.000 to Point/Station      311.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------------
Top of street segment elevation =   299.000(Ft.)
End of street segment elevation =   266.000(Ft.)
Length of street segment  =   717.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [2] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      8.852(CFS)
Depth of flow =   0.309(Ft.), Average velocity =   4.624(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =   9.113(Ft.)
Flow velocity =   4.62(Ft/s)
Travel time =    2.58 min.     TC =   12.31  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      2.897(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.854
Subarea runoff =     11.409(CFS) for    4.750(Ac.)
Total runoff =     14.496(CFS)       Total area =        5.86(Ac.)
Area averaged Fm value =    0.149(In/Hr)
Street flow at end of street =     14.496(CFS)
Half street flow at end of street =      7.248(CFS)
Depth of flow =   0.352(Ft.), Average velocity =   5.177(Ft/s)
Flow width (from curb towards crown)=  11.284(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      311.000 to Point/Station      308.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =   260.000(Ft.)
Downstream point/station elevation =   259.000(Ft.)
Pipe length  =    26.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    14.496(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =    14.496(CFS)
Normal flow depth in pipe =   11.14(In.)
Flow top width inside pipe =   17.49(In.)
Critical Depth =   16.72(In.)
Pipe flow velocity =     12.63(Ft/s)
Travel time through pipe =    0.03 min.
Time of concentration (TC) =    12.34 min.


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Process from Point/Station      311.000 to Point/Station      308.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      5.860(Ac.)
Runoff from this stream =     14.496(CFS)
Time of concentration =   12.34 min.
Rainfall intensity =     2.893(In/Hr)
Area averaged loss rate (Fm) =    0.1487(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5947


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      312.000 to Point/Station      313.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   350.000(Ft.)
Bottom (of initial area) elevation =   280.000(Ft.)
Difference in elevation =    70.000(Ft.)
Slope =    0.23333  s(%)=      23.33
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.096 min.
Rainfall intensity =      4.772(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.876
Subarea runoff =     10.582(CFS)
Total initial stream area =        2.530(Ac.)


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Process from Point/Station      313.000 to Point/Station      314.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------
Top of street segment elevation =   280.000(Ft.)
End of street segment elevation =   266.000(Ft.)
Length of street segment  =   609.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [2] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =     14.877(CFS)
Depth of flow =   0.390(Ft.), Average velocity =   3.995(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  13.173(Ft.)
Flow velocity =   4.00(Ft/s)
Travel time =    2.54 min.     TC =    7.64  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
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Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      3.796(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.870
Subarea runoff =      8.414(CFS) for    3.220(Ac.)
Total runoff =     18.996(CFS)       Total area =        5.75(Ac.)
Area averaged Fm value =    0.125(In/Hr)
Street flow at end of street =     18.996(CFS)
Half street flow at end of street =      9.498(CFS)
Depth of flow =   0.418(Ft.), Average velocity =   4.236(Ft/s)
Flow width (from curb towards crown)=  14.545(Ft.)


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Process from Point/Station      314.000 to Point/Station      308.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   260.000(Ft.)
Downstream point/station elevation =   259.000(Ft.)
Pipe length  =    36.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    18.996(CFS)
Given pipe size =     18.00(In.)
NOTE: Normal flow is pressure flow in user selected pipe size.
The approximate hydraulic grade line above the pipe invert is
     2.868(Ft.)  at the headworks or inlet of the pipe(s)
 Pipe friction loss =      1.177(Ft.)
 Minor friction loss =      2.691(Ft.)       K-factor =   1.50
Pipe flow velocity =     10.75(Ft/s)
Travel time through pipe =    0.06 min.
Time of concentration (TC) =     7.69 min.


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Process from Point/Station      314.000 to Point/Station      308.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 3
Stream flow area =      5.750(Ac.)
Runoff from this stream =     18.996(CFS)
Time of concentration =    7.69 min.
Rainfall intensity =     3.780(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1      4.25    11.309     11.17    0.156      3.060
2      5.86    14.496     12.34    0.149      2.893
3      5.75    18.996      7.69    0.125      3.780
Qmax(1) =
          1.000 *    1.000 *    11.309) +
          1.061 *    0.905 *    14.496) +
          0.803 *    1.000 *    18.996) + =      40.488
Qmax(2) =
          0.942 *    1.000 *    11.309) +
          1.000 *    1.000 *    14.496) +
          0.757 *    1.000 *    18.996) + =      39.536
Qmax(3) =
          1.248 *    0.689 *    11.309) +
          1.323 *    0.623 *    14.496) +
          1.000 *    1.000 *    18.996) + =      40.669

Total of 3 streams to confluence:
Flow rates before confluence point:
      11.309      14.496      18.996
Maximum flow rates at confluence using above data:
       40.488       39.536       40.669
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Area of streams before confluence:
        4.250        5.860        5.750
Effective area values after confluence:
       15.305       15.860       12.329
Results of confluence:
Total flow rate =     40.669(CFS)
Time of concentration =     7.692 min.
Effective stream area after confluence =     12.329(Ac.)
Study area average Pervious fraction(Ap) =  0.568
Study area average soil loss rate(Fm) =    0.142(In/Hr)
Study area total (this main stream) =      15.86(Ac.)


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Process from Point/Station      308.000 to Point/Station      315.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   259.000(Ft.)
Downstream point/station elevation =   241.500(Ft.)
Pipe length  =  1077.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    40.669(CFS)
Given pipe size =     36.00(In.)
Calculated individual pipe flow  =    40.669(CFS)
Normal flow depth in pipe =   17.54(In.)
Flow top width inside pipe =   35.99(In.)
Critical Depth =   24.92(In.)
Pipe flow velocity =     11.89(Ft/s)
Travel time through pipe =    1.51 min.
Time of concentration (TC) =     9.20 min.


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Process from Point/Station      308.000 to Point/Station      315.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =     12.329(Ac.)
Runoff from this stream =     40.669(CFS)
Time of concentration =    9.20 min.
Rainfall intensity =     3.416(In/Hr)
Area averaged loss rate (Fm) =    0.1420(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5681


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Process from Point/Station      316.000 to Point/Station      317.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   280.000(Ft.)
Bottom (of initial area) elevation =   270.000(Ft.)
Difference in elevation =    10.000(Ft.)
Slope =    0.03333  s(%)=       3.33
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    7.520 min.
Rainfall intensity =      3.829(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.871
Subarea runoff =      3.267(CFS)
Total initial stream area =        0.980(Ac.)


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Process from Point/Station      317.000 to Point/Station      318.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
----------------------------------------------------------------------
Top of street segment elevation =   270.000(Ft.)
End of street segment elevation =   255.000(Ft.)
Length of street segment  =   599.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      5.799(CFS)
Depth of flow =   0.360(Ft.), Average velocity =   3.892(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  11.676(Ft.)
Flow velocity =   3.89(Ft/s)
Travel time =    2.57 min.     TC =   10.09  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      3.243(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.865
Subarea runoff =      5.011(CFS) for    1.970(Ac.)
Total runoff =      8.278(CFS)       Total area =        2.95(Ac.)
Area averaged Fm value =    0.125(In/Hr)
Street flow at end of street =      8.278(CFS)
Half street flow at end of street =      8.278(CFS)
Depth of flow =   0.397(Ft.), Average velocity =   4.234(Ft/s)
Flow width (from curb towards crown)=  13.521(Ft.)


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Process from Point/Station      318.000 to Point/Station      319.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
----------------------------------------------------------------------
Top of street segment elevation =   255.000(Ft.)
End of street segment elevation =   248.000(Ft.)
Length of street segment  =   653.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =     14.654(CFS)
Depth of flow =   0.526(Ft.), Average velocity =   3.583(Ft/s)
Warning: depth of flow exceeds top of curb
Note:  depth of flow exceeds top of street crown.
Distance that curb overflow reaches into property =    1.29(Ft.)
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Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  18.000(Ft.)
Flow velocity =   3.58(Ft/s)
Travel time =    3.04 min.     TC =   13.12  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      2.794(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.860
Subarea runoff =     12.692(CFS) for    5.780(Ac.)
Total runoff =     20.969(CFS)       Total area =        8.73(Ac.)
Area averaged Fm value =    0.125(In/Hr)
Street flow at end of street =     20.969(CFS)
Half street flow at end of street =     20.969(CFS)
Depth of flow =   0.587(Ft.), Average velocity =   3.903(Ft/s)
Warning: depth of flow exceeds top of curb
Note:  depth of flow exceeds top of street crown.
Distance that curb overflow reaches into property =    4.37(Ft.)
Flow width (from curb towards crown)=  18.000(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      319.000 to Point/Station      315.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
________________________________________________________________________
Upstream point/station elevation =   242.000(Ft.)
Downstream point/station elevation =   241.500(Ft.)
Pipe length  =    18.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    20.969(CFS)
Given pipe size =     18.00(In.)
NOTE: Normal flow is pressure flow in user selected pipe size.
The approximate hydraulic grade line above the pipe invert is
     3.497(Ft.)  at the headworks or inlet of the pipe(s)
 Pipe friction loss =      0.717(Ft.)
 Minor friction loss =      3.280(Ft.)       K-factor =   1.50
Pipe flow velocity =     11.87(Ft/s)
Travel time through pipe =    0.03 min.
Time of concentration (TC) =    13.15 min.


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Process from Point/Station      319.000 to Point/Station      315.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      8.730(Ac.)
Runoff from this stream =     20.969(CFS)
Time of concentration =   13.15 min.
Rainfall intensity =     2.791(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1     12.33    40.669      9.20    0.142      3.416
2      8.73    20.969     13.15    0.125      2.791
Qmax(1) =
          1.000 *    1.000 *    40.669) +
          1.234 *    0.700 *    20.969) + =      58.783
Qmax(2) =
          0.809 *    1.000 *    40.669) +
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          1.000 *    1.000 *    20.969) + =      53.876

Total of 2 streams to confluence:
Flow rates before confluence point:
      40.669      20.969
Maximum flow rates at confluence using above data:
       58.783       53.876
Area of streams before confluence:
       12.329        8.730
Effective area values after confluence:
       18.438       21.059
Results of confluence:
Total flow rate =     58.783(CFS)
Time of concentration =     9.201 min.
Effective stream area after confluence =     18.438(Ac.)
Study area average Pervious fraction(Ap) =  0.540
Study area average soil loss rate(Fm) =    0.135(In/Hr)
Study area total (this main stream) =      21.06(Ac.)


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Process from Point/Station      315.000 to Point/Station      320.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   241.500(Ft.)
Downstream point/station elevation =   241.000(Ft.)
Pipe length  =    34.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    58.783(CFS)
Given pipe size =     36.00(In.)
Calculated individual pipe flow  =    58.783(CFS)
Normal flow depth in pipe =   22.76(In.)
Flow top width inside pipe =   34.72(In.)
Critical Depth =   29.76(In.)
Pipe flow velocity =     12.48(Ft/s)
Travel time through pipe =    0.05 min.
Time of concentration (TC) =     9.25 min.


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Process from Point/Station      315.000 to Point/Station      320.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     18.438(Ac.)
Runoff from this stream =     58.783(CFS)
Time of concentration =    9.25 min.
Rainfall intensity =     3.406(In/Hr)
Area averaged loss rate (Fm) =    0.1350(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5399
Program is now starting with Main Stream No. 2


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Process from Point/Station      321.000 to Point/Station      322.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   396.000(Ft.)
Bottom (of initial area) elevation =   355.000(Ft.)
Difference in elevation =    41.000(Ft.)
Slope =    0.13667  s(%)=      13.67
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TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   10.292 min.
Rainfall intensity =      3.206(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.830
Subarea runoff =      1.330(CFS)
Total initial stream area =        0.500(Ac.)


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Process from Point/Station      322.000 to Point/Station      323.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   355.000(Ft.)
Downstream point/station elevation =   288.000(Ft.)
Pipe length  =   207.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.330(CFS)
Given pipe size =     12.00(In.)
Calculated individual pipe flow  =     1.330(CFS)
Normal flow depth in pipe =    2.08(In.)
Flow top width inside pipe =    9.09(In.)
Critical Depth =    5.85(In.)
Pipe flow velocity =     14.58(Ft/s)
Travel time through pipe =    0.24 min.
Time of concentration (TC) =    10.53 min.


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Process from Point/Station      323.000 to Point/Station      324.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
______________________________________________________________________________
Top of street segment elevation =   288.000(Ft.)
End of street segment elevation =   267.000(Ft.)
Length of street segment  =   240.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      2.155(CFS)
Depth of flow =   0.234(Ft.), Average velocity =   5.168(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =   5.388(Ft.)
Flow velocity =   5.17(Ft/s)
Travel time =    0.77 min.     TC =   11.30  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      3.040(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.846
Subarea runoff =      1.552(CFS) for    0.620(Ac.)
Total runoff =      2.882(CFS)       Total area =        1.12(Ac.)
Area averaged Fm value =    0.181(In/Hr)
Street flow at end of street =      2.882(CFS)
Half street flow at end of street =      2.882(CFS)
Depth of flow =   0.254(Ft.), Average velocity =   5.446(Ft/s)
Flow width (from curb towards crown)=   6.345(Ft.)
```

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++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      324.000 to Point/Station      325.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   261.000(Ft.)
Downstream point/station elevation =   260.000(Ft.)
Pipe length  =    20.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     2.882(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =     2.882(CFS)
Normal flow depth in pipe =    4.26(In.)
Flow top width inside pipe =   15.30(In.)
Critical Depth =    7.73(In.)
Pipe flow velocity =      9.02(Ft/s)
Travel time through pipe =    0.04 min.
Time of concentration (TC) =    11.34 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      324.000 to Point/Station      325.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 2 in normal stream number 1
Stream flow area =      1.120(Ac.)
Runoff from this stream =      2.882(CFS)
Time of concentration =   11.34 min.
Rainfall intensity =     3.035(In/Hr)
Area averaged loss rate (Fm) =    0.1808(In/Hr)
Area averaged Pervious ratio (Ap) = 0.7232


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      326.000 to Point/Station      327.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   250.000(Ft.)
Top (of initial area) elevation =   297.000(Ft.)
Bottom (of initial area) elevation =   288.000(Ft.)
Difference in elevation =     9.000(Ft.)
Slope =    0.03600  s(%)=       3.60
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.884 min.
Rainfall intensity =      4.025(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.872
Subarea runoff =      2.001(CFS)
Total initial stream area =        0.570(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      327.000 to Point/Station      328.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
______________________________________________________________________________
Top of street segment elevation =   288.000(Ft.)
End of street segment elevation =   267.000(Ft.)
Length of street segment  =   293.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
```

```
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      3.850(CFS)
Depth of flow =   0.281(Ft.), Average velocity =   5.334(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =   7.715(Ft.)
Flow velocity =   5.33(Ft/s)
Travel time =    0.92 min.     TC =    7.80  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      3.750(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.870
Subarea runoff =      3.644(CFS) for    1.160(Ac.)
Total runoff =      5.645(CFS)       Total area =        1.73(Ac.)
Area averaged Fm value =    0.125(In/Hr)
Street flow at end of street =      5.645(CFS)
Half street flow at end of street =      5.645(CFS)
Depth of flow =   0.311(Ft.), Average velocity =   5.799(Ft/s)
Flow width (from curb towards crown)=   9.202(Ft.)


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Process from Point/Station      328.000 to Point/Station      325.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
____________________________________________________________________________
Upstream point/station elevation =   261.000(Ft.)
Downstream point/station elevation =   260.000(Ft.)
Pipe length  =    32.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     5.645(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =     5.645(CFS)
Normal flow depth in pipe =    6.81(In.)
Flow top width inside pipe =   17.46(In.)
Critical Depth =   11.00(In.)
Pipe flow velocity =      9.22(Ft/s)
Travel time through pipe =    0.06 min.
Time of concentration (TC) =     7.86 min.


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Process from Point/Station      328.000 to Point/Station      325.000
**** CONFLUENCE OF MINOR STREAMS ****
____________________________________________________________________________
Along Main Stream number: 2 in normal stream number 2
Stream flow area =      1.730(Ac.)
Runoff from this stream =      5.645(CFS)
Time of concentration =    7.86 min.
Rainfall intensity =     3.735(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1      1.12     2.882     11.34    0.181      3.035
```

```
2      1.73     5.645      7.86    0.125      3.735
Qmax(1) =
          1.000 *    1.000 *     2.882) +
          0.806 *    1.000 *     5.645) + =       7.432
Qmax(2) =
          1.245 *    0.693 *     2.882) +
          1.000 *    1.000 *     5.645) + =       8.132

Total of 2 streams to confluence:
Flow rates before confluence point:
       2.882       5.645
Maximum flow rates at confluence using above data:
        7.432        8.132
Area of streams before confluence:
        1.120        1.730
Effective area values after confluence:
        2.850        2.506
Results of confluence:
Total flow rate =      8.132(CFS)
Time of concentration =     7.858 min.
Effective stream area after confluence =      2.506(Ac.)
Study area average Pervious fraction(Ap) =  0.588
Study area average soil loss rate(Fm) =    0.147(In/Hr)
Study area total (this main stream) =       2.85(Ac.)


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Process from Point/Station      325.000 to Point/Station      320.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   260.000(Ft.)
Downstream point/station elevation =   241.000(Ft.)
Pipe length  =   220.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     8.132(CFS)
Given pipe size =     24.00(In.)
Calculated individual pipe flow  =     8.132(CFS)
Normal flow depth in pipe =    5.67(In.)
Flow top width inside pipe =   20.39(In.)
Critical Depth =   12.17(In.)
Pipe flow velocity =     14.35(Ft/s)
Travel time through pipe =    0.26 min.
Time of concentration (TC) =     8.11 min.


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Process from Point/Station      325.000 to Point/Station      320.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      2.506(Ac.)
Runoff from this stream =      8.132(CFS)
Time of concentration =    8.11 min.
Rainfall intensity =     3.668(In/Hr)
Area averaged loss rate (Fm) =    0.1469(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5877
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1     18.44    58.783      9.25    0.135      3.406
2      2.51     8.132      8.11    0.147      3.668
Qmax(1) =
          1.000 *    1.000 *    58.783) +
          0.926 *    1.000 *     8.132) + =      66.311
Qmax(2) =
          1.080 *    0.877 *    58.783) +
          1.000 *    1.000 *     8.132) + =      63.836
```

```
Total of 2 main streams to confluence:
Flow rates before confluence point:
      59.783       9.132
Maximum flow rates at confluence using above data:
       66.311       63.836
Area of streams before confluence:
       18.438        2.506
Effective area values after confluence:
       20.944       18.685


Results of confluence:
Total flow rate =     66.311(CFS)
Time of concentration =     9.246 min.
Effective stream area after confluence  =     20.944(Ac.)
Study area average Pervious fraction(Ap) =  0.546
Study area average soil loss rate(Fm) =    0.136(In/Hr)
Study area total =      20.94(Ac.)


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Process from Point/Station      320.000 to Point/Station      329.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   241.000(Ft.)
Downstream point/station elevation =   240.000(Ft.)
Pipe length  =    64.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    66.311(CFS)
Given pipe size =     48.00(In.)
Calculated individual pipe flow  =    66.311(CFS)
Normal flow depth in pipe =   20.19(In.)
Flow top width inside pipe =   47.39(In.)
Critical Depth =   29.51(In.)
Pipe flow velocity =     13.21(Ft/s)
Travel time through pipe =    0.08 min.
Time of concentration (TC) =     9.33 min.


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Process from Point/Station      320.000 to Point/Station      329.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =     20.944(Ac.)
Runoff from this stream =     66.311(CFS)
Time of concentration =    9.33 min.
Rainfall intensity =     3.389(In/Hr)
Area averaged loss rate (Fm) =    0.1364(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5456


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Process from Point/Station      328.000 to Point/Station      330.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   210.000(Ft.)
Top (of initial area) elevation =   267.000(Ft.)
Bottom (of initial area) elevation =   247.000(Ft.)
Difference in elevation =    20.000(Ft.)
Slope =    0.09524  s(%)=       9.52
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.285 min.
```

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Rainfall intensity =      4.675(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.876
Subarea runoff =      1.679(CFS)
Total initial stream area =        0.410(Ac.)


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Process from Point/Station      330.000 to Point/Station      329.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =   241.000(Ft.)
Downstream point/station elevation =   240.000(Ft.)
Pipe length  =    29.00(Ft.)   Manning's N = 0.015
No. of pipes = 1  Required pipe flow  =     1.679(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =     1.679(CFS)
Normal flow depth in pipe =    3.83(In.)
Flow top width inside pipe =   14.74(In.)
Critical Depth =    5.84(In.)
Pipe flow velocity =      6.10(Ft/s)
Travel time through pipe =    0.08 min.
Time of concentration (TC) =     5.36 min.


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Process from Point/Station      330.000 to Point/Station      329.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.410(Ac.)
Runoff from this stream =      1.679(CFS)
Time of concentration =    5.36 min.
Rainfall intensity =     4.635(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000


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Process from Point/Station      331.000 to Point/Station      332.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   280.000(Ft.)
Bottom (of initial area) elevation =   270.000(Ft.)
Difference in elevation =    10.000(Ft.)
Slope =    0.03333  s(%)=       3.33
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    7.520 min.
Rainfall intensity =      3.829(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.871
Subarea runoff =      6.000(CFS)
Total initial stream area =        1.800(Ac.)


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Process from Point/Station      332.000 to Point/Station      333.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------------
Top of street segment elevation =   270.000(Ft.)
End of street segment elevation =   255.000(Ft.)
Length of street segment  =   601.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
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Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      8.236(CFS)
Depth of flow =   0.361(Ft.), Average velocity =   5.499(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  11.709(Ft.)
Flow velocity =   5.50(Ft/s)
Travel time =    0.91 min.     TC =    8.43  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      3.589(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.869
Subarea runoff =      4.380(CFS) for    1.530(Ac.)
Total runoff =     10.380(CFS)       Total area =        3.33(Ac.)
Area averaged Fm value =    0.125(In/Hr)
Street flow at end of street =     10.380(CFS)
Half street flow at end of street =     10.380(CFS)
Depth of flow =   0.384(Ft.), Average velocity =   5.808(Ft/s)
Flow width (from curb towards crown)=  12.886(Ft.)


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Process from Point/Station      333.000 to Point/Station      334.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of street segment elevation =   255.000(Ft.)
End of street segment elevation =   247.000(Ft.)
Length of street segment  =   708.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =     11.792(CFS)
Depth of flow =   0.491(Ft.), Average velocity =   3.430(Ft/s)
Note:  depth of flow exceeds top of street crown.
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  18.000(Ft.)
Flow velocity =   3.43(Ft/s)
Travel time =    3.44 min.     TC =   11.87  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
```

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Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      2.957(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.862
Subarea runoff =      2.770(CFS) for    1.830(Ac.)
Total runoff =     13.150(CFS)       Total area =        5.16(Ac.)
Area averaged Fm value =    0.125(In/Hr)
Street flow at end of street =     13.150(CFS)
Half street flow at end of street =     13.150(CFS)
Depth of flow =   0.505(Ft.), Average velocity =   3.564(Ft/s)
Warning: depth of flow exceeds top of curb
Note:  depth of flow exceeds top of street crown.
Distance that curb overflow reaches into property =    0.23(Ft.)
Flow width (from curb towards crown)=  18.000(Ft.)


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Process from Point/Station      334.000 to Point/Station      329.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   241.000(Ft.)
Downstream point/station elevation =   240.000(Ft.)
Pipe length  =    41.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    13.150(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =    13.150(CFS)
Normal flow depth in pipe =   12.20(In.)
Flow top width inside pipe =   16.83(In.)
Critical Depth =   16.27(In.)
Pipe flow velocity =     10.32(Ft/s)
Travel time through pipe =    0.07 min.
Time of concentration (TC) =    11.94 min.


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Process from Point/Station      334.000 to Point/Station      329.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 3
Stream flow area =      5.160(Ac.)
Runoff from this stream =     13.150(CFS)
Time of concentration =   11.94 min.
Rainfall intensity =     2.947(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1     20.94    66.311      9.33    0.136      3.389
2      0.41     1.679      5.36    0.125      4.635
3      5.16    13.150     11.94    0.125      2.947
Qmax(1) =
          1.000 *    1.000 *    66.311) +
          0.724 *    1.000 *     1.679) +
          1.157 *    0.781 *    13.150) + =      79.408
Qmax(2) =
          1.383 *    0.575 *    66.311) +
          1.000 *    1.000 *     1.679) +
          1.598 *    0.449 *    13.150) + =      63.868
Qmax(3) =
          0.864 *    1.000 *    66.311) +
          0.626 *    1.000 *     1.679) +
          1.000 *    1.000 *    13.150) + =      71.501

Total of 3 streams to confluence:
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```
Flow rates before confluence point:
      66.311       1.679      13.150
Maximum flow rates at confluence using above data:
       79.408       63.868       71.501
Area of streams before confluence:
       20.944        0.410        5.160
Effective area values after confluence:
       25.385       14.775       26.514
Results of confluence:
Total flow rate =     79.408(CFS)
Time of concentration =     9.327 min.
Effective stream area after confluence =     25.385(Ac.)
Study area average Pervious fraction(Ap) =  0.536
Study area average soil loss rate(Fm) =    0.134(In/Hr)
Study area total (this main stream) =      26.51(Ac.)


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Process from Point/Station      329.000 to Point/Station      335.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   240.000(Ft.)
Downstream point/station elevation =   201.800(Ft.)
Pipe length  =   393.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    79.408(CFS)
Given pipe size =     48.00(In.)
Calculated individual pipe flow  =    79.408(CFS)
Normal flow depth in pipe =   13.68(In.)
Flow top width inside pipe =   43.34(In.)
Critical Depth =   32.36(In.)
Pipe flow velocity =     26.89(Ft/s)
Travel time through pipe =    0.24 min.
Time of concentration (TC) =     9.57 min.


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Process from Point/Station      329.000 to Point/Station      335.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     25.385(Ac.)
Runoff from this stream =     79.408(CFS)
Time of concentration =    9.57 min.
Rainfall intensity =     3.340(In/Hr)
Area averaged loss rate (Fm) =    0.1340(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5360
Program is now starting with Main Stream No. 2


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Process from Point/Station      336.000 to Point/Station      337.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.100
Decimal fraction soil group C = 0.900
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 67.70
Pervious ratio(Ap) = 0.1000  Max loss rate(Fp)=     0.255(In/Hr)
Max Catchment Loss (Fm) =     0.026(In/Hr)
Initial subarea data:
Initial area flow distance =   416.000(Ft.)
Top (of initial area) elevation =   227.000(Ft.)
Bottom (of initial area) elevation =   211.000(Ft.)
Difference in elevation =    16.000(Ft.)
Slope =    0.03846  s(%)=       3.85
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.509 min.
NOTE: Distance EXCEEDS recommended maximum value of   328.084(Ft.)
```

```
for this Development Type
Rainfall intensity =      4.155(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.894
Subarea runoff =     10.332(CFS)
Total initial stream area =        2.780(Ac.)


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Process from Point/Station      337.000 to Point/Station      338.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
________________________________________________________________________
Upstream point/station elevation =   206.900(Ft.)
Downstream point/station elevation =   204.500(Ft.)
Pipe length  =   470.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    10.332(CFS)
Given pipe size =     24.00(In.)
Calculated individual pipe flow  =    10.332(CFS)
Normal flow depth in pipe =   13.94(In.)
Flow top width inside pipe =   23.68(In.)
Critical Depth =   13.82(In.)
Pipe flow velocity =      5.46(Ft/s)
Travel time through pipe =    1.44 min.
Time of concentration (TC) =     7.94 min.


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Process from Point/Station      337.000 to Point/Station      338.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 2 in normal stream number 1
Stream flow area =      2.780(Ac.)
Runoff from this stream =     10.332(CFS)
Time of concentration =    7.94 min.
Rainfall intensity =     3.712(In/Hr)
Area averaged loss rate (Fm) =    0.0255(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000


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Process from Point/Station      336.000 to Point/Station      339.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
APARTMENT subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.2000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.050(In/Hr)
Initial subarea data:
Initial area flow distance =   364.000(Ft.)
Top (of initial area) elevation =   227.000(Ft.)
Bottom (of initial area) elevation =   223.500(Ft.)
Difference in elevation =     3.500(Ft.)
Slope =    0.00962  s(%)=       0.96
TC = k(0.324)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.677 min.
NOTE: Distance EXCEEDS recommended maximum value of   328.084(Ft.)
for this Development Type
Rainfall intensity =      3.531(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.887
Subarea runoff =      7.957(CFS)
Total initial stream area =        2.540(Ac.)


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Process from Point/Station      339.000 to Point/Station      338.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
________________________________________________________________________
Upstream point/station elevation =   216.000(Ft.)
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Downstream point/station elevation =   204.500(Ft.)
Pipe length  =   164.00(Ft.)   Manning's N = 0.015
No. of pipes = 1  Required pipe flow  =     7.957(CFS)
Given pipe size =     24.00(In.)
Calculated individual pipe flow  =     7.957(CFS)
Normal flow depth in pipe =    6.35(In.)
Flow top width inside pipe =   21.17(In.)
Critical Depth =   12.06(In.)
Pipe flow velocity =     11.96(Ft/s)
Travel time through pipe =    0.23 min.
Time of concentration (TC) =     8.91 min.


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Process from Point/Station      339.000 to Point/Station      338.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 2 in normal stream number 2
Stream flow area =      2.540(Ac.)
Runoff from this stream =      7.957(CFS)
Time of concentration =    8.91 min.
Rainfall intensity =     3.479(In/Hr)
Area averaged loss rate (Fm) =    0.0500(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1      2.78    10.332      7.94    0.025      3.712
2      2.54     7.957      8.91    0.050      3.479
Qmax(1) =
          1.000 *    1.000 *    10.332) +
          1.068 *    0.892 *     7.957) + =      17.911
Qmax(2) =
          0.937 *    1.000 *    10.332) +
          1.000 *    1.000 *     7.957) + =      17.637

Total of 2 streams to confluence:
Flow rates before confluence point:
      10.332       7.957
Maximum flow rates at confluence using above data:
       17.911       17.637
Area of streams before confluence:
        2.780        2.540
Effective area values after confluence:
        5.046        5.320
Results of confluence:
Total flow rate =     17.911(CFS)
Time of concentration =     7.944 min.
Effective stream area after confluence =      5.046(Ac.)
Study area average Pervious fraction(Ap) =  0.148
Study area average soil loss rate(Fm) =    0.037(In/Hr)
Study area total (this main stream) =       5.32(Ac.)


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Process from Point/Station      338.000 to Point/Station      340.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   204.500(Ft.)
Downstream point/station elevation =   202.400(Ft.)
Pipe length  =   286.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    17.911(CFS)
Given pipe size =     24.00(In.)
Calculated individual pipe flow  =    17.911(CFS)
Normal flow depth in pipe =   18.21(In.)
Flow top width inside pipe =   20.54(In.)
Critical Depth =   18.28(In.)
Pipe flow velocity =      7.00(Ft/s)
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Travel time through pipe =    0.68 min.
Time of concentration (TC) =     8.62 min.


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Process from Point/Station      338.000 to Point/Station      340.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 2 in normal stream number 1
Stream flow area =      5.046(Ac.)
Runoff from this stream =     17.911(CFS)
Time of concentration =    8.62 min.
Rainfall intensity =     3.543(In/Hr)
Area averaged loss rate (Fm) =    0.0372(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1477


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Process from Point/Station      341.000 to Point/Station      342.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
APARTMENT subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.2000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.050(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   252.000(Ft.)
Bottom (of initial area) elevation =   221.500(Ft.)
Difference in elevation =    30.500(Ft.)
Slope =    0.10167  s(%)=      10.17
TC = k(0.324)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.011 min.
Rainfall intensity =      4.818(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.891
Subarea runoff =      5.063(CFS)
Total initial stream area =        1.180(Ac.)


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Process from Point/Station      342.000 to Point/Station      343.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
______________________________________________________________________________
Top of street segment elevation =   221.500(Ft.)
End of street segment elevation =   219.000(Ft.)
Length of street segment  =   215.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [2] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      8.456(CFS)
Depth of flow =   0.367(Ft.), Average velocity =   2.695(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  12.010(Ft.)
Flow velocity =   2.69(Ft/s)
Travel time =    1.33 min.     TC =    6.34  min.
 Adding area flow to street
APARTMENT subarea type
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Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.2000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.050(In/Hr)
Rainfall intensity =      4.217(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.889
Subarea runoff =      6.674(CFS) for    1.950(Ac.)
Total runoff =     11.738(CFS)       Total area =        3.13(Ac.)
Area averaged Fm value =    0.050(In/Hr)
Street flow at end of street =     11.738(CFS)
Half street flow at end of street =      5.869(CFS)
Depth of flow =   0.401(Ft.), Average velocity =   2.913(Ft/s)
Flow width (from curb towards crown)=  13.741(Ft.)


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Process from Point/Station      343.000 to Point/Station      340.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   211.000(Ft.)
Downstream point/station elevation =   202.400(Ft.)
Pipe length  =    45.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    11.738(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =    11.738(CFS)
Normal flow depth in pipe =    6.21(In.)
Flow top width inside pipe =   17.11(In.)
Critical Depth =   15.64(In.)
Pipe flow velocity =     21.73(Ft/s)
Travel time through pipe =    0.03 min.
Time of concentration (TC) =     6.38 min.


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Process from Point/Station      343.000 to Point/Station      340.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 2 in normal stream number 2
Stream flow area =      3.130(Ac.)
Runoff from this stream =     11.738(CFS)
Time of concentration =    6.38 min.
Rainfall intensity =     4.204(In/Hr)
Area averaged loss rate (Fm) =    0.0500(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000


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Process from Point/Station      344.000 to Point/Station      345.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
APARTMENT subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.2000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.050(In/Hr)
Initial subarea data:
Initial area flow distance =   263.000(Ft.)
Top (of initial area) elevation =   225.000(Ft.)
Bottom (of initial area) elevation =   221.500(Ft.)
Difference in elevation =     3.500(Ft.)
Slope =    0.01331  s(%)=       1.33
TC = k(0.324)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    7.140 min.
Rainfall intensity =      3.943(In/Hr) for a    25.0 year storm
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Effective runoff coefficient used for area (Q=KCIA) is C = 0.889
Subarea runoff =      3.293(CFS)
Total initial stream area =        0.940(Ac.)


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Process from Point/Station      345.000 to Point/Station      346.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------
Top of street segment elevation =   221.500(Ft.)
End of street segment elevation =   219.000(Ft.)
Length of street segment  =   241.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  22.000(Ft.)
Distance from crown to crossfall grade break  =  18.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.025
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      7.035(CFS)
Depth of flow =   0.429(Ft.), Average velocity =   2.913(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  15.127(Ft.)
Flow velocity =   2.91(Ft/s)
Travel time =    1.38 min.     TC =    8.52  min.
 Adding area flow to street
APARTMENT subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.2000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.050(In/Hr)
Rainfall intensity =      3.568(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.887
Subarea runoff =      7.408(CFS) for    2.440(Ac.)
Total runoff =     10.701(CFS)       Total area =        3.38(Ac.)
Area averaged Fm value =    0.050(In/Hr)
Street flow at end of street =     10.701(CFS)
Half street flow at end of street =     10.701(CFS)
Depth of flow =   0.484(Ft.), Average velocity =   3.225(Ft/s)
Flow width (from curb towards crown)=  17.864(Ft.)


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Process from Point/Station      346.000 to Point/Station      340.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
------------------------------------------------------------------------
Upstream point/station elevation =   211.000(Ft.)
Downstream point/station elevation =   202.400(Ft.)
Pipe length  =    42.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    10.701(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =    10.701(CFS)
Normal flow depth in pipe =    5.81(In.)
Flow top width inside pipe =   16.83(In.)
Critical Depth =   15.06(In.)
Pipe flow velocity =     21.71(Ft/s)
Travel time through pipe =    0.03 min.
Time of concentration (TC) =     8.55 min.


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Process from Point/Station      346.000 to Point/Station      340.000
**** CONFLUENCE OF MINOR STREAMS ****
____________________________________________________________________
Along Main Stream number: 2 in normal stream number 3
Stream flow area =      3.380(Ac.)
Runoff from this stream =     10.701(CFS)
Time of concentration =    8.55 min.
Rainfall intensity =     3.560(In/Hr)
Area averaged loss rate (Fm) =    0.0500(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1      5.05    17.911      8.62    0.037      3.543
2      3.13    11.738      6.38    0.050      4.204
3      3.38    10.701      8.55    0.050      3.560
Qmax(1) =
          1.000 *    1.000 *    17.911) +
          0.841 *    1.000 *    11.738) +
          0.995 *    1.000 *    10.701) + =      38.430
Qmax(2) =
          1.188 *    0.739 *    17.911) +
          1.000 *    1.000 *    11.738) +
          1.183 *    0.746 *    10.701) + =      36.915
Qmax(3) =
          1.005 *    0.991 *    17.911) +
          0.845 *    1.000 *    11.738) +
          1.000 *    1.000 *    10.701) + =      38.465

Total of 3 streams to confluence:
Flow rates before confluence point:
      17.911      11.738      10.701
Maximum flow rates at confluence using above data:
       38.430       36.915       38.465
Area of streams before confluence:
        5.046        3.130        3.380
Effective area values after confluence:
       11.556        9.380       11.513
Results of confluence:
Total flow rate =     38.465(CFS)
Time of concentration =     8.551 min.
Effective stream area after confluence =     11.513(Ac.)
Study area average Pervious fraction(Ap) =  0.177
Study area average soil loss rate(Fm) =    0.044(In/Hr)
Study area total (this main stream) =      11.56(Ac.)


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Process from Point/Station      340.000 to Point/Station      335.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
____________________________________________________________________
Upstream point/station elevation =   202.400(Ft.)
Downstream point/station elevation =   201.800(Ft.)
Pipe length  =   260.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    38.465(CFS)
Given pipe size =     36.00(In.)
NOTE: Normal flow is pressure flow in user selected pipe size.
The approximate hydraulic grade line above the pipe invert is
     0.954(Ft.)  at the headworks or inlet of the pipe(s)
 Pipe friction loss =      0.864(Ft.)
 Minor friction loss =      0.690(Ft.)       K-factor =   1.50
Pipe flow velocity =      5.44(Ft/s)
Travel time through pipe =    0.80 min.
Time of concentration (TC) =     9.35 min.


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Process from Point/Station      340.000 to Point/Station      335.000
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**** CONFLUENCE OF MAIN STREAMS ****
_____________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =     11.513(Ac.)
Runoff from this stream =     38.465(CFS)
Time of concentration =    9.35 min.
Rainfall intensity =     3.385(In/Hr)
Area averaged loss rate (Fm) =    0.0444(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1772
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1     25.39    79.408      9.57    0.134      3.340
2     11.51    38.465      9.35    0.044      3.385
Qmax(1) =
          1.000 *    1.000 *    79.408) +
          0.987 *    1.000 *    38.465) + =     117.356
Qmax(2) =
          1.014 *    0.977 *    79.408) +
          1.000 *    1.000 *    38.465) + =     117.107

Total of 2 main streams to confluence:
Flow rates before confluence point:
      80.408      39.465
Maximum flow rates at confluence using above data:
      117.356      117.107
Area of streams before confluence:
       25.385       11.513
Effective area values after confluence:
       36.898       36.306


Results of confluence:
Total flow rate =    117.356(CFS)
Time of concentration =     9.571 min.
Effective stream area after confluence  =     36.898(Ac.)
Study area average Pervious fraction(Ap) =  0.424
Study area average soil loss rate(Fm) =    0.106(In/Hr)
Study area total =      36.90(Ac.)


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Process from Point/Station      335.000 to Point/Station      347.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
_____________________________________________________________________
Upstream point/station elevation =   201.800(Ft.)
Downstream point/station elevation =   200.700(Ft.)
Pipe length  =   133.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =   117.356(CFS)
Given pipe size =     48.00(In.)
Calculated individual pipe flow  =   117.356(CFS)
Normal flow depth in pipe =   35.55(In.)
Flow top width inside pipe =   42.08(In.)
Critical Depth =   39.19(In.)
Pipe flow velocity =     11.76(Ft/s)
Travel time through pipe =    0.19 min.
Time of concentration (TC) =     9.76 min.


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Process from Point/Station      335.000 to Point/Station      347.000
**** CONFLUENCE OF MINOR STREAMS ****
_____________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =     36.898(Ac.)
Runoff from this stream =    117.356(CFS)
Time of concentration =    9.76 min.
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Rainfall intensity =     3.304(In/Hr)
Area averaged loss rate (Fm) =    0.1060(In/Hr)
Area averaged Pervious ratio (Ap) = 0.4241


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Process from Point/Station      330.000 to Point/Station      348.000
**** INITIAL AREA EVALUATION ****
----------------------------------------------------------------------
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   250.000(Ft.)
Top (of initial area) elevation =   247.000(Ft.)
Bottom (of initial area) elevation =   229.000(Ft.)
Difference in elevation =    18.000(Ft.)
Slope =    0.07200  s(%)=       7.20
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.993 min.
Rainfall intensity =      4.354(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.874
Subarea runoff =      1.903(CFS)
Total initial stream area =        0.500(Ac.)


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Process from Point/Station      348.000 to Point/Station      349.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
----------------------------------------------------------------------
Top of street segment elevation =   229.000(Ft.)
End of street segment elevation =   213.000(Ft.)
Length of street segment  =   254.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      3.159(CFS)
Depth of flow =   0.271(Ft.), Average velocity =   4.863(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =   7.232(Ft.)
Flow velocity =   4.86(Ft/s)
Travel time =    0.87 min.     TC =    6.86  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      4.032(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.872
Subarea runoff =      2.422(CFS) for    0.730(Ac.)
Total runoff =      4.325(CFS)       Total area =        1.23(Ac.)
```

```
Area averaged Fm value =    0.125(In/Hr)
Street flow at end of street =      4.325(CFS)
Half street flow at end of street =      4.325(CFS)
Depth of flow =   0.295(Ft.), Average velocity =   5.199(Ft/s)
Flow width (from curb towards crown)=   8.398(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      349.000 to Point/Station      347.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   201.500(Ft.)
Downstream point/station elevation =   200.700(Ft.)
Pipe length  =    34.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     4.325(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =     4.325(CFS)
Normal flow depth in pipe =    6.37(In.)
Flow top width inside pipe =   17.21(In.)
Critical Depth =    9.58(In.)
Pipe flow velocity =      7.73(Ft/s)
Travel time through pipe =    0.07 min.
Time of concentration (TC) =     6.94 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      349.000 to Point/Station      347.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      1.230(Ac.)
Runoff from this stream =      4.325(CFS)
Time of concentration =    6.94 min.
Rainfall intensity =     4.008(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      334.000 to Point/Station      350.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   250.000(Ft.)
Top (of initial area) elevation =   247.000(Ft.)
Bottom (of initial area) elevation =   229.000(Ft.)
Difference in elevation =    18.000(Ft.)
Slope =    0.07200  s(%)=       7.20
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.993 min.
Rainfall intensity =      4.354(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.874
Subarea runoff =      0.799(CFS)
Total initial stream area =        0.210(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      350.000 to Point/Station      351.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
______________________________________________________________________________
Top of street segment elevation =   229.000(Ft.)
End of street segment elevation =   213.000(Ft.)
Length of street segment  =   266.000(Ft.)
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Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  22.000(Ft.)
Distance from crown to crossfall grade break  =  18.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.025
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      1.198(CFS)
Depth of flow =   0.209(Ft.), Average velocity =   4.060(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =   4.104(Ft.)
Flow velocity =   4.06(Ft/s)
Travel time =    1.09 min.     TC =    7.09  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      3.960(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.872
Subarea runoff =      0.719(CFS) for    0.230(Ac.)
Total runoff =      1.519(CFS)       Total area =        0.44(Ac.)
Area averaged Fm value =    0.125(In/Hr)
Street flow at end of street =      1.519(CFS)
Half street flow at end of street =      1.519(CFS)
Depth of flow =   0.224(Ft.), Average velocity =   4.178(Ft/s)
Flow width (from curb towards crown)=   4.867(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      351.000 to Point/Station      347.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
________________________________________________________________________
Upstream point/station elevation =   201.500(Ft.)
Downstream point/station elevation =   200.700(Ft.)
Pipe length  =    43.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.519(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =     1.519(CFS)
Normal flow depth in pipe =    3.96(In.)
Flow top width inside pipe =   14.91(In.)
Critical Depth =    5.54(In.)
Pipe flow velocity =      5.27(Ft/s)
Travel time through pipe =    0.14 min.
Time of concentration (TC) =     7.22 min.


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Process from Point/Station      351.000 to Point/Station      347.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 3
Stream flow area =      0.440(Ac.)
Runoff from this stream =      1.519(CFS)
Time of concentration =    7.22 min.
Rainfall intensity =     3.918(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000
Summary of stream data:
```

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Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1     36.90   117.356      9.76    0.106      3.304
2      1.23     4.325      6.94    0.125      4.008
3      0.44     1.519      7.22    0.125      3.918
Qmax(1) =
          1.000 *    1.000 *   117.356) +
          0.819 *    1.000 *     4.325) +
          0.838 *    1.000 *     1.519) + =     122.169
Qmax(2) =
          1.220 *    0.711 *   117.356) +
          1.000 *    1.000 *     4.325) +
          1.024 *    0.961 *     1.519) + =     107.605
Qmax(3) =
          1.192 *    0.740 *   117.356) +
          0.977 *    1.000 *     4.325) +
          1.000 *    1.000 *     1.519) + =     109.254

Total of 3 streams to confluence:
Flow rates before confluence point:
     117.356       4.325       1.519
Maximum flow rates at confluence using above data:
      122.169      107.605      109.254
Area of streams before confluence:
       36.898        1.230        0.440
Effective area values after confluence:
       38.568       27.881       28.972
Results of confluence:
Total flow rate =    122.169(CFS)
Time of concentration =     9.759 min.
Effective stream area after confluence =     38.568(Ac.)
Study area average Pervious fraction(Ap) =  0.427
Study area average soil loss rate(Fm) =    0.107(In/Hr)
Study area total (this main stream) =      38.57(Ac.)


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Process from Point/Station      347.000 to Point/Station      352.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
________________________________________________________________________
Upstream point/station elevation =   200.700(Ft.)
Downstream point/station elevation =   200.000(Ft.)
Pipe length  =   227.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =   122.169(CFS)
Given pipe size =     48.00(In.)
NOTE: Normal flow is pressure flow in user selected pipe size.
The approximate hydraulic grade line above the pipe invert is
     3.143(Ft.)  at the headworks or inlet of the pipe(s)
 Pipe friction loss =      1.641(Ft.)
 Minor friction loss =      2.201(Ft.)       K-factor =   1.50
Pipe flow velocity =      9.72(Ft/s)
Travel time through pipe =    0.39 min.
Time of concentration (TC) =    10.15 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      347.000 to Point/Station      352.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     38.568(Ac.)
Runoff from this stream =    122.169(CFS)
Time of concentration =   10.15 min.
Rainfall intensity =     3.231(In/Hr)
Area averaged loss rate (Fm) =    0.1069(In/Hr)
Area averaged Pervious ratio (Ap) = 0.4273
Program is now starting with Main Stream No. 2
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++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      353.000 to Point/Station      354.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   380.000(Ft.)
Bottom (of initial area) elevation =   310.000(Ft.)
Difference in elevation =    70.000(Ft.)
Slope =    0.23333  s(%)=      23.33
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.248 min.
Rainfall intensity =      3.406(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.834
Subarea runoff =      3.295(CFS)
Total initial stream area =        1.160(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      354.000 to Point/Station      355.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
------------------------------------------------------------------------
Estimated mean flow rate at midpoint of channel =     11.683(CFS)
Depth of flow =   0.238(Ft.), Average velocity =   4.129(Ft/s)
       ******* Irregular Channel Data ***********
---------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2             50.00              0.00
       3            100.00              1.00
Manning's 'N' friction factor =   0.030
---------------------------------------------------------------
Sub-Channel flow  =     11.683(CFS)
  '     '       flow top width =     23.790(Ft.)
  '     '    velocity=    4.129(Ft/s)
  '     '       area =      2.830(Sq.Ft)
  '     '       Froude number =     2.110

Upstream point elevation =   310.000(Ft.)
Downstream point elevation =   231.000(Ft.)
Flow length =   665.000(Ft.)
Travel time  =    2.68 min.
Time of concentration =   11.93 min.
Depth of flow =   0.238(Ft.)
Average velocity =   4.129(Ft/s)
Total irregular channel flow =    11.683(CFS)
Irregular channel normal depth above invert elev. =   0.238(Ft.)
Average velocity of channel(s) =   4.129(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Rainfall intensity =      2.948(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.824
Subarea runoff =     16.716(CFS) for    7.080(Ac.)
```

```
Total runoff =     20.010(CFS)        Total area =        8.24(Ac.)
Area averaged Fm value =    0.250(In/Hr)
Depth of flow =   0.291(Ft.), Average velocity =   4.723(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      355.000 to Point/Station      352.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =     28.330(CFS)
Depth of flow =   0.388(Ft.), Average velocity =   3.754(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2             50.00              0.00
       3            100.00              1.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =     28.330(CFS)
  '     '       flow top width =     38.850(Ft.)
  '     '    velocity=    3.754(Ft/s)
  '     '       area =      7.547(Sq.Ft)
  '     '       Froude number =     1.501

Upstream point elevation =   231.000(Ft.)
Downstream point elevation =   200.000(Ft.)
Flow length =   607.000(Ft.)
Travel time  =    2.69 min.
Time of concentration =   14.63 min.
Depth of flow =   0.388(Ft.)
Average velocity =   3.754(Ft/s)
Total irregular channel flow =    28.330(CFS)
Irregular channel normal depth above invert elev. =   0.388(Ft.)
Average velocity of channel(s) =   3.754(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Rainfall intensity =      2.627(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.814
Subarea runoff =     16.555(CFS) for    8.850(Ac.)
Total runoff =     36.566(CFS)        Total area =       17.09(Ac.)
Area averaged Fm value =    0.250(In/Hr)
Depth of flow =   0.428(Ft.), Average velocity =   4.001(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      355.000 to Point/Station      352.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =     17.090(Ac.)
Runoff from this stream =     36.566(CFS)
Time of concentration =   14.63 min.
Rainfall intensity =     2.627(In/Hr)
Area averaged loss rate (Fm) =    0.2500(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Program is now starting with Main Stream No. 3


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      356.000 to Point/Station      357.000
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```
**** INITIAL AREA EVALUATION ****
_____________________________________________________________________
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   540.000(Ft.)
Bottom (of initial area) elevation =   485.000(Ft.)
Difference in elevation =    55.000(Ft.)
Slope =    0.18333  s(%)=      18.33
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.705 min.
Rainfall intensity =      3.314(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.832
Subarea runoff =      3.750(CFS)
Total initial stream area =        1.360(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      357.000 to Point/Station      358.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
_____________________________________________________________________
Estimated mean flow rate at midpoint of channel =     13.619(CFS)
Depth of flow =   0.256(Ft.), Average velocity =   4.171(Ft/s)
       ******* Irregular Channel Data ***********
---------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2             50.00              0.00
       3            100.00              1.00
Manning's 'N' friction factor =   0.030
---------------------------------------------------------------
Sub-Channel flow  =     13.620(CFS)
  '     '       flow top width =     25.554(Ft.)
  '     '    velocity=    4.171(Ft/s)
  '     '       area =      3.265(Sq.Ft)
  '     '       Froude number =     2.057

Upstream point elevation =   485.000(Ft.)
Downstream point elevation =   415.000(Ft.)
Flow length =   635.000(Ft.)
Travel time  =    2.54 min.
Time of concentration =   12.24 min.
Depth of flow =   0.256(Ft.)
Average velocity =   4.171(Ft/s)
Total irregular channel flow =    13.619(CFS)
Irregular channel normal depth above invert elev. =   0.256(Ft.)
Average velocity of channel(s) =   4.171(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Rainfall intensity =      2.906(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.823
Subarea runoff =     19.674(CFS) for    8.440(Ac.)
Total runoff =     23.424(CFS)       Total area =        9.80(Ac.)
Area averaged Fm value =    0.250(In/Hr)
Depth of flow =   0.313(Ft.), Average velocity =   4.777(Ft/s)
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Process from Point/Station      358.000 to Point/Station      359.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =     53.050(CFS)
Depth of flow =   0.410(Ft.), Average velocity =   6.309(Ft/s)
       ******* Irregular Channel Data **********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2             50.00              0.00
       3            100.00              1.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =     53.050(CFS)
  '     '       flow top width =     41.008(Ft.)
  '     '    velocity=    6.309(Ft/s)
  '     '       area =      8.408(Sq.Ft)
  '     '       Froude number =     2.455

Upstream point elevation =   415.000(Ft.)
Downstream point elevation =   273.000(Ft.)
Flow length =  1058.000(Ft.)
Travel time  =    2.79 min.
Time of concentration =   15.04 min.
Depth of flow =   0.410(Ft.)
Average velocity =   6.309(Ft/s)
Total irregular channel flow =    53.050(CFS)
Irregular channel normal depth above invert elev. =   0.410(Ft.)
Average velocity of channel(s) =   6.309(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Rainfall intensity =      2.587(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.813
Subarea runoff =     59.199(CFS) for   29.490(Ac.)
Total runoff =     82.623(CFS)       Total area =       39.29(Ac.)
Area averaged Fm value =    0.250(In/Hr)
Depth of flow =   0.484(Ft.), Average velocity =   7.048(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      359.000 to Point/Station      360.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
________________________________________________________________________
Upstream point/station elevation =   267.000(Ft.)
Downstream point/station elevation =   266.000(Ft.)
Pipe length  =   111.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    82.623(CFS)
Given pipe size =     48.00(In.)
Calculated individual pipe flow  =    82.623(CFS)
Normal flow depth in pipe =   26.96(In.)
Flow top width inside pipe =   47.63(In.)
Critical Depth =   33.04(In.)
Pipe flow velocity =     11.37(Ft/s)
Travel time through pipe =    0.16 min.
Time of concentration (TC) =    15.20 min.


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Process from Point/Station      359.000 to Point/Station      360.000
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**** CONFLUENCE OF MINOR STREAMS ****
____________________________________________________________________________
Along Main Stream number: 3 in normal stream number 1
Stream flow area =     39.290(Ac.)
Runoff from this stream =     82.623(CFS)
Time of concentration =   15.20 min.
Rainfall intensity =     2.571(In/Hr)
Area averaged loss rate (Fm) =    0.2500(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      361.000 to Point/Station      362.000
**** INITIAL AREA EVALUATION ****
____________________________________________________________________________
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   597.000(Ft.)
Top (of initial area) elevation =   407.000(Ft.)
Bottom (of initial area) elevation =   380.000(Ft.)
Difference in elevation =    27.000(Ft.)
Slope =    0.04523  s(%)=       4.52
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.317 min.
NOTE: Distance EXCEEDS recommended maximum value of   328.084(Ft.)
for this Development Type
Rainfall intensity =      3.392(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.867
Subarea runoff =     22.520(CFS)
Total initial stream area =        7.660(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      362.000 to Point/Station      360.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
____________________________________________________________________________
Upstream point/station elevation =   372.000(Ft.)
Downstream point/station elevation =   266.000(Ft.)
Pipe length  =   750.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    22.520(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =    22.520(CFS)
Normal flow depth in pipe =    9.74(In.)
Flow top width inside pipe =   17.94(In.)
Critical depth could not be calculated.
Pipe flow velocity =     23.08(Ft/s)
Travel time through pipe =    0.54 min.
Time of concentration (TC) =     9.86 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      362.000 to Point/Station      360.000
**** CONFLUENCE OF MINOR STREAMS ****
____________________________________________________________________________
Along Main Stream number: 3 in normal stream number 2
Stream flow area =      7.660(Ac.)
Runoff from this stream =     22.520(CFS)
Time of concentration =    9.86 min.
Rainfall intensity =     3.285(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
```

```
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1     39.29    82.623     15.20    0.250      2.571
2      7.66    22.520      9.86    0.125      3.285
Qmax(1) =
          1.000 *    1.000 *    82.623) +
          0.774 *    1.000 *    22.520) + =     100.055
Qmax(2) =
          1.308 *    0.649 *    82.623) +
          1.000 *    1.000 *    22.520) + =      92.591

Total of 2 streams to confluence:
Flow rates before confluence point:
      82.623      22.520
Maximum flow rates at confluence using above data:
      100.055       92.591
Area of streams before confluence:
       39.290        7.660
Effective area values after confluence:
       46.950       33.142
Results of confluence:
Total flow rate =    100.055(CFS)
Time of concentration =    15.200 min.
Effective stream area after confluence =     46.950(Ac.)
Study area average Pervious fraction(Ap) =  0.918
Study area average soil loss rate(Fm) =    0.230(In/Hr)
Study area total (this main stream) =      46.95(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      360.000 to Point/Station      352.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   266.000(Ft.)
Downstream point/station elevation =   200.000(Ft.)
Pipe length  =  1386.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =   100.055(CFS)
Given pipe size =     36.00(In.)
Calculated individual pipe flow  =   100.055(CFS)
Normal flow depth in pipe =   21.93(In.)
Flow top width inside pipe =   35.13(In.)
Critical depth could not be calculated.
Pipe flow velocity =     22.19(Ft/s)
Travel time through pipe =    1.04 min.
Time of concentration (TC) =    16.24 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      360.000 to Point/Station      352.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 3
Stream flow area =     46.950(Ac.)
Runoff from this stream =    100.055(CFS)
Time of concentration =   16.24 min.
Rainfall intensity =     2.476(In/Hr)
Area averaged loss rate (Fm) =    0.2296(In/Hr)
Area averaged Pervious ratio (Ap) = 0.9184
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1     38.57   122.169     10.15    0.107      3.231
2     17.09    36.566     14.63    0.250      2.627
3     46.95   100.055     16.24    0.230      2.476
Qmax(1) =
          1.000 *    1.000 *   122.169) +
```

```
          1.254 *    0.694 *    36.566) +
          1.336 *    0.625 *   100.055) + =     237.516
Qmax(2) =
          0.807 *    1.000 *   122.169) +
          1.000 *    1.000 *    36.566) +
          1.067 *    0.901 *   100.055) + =     231.293
Qmax(3) =
          0.758 *    1.000 *   122.169) +
          0.936 *    1.000 *    36.566) +
          1.000 *    1.000 *   100.055) + =     226.942

Total of 3 main streams to confluence:
Flow rates before confluence point:
     123.169      37.566     101.055
Maximum flow rates at confluence using above data:
      237.516      231.293      226.942
Area of streams before confluence:
       38.568       17.090       46.950
Effective area values after confluence:
       79.762       97.944      102.608


Results of confluence:
Total flow rate =    237.516(CFS)
Time of concentration =    10.148 min.
Effective stream area after confluence  =     79.762(Ac.)
Study area average Pervious fraction(Ap) =  0.747
Study area average soil loss rate(Fm) =    0.187(In/Hr)
Study area total =     102.61(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      360.000 to Point/Station      352.000
**** SUBAREA FLOW ADDITION ****
________________________________________________________________________
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
The area added to the existing stream with this TC
does not add flow per Para 6b, Page D-15 of the OCHM,
therefore the upstream flow rate of Q =    237.516(CFS) is being used
Time of concentration =    10.15 min.
Rainfall intensity =      3.231(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.847
Subarea runoff =      0.000(CFS) for    6.730(Ac.)
Total runoff =    237.516(CFS)       Total area =       86.49(Ac.)
Area averaged Fm value =    0.192(In/Hr)
End of computations, total study area =          117.28 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.748
Area averaged SCS curve number (AMC 2) =  74.6
```

- 100 Year Post-Development Rational Method – Area 'C'

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                    Orange County Rational Hydrology Program

                (Hydrology Manual Date(s) October 1986 & November 1996)

 CIVILCADD/CIVILDESIGN  Engineering Software, (c) 1989-2012 Version 8.2
       Rational Hydrology Study, Date: 10/13/16  File Name: PRC100.roc
---------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION RATIONAL METHOD - AREA 'C' - 100 YEAR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
---------------------------------------------------------------------------


Program License Serial Number 4094

---------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

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Rational hydrology study storm event year is   100.0

Decimal fraction of study above 2000 ft., 600M  =     0.0000
English Units Used for input data


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Process from Point/Station      300.000 to Point/Station      301.000
**** INITIAL AREA EVALUATION ****
___________________________________________________________________________
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   383.000(Ft.)
Bottom (of initial area) elevation =   321.000(Ft.)
Difference in elevation =    62.000(Ft.)
Slope =    0.20667  s(%)=      20.67
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.475 min.
Rainfall intensity =      4.290(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.848
Subarea runoff =      3.817(CFS)
Total initial stream area =        1.050(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      301.000 to Point/Station      302.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
___________________________________________________________________________
Upstream point/station elevation =   321.000(Ft.)
Downstream point/station elevation =   297.000(Ft.)
Pipe length  =    63.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     3.817(CFS)
Given pipe size =      8.00(In.)
Calculated individual pipe flow  =     3.817(CFS)
Normal flow depth in pipe =    4.06(In.)
Flow top width inside pipe =    8.00(In.)
Critical depth could not be calculated.
Pipe flow velocity =     21.49(Ft/s)
Travel time through pipe =    0.05 min.
Time of concentration (TC) =     9.52 min.
```

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Process from Point/Station      302.000 to Point/Station      303.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
______________________________________________________________________________
Top of street segment elevation =   297.000(Ft.)
End of street segment elevation =   286.000(Ft.)
Length of street segment  =   341.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      7.096(CFS)
Depth of flow =   0.368(Ft.), Average velocity =   4.496(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  12.048(Ft.)
Flow velocity =   4.50(Ft/s)
Travel time =    1.26 min.     TC =   10.79  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      3.982(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.862
Subarea runoff =      6.479(CFS) for    1.950(Ac.)
Total runoff =     10.296(CFS)       Total area =        3.00(Ac.)
Area averaged Fm value =    0.169(In/Hr)
Street flow at end of street =     10.296(CFS)
Half street flow at end of street =     10.296(CFS)
Depth of flow =   0.407(Ft.), Average velocity =   4.912(Ft/s)
Flow width (from curb towards crown)=  14.034(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      303.000 to Point/Station      304.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   280.000(Ft.)
Downstream point/station elevation =   279.000(Ft.)
Pipe length  =    23.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    10.296(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =    10.296(CFS)
Normal flow depth in pipe =    8.68(In.)
Flow top width inside pipe =   17.99(In.)
Critical Depth =   14.81(In.)
Pipe flow velocity =     12.20(Ft/s)
Travel time through pipe =    0.03 min.
Time of concentration (TC) =    10.82 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      303.000 to Point/Station      304.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
```

```
Stream flow area =      3.000(Ac.)
Runoff from this stream =     10.296(CFS)
Time of concentration =   10.82 min.
Rainfall intensity =     3.976(In/Hr)
Area averaged loss rate (Fm) =    0.1687(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6750


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Process from Point/Station      305.000 to Point/Station      306.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   233.000(Ft.)
Top (of initial area) elevation =   334.000(Ft.)
Bottom (of initial area) elevation =   297.000(Ft.)
Difference in elevation =    37.000(Ft.)
Slope =    0.15880  s(%)=      15.88
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    4.974 min.
Rainfall intensity =      6.206(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.882
Subarea runoff =      2.900(CFS)
Total initial stream area =        0.530(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      306.000 to Point/Station      307.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------------
Top of street segment elevation =   297.000(Ft.)
End of street segment elevation =   286.000(Ft.)
Length of street segment  =   303.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      4.493(CFS)
Depth of flow =   0.320(Ft.), Average velocity =   4.232(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =   9.668(Ft.)
Flow velocity =   4.23(Ft/s)
Travel time =    1.19 min.     TC =    6.17  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      5.486(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
```

```
rational method)(Q=KCIA) is C = 0.879
Subarea runoff =      3.131(CFS) for    0.720(Ac.)
Total runoff =      6.032(CFS)       Total area =        1.25(Ac.)
Area averaged Fm value =    0.125(In/Hr)
Street flow at end of street =      6.032(CFS)
Half street flow at end of street =      6.032(CFS)
Depth of flow =   0.346(Ft.), Average velocity =   4.529(Ft/s)
Flow width (from curb towards crown)=  10.978(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      307.000 to Point/Station      304.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   280.000(Ft.)
Downstream point/station elevation =   279.000(Ft.)
Pipe length  =    37.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     6.032(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =     6.032(CFS)
Normal flow depth in pipe =    7.34(In.)
Flow top width inside pipe =   17.69(In.)
Critical Depth =   11.38(In.)
Pipe flow velocity =      8.90(Ft/s)
Travel time through pipe =    0.07 min.
Time of concentration (TC) =     6.24 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      307.000 to Point/Station      304.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      1.250(Ac.)
Runoff from this stream =      6.032(CFS)
Time of concentration =    6.24 min.
Rainfall intensity =     5.451(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1      3.00    10.296     10.82    0.169      3.976
2      1.25     6.032      6.24    0.125      5.451
Qmax(1) =
          1.000 *    1.000 *    10.296) +
          0.723 *    1.000 *     6.032) + =      14.657
Qmax(2) =
          1.388 *    0.576 *    10.296) +
          1.000 *    1.000 *     6.032) + =      14.267

Total of 2 streams to confluence:
Flow rates before confluence point:
      10.296       6.032
Maximum flow rates at confluence using above data:
       14.657       14.267
Area of streams before confluence:
        3.000        1.250
Effective area values after confluence:
        4.250        2.979
Results of confluence:
Total flow rate =     14.657(CFS)
Time of concentration =    10.820 min.
Effective stream area after confluence =      4.250(Ac.)
Study area average Pervious fraction(Ap) =  0.624
Study area average soil loss rate(Fm) =    0.156(In/Hr)
Study area total (this main stream) =       4.25(Ac.)
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      304.000 to Point/Station      308.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
------------------------------------------------------------------------
Upstream point/station elevation =   279.000(Ft.)
Downstream point/station elevation =   259.000(Ft.)
Pipe length  =   247.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    14.657(CFS)
Given pipe size =     24.00(In.)
Calculated individual pipe flow  =    14.657(CFS)
Normal flow depth in pipe =    7.79(In.)
Flow top width inside pipe =   22.47(In.)
Critical Depth =   16.56(In.)
Pipe flow velocity =     16.59(Ft/s)
Travel time through pipe =    0.25 min.
Time of concentration (TC) =    11.07 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      304.000 to Point/Station      308.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      4.250(Ac.)
Runoff from this stream =     14.657(CFS)
Time of concentration =   11.07 min.
Rainfall intensity =     3.924(In/Hr)
Area averaged loss rate (Fm) =    0.1559(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6235


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      300.000 to Point/Station      309.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   383.000(Ft.)
Bottom (of initial area) elevation =   324.000(Ft.)
Difference in elevation =    59.000(Ft.)
Slope =    0.19667  s(%)=      19.67
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.570 min.
Rainfall intensity =      4.265(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.847
Subarea runoff =      4.011(CFS)
Total initial stream area =        1.110(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      309.000 to Point/Station      310.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
------------------------------------------------------------------------
Upstream point/station elevation =   324.000(Ft.)
Downstream point/station elevation =   299.000(Ft.)
Pipe length  =   140.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     4.011(CFS)
Given pipe size =      8.00(In.)
Calculated individual pipe flow  =     4.011(CFS)
Normal flow depth in pipe =    5.34(In.)
Flow top width inside pipe =    7.54(In.)
Critical depth could not be calculated.
```

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Pipe flow velocity =     16.20(Ft/s)
Travel time through pipe =    0.14 min.
Time of concentration (TC) =     9.71 min.


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Process from Point/Station      310.000 to Point/Station      311.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------------
Top of street segment elevation =   299.000(Ft.)
End of street segment elevation =   266.000(Ft.)
Length of street segment  =   717.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [2] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =     11.502(CFS)
Depth of flow =   0.331(Ft.), Average velocity =   4.907(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  10.224(Ft.)
Flow velocity =   4.91(Ft/s)
Travel time =    2.44 min.     TC =   12.15  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      3.720(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.864
Subarea runoff =     14.825(CFS) for    4.750(Ac.)
Total runoff =     18.836(CFS)       Total area =        5.86(Ac.)
Area averaged Fm value =    0.149(In/Hr)
Street flow at end of street =     18.836(CFS)
Half street flow at end of street =      9.418(CFS)
Depth of flow =   0.378(Ft.), Average velocity =   5.506(Ft/s)
Flow width (from curb towards crown)=  12.585(Ft.)


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Process from Point/Station      311.000 to Point/Station      308.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =   260.000(Ft.)
Downstream point/station elevation =   259.000(Ft.)
Pipe length  =    26.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    18.836(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =    18.836(CFS)
Normal flow depth in pipe =   13.53(In.)
Flow top width inside pipe =   15.55(In.)
Critical depth could not be calculated.
Pipe flow velocity =     13.22(Ft/s)
Travel time through pipe =    0.03 min.
Time of concentration (TC) =    12.18 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
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Process from Point/Station      311.000 to Point/Station      308.000
**** CONFLUENCE OF MINOR STREAMS ****
----------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      5.860(Ac.)
Runoff from this stream =     18.836(CFS)
Time of concentration =   12.18 min.
Rainfall intensity =     3.714(In/Hr)
Area averaged loss rate (Fm) =    0.1487(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5947


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      312.000 to Point/Station      313.000
**** INITIAL AREA EVALUATION ****
----------------------------------------------------------------------------
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   350.000(Ft.)
Bottom (of initial area) elevation =   280.000(Ft.)
Difference in elevation =    70.000(Ft.)
Slope =    0.23333  s(%)=      23.33
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.096 min.
Rainfall intensity =      6.120(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.882
Subarea runoff =     13.652(CFS)
Total initial stream area =        2.530(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      313.000 to Point/Station      314.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
----------------------------------------------------------------------------
Top of street segment elevation =   280.000(Ft.)
End of street segment elevation =   266.000(Ft.)
Length of street segment  =   609.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [2] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =     19.265(CFS)
Depth of flow =   0.419(Ft.), Average velocity =   4.250(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  14.627(Ft.)
Flow velocity =   4.25(Ft/s)
Travel time =    2.39 min.     TC =    7.48  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
```

```
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      4.911(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.877
Subarea runoff =     11.114(CFS) for    3.220(Ac.)
Total runoff =     24.766(CFS)       Total area =        5.75(Ac.)
Area averaged Fm value =    0.125(In/Hr)
Street flow at end of street =     24.766(CFS)
Half street flow at end of street =     12.383(CFS)
Depth of flow =   0.450(Ft.), Average velocity =   4.516(Ft/s)
Flow width (from curb towards crown)=  16.172(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      314.000 to Point/Station      308.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
________________________________________________________________________
Upstream point/station elevation =   260.000(Ft.)
Downstream point/station elevation =   259.000(Ft.)
Pipe length  =    36.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    24.766(CFS)
Given pipe size =     18.00(In.)
NOTE: Normal flow is pressure flow in user selected pipe size.
The approximate hydraulic grade line above the pipe invert is
     5.575(Ft.)  at the headworks or inlet of the pipe(s)
 Pipe friction loss =      2.000(Ft.)
 Minor friction loss =      4.575(Ft.)       K-factor =   1.50
Critical depth could not be calculated.
Pipe flow velocity =     14.01(Ft/s)
Travel time through pipe =    0.04 min.
Time of concentration (TC) =     7.53 min.


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Process from Point/Station      314.000 to Point/Station      308.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 3
Stream flow area =      5.750(Ac.)
Runoff from this stream =     24.766(CFS)
Time of concentration =    7.53 min.
Rainfall intensity =     4.895(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1      4.25    14.657     11.07    0.156      3.924
2      5.86    18.836     12.18    0.149      3.714
3      5.75    24.766      7.53    0.125      4.895
Qmax(1) =
          1.000 *    1.000 *    14.657) +
          1.059 *    0.909 *    18.836) +
          0.797 *    1.000 *    24.766) + =      52.505
Qmax(2) =
          0.944 *    1.000 *    14.657) +
          1.000 *    1.000 *    18.836) +
          0.753 *    1.000 *    24.766) + =      51.314
Qmax(3) =
          1.257 *    0.680 *    14.657) +
          1.331 *    0.618 *    18.836) +
          1.000 *    1.000 *    24.766) + =      52.789

Total of 3 streams to confluence:
Flow rates before confluence point:
      14.657      18.836      24.766
Maximum flow rates at confluence using above data:
```

```
       52.505       51.314       52.789
Area of streams before confluence:
        4.250        5.860        5.750
Effective area values after confluence:
       15.324       15.860       12.261
Results of confluence:
Total flow rate =     52.789(CFS)
Time of concentration =     7.527 min.
Effective stream area after confluence =     12.261(Ac.)
Study area average Pervious fraction(Ap) =  0.568
Study area average soil loss rate(Fm) =    0.142(In/Hr)
Study area total (this main stream) =      15.86(Ac.)


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Process from Point/Station      308.000 to Point/Station      315.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   259.000(Ft.)
Downstream point/station elevation =   241.500(Ft.)
Pipe length  =  1077.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    52.789(CFS)
Given pipe size =     36.00(In.)
Calculated individual pipe flow  =    52.789(CFS)
Normal flow depth in pipe =   20.53(In.)
Flow top width inside pipe =   35.64(In.)
Critical Depth =   28.32(In.)
Pipe flow velocity =     12.67(Ft/s)
Travel time through pipe =    1.42 min.
Time of concentration (TC) =     8.94 min.


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Process from Point/Station      308.000 to Point/Station      315.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =     12.261(Ac.)
Runoff from this stream =     52.789(CFS)
Time of concentration =    8.94 min.
Rainfall intensity =     4.434(In/Hr)
Area averaged loss rate (Fm) =    0.1420(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5681


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Process from Point/Station      316.000 to Point/Station      317.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   280.000(Ft.)
Bottom (of initial area) elevation =   270.000(Ft.)
Difference in elevation =    10.000(Ft.)
Slope =    0.03333  s(%)=       3.33
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    7.520 min.
Rainfall intensity =      4.897(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.877
Subarea runoff =      4.209(CFS)
Total initial stream area =        0.980(Ac.)
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Process from Point/Station      317.000 to Point/Station      318.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
______________________________________________________________________________
Top of street segment elevation =   270.000(Ft.)
End of street segment elevation =   255.000(Ft.)
Length of street segment  =   599.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      7.514(CFS)
Depth of flow =   0.387(Ft.), Average velocity =   4.138(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  12.998(Ft.)
Flow velocity =   4.14(Ft/s)
Travel time =    2.41 min.     TC =    9.93  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      4.175(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.873
Subarea runoff =      6.545(CFS) for    1.970(Ac.)
Total runoff =     10.753(CFS)       Total area =        2.95(Ac.)
Area averaged Fm value =    0.125(In/Hr)
Street flow at end of street =     10.753(CFS)
Half street flow at end of street =     10.753(CFS)
Depth of flow =   0.427(Ft.), Average velocity =   4.509(Ft/s)
Flow width (from curb towards crown)=  15.028(Ft.)


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Process from Point/Station      318.000 to Point/Station      319.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
______________________________________________________________________________
Top of street segment elevation =   255.000(Ft.)
End of street segment elevation =   248.000(Ft.)
Length of street segment  =   653.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =     19.119(CFS)
Depth of flow =   0.571(Ft.), Average velocity =   3.818(Ft/s)
Warning: depth of flow exceeds top of curb
Note:  depth of flow exceeds top of street crown.
```

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Distance that curb overflow reaches into property =    3.54(Ft.)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  18.000(Ft.)
Flow velocity =   3.82(Ft/s)
Travel time =    2.85 min.     TC =   12.78  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      3.613(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.869
Subarea runoff =     16.654(CFS) for    5.780(Ac.)
Total runoff =     27.407(CFS)       Total area =        8.73(Ac.)
Area averaged Fm value =    0.125(In/Hr)
Street flow at end of street =     27.407(CFS)
Half street flow at end of street =     27.407(CFS)
Depth of flow =   0.639(Ft.), Average velocity =   4.164(Ft/s)
Warning: depth of flow exceeds top of curb
Note:  depth of flow exceeds top of street crown.
Distance that curb overflow reaches into property =    6.93(Ft.)
Flow width (from curb towards crown)=  18.000(Ft.)


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Process from Point/Station      319.000 to Point/Station      315.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
____________________________________________________________________________
Upstream point/station elevation =   242.000(Ft.)
Downstream point/station elevation =   241.500(Ft.)
Pipe length  =    18.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    27.407(CFS)
Given pipe size =     18.00(In.)
NOTE: Normal flow is pressure flow in user selected pipe size.
The approximate hydraulic grade line above the pipe invert is
     6.327(Ft.)  at the headworks or inlet of the pipe(s)
 Pipe friction loss =      1.225(Ft.)
 Minor friction loss =      5.603(Ft.)       K-factor =   1.50
Pipe flow velocity =     15.51(Ft/s)
Travel time through pipe =    0.02 min.
Time of concentration (TC) =    12.80 min.


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Process from Point/Station      319.000 to Point/Station      315.000
**** CONFLUENCE OF MINOR STREAMS ****
____________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      8.730(Ac.)
Runoff from this stream =     27.407(CFS)
Time of concentration =   12.80 min.
Rainfall intensity =     3.610(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1     12.26    52.789      8.94    0.142      4.434
2      8.73    27.407     12.80    0.125      3.610
Qmax(1) =
          1.000 *    1.000 *    52.789) +
          1.236 *    0.699 *    27.407) + =      76.460
Qmax(2) =
```

```
          0.808 *    1.000 *    52.789) +
          1.000 *    1.000 *    27.407) + =      70.061

Total of 2 streams to confluence:
Flow rates before confluence point:
      52.789      27.407
Maximum flow rates at confluence using above data:
       76.460       70.061
Area of streams before confluence:
       12.261        8.730
Effective area values after confluence:
       18.359       20.991
Results of confluence:
Total flow rate =     76.460(CFS)
Time of concentration =     8.943 min.
Effective stream area after confluence =     18.359(Ac.)
Study area average Pervious fraction(Ap) =  0.540
Study area average soil loss rate(Fm) =    0.135(In/Hr)
Study area total (this main stream) =      20.99(Ac.)


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Process from Point/Station      315.000 to Point/Station      320.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   241.500(Ft.)
Downstream point/station elevation =   241.000(Ft.)
Pipe length  =    34.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    76.460(CFS)
Given pipe size =     36.00(In.)
Calculated individual pipe flow  =    76.460(CFS)
Normal flow depth in pipe =   27.88(In.)
Flow top width inside pipe =   30.09(In.)
Critical Depth =   32.82(In.)
Pipe flow velocity =     13.02(Ft/s)
Travel time through pipe =    0.04 min.
Time of concentration (TC) =     8.99 min.


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Process from Point/Station      315.000 to Point/Station      320.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     18.359(Ac.)
Runoff from this stream =     76.460(CFS)
Time of concentration =    8.99 min.
Rainfall intensity =     4.422(In/Hr)
Area averaged loss rate (Fm) =    0.1349(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5398
Program is now starting with Main Stream No. 2


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Process from Point/Station      321.000 to Point/Station      322.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   396.000(Ft.)
Bottom (of initial area) elevation =   355.000(Ft.)
Difference in elevation =    41.000(Ft.)
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```
Slope =    0.13667  s(%)=      13.67
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   10.292 min.
Rainfall intensity =      4.091(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.845
Subarea runoff =      1.728(CFS)
Total initial stream area =        0.500(Ac.)


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Process from Point/Station      322.000 to Point/Station      323.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
________________________________________________________________________
Upstream point/station elevation =   355.000(Ft.)
Downstream point/station elevation =   288.000(Ft.)
Pipe length  =   207.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.728(CFS)
Given pipe size =     12.00(In.)
Calculated individual pipe flow  =     1.728(CFS)
Normal flow depth in pipe =    2.37(In.)
Flow top width inside pipe =    9.55(In.)
Critical Depth =    6.70(In.)
Pipe flow velocity =     15.75(Ft/s)
Travel time through pipe =    0.22 min.
Time of concentration (TC) =    10.51 min.


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Process from Point/Station      323.000 to Point/Station      324.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of street segment elevation =   288.000(Ft.)
End of street segment elevation =   267.000(Ft.)
Length of street segment  =   240.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      2.766(CFS)
Depth of flow =   0.251(Ft.), Average velocity =   5.403(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =   6.207(Ft.)
Flow velocity =   5.40(Ft/s)
Travel time =    0.74 min.     TC =   11.25  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      3.887(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.858
Subarea runoff =      2.008(CFS) for    0.620(Ac.)
Total runoff =      3.736(CFS)       Total area =        1.12(Ac.)
Area averaged Fm value =    0.181(In/Hr)
Street flow at end of street =      3.736(CFS)
Half street flow at end of street =      3.736(CFS)
Depth of flow =   0.272(Ft.), Average velocity =   5.735(Ft/s)
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Flow width (from curb towards crown)=   7.244(Ft.)


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Process from Point/Station      324.000 to Point/Station      325.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
------------------------------------------------------------------------
Upstream point/station elevation =   261.000(Ft.)
Downstream point/station elevation =   260.000(Ft.)
Pipe length  =    20.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     3.736(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =     3.736(CFS)
Normal flow depth in pipe =    4.85(In.)
Flow top width inside pipe =   15.98(In.)
Critical Depth =    8.87(In.)
Pipe flow velocity =      9.72(Ft/s)
Travel time through pipe =    0.03 min.
Time of concentration (TC) =    11.29 min.


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Process from Point/Station      324.000 to Point/Station      325.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------
Along Main Stream number: 2 in normal stream number 1
Stream flow area =      1.120(Ac.)
Runoff from this stream =      3.736(CFS)
Time of concentration =   11.29 min.
Rainfall intensity =     3.881(In/Hr)
Area averaged loss rate (Fm) =    0.1808(In/Hr)
Area averaged Pervious ratio (Ap) = 0.7232


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Process from Point/Station      326.000 to Point/Station      327.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   250.000(Ft.)
Top (of initial area) elevation =   297.000(Ft.)
Bottom (of initial area) elevation =   288.000(Ft.)
Difference in elevation =     9.000(Ft.)
Slope =    0.03600  s(%)=       3.60
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.884 min.
Rainfall intensity =      5.151(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.878
Subarea runoff =      2.578(CFS)
Total initial stream area =        0.570(Ac.)


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Process from Point/Station      327.000 to Point/Station      328.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------
Top of street segment elevation =   288.000(Ft.)
End of street segment elevation =   267.000(Ft.)
Length of street segment  =   293.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
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```
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      4.973(CFS)
Depth of flow =   0.300(Ft.), Average velocity =   5.638(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =   8.691(Ft.)
Flow velocity =   5.64(Ft/s)
Travel time =    0.87 min.     TC =    7.75  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      4.813(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.877
Subarea runoff =      4.721(CFS) for    1.160(Ac.)
Total runoff =      7.299(CFS)       Total area =        1.73(Ac.)
Area averaged Fm value =    0.125(In/Hr)
Street flow at end of street =      7.299(CFS)
Half street flow at end of street =      7.299(CFS)
Depth of flow =   0.333(Ft.), Average velocity =   6.147(Ft/s)
Flow width (from curb towards crown)=  10.299(Ft.)


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Process from Point/Station      328.000 to Point/Station      325.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
____________________________________________________________________________
Upstream point/station elevation =   261.000(Ft.)
Downstream point/station elevation =   260.000(Ft.)
Pipe length  =    32.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     7.299(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =     7.299(CFS)
Normal flow depth in pipe =    7.84(In.)
Flow top width inside pipe =   17.85(In.)
Critical Depth =   12.56(In.)
Pipe flow velocity =      9.88(Ft/s)
Travel time through pipe =    0.05 min.
Time of concentration (TC) =     7.80 min.


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Process from Point/Station      328.000 to Point/Station      325.000
**** CONFLUENCE OF MINOR STREAMS ****
____________________________________________________________________________
Along Main Stream number: 2 in normal stream number 2
Stream flow area =      1.730(Ac.)
Runoff from this stream =      7.299(CFS)
Time of concentration =    7.80 min.
Rainfall intensity =     4.794(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)
```

```
1      1.12     3.736     11.29    0.181      3.881
2      1.73     7.299      7.80    0.125      4.794
Qmax(1) =
          1.000 *    1.000 *     3.736) +
          0.804 *    1.000 *     7.299) + =       9.608
Qmax(2) =
          1.247 *    0.692 *     3.736) +
          1.000 *    1.000 *     7.299) + =      10.521

Total of 2 streams to confluence:
Flow rates before confluence point:
       3.736       7.299
Maximum flow rates at confluence using above data:
        9.608       10.521
Area of streams before confluence:
        1.120        1.730
Effective area values after confluence:
        2.850        2.505
Results of confluence:
Total flow rate =     10.521(CFS)
Time of concentration =     7.805 min.
Effective stream area after confluence =      2.505(Ac.)
Study area average Pervious fraction(Ap) =  0.588
Study area average soil loss rate(Fm) =    0.147(In/Hr)
Study area total (this main stream) =       2.85(Ac.)


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Process from Point/Station      325.000 to Point/Station      320.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
________________________________________________________________________
Upstream point/station elevation =   260.000(Ft.)
Downstream point/station elevation =   241.000(Ft.)
Pipe length  =   220.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    10.521(CFS)
Given pipe size =     24.00(In.)
Calculated individual pipe flow  =    10.521(CFS)
Normal flow depth in pipe =    6.46(In.)
Flow top width inside pipe =   21.28(In.)
Critical Depth =   13.93(In.)
Pipe flow velocity =     15.46(Ft/s)
Travel time through pipe =    0.24 min.
Time of concentration (TC) =     8.04 min.


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Process from Point/Station      325.000 to Point/Station      320.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      2.505(Ac.)
Runoff from this stream =     10.521(CFS)
Time of concentration =    8.04 min.
Rainfall intensity =     4.712(In/Hr)
Area averaged loss rate (Fm) =    0.1469(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5877
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1     18.36    76.460      8.99    0.135      4.422
2      2.50    10.521      8.04    0.147      4.712
Qmax(1) =
          1.000 *    1.000 *    76.460) +
          0.936 *    1.000 *    10.521) + =      86.311
Qmax(2) =
          1.068 *    0.895 *    76.460) +
          1.000 *    1.000 *    10.521) + =      83.580
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Total of 2 main streams to confluence:
Flow rates before confluence point:
      77.460      11.521
Maximum flow rates at confluence using above data:
       86.311       83.580
Area of streams before confluence:
       18.359        2.505
Effective area values after confluence:
       20.863       18.933


Results of confluence:
Total flow rate =     86.311(CFS)
Time of concentration =     8.987 min.
Effective stream area after confluence  =     20.863(Ac.)
Study area average Pervious fraction(Ap) =  0.546
Study area average soil loss rate(Fm) =    0.136(In/Hr)
Study area total =      20.86(Ac.)


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Process from Point/Station      320.000 to Point/Station      329.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   241.000(Ft.)
Downstream point/station elevation =   240.000(Ft.)
Pipe length  =    64.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    86.311(CFS)
Given pipe size =     48.00(In.)
Calculated individual pipe flow  =    86.311(CFS)
Normal flow depth in pipe =   23.45(In.)
Flow top width inside pipe =   47.99(In.)
Critical Depth =   33.79(In.)
Pipe flow velocity =     14.15(Ft/s)
Travel time through pipe =    0.08 min.
Time of concentration (TC) =     9.06 min.


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Process from Point/Station      320.000 to Point/Station      329.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =     20.863(Ac.)
Runoff from this stream =     86.311(CFS)
Time of concentration =    9.06 min.
Rainfall intensity =     4.401(In/Hr)
Area averaged loss rate (Fm) =    0.1364(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5455


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Process from Point/Station      328.000 to Point/Station      330.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   210.000(Ft.)
Top (of initial area) elevation =   267.000(Ft.)
Bottom (of initial area) elevation =   247.000(Ft.)
Difference in elevation =    20.000(Ft.)
Slope =    0.09524  s(%)=       9.52
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
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Initial area time of concentration =    5.285 min.
Rainfall intensity =      5.994(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.881
Subarea runoff =      2.166(CFS)
Total initial stream area =        0.410(Ac.)


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Process from Point/Station      330.000 to Point/Station      329.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   241.000(Ft.)
Downstream point/station elevation =   240.000(Ft.)
Pipe length  =    29.00(Ft.)   Manning's N = 0.015
No. of pipes = 1  Required pipe flow  =     2.166(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =     2.166(CFS)
Normal flow depth in pipe =    4.35(In.)
Flow top width inside pipe =   15.41(In.)
Critical Depth =    6.67(In.)
Pipe flow velocity =      6.57(Ft/s)
Travel time through pipe =    0.07 min.
Time of concentration (TC) =     5.36 min.


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Process from Point/Station      330.000 to Point/Station      329.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.410(Ac.)
Runoff from this stream =      2.166(CFS)
Time of concentration =    5.36 min.
Rainfall intensity =     5.946(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000


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Process from Point/Station      331.000 to Point/Station      332.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   280.000(Ft.)
Bottom (of initial area) elevation =   270.000(Ft.)
Difference in elevation =    10.000(Ft.)
Slope =    0.03333  s(%)=       3.33
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    7.520 min.
Rainfall intensity =      4.897(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.877
Subarea runoff =      7.731(CFS)
Total initial stream area =        1.800(Ac.)


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Process from Point/Station      332.000 to Point/Station      333.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
______________________________________________________________________________
Top of street segment elevation =   270.000(Ft.)
End of street segment elevation =   255.000(Ft.)
Length of street segment  =   601.000(Ft.)
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Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =     10.603(CFS)
Depth of flow =   0.387(Ft.), Average velocity =   5.837(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  12.999(Ft.)
Flow velocity =   5.84(Ft/s)
Travel time =    0.86 min.     TC =    8.38  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      4.603(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.876
Subarea runoff =      5.689(CFS) for    1.530(Ac.)
Total runoff =     13.419(CFS)       Total area =        3.33(Ac.)
Area averaged Fm value =    0.125(In/Hr)
Street flow at end of street =     13.419(CFS)
Half street flow at end of street =     13.419(CFS)
Depth of flow =   0.413(Ft.), Average velocity =   6.175(Ft/s)
Flow width (from curb towards crown)=  14.305(Ft.)


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Process from Point/Station      333.000 to Point/Station      334.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
____________________________________________________________________________
Top of street segment elevation =   255.000(Ft.)
End of street segment elevation =   247.000(Ft.)
Length of street segment  =   708.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =     15.333(CFS)
Depth of flow =   0.529(Ft.), Average velocity =   3.695(Ft/s)
Warning: depth of flow exceeds top of curb
Note:  depth of flow exceeds top of street crown.
Distance that curb overflow reaches into property =    1.45(Ft.)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  18.000(Ft.)
Flow velocity =   3.70(Ft/s)
Travel time =    3.19 min.     TC =   11.57  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
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Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      3.825(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.871
Subarea runoff =      3.765(CFS) for    1.830(Ac.)
Total runoff =     17.184(CFS)       Total area =        5.16(Ac.)
Area averaged Fm value =    0.125(In/Hr)
Street flow at end of street =     17.184(CFS)
Half street flow at end of street =     17.184(CFS)
Depth of flow =   0.548(Ft.), Average velocity =   3.797(Ft/s)
Warning: depth of flow exceeds top of curb
Note:  depth of flow exceeds top of street crown.
Distance that curb overflow reaches into property =    2.39(Ft.)
Flow width (from curb towards crown)=  18.000(Ft.)


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Process from Point/Station      334.000 to Point/Station      329.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
____________________________________________________________________________
Upstream point/station elevation =   241.000(Ft.)
Downstream point/station elevation =   240.000(Ft.)
Pipe length  =    41.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    17.184(CFS)
Given pipe size =     18.00(In.)
NOTE: Normal flow is pressure flow in user selected pipe size.
The approximate hydraulic grade line above the pipe invert is
     2.299(Ft.)  at the headworks or inlet of the pipe(s)
 Pipe friction loss =      1.097(Ft.)
 Minor friction loss =      2.202(Ft.)       K-factor =   1.50
Pipe flow velocity =      9.72(Ft/s)
Travel time through pipe =    0.07 min.
Time of concentration (TC) =    11.64 min.


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Process from Point/Station      334.000 to Point/Station      329.000
**** CONFLUENCE OF MINOR STREAMS ****
____________________________________________________________________________
Along Main Stream number: 1 in normal stream number 3
Stream flow area =      5.160(Ac.)
Runoff from this stream =     17.184(CFS)
Time of concentration =   11.64 min.
Rainfall intensity =     3.812(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1     20.86    86.311      9.06    0.136      4.401
2      0.41     2.166      5.36    0.125      5.946
3      5.16    17.184     11.64    0.125      3.812
Qmax(1) =
          1.000 *    1.000 *    86.311) +
          0.734 *    1.000 *     2.166) +
          1.160 *    0.778 *    17.184) + =     103.412
Qmax(2) =
          1.362 *    0.591 *    86.311) +
          1.000 *    1.000 *     2.166) +
          1.579 *    0.460 *    17.184) + =      84.194
Qmax(3) =
          0.862 *    1.000 *    86.311) +
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          0.633 *    1.000 *     2.166) +
          1.000 *    1.000 *    17.184) + =      92.952

Total of 3 streams to confluence:
Flow rates before confluence point:
      86.311       2.166      17.184
Maximum flow rates at confluence using above data:
      103.412       84.194       92.952
Area of streams before confluence:
       20.863        0.410        5.160
Effective area values after confluence:
       25.289       15.123       26.433
Results of confluence:
Total flow rate =    103.412(CFS)
Time of concentration =     9.062 min.
Effective stream area after confluence =     25.289(Ac.)
Study area average Pervious fraction(Ap) =  0.536
Study area average soil loss rate(Fm) =    0.134(In/Hr)
Study area total (this main stream) =      26.43(Ac.)


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Process from Point/Station      329.000 to Point/Station      335.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
________________________________________________________________________
Upstream point/station elevation =   240.000(Ft.)
Downstream point/station elevation =   201.800(Ft.)
Pipe length  =   393.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =   103.412(CFS)
Given pipe size =     48.00(In.)
Calculated individual pipe flow  =   103.412(CFS)
Normal flow depth in pipe =   15.69(In.)
Flow top width inside pipe =   45.03(In.)
Critical Depth =   36.94(In.)
Pipe flow velocity =     28.97(Ft/s)
Travel time through pipe =    0.23 min.
Time of concentration (TC) =     9.29 min.


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Process from Point/Station      329.000 to Point/Station      335.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     25.289(Ac.)
Runoff from this stream =    103.412(CFS)
Time of concentration =    9.29 min.
Rainfall intensity =     4.339(In/Hr)
Area averaged loss rate (Fm) =    0.1340(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5359
Program is now starting with Main Stream No. 2


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Process from Point/Station      336.000 to Point/Station      337.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.100
Decimal fraction soil group C = 0.900
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 67.70
Pervious ratio(Ap) = 0.1000  Max loss rate(Fp)=     0.255(In/Hr)
Max Catchment Loss (Fm) =     0.026(In/Hr)
Initial subarea data:
Initial area flow distance =   416.000(Ft.)
Top (of initial area) elevation =   227.000(Ft.)
Bottom (of initial area) elevation =   211.000(Ft.)
Difference in elevation =    16.000(Ft.)
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Slope =    0.03846  s(%)=       3.85
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.509 min.
NOTE: Distance EXCEEDS recommended maximum value of   328.084(Ft.)
for this Development Type
Rainfall intensity =      5.320(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.896
Subarea runoff =     13.246(CFS)
Total initial stream area =        2.780(Ac.)


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Process from Point/Station      337.000 to Point/Station      338.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
________________________________________________________________________
Upstream point/station elevation =   206.900(Ft.)
Downstream point/station elevation =   204.500(Ft.)
Pipe length  =   470.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    13.246(CFS)
Given pipe size =     24.00(In.)
Calculated individual pipe flow  =    13.246(CFS)
Normal flow depth in pipe =   16.53(In.)
Flow top width inside pipe =   22.23(In.)
Critical Depth =   15.71(In.)
Pipe flow velocity =      5.74(Ft/s)
Travel time through pipe =    1.36 min.
Time of concentration (TC) =     7.87 min.


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Process from Point/Station      337.000 to Point/Station      338.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 2 in normal stream number 1
Stream flow area =      2.780(Ac.)
Runoff from this stream =     13.246(CFS)
Time of concentration =    7.87 min.
Rainfall intensity =     4.770(In/Hr)
Area averaged loss rate (Fm) =    0.0255(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000


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Process from Point/Station      336.000 to Point/Station      339.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
APARTMENT subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.2000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.050(In/Hr)
Initial subarea data:
Initial area flow distance =   364.000(Ft.)
Top (of initial area) elevation =   227.000(Ft.)
Bottom (of initial area) elevation =   223.500(Ft.)
Difference in elevation =     3.500(Ft.)
Slope =    0.00962  s(%)=       0.96
TC = k(0.324)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.677 min.
NOTE: Distance EXCEEDS recommended maximum value of   328.084(Ft.)
for this Development Type
Rainfall intensity =      4.511(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.890
Subarea runoff =     10.199(CFS)
Total initial stream area =        2.540(Ac.)


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Process from Point/Station      339.000 to Point/Station      338.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
------------------------------------------------------------------------
Upstream point/station elevation =   216.000(Ft.)
Downstream point/station elevation =   204.500(Ft.)
Pipe length  =   164.00(Ft.)   Manning's N = 0.015
No. of pipes = 1  Required pipe flow  =    10.199(CFS)
Given pipe size =     24.00(In.)
Calculated individual pipe flow  =    10.199(CFS)
Normal flow depth in pipe =    7.21(In.)
Flow top width inside pipe =   22.01(In.)
Critical Depth =   13.71(In.)
Pipe flow velocity =     12.84(Ft/s)
Travel time through pipe =    0.21 min.
Time of concentration (TC) =     8.89 min.


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Process from Point/Station      339.000 to Point/Station      338.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------
Along Main Stream number: 2 in normal stream number 2
Stream flow area =      2.540(Ac.)
Runoff from this stream =     10.199(CFS)
Time of concentration =    8.89 min.
Rainfall intensity =     4.449(In/Hr)
Area averaged loss rate (Fm) =    0.0500(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1      2.78    13.246      7.87    0.025      4.770
2      2.54    10.199      8.89    0.050      4.449
Qmax(1) =
          1.000 *    1.000 *    13.246) +
          1.073 *    0.886 *    10.199) + =      22.936
Qmax(2) =
          0.932 *    1.000 *    13.246) +
          1.000 *    1.000 *    10.199) + =      22.549

Total of 2 streams to confluence:
Flow rates before confluence point:
      13.246      10.199
Maximum flow rates at confluence using above data:
       22.936       22.549
Area of streams before confluence:
        2.780        2.540
Effective area values after confluence:
        5.029        5.320
Results of confluence:
Total flow rate =     22.936(CFS)
Time of concentration =     7.873 min.
Effective stream area after confluence =      5.029(Ac.)
Study area average Pervious fraction(Ap) =  0.148
Study area average soil loss rate(Fm) =    0.037(In/Hr)
Study area total (this main stream) =       5.32(Ac.)


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Process from Point/Station      338.000 to Point/Station      340.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
------------------------------------------------------------------------
Upstream point/station elevation =   204.500(Ft.)
Downstream point/station elevation =   202.400(Ft.)
Pipe length  =   286.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    22.936(CFS)
Given pipe size =     24.00(In.)
NOTE: Normal flow is pressure flow in user selected pipe size.
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The approximate hydraulic grade line above the pipe invert is
     2.080(Ft.)  at the headworks or inlet of the pipe(s)
 Pipe friction loss =      2.939(Ft.)
 Minor friction loss =      1.241(Ft.)       K-factor =   1.50
Pipe flow velocity =      7.30(Ft/s)
Travel time through pipe =    0.65 min.
Time of concentration (TC) =     8.53 min.


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Process from Point/Station      338.000 to Point/Station      340.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 2 in normal stream number 1
Stream flow area =      5.029(Ac.)
Runoff from this stream =     22.936(CFS)
Time of concentration =    8.53 min.
Rainfall intensity =     4.557(In/Hr)
Area averaged loss rate (Fm) =    0.0372(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1477


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Process from Point/Station      341.000 to Point/Station      342.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
APARTMENT subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.2000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.050(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   252.000(Ft.)
Bottom (of initial area) elevation =   221.500(Ft.)
Difference in elevation =    30.500(Ft.)
Slope =    0.10167  s(%)=      10.17
TC = k(0.324)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.011 min.
Rainfall intensity =      6.179(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.893
Subarea runoff =      6.509(CFS)
Total initial stream area =        1.180(Ac.)


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Process from Point/Station      342.000 to Point/Station      343.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
______________________________________________________________________________
Top of street segment elevation =   221.500(Ft.)
End of street segment elevation =   219.000(Ft.)
Length of street segment  =   215.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [2] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =     10.913(CFS)
Depth of flow =   0.393(Ft.), Average velocity =   2.862(Ft/s)
Streetflow hydraulics at midpoint of street travel:
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Halfstreet flow width =  13.340(Ft.)
Flow velocity =   2.86(Ft/s)
Travel time =    1.25 min.     TC =    6.26  min.
 Adding area flow to street
APARTMENT subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.2000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.050(In/Hr)
Rainfall intensity =      5.438(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.892
Subarea runoff =      8.669(CFS) for    1.950(Ac.)
Total runoff =     15.178(CFS)       Total area =        3.13(Ac.)
Area averaged Fm value =    0.050(In/Hr)
Street flow at end of street =     15.178(CFS)
Half street flow at end of street =      7.589(CFS)
Depth of flow =   0.431(Ft.), Average velocity =   3.098(Ft/s)
Flow width (from curb towards crown)=  15.241(Ft.)


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Process from Point/Station      343.000 to Point/Station      340.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
________________________________________________________________________
Upstream point/station elevation =   211.000(Ft.)
Downstream point/station elevation =   202.400(Ft.)
Pipe length  =    45.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    15.178(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =    15.178(CFS)
Normal flow depth in pipe =    7.12(In.)
Flow top width inside pipe =   17.60(In.)
Critical Depth =   16.91(In.)
Pipe flow velocity =     23.32(Ft/s)
Travel time through pipe =    0.03 min.
Time of concentration (TC) =     6.30 min.


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Process from Point/Station      343.000 to Point/Station      340.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 2 in normal stream number 2
Stream flow area =      3.130(Ac.)
Runoff from this stream =     15.178(CFS)
Time of concentration =    6.30 min.
Rainfall intensity =     5.422(In/Hr)
Area averaged loss rate (Fm) =    0.0500(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000


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Process from Point/Station      344.000 to Point/Station      345.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
APARTMENT subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.2000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.050(In/Hr)
Initial subarea data:
Initial area flow distance =   263.000(Ft.)
Top (of initial area) elevation =   225.000(Ft.)
Bottom (of initial area) elevation =   221.500(Ft.)
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Difference in elevation =     3.500(Ft.)
Slope =    0.01331  s(%)=       1.33
TC = k(0.324)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    7.140 min.
Rainfall intensity =      5.045(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.891
Subarea runoff =      4.226(CFS)
Total initial stream area =        0.940(Ac.)


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Process from Point/Station      345.000 to Point/Station      346.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of street segment elevation =   221.500(Ft.)
End of street segment elevation =   219.000(Ft.)
Length of street segment  =   241.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  22.000(Ft.)
Distance from crown to crossfall grade break  =  18.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.025
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      9.056(CFS)
Depth of flow =   0.461(Ft.), Average velocity =   3.097(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  16.726(Ft.)
Flow velocity =   3.10(Ft/s)
Travel time =    1.30 min.     TC =    8.44  min.
 Adding area flow to street
APARTMENT subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.2000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.050(In/Hr)
Rainfall intensity =      4.585(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.890
Subarea runoff =      9.569(CFS) for    2.440(Ac.)
Total runoff =     13.794(CFS)       Total area =        3.38(Ac.)
Area averaged Fm value =    0.050(In/Hr)
Street flow at end of street =     13.794(CFS)
Half street flow at end of street =     13.794(CFS)
Depth of flow =   0.525(Ft.), Average velocity =   3.354(Ft/s)
Warning: depth of flow exceeds top of curb
Distance that curb overflow reaches into property =    1.01(Ft.)
Flow width (from curb towards crown)=  19.932(Ft.)


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Process from Point/Station      346.000 to Point/Station      340.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
________________________________________________________________________
Upstream point/station elevation =   211.000(Ft.)
Downstream point/station elevation =   202.400(Ft.)
Pipe length  =    42.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    13.794(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =    13.794(CFS)
Normal flow depth in pipe =    6.64(In.)
Flow top width inside pipe =   17.37(In.)
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Critical Depth =   16.50(In.)
Pipe flow velocity =     23.30(Ft/s)
Travel time through pipe =    0.03 min.
Time of concentration (TC) =     8.47 min.


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Process from Point/Station      346.000 to Point/Station      340.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 2 in normal stream number 3
Stream flow area =      3.380(Ac.)
Runoff from this stream =     13.794(CFS)
Time of concentration =    8.47 min.
Rainfall intensity =     4.575(In/Hr)
Area averaged loss rate (Fm) =    0.0500(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1      5.03    22.936      8.53    0.037      4.557
2      3.13    15.178      6.30    0.050      5.422
3      3.38    13.794      8.47    0.050      4.575
Qmax(1) =
          1.000 *    1.000 *    22.936) +
          0.839 *    1.000 *    15.178) +
          0.996 *    1.000 *    13.794) + =      49.409
Qmax(2) =
          1.191 *    0.738 *    22.936) +
          1.000 *    1.000 *    15.178) +
          1.187 *    0.744 *    13.794) + =      47.530
Qmax(3) =
          1.004 *    0.993 *    22.936) +
          0.842 *    1.000 *    15.178) +
          1.000 *    1.000 *    13.794) + =      49.449

Total of 3 streams to confluence:
Flow rates before confluence point:
      22.936      15.178      13.794
Maximum flow rates at confluence using above data:
       49.409       47.530       49.449
Area of streams before confluence:
        5.029        3.130        3.380
Effective area values after confluence:
       11.539        9.357       11.505
Results of confluence:
Total flow rate =     49.449(CFS)
Time of concentration =     8.467 min.
Effective stream area after confluence =     11.505(Ac.)
Study area average Pervious fraction(Ap) =  0.177
Study area average soil loss rate(Fm) =    0.044(In/Hr)
Study area total (this main stream) =      11.54(Ac.)


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Process from Point/Station      340.000 to Point/Station      335.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   202.400(Ft.)
Downstream point/station elevation =   201.800(Ft.)
Pipe length  =   260.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    49.449(CFS)
Given pipe size =     36.00(In.)
NOTE: Normal flow is pressure flow in user selected pipe size.
The approximate hydraulic grade line above the pipe invert is
     1.968(Ft.)  at the headworks or inlet of the pipe(s)
 Pipe friction loss =      1.429(Ft.)
 Minor friction loss =      1.140(Ft.)       K-factor =   1.50
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Pipe flow velocity =      7.00(Ft/s)
Travel time through pipe =    0.62 min.
Time of concentration (TC) =     9.09 min.


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Process from Point/Station      340.000 to Point/Station      335.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =     11.505(Ac.)
Runoff from this stream =     49.449(CFS)
Time of concentration =    9.09 min.
Rainfall intensity =     4.394(In/Hr)
Area averaged loss rate (Fm) =    0.0444(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1772
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1     25.29   103.412      9.29    0.134      4.339
2     11.50    49.449      9.09    0.044      4.394
Qmax(1) =
          1.000 *    1.000 *   103.412) +
          0.987 *    1.000 *    49.449) + =     152.236
Qmax(2) =
          1.013 *    0.978 *   103.412) +
          1.000 *    1.000 *    49.449) + =     151.937

Total of 2 main streams to confluence:
Flow rates before confluence point:
     104.412      50.449
Maximum flow rates at confluence using above data:
      152.236      151.937
Area of streams before confluence:
       25.289       11.505
Effective area values after confluence:
       36.794       36.245


Results of confluence:
Total flow rate =    152.236(CFS)
Time of concentration =     9.288 min.
Effective stream area after confluence  =     36.794(Ac.)
Study area average Pervious fraction(Ap) =  0.424
Study area average soil loss rate(Fm) =    0.106(In/Hr)
Study area total =      36.79(Ac.)


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Process from Point/Station      335.000 to Point/Station      347.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
------------------------------------------------------------------------
Upstream point/station elevation =   201.800(Ft.)
Downstream point/station elevation =   200.700(Ft.)
Pipe length  =   133.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =   152.236(CFS)
Given pipe size =     48.00(In.)
NOTE: Normal flow is pressure flow in user selected pipe size.
The approximate hydraulic grade line above the pipe invert is
     3.812(Ft.)  at the headworks or inlet of the pipe(s)
 Pipe friction loss =      1.493(Ft.)
 Minor friction loss =      3.418(Ft.)       K-factor =   1.50
Pipe flow velocity =     12.11(Ft/s)
Travel time through pipe =    0.18 min.
Time of concentration (TC) =     9.47 min.
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Process from Point/Station      335.000 to Point/Station      347.000
**** CONFLUENCE OF MINOR STREAMS ****
----------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 1
Stream flow area =     36.794(Ac.)
Runoff from this stream =    152.236(CFS)
Time of concentration =    9.47 min.
Rainfall intensity =     4.291(In/Hr)
Area averaged loss rate (Fm) =    0.1060(In/Hr)
Area averaged Pervious ratio (Ap) = 0.4238


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Process from Point/Station      330.000 to Point/Station      348.000
**** INITIAL AREA EVALUATION ****
----------------------------------------------------------------------------
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   250.000(Ft.)
Top (of initial area) elevation =   247.000(Ft.)
Bottom (of initial area) elevation =   229.000(Ft.)
Difference in elevation =    18.000(Ft.)
Slope =    0.07200  s(%)=       7.20
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.993 min.
Rainfall intensity =      5.577(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.880
Subarea runoff =      2.453(CFS)
Total initial stream area =        0.500(Ac.)


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Process from Point/Station      348.000 to Point/Station      349.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
----------------------------------------------------------------------------
Top of street segment elevation =   229.000(Ft.)
End of street segment elevation =   213.000(Ft.)
Length of street segment  =   254.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      4.053(CFS)
Depth of flow =   0.290(Ft.), Average velocity =   5.126(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =   8.148(Ft.)
Flow velocity =   5.13(Ft/s)
Travel time =    0.83 min.     TC =    6.82  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
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SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      5.179(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.878
Subarea runoff =      3.142(CFS) for    0.730(Ac.)
Total runoff =      5.595(CFS)       Total area =        1.23(Ac.)
Area averaged Fm value =    0.125(In/Hr)
Street flow at end of street =      5.595(CFS)
Half street flow at end of street =      5.595(CFS)
Depth of flow =   0.315(Ft.), Average velocity =   5.505(Ft/s)
Flow width (from curb towards crown)=   9.433(Ft.)


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Process from Point/Station      349.000 to Point/Station      347.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   201.500(Ft.)
Downstream point/station elevation =   200.700(Ft.)
Pipe length  =    34.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     5.595(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =     5.595(CFS)
Normal flow depth in pipe =    7.32(In.)
Flow top width inside pipe =   17.68(In.)
Critical Depth =   10.95(In.)
Pipe flow velocity =      8.29(Ft/s)
Travel time through pipe =    0.07 min.
Time of concentration (TC) =     6.89 min.


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Process from Point/Station      349.000 to Point/Station      347.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      1.230(Ac.)
Runoff from this stream =      5.595(CFS)
Time of concentration =    6.89 min.
Rainfall intensity =     5.150(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      334.000 to Point/Station      350.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   250.000(Ft.)
Top (of initial area) elevation =   247.000(Ft.)
Bottom (of initial area) elevation =   229.000(Ft.)
Difference in elevation =    18.000(Ft.)
Slope =    0.07200  s(%)=       7.20
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.993 min.
Rainfall intensity =      5.577(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.880
Subarea runoff =      1.030(CFS)
Total initial stream area =        0.210(Ac.)
```

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Process from Point/Station      350.000 to Point/Station      351.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
______________________________________________________________________________
Top of street segment elevation =   229.000(Ft.)
End of street segment elevation =   213.000(Ft.)
Length of street segment  =   266.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  22.000(Ft.)
Distance from crown to crossfall grade break  =  18.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.025
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      1.546(CFS)
Depth of flow =   0.225(Ft.), Average velocity =   4.189(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =   4.923(Ft.)
Flow velocity =   4.19(Ft/s)
Travel time =    1.06 min.     TC =    7.05  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Rainfall intensity =      5.081(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.878
Subarea runoff =      0.932(CFS) for    0.230(Ac.)
Total runoff =      1.963(CFS)       Total area =        0.44(Ac.)
Area averaged Fm value =    0.125(In/Hr)
Street flow at end of street =      1.963(CFS)
Half street flow at end of street =      1.963(CFS)
Depth of flow =   0.241(Ft.), Average velocity =   4.354(Ft/s)
Flow width (from curb towards crown)=   5.692(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      351.000 to Point/Station      347.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   201.500(Ft.)
Downstream point/station elevation =   200.700(Ft.)
Pipe length  =    43.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.963(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =     1.963(CFS)
Normal flow depth in pipe =    4.50(In.)
Flow top width inside pipe =   15.59(In.)
Critical Depth =    6.33(In.)
Pipe flow velocity =      5.68(Ft/s)
Travel time through pipe =    0.13 min.
Time of concentration (TC) =     7.18 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      351.000 to Point/Station      347.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 3
```

```
Stream flow area =      0.440(Ac.)
Runoff from this stream =      1.963(CFS)
Time of concentration =    7.18 min.
Rainfall intensity =     5.030(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1     36.79   152.236      9.47    0.106      4.291
2      1.23     5.595      6.89    0.125      5.150
3      0.44     1.963      7.18    0.125      5.030
Qmax(1) =
          1.000 *    1.000 *   152.236) +
          0.829 *    1.000 *     5.595) +
          0.849 *    1.000 *     1.963) + =     158.542
Qmax(2) =
          1.205 *    0.727 *   152.236) +
          1.000 *    1.000 *     5.595) +
          1.025 *    0.960 *     1.963) + =     140.962
Qmax(3) =
          1.177 *    0.758 *   152.236) +
          0.976 *    1.000 *     5.595) +
          1.000 *    1.000 *     1.963) + =     143.167

Total of 3 streams to confluence:
Flow rates before confluence point:
     152.236       5.595       1.963
Maximum flow rates at confluence using above data:
      158.542      140.962      143.167
Area of streams before confluence:
       36.794        1.230        0.440
Effective area values after confluence:
       38.464       28.409       29.555
Results of confluence:
Total flow rate =    158.542(CFS)
Time of concentration =     9.471 min.
Effective stream area after confluence =     38.464(Ac.)
Study area average Pervious fraction(Ap) =  0.427
Study area average soil loss rate(Fm) =    0.107(In/Hr)
Study area total (this main stream) =      38.46(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      347.000 to Point/Station      352.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
________________________________________________________________________
Upstream point/station elevation =   200.700(Ft.)
Downstream point/station elevation =   200.000(Ft.)
Pipe length  =   227.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =   158.542(CFS)
Given pipe size =     48.00(In.)
NOTE: Normal flow is pressure flow in user selected pipe size.
The approximate hydraulic grade line above the pipe invert is
     5.772(Ft.)  at the headworks or inlet of the pipe(s)
 Pipe friction loss =      2.764(Ft.)
 Minor friction loss =      3.707(Ft.)       K-factor =   1.50
Pipe flow velocity =     12.62(Ft/s)
Travel time through pipe =    0.30 min.
Time of concentration (TC) =     9.77 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      347.000 to Point/Station      352.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
```

```
Stream flow area =     38.464(Ac.)
Runoff from this stream =    158.542(CFS)
Time of concentration =    9.77 min.
Rainfall intensity =     4.215(In/Hr)
Area averaged loss rate (Fm) =    0.1068(In/Hr)
Area averaged Pervious ratio (Ap) = 0.4271
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      353.000 to Point/Station      354.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   380.000(Ft.)
Bottom (of initial area) elevation =   310.000(Ft.)
Difference in elevation =    70.000(Ft.)
Slope =    0.23333  s(%)=      23.33
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.248 min.
Rainfall intensity =      4.350(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.848
Subarea runoff =      4.280(CFS)
Total initial stream area =        1.160(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      354.000 to Point/Station      355.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =     15.306(CFS)
Depth of flow =   0.263(Ft.), Average velocity =   4.417(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2             50.00              0.00
       3            100.00              1.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =     15.306(CFS)
  '     '       flow top width =     26.326(Ft.)
  '     '    velocity=    4.417(Ft/s)
  '     '       area =      3.465(Sq.Ft)
  '     '       Froude number =     2.146

Upstream point elevation =   310.000(Ft.)
Downstream point elevation =   231.000(Ft.)
Flow length =   665.000(Ft.)
Travel time  =    2.51 min.
Time of concentration =   11.76 min.
Depth of flow =   0.263(Ft.)
Average velocity =   4.417(Ft/s)
Total irregular channel flow =    15.306(CFS)
Irregular channel normal depth above invert elev. =   0.263(Ft.)
Average velocity of channel(s) =   4.417(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
```

```
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Rainfall intensity =      3.791(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.841
Subarea runoff =     21.978(CFS) for    7.080(Ac.)
Total runoff =     26.258(CFS)       Total area =        8.24(Ac.)
Area averaged Fm value =    0.250(In/Hr)
Depth of flow =   0.322(Ft.), Average velocity =   5.055(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      355.000 to Point/Station      352.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =     37.320(CFS)
Depth of flow =   0.431(Ft.), Average velocity =   4.022(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2             50.00              0.00
       3            100.00              1.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =     37.321(CFS)
  '     '       flow top width =     43.080(Ft.)
  '     '    velocity=    4.022(Ft/s)
  '     '       area =      9.279(Sq.Ft)
  '     '       Froude number =     1.527

Upstream point elevation =   231.000(Ft.)
Downstream point elevation =   200.000(Ft.)
Flow length =   607.000(Ft.)
Travel time  =    2.52 min.
Time of concentration =   14.27 min.
Depth of flow =   0.431(Ft.)
Average velocity =   4.022(Ft/s)
Total irregular channel flow =    37.320(CFS)
Irregular channel normal depth above invert elev. =   0.431(Ft.)
Average velocity of channel(s) =   4.022(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Rainfall intensity =      3.392(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.834
Subarea runoff =     22.071(CFS) for    8.850(Ac.)
Total runoff =     48.329(CFS)       Total area =       17.09(Ac.)
Area averaged Fm value =    0.250(In/Hr)
Depth of flow =   0.475(Ft.), Average velocity =   4.290(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      355.000 to Point/Station      352.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =     17.090(Ac.)
Runoff from this stream =     48.329(CFS)
Time of concentration =   14.27 min.
```

```
Rainfall intensity =     3.392(In/Hr)
Area averaged loss rate (Fm) =    0.2500(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Program is now starting with Main Stream No. 3


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      356.000 to Point/Station      357.000
**** INITIAL AREA EVALUATION ****
----------------------------------------------------------------------
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Initial subarea data:
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =   540.000(Ft.)
Bottom (of initial area) elevation =   485.000(Ft.)
Difference in elevation =    55.000(Ft.)
Slope =    0.18333  s(%)=      18.33
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.705 min.
Rainfall intensity =      4.231(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.847
Subarea runoff =      4.873(CFS)
Total initial stream area =        1.360(Ac.)


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Process from Point/Station      357.000 to Point/Station      358.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
----------------------------------------------------------------------
Estimated mean flow rate at midpoint of channel =     17.835(CFS)
Depth of flow =   0.283(Ft.), Average velocity =   4.462(Ft/s)
       ******* Irregular Channel Data ***********
---------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2             50.00              0.00
       3            100.00              1.00
Manning's 'N' friction factor =   0.030
---------------------------------------------------------------
Sub-Channel flow  =     17.835(CFS)
  '     '       flow top width =     28.273(Ft.)
  '     '    velocity=    4.462(Ft/s)
  '     '       area =      3.997(Sq.Ft)
  '     '       Froude number =     2.092

Upstream point elevation =   485.000(Ft.)
Downstream point elevation =   415.000(Ft.)
Flow length =   635.000(Ft.)
Travel time  =    2.37 min.
Time of concentration =   12.08 min.
Depth of flow =   0.283(Ft.)
Average velocity =   4.462(Ft/s)
Total irregular channel flow =    17.835(CFS)
Irregular channel normal depth above invert elev. =   0.283(Ft.)
Average velocity of channel(s) =   4.462(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
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Max Catchment Loss (Fm) =     0.250(In/Hr)
Rainfall intensity =      3.733(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.840
Subarea runoff =     25.846(CFS) for    8.440(Ac.)
Total runoff =     30.719(CFS)       Total area =        9.80(Ac.)
Area averaged Fm value =    0.250(In/Hr)
Depth of flow =   0.347(Ft.), Average velocity =   5.112(Ft/s)


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Process from Point/Station      358.000 to Point/Station      359.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =     69.976(CFS)
Depth of flow =   0.455(Ft.), Average velocity =   6.761(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2             50.00              0.00
       3            100.00              1.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =     69.977(CFS)
  '     '       flow top width =     45.496(Ft.)
  '     '    velocity=    6.761(Ft/s)
  '     '       area =     10.349(Sq.Ft)
  '     '       Froude number =     2.498

Upstream point elevation =   415.000(Ft.)
Downstream point elevation =   273.000(Ft.)
Flow length =  1058.000(Ft.)
Travel time  =    2.61 min.
Time of concentration =   14.68 min.
Depth of flow =   0.455(Ft.)
Average velocity =   6.761(Ft/s)
Total irregular channel flow =    69.976(CFS)
Irregular channel normal depth above invert elev. =   0.455(Ft.)
Average velocity of channel(s) =   6.761(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Rainfall intensity =      3.337(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.833
Subarea runoff =     78.450(CFS) for   29.490(Ac.)
Total runoff =    109.169(CFS)       Total area =       39.29(Ac.)
Area averaged Fm value =    0.250(In/Hr)
Depth of flow =   0.538(Ft.), Average velocity =   7.557(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      359.000 to Point/Station      360.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
________________________________________________________________________
Upstream point/station elevation =   267.000(Ft.)
Downstream point/station elevation =   266.000(Ft.)
Pipe length  =   111.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =   109.169(CFS)
Given pipe size =     48.00(In.)
Calculated individual pipe flow  =   109.169(CFS)
Normal flow depth in pipe =   32.50(In.)
Flow top width inside pipe =   44.89(In.)
```

```
Critical Depth =   37.91(In.)
Pipe flow velocity =     12.06(Ft/s)
Travel time through pipe =    0.15 min.
Time of concentration (TC) =    14.84 min.


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Process from Point/Station      359.000 to Point/Station      360.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 3 in normal stream number 1
Stream flow area =     39.290(Ac.)
Runoff from this stream =    109.169(CFS)
Time of concentration =   14.84 min.
Rainfall intensity =     3.317(In/Hr)
Area averaged loss rate (Fm) =    0.2500(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000


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Process from Point/Station      361.000 to Point/Station      362.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   597.000(Ft.)
Top (of initial area) elevation =   407.000(Ft.)
Bottom (of initial area) elevation =   380.000(Ft.)
Difference in elevation =    27.000(Ft.)
Slope =    0.04523  s(%)=       4.52
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.317 min.
NOTE: Distance EXCEEDS recommended maximum value of   328.084(Ft.)
for this Development Type
Rainfall intensity =      4.331(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.874
Subarea runoff =     28.999(CFS)
Total initial stream area =        7.660(Ac.)


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Process from Point/Station      362.000 to Point/Station      360.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   372.000(Ft.)
Downstream point/station elevation =   266.000(Ft.)
Pipe length  =   750.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    28.999(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =    28.999(CFS)
Normal flow depth in pipe =   11.46(In.)
Flow top width inside pipe =   17.31(In.)
Critical depth could not be calculated.
Pipe flow velocity =     24.42(Ft/s)
Travel time through pipe =    0.51 min.
Time of concentration (TC) =     9.83 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      362.000 to Point/Station      360.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 3 in normal stream number 2
Stream flow area =      7.660(Ac.)
```

```
Runoff from this stream =     28.999(CFS)
Time of concentration =    9.83 min.
Rainfall intensity =     4.201(In/Hr)
Area averaged loss rate (Fm) =    0.1250(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1     39.29   109.169     14.84    0.250      3.317
2      7.66    28.999      9.83    0.125      4.201
Qmax(1) =
          1.000 *    1.000 *   109.169) +
          0.783 *    1.000 *    28.999) + =     131.884
Qmax(2) =
          1.288 *    0.662 *   109.169) +
          1.000 *    1.000 *    28.999) + =     122.129

Total of 2 streams to confluence:
Flow rates before confluence point:
     109.169      28.999
Maximum flow rates at confluence using above data:
      131.884      122.129
Area of streams before confluence:
       39.290        7.660
Effective area values after confluence:
       46.950       33.685
Results of confluence:
Total flow rate =    131.884(CFS)
Time of concentration =    14.838 min.
Effective stream area after confluence =     46.950(Ac.)
Study area average Pervious fraction(Ap) =  0.918
Study area average soil loss rate(Fm) =    0.230(In/Hr)
Study area total (this main stream) =      46.95(Ac.)


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Process from Point/Station      360.000 to Point/Station      352.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   266.000(Ft.)
Downstream point/station elevation =   200.000(Ft.)
Pipe length  =  1386.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =   131.884(CFS)
Given pipe size =     36.00(In.)
Calculated individual pipe flow  =   131.884(CFS)
Normal flow depth in pipe =   26.85(In.)
Flow top width inside pipe =   31.34(In.)
Critical depth could not be calculated.
Pipe flow velocity =     23.32(Ft/s)
Travel time through pipe =    0.99 min.
Time of concentration (TC) =    15.83 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      360.000 to Point/Station      352.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 3
Stream flow area =     46.950(Ac.)
Runoff from this stream =    131.884(CFS)
Time of concentration =   15.83 min.
Rainfall intensity =     3.197(In/Hr)
Area averaged loss rate (Fm) =    0.2296(In/Hr)
Area averaged Pervious ratio (Ap) = 0.9184
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
```

```
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1     38.46   158.542      9.77    0.107      4.215
2     17.09    48.329     14.27    0.250      3.392
3     46.95   131.884     15.83    0.230      3.197
Qmax(1) =
          1.000 *    1.000 *   158.542) +
          1.262 *    0.685 *    48.329) +
          1.343 *    0.617 *   131.884) + =     309.627
Qmax(2) =
          0.800 *    1.000 *   158.542) +
          1.000 *    1.000 *    48.329) +
          1.066 *    0.902 *   131.884) + =     301.868
Qmax(3) =
          0.752 *    1.000 *   158.542) +
          0.938 *    1.000 *    48.329) +
          1.000 *    1.000 *   131.884) + =     296.466

Total of 3 main streams to confluence:
Flow rates before confluence point:
     159.542      49.329     132.884
Maximum flow rates at confluence using above data:
      309.627      301.868      296.466
Area of streams before confluence:
       38.464       17.090       46.950
Effective area values after confluence:
       79.145       97.889      102.504


Results of confluence:
Total flow rate =    309.627(CFS)
Time of concentration =     9.771 min.
Effective stream area after confluence  =     79.145(Ac.)
Study area average Pervious fraction(Ap) =  0.748
Study area average soil loss rate(Fm) =    0.187(In/Hr)
Study area total =     102.50(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      360.000 to Point/Station      352.000
**** SUBAREA FLOW ADDITION ****
________________________________________________________________________
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Time of concentration =     9.77 min.
Rainfall intensity =      4.215(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.859
Subarea runoff =      1.295(CFS) for    6.730(Ac.)
Total runoff =    310.922(CFS)       Total area =       85.88(Ac.)
Area averaged Fm value =    0.192(In/Hr)
End of computations, total study area =          117.28 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.748
Area averaged SCS curve number (AMC 2) =  74.6
```

- 2 Year 3 Hour Pre-Development Unit Hydrograph – Area 'C'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/10/16   File Name exc00203.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'C' - 2 YEAR 3 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 2

       Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 78.3       0.5          0.00     B     0.300     1.000    0.300
 78.3     120.5          1.00     C     0.250     1.000    0.250

Area-averaged adjusted loss rate Fm (In/Hr) =  0.250

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
     0.52   0.004         78.3      61.0       6.40     0.040

   120.50   0.996         78.3      61.0       6.40     0.040

Area-averaged catchment yield fraction, Y =  0.040
Area-averaged low loss fraction, Yb =  0.960
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.298 (hours)
Watershed area =     121.02(Ac.)
Catchment Lag time =   0.238 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 34.9533
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.250(In/Hr)
Average low loss rate fraction (Yb) = 0.960 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.190(In)
Computed peak 30-minute rainfall =  0.400(In)
Specified peak 1-hour rainfall =  0.530(In)
Computed peak 3-hour rainfall =  0.890(In)
Specified peak 6-hour rainfall =  1.220(In)
Specified peak 24-hour rainfall =  2.050(In)


Rainfall depth area reduction factors:
Using a total area of     121.02(Ac.) (Ref: fig. E-4)
```

```
5-minute factor = 0.994     Adjusted rainfall =  0.189(In)
30-minute factor = 0.994    Adjusted rainfall =  0.398(In)
1-hour factor = 0.994       Adjusted rainfall =  0.527(In)
3-hour factor = 0.999       Adjusted rainfall =  0.889(In)
6-hour factor = 1.000       Adjusted rainfall =  1.220(In)
24-hour factor = 1.000 Adjusted rainfall =  2.050(In)
--------------------------------------------------------------------

                    U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------
               (K =      1463.59 (CFS))

  1                2.617                  38.301
  2               11.670                 132.502
  3               34.146                 328.951
  4               62.132                 409.603
  5               73.540                 166.967
  6               80.919                 107.990
  7               86.183                  77.054
  8               90.152                  58.080
  9               93.120                  43.437
 10               95.314                  32.115
 11               96.865                  22.701
 12               97.868                  14.688
 13               98.342                   6.937
 14               98.719                   5.507
 15               99.034                   4.621
 16               99.253                   3.200
 17               99.514                   3.816
 18               99.745                   3.381
 19               99.881                   1.991
 20               99.963                   1.205
 21              100.000                   0.539
--------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.1889              0.1889
  2              0.2520              0.0631
  3              0.2982              0.0462
  4              0.3361              0.0379
  5              0.3687              0.0326
  6              0.3977              0.0290
  7              0.4234              0.0257
  8              0.4470              0.0236
  9              0.4689              0.0219
 10              0.4894              0.0205
 11              0.5087              0.0193
 12              0.5270              0.0183
 13              0.5475              0.0205
 14              0.5671              0.0197
 15              0.5861              0.0189
 16              0.6044              0.0183
 17              0.6221              0.0177
 18              0.6393              0.0172
 19              0.6559              0.0167
 20              0.6722              0.0162
 21              0.6880              0.0158
 22              0.7034              0.0154
 23              0.7184              0.0151
 24              0.7332              0.0147
 25              0.7476              0.0144
 26              0.7617              0.0141
 27              0.7755              0.0138
 28              0.7890              0.0136
 29              0.8023              0.0133
 30              0.8154              0.0131
 31              0.8282              0.0128
```

```
 32              0.8408              0.0126
 33              0.8533              0.0124
 34              0.8655              0.0122
 35              0.8775              0.0120
 36              0.8894              0.0119
--------------------------------------------------------------------
Unit              Unit              Unit              Effective
Period            Rainfall          Soil-Loss         Rainfall
(number)            (In)              (In)              (In)
--------------------------------------------------------------------
  1              0.0119            0.0114              0.0005
  2              0.0120            0.0115              0.0005
  3              0.0124            0.0119              0.0005
  4              0.0126            0.0121              0.0005
  5              0.0131            0.0125              0.0005
  6              0.0133            0.0128              0.0005
  7              0.0138            0.0133              0.0006
  8              0.0141            0.0135              0.0006
  9              0.0147            0.0141              0.0006
 10              0.0151            0.0144              0.0006
 11              0.0158            0.0152              0.0006
 12              0.0162            0.0156              0.0007
 13              0.0172            0.0165              0.0007
 14              0.0177            0.0170              0.0007
 15              0.0189            0.0182              0.0008
 16              0.0197            0.0189              0.0008
 17              0.0183            0.0176              0.0007
 18              0.0193            0.0185              0.0008
 19              0.0219            0.0209              0.0010
 20              0.0236            0.0209              0.0027
 21              0.0290            0.0209              0.0082
 22              0.0326            0.0209              0.0118
 23              0.0462            0.0209              0.0254
 24              0.0631            0.0209              0.0422
 25              0.1889            0.0209              0.1681
 26              0.0379            0.0209              0.0170
 27              0.0257            0.0209              0.0048
 28              0.0205            0.0197              0.0008
 29              0.0205            0.0197              0.0008
 30              0.0183            0.0176              0.0007
 31              0.0167            0.0160              0.0007
 32              0.0154            0.0148              0.0006
 33              0.0144            0.0138              0.0006
 34              0.0136            0.0130              0.0005
 35              0.0128            0.0123              0.0005
 36              0.0122            0.0117              0.0005
--------------------------------------------------------------------
--------------------------------------------------------------------
Total soil rain loss =      0.59(In)
Total effective rainfall =      0.30(In)
Peak flow rate in flood hydrograph =     86.48(CFS)
--------------------------------------------------------------------
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                    3 - H O U R    S T O R M
                R u n o f f      H y d r o g r a p h
--------------------------------------------------------------------
            Hydrograph in   5   Minute intervals ((CFS))

--------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0       22.5      45.0      67.5      90.0
--------------------------------------------------------------------
  0+ 5       0.0001      0.02  Q         |         |         |         |
  0+10       0.0007      0.08  Q         |         |         |         |
  0+15       0.0023      0.24  Q         |         |         |         |
  0+20       0.0054      0.44  Q         |         |         |         |
  0+25       0.0090      0.53  Q         |         |         |         |
  0+30       0.0131      0.59  Q         |         |         |         |
  0+35       0.0176      0.65  Q         |         |         |         |
  0+40       0.0223      0.69  Q         |         |         |         |
  0+45       0.0273      0.73  Q         |         |         |         |
  0+50       0.0326      0.77  Q         |         |         |         |
```

```
   0+55       0.0381      0.80  Q          |          |          |          |
   1+ 0       0.0439      0.83  Q          |          |          |          |
   1+ 5       0.0498      0.87  Q          |          |          |          |
   1+10       0.0560      0.90  Q          |          |          |          |
   1+15       0.0625      0.94  Q          |          |          |          |
   1+20       0.0692      0.98  Q          |          |          |          |
   1+25       0.0763      1.02  QV         |          |          |          |
   1+30       0.0836      1.06  QV         |          |          |          |
   1+35       0.0911      1.09  QV         |          |          |          |
   1+40       0.0993      1.20  QV         |          |          |          |
   1+45       0.1113      1.74  QV         |          |          |          |
   1+50       0.1338      3.27  |Q         |          |          |          |
   1+55       0.1806      6.80  | VQ       |          |          |          |
   2+ 0       0.2700     12.98  |  V Q     |          |          |          |
   2+ 5       0.4567     27.10  |     V    | Q        |          |          |
   2+10       0.8040     50.43  |          V          | Q        |          |
   2+15       1.3648     81.43  |          |        V |          |     Q    |
   2+20       1.9604     86.48  |          |          |     V    |       Q  |
   2+25       2.2666     44.46  |          |         Q|          V          |
   2+30       2.4662     28.98  |          | Q        |          | V        |
   2+35       2.6074     20.51  |         Q|          |          |   V      |
   2+40       2.7142     15.50  |     Q    |          |          |     V    |
   2+45       2.7948     11.71  |    Q     |          |          |      V   |
   2+50       2.8551      8.75  |  Q       |          |          |       V  |
   2+55       2.8987      6.33  | Q        |          |          |       V  |
   3+ 0       2.9287      4.36  |Q         |          |          |       V  |
   3+ 5       2.9475      2.74  |Q         |          |          |        V |
   3+10       2.9624      2.16  Q          |          |          |        V |
   3+15       2.9742      1.71  Q          |          |          |        V |
   3+20       2.9826      1.22  Q          |          |          |        V |
   3+25       2.9904      1.14  Q          |          |          |        V |
   3+30       2.9967      0.92  Q          |          |          |        V |
   3+35       3.0007      0.58  Q          |          |          |        V |
   3+40       3.0031      0.35  Q          |          |          |        V |
   3+45       3.0043      0.18  Q          |          |          |        V |
   3+50       3.0047      0.05  Q          |          |          |        V |
   3+55       3.0049      0.03  Q          |          |          |        V |
   4+ 0       3.0050      0.02  Q          |          |          |        V |
   4+ 5       3.0051      0.01  Q          |          |          |        V |
   4+10       3.0052      0.01  Q          |          |          |        V |
   4+15       3.0053      0.01  Q          |          |          |        V |
   4+20       3.0053      0.01  Q          |          |          |        V |
   4+25       3.0053      0.00  Q          |          |          |        V |
   4+30       3.0053      0.00  Q          |          |          |        V |
   4+35       3.0053      0.00  Q          |          |          |        V |
   4+40       3.0053      0.00  Q          |          |          |        V |
-------------------------------------------------------------------------
```

- 2 Year 6 Hour Pre-Development Unit Hydrograph – Area 'C'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/10/16   File Name exc00206.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'C' - 2 YEAR 6 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 2

       Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 78.3       0.5          0.00     B     0.300     1.000    0.300
 78.3     120.5          1.00     C     0.250     1.000    0.250

Area-averaged adjusted loss rate Fm (In/Hr) =  0.250

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
     0.52   0.004         78.3      61.0       6.40     0.040

   120.50   0.996         78.3      61.0       6.40     0.040

Area-averaged catchment yield fraction, Y =  0.040
Area-averaged low loss fraction, Yb =  0.960
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.298 (hours)
Watershed area =     121.02(Ac.)
Catchment Lag time =   0.238 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 34.9533
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.250(In/Hr)
Average low loss rate fraction (Yb) = 0.960 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.190(In)
Computed peak 30-minute rainfall =  0.400(In)
Specified peak 1-hour rainfall =  0.530(In)
Computed peak 3-hour rainfall =  0.890(In)
Specified peak 6-hour rainfall =  1.220(In)
Specified peak 24-hour rainfall =  2.050(In)


Rainfall depth area reduction factors:
Using a total area of     121.02(Ac.) (Ref: fig. E-4)
```

```
5-minute factor = 0.994     Adjusted rainfall =  0.189(In)
30-minute factor = 0.994    Adjusted rainfall =  0.398(In)
1-hour factor = 0.994       Adjusted rainfall =  0.527(In)
3-hour factor = 0.999       Adjusted rainfall =  0.889(In)
6-hour factor = 1.000       Adjusted rainfall =  1.220(In)
24-hour factor = 1.000 Adjusted rainfall =  2.050(In)
--------------------------------------------------------------------

                    U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------
               (K =      1463.59 (CFS))

  1                2.617                  38.301
  2               11.670                 132.502
  3               34.146                 328.951
  4               62.132                 409.603
  5               73.540                 166.967
  6               80.919                 107.990
  7               86.183                  77.054
  8               90.152                  58.080
  9               93.120                  43.437
 10               95.314                  32.115
 11               96.865                  22.701
 12               97.868                  14.688
 13               98.342                   6.937
 14               98.719                   5.507
 15               99.034                   4.621
 16               99.253                   3.200
 17               99.514                   3.816
 18               99.745                   3.381
 19               99.881                   1.991
 20               99.963                   1.205
 21              100.000                   0.539
--------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.1889              0.1889
  2              0.2520              0.0631
  3              0.2982              0.0462
  4              0.3361              0.0379
  5              0.3687              0.0326
  6              0.3977              0.0290
  7              0.4234              0.0257
  8              0.4470              0.0236
  9              0.4689              0.0219
 10              0.4894              0.0205
 11              0.5087              0.0193
 12              0.5270              0.0183
 13              0.5475              0.0205
 14              0.5671              0.0197
 15              0.5861              0.0189
 16              0.6044              0.0183
 17              0.6221              0.0177
 18              0.6393              0.0172
 19              0.6559              0.0167
 20              0.6722              0.0162
 21              0.6880              0.0158
 22              0.7034              0.0154
 23              0.7184              0.0151
 24              0.7332              0.0147
 25              0.7476              0.0144
 26              0.7617              0.0141
 27              0.7755              0.0138
 28              0.7890              0.0136
 29              0.8023              0.0133
 30              0.8154              0.0131
 31              0.8282              0.0128
```

32	0.8408	0.0126
33	0.8533	0.0124
34	0.8655	0.0122
35	0.8775	0.0120
36	0.8894	0.0119
37	0.9005	0.0112
38	0.9115	0.0110
39	0.9224	0.0108
40	0.9331	0.0107
41	0.9436	0.0106
42	0.9541	0.0104
43	0.9643	0.0103
44	0.9745	0.0102
45	0.9845	0.0100
46	0.9944	0.0099
47	1.0042	0.0098
48	1.0139	0.0097
49	1.0234	0.0096
50	1.0329	0.0095
51	1.0423	0.0094
52	1.0515	0.0093
53	1.0607	0.0092
54	1.0698	0.0091
55	1.0787	0.0090
56	1.0876	0.0089
57	1.0964	0.0088
58	1.1052	0.0087
59	1.1138	0.0086
60	1.1224	0.0086
61	1.1308	0.0085
62	1.1392	0.0084
63	1.1476	0.0083
64	1.1558	0.0083
65	1.1640	0.0082
66	1.1721	0.0081
67	1.1802	0.0081
68	1.1882	0.0080
69	1.1961	0.0079
70	1.2040	0.0079
71	1.2118	0.0078
72	1.2195	0.0077

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0077	0.0074	0.0003
2	0.0078	0.0075	0.0003
3	0.0079	0.0076	0.0003
4	0.0080	0.0077	0.0003
5	0.0081	0.0078	0.0003
6	0.0082	0.0079	0.0003
7	0.0083	0.0080	0.0003
8	0.0084	0.0081	0.0003
9	0.0086	0.0082	0.0003
10	0.0086	0.0083	0.0003
11	0.0088	0.0084	0.0004
12	0.0089	0.0085	0.0004
13	0.0091	0.0087	0.0004
14	0.0092	0.0088	0.0004
15	0.0094	0.0090	0.0004
16	0.0095	0.0091	0.0004
17	0.0097	0.0093	0.0004
18	0.0098	0.0094	0.0004
19	0.0100	0.0096	0.0004
20	0.0102	0.0097	0.0004
21	0.0104	0.0100	0.0004
22	0.0106	0.0101	0.0004
23	0.0108	0.0104	0.0004
24	0.0110	0.0106	0.0004
25	0.0119	0.0114	0.0005

```
 26              0.0120          0.0115              0.0005
 27              0.0124          0.0119              0.0005
 28              0.0126          0.0121              0.0005
 29              0.0131          0.0125              0.0005
 30              0.0133          0.0128              0.0005
 31              0.0138          0.0133              0.0006
 32              0.0141          0.0135              0.0006
 33              0.0147          0.0141              0.0006
 34              0.0151          0.0144              0.0006
 35              0.0158          0.0152              0.0006
 36              0.0162          0.0156              0.0007
 37              0.0172          0.0165              0.0007
 38              0.0177          0.0170              0.0007
 39              0.0189          0.0182              0.0008
 40              0.0197          0.0189              0.0008
 41              0.0183          0.0176              0.0007
 42              0.0193          0.0185              0.0008
 43              0.0219          0.0209              0.0010
 44              0.0236          0.0209              0.0027
 45              0.0290          0.0209              0.0082
 46              0.0326          0.0209              0.0118
 47              0.0462          0.0209              0.0254
 48              0.0631          0.0209              0.0422
 49              0.1889          0.0209              0.1681
 50              0.0379          0.0209              0.0170
 51              0.0257          0.0209              0.0048
 52              0.0205          0.0197              0.0008
 53              0.0205          0.0197              0.0008
 54              0.0183          0.0176              0.0007
 55              0.0167          0.0160              0.0007
 56              0.0154          0.0148              0.0006
 57              0.0144          0.0138              0.0006
 58              0.0136          0.0130              0.0005
 59              0.0128          0.0123              0.0005
 60              0.0122          0.0117              0.0005
 61              0.0112          0.0107              0.0004
 62              0.0107          0.0103              0.0004
 63              0.0103          0.0099              0.0004
 64              0.0099          0.0095              0.0004
 65              0.0096          0.0092              0.0004
 66              0.0093          0.0089              0.0004
 67              0.0090          0.0086              0.0004
 68              0.0087          0.0084              0.0004
 69              0.0085          0.0081              0.0003
 70              0.0083          0.0079              0.0003
 71              0.0081          0.0077              0.0003
 72              0.0079          0.0075              0.0003
-------------------------------------------------------------------------
-------------------------------------------------------------------------
Total soil rain loss =      0.91(In)
Total effective rainfall =      0.31(In)
Peak flow rate in flood hydrograph =     86.48(CFS)
-------------------------------------------------------------------------
+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                    6 - H O U R    S T O R M
                R u n o f f      H y d r o g r a p h
-------------------------------------------------------------------------
            Hydrograph in   5   Minute intervals ((CFS))

     -------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0       22.5      45.0      67.5      90.0
-------------------------------------------------------------------------
  0+ 5       0.0001      0.01  Q         |         |         |         |
  0+10       0.0004      0.05  Q         |         |         |         |
  0+15       0.0015      0.16  Q         |         |         |         |
  0+20       0.0035      0.29  Q         |         |         |         |
  0+25       0.0058      0.34  Q         |         |         |         |
  0+30       0.0084      0.38  Q         |         |         |         |
  0+35       0.0112      0.41  Q         |         |         |         |
  0+40       0.0142      0.43  Q         |         |         |         |
  0+45       0.0173      0.45  Q         |         |         |         |
```

```
0+50       0.0205      0.46  Q          |          |          |          |
0+55       0.0238      0.48  Q          |          |          |          |
1+ 0       0.0272      0.49  Q          |          |          |          |
1+ 5       0.0306      0.50  Q          |          |          |          |
1+10       0.0341      0.51  Q          |          |          |          |
1+15       0.0376      0.52  Q          |          |          |          |
1+20       0.0412      0.52  Q          |          |          |          |
1+25       0.0449      0.53  Q          |          |          |          |
1+30       0.0486      0.54  Q          |          |          |          |
1+35       0.0524      0.55  Q          |          |          |          |
1+40       0.0563      0.56  Q          |          |          |          |
1+45       0.0603      0.57  Q          |          |          |          |
1+50       0.0643      0.58  Q          |          |          |          |
1+55       0.0683      0.59  Q          |          |          |          |
2+ 0       0.0725      0.60  Q          |          |          |          |
2+ 5       0.0767      0.62  Q          |          |          |          |
2+10       0.0811      0.63  QV         |          |          |          |
2+15       0.0856      0.65  QV         |          |          |          |
2+20       0.0902      0.68  QV         |          |          |          |
2+25       0.0950      0.69  QV         |          |          |          |
2+30       0.0999      0.71  QV         |          |          |          |
2+35       0.1050      0.73  QV         |          |          |          |
2+40       0.1101      0.75  QV         |          |          |          |
2+45       0.1155      0.77  QV         |          |          |          |
2+50       0.1209      0.80  QV         |          |          |          |
2+55       0.1266      0.82  QV         |          |          |          |
3+ 0       0.1324      0.85  QV         |          |          |          |
3+ 5       0.1384      0.88  QV         |          |          |          |
3+10       0.1447      0.91  QV         |          |          |          |
3+15       0.1512      0.94  QV         |          |          |          |
3+20       0.1580      0.98  Q V        |          |          |          |
3+25       0.1650      1.03  Q V        |          |          |          |
3+30       0.1723      1.06  Q V        |          |          |          |
3+35       0.1799      1.09  Q V        |          |          |          |
3+40       0.1881      1.20  Q V        |          |          |          |
3+45       0.2001      1.74  Q V        |          |          |          |
3+50       0.2226      3.27  |QV        |          |          |          |
3+55       0.2694      6.80  |  Q       |          |          |          |
4+ 0       0.3588     12.98  |   VQ     |          |          |          |
4+ 5       0.5455     27.10  |     V    | Q        |          |          |
4+10       0.8928     50.43  |          |V         | Q        |          |
4+15       1.4536     81.43  |          |       V  |          |     Q    |
4+20       2.0492     86.48  |          |          |     V    |       Q  |
4+25       2.3554     44.46  |          |        Q |          V          |
4+30       2.5550     28.98  |          | Q        |          | V        |
4+35       2.6962     20.51  |        Q |          |          |   V      |
4+40       2.8030     15.50  |     Q    |          |          |    V     |
4+45       2.8836     11.71  |    Q     |          |          |     V    |
4+50       2.9439      8.75  |  Q       |          |          |      V   |
4+55       2.9874      6.33  | Q        |          |          |       V  |
5+ 0       3.0175      4.36  |Q         |          |          |       V  |
5+ 5       3.0364      2.75  |Q         |          |          |       V  |
5+10       3.0518      2.24  Q          |          |          |       V  |
5+15       3.0651      1.93  Q          |          |          |        V |
5+20       3.0762      1.62  Q          |          |          |        V |
5+25       3.0872      1.59  Q          |          |          |        V |
5+30       3.0969      1.40  Q          |          |          |        V |
5+35       3.1043      1.08  Q          |          |          |        V |
5+40       3.1103      0.86  Q          |          |          |        V |
5+45       3.1150      0.69  Q          |          |          |        V |
5+50       3.1189      0.57  Q          |          |          |        V |
5+55       3.1226      0.54  Q          |          |          |        V |
6+ 0       3.1262      0.52  Q          |          |          |        V |
6+ 5       3.1296      0.49  Q          |          |          |        V |
6+10       3.1326      0.44  Q          |          |          |        V |
6+15       3.1348      0.32  Q          |          |          |        V |
6+20       3.1361      0.19  Q          |          |          |        V |
6+25       3.1370      0.13  Q          |          |          |        V |
6+30       3.1377      0.09  Q          |          |          |        V |
6+35       3.1381      0.07  Q          |          |          |        V |
6+40       3.1385      0.05  Q          |          |          |        V |
```

```
   6+45       3.1387      0.03  Q         |         |         |        V|
   6+50       3.1389      0.02  Q         |         |         |        V|
   6+55       3.1390      0.02  Q         |         |         |        V|
   7+ 0       3.1390      0.01  Q         |         |         |        V|
   7+ 5       3.1391      0.01  Q         |         |         |        V|
   7+10       3.1391      0.01  Q         |         |         |        V|
   7+15       3.1392      0.00  Q         |         |         |        V|
   7+20       3.1392      0.00  Q         |         |         |        V|
   7+25       3.1392      0.00  Q         |         |         |        V|
   7+30       3.1392      0.00  Q         |         |         |        V|
   7+35       3.1392      0.00  Q         |         |         |        V|
   7+40       3.1392      0.00  Q         |         |         |         V
-------------------------------------------------------------------------
```

- 2 Year 12 Hour Pre-Development Unit Hydrograph – Area 'C'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/10/16   File Name exc00212.out


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'C' - 2 YEAR 12 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 2

       Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 78.3       0.5          0.00     B     0.300     1.000    0.300
 78.3     120.5          1.00     C     0.250     1.000    0.250

Area-averaged adjusted loss rate Fm (In/Hr) =  0.250

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
     0.52   0.004         78.3      61.0       6.40     0.040

   120.50   0.996         78.3      61.0       6.40     0.040

Area-averaged catchment yield fraction, Y =  0.040
Area-averaged low loss fraction, Yb =  0.960
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.298 (hours)
Watershed area =     121.02(Ac.)
Catchment Lag time =   0.238 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 34.9533
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.250(In/Hr)
Average low loss rate fraction (Yb) = 0.960 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.190(In)
Computed peak 30-minute rainfall =  0.400(In)
Specified peak 1-hour rainfall =  0.530(In)
Computed peak 3-hour rainfall =  0.890(In)
Specified peak 6-hour rainfall =  1.220(In)
Specified peak 24-hour rainfall =  2.050(In)


Rainfall depth area reduction factors:
Using a total area of     121.02(Ac.) (Ref: fig. E-4)
```

```
5-minute factor = 0.994     Adjusted rainfall =  0.189(In)
30-minute factor = 0.994    Adjusted rainfall =  0.398(In)
1-hour factor = 0.994       Adjusted rainfall =  0.527(In)
3-hour factor = 0.999       Adjusted rainfall =  0.889(In)
6-hour factor = 1.000       Adjusted rainfall =  1.220(In)
24-hour factor = 1.000 Adjusted rainfall =  2.050(In)
------------------------------------------------------------------------

                     U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
------------------------------------------------------------------------
               (K =      1463.59 (CFS))

  1                2.617                  38.301
  2               11.670                 132.502
  3               34.146                 328.951
  4               62.132                 409.603
  5               73.540                 166.967
  6               80.919                 107.990
  7               86.183                  77.054
  8               90.152                  58.080
  9               93.120                  43.437
 10               95.314                  32.115
 11               96.865                  22.701
 12               97.868                  14.688
 13               98.342                   6.937
 14               98.719                   5.507
 15               99.034                   4.621
 16               99.253                   3.200
 17               99.514                   3.816
 18               99.745                   3.381
 19               99.881                   1.991
 20               99.963                   1.205
 21              100.000                   0.539
------------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.1889              0.1889
  2              0.2520              0.0631
  3              0.2982              0.0462
  4              0.3361              0.0379
  5              0.3687              0.0326
  6              0.3977              0.0290
  7              0.4234              0.0257
  8              0.4470              0.0236
  9              0.4689              0.0219
 10              0.4894              0.0205
 11              0.5087              0.0193
 12              0.5270              0.0183
 13              0.5475              0.0205
 14              0.5671              0.0197
 15              0.5861              0.0189
 16              0.6044              0.0183
 17              0.6221              0.0177
 18              0.6393              0.0172
 19              0.6559              0.0167
 20              0.6722              0.0162
 21              0.6880              0.0158
 22              0.7034              0.0154
 23              0.7184              0.0151
 24              0.7332              0.0147
 25              0.7476              0.0144
 26              0.7617              0.0141
 27              0.7755              0.0138
 28              0.7890              0.0136
 29              0.8023              0.0133
 30              0.8154              0.0131
 31              0.8282              0.0128
```

32	0.8408	0.0126
33	0.8533	0.0124
34	0.8655	0.0122
35	0.8775	0.0120
36	0.8894	0.0119
37	0.9005	0.0112
38	0.9115	0.0110
39	0.9224	0.0108
40	0.9331	0.0107
41	0.9436	0.0106
42	0.9541	0.0104
43	0.9643	0.0103
44	0.9745	0.0102
45	0.9845	0.0100
46	0.9944	0.0099
47	1.0042	0.0098
48	1.0139	0.0097
49	1.0234	0.0096
50	1.0329	0.0095
51	1.0423	0.0094
52	1.0515	0.0093
53	1.0607	0.0092
54	1.0698	0.0091
55	1.0787	0.0090
56	1.0876	0.0089
57	1.0964	0.0088
58	1.1052	0.0087
59	1.1138	0.0086
60	1.1224	0.0086
61	1.1308	0.0085
62	1.1392	0.0084
63	1.1476	0.0083
64	1.1558	0.0083
65	1.1640	0.0082
66	1.1721	0.0081
67	1.1802	0.0081
68	1.1882	0.0080
69	1.1961	0.0079
70	1.2040	0.0079
71	1.2118	0.0078
72	1.2195	0.0077
73	1.2259	0.0063
74	1.2321	0.0063
75	1.2383	0.0062
76	1.2445	0.0062
77	1.2506	0.0061
78	1.2567	0.0061
79	1.2627	0.0060
80	1.2686	0.0060
81	1.2745	0.0059
82	1.2804	0.0059
83	1.2862	0.0058
84	1.2920	0.0058
85	1.2978	0.0057
86	1.3035	0.0057
87	1.3091	0.0057
88	1.3147	0.0056
89	1.3203	0.0056
90	1.3258	0.0055
91	1.3313	0.0055
92	1.3368	0.0055
93	1.3422	0.0054
94	1.3476	0.0054
95	1.3530	0.0054
96	1.3583	0.0053
97	1.3636	0.0053
98	1.3688	0.0052
99	1.3740	0.0052
100	1.3792	0.0052
101	1.3844	0.0051
102	1.3895	0.0051

103	1.3946	0.0051
104	1.3996	0.0051
105	1.4046	0.0050
106	1.4096	0.0050
107	1.4146	0.0050
108	1.4195	0.0049
109	1.4244	0.0049
110	1.4293	0.0049
111	1.4342	0.0049
112	1.4390	0.0048
113	1.4438	0.0048
114	1.4486	0.0048
115	1.4533	0.0047
116	1.4580	0.0047
117	1.4627	0.0047
118	1.4674	0.0047
119	1.4721	0.0046
120	1.4767	0.0046
121	1.4813	0.0046
122	1.4858	0.0046
123	1.4904	0.0045
124	1.4949	0.0045
125	1.4994	0.0045
126	1.5039	0.0045
127	1.5084	0.0045
128	1.5128	0.0044
129	1.5172	0.0044
130	1.5216	0.0044
131	1.5260	0.0044
132	1.5303	0.0044
133	1.5347	0.0043
134	1.5390	0.0043
135	1.5433	0.0043
136	1.5475	0.0043
137	1.5518	0.0043
138	1.5560	0.0042
139	1.5602	0.0042
140	1.5644	0.0042
141	1.5686	0.0042
142	1.5728	0.0042
143	1.5769	0.0041
144	1.5810	0.0041

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0041	0.0040	0.0002
2	0.0041	0.0040	0.0002
3	0.0042	0.0040	0.0002
4	0.0042	0.0040	0.0002
5	0.0042	0.0041	0.0002
6	0.0043	0.0041	0.0002
7	0.0043	0.0041	0.0002
8	0.0043	0.0041	0.0002
9	0.0044	0.0042	0.0002
10	0.0044	0.0042	0.0002
11	0.0044	0.0042	0.0002
12	0.0044	0.0043	0.0002
13	0.0045	0.0043	0.0002
14	0.0045	0.0043	0.0002
15	0.0045	0.0044	0.0002
16	0.0046	0.0044	0.0002
17	0.0046	0.0044	0.0002
18	0.0046	0.0045	0.0002
19	0.0047	0.0045	0.0002
20	0.0047	0.0045	0.0002
21	0.0048	0.0046	0.0002
22	0.0048	0.0046	0.0002
23	0.0049	0.0047	0.0002
24	0.0049	0.0047	0.0002

25	0.0049	0.0047	0.0002
26	0.0050	0.0048	0.0002
27	0.0050	0.0048	0.0002
28	0.0051	0.0049	0.0002
29	0.0051	0.0049	0.0002
30	0.0051	0.0049	0.0002
31	0.0052	0.0050	0.0002
32	0.0052	0.0050	0.0002
33	0.0053	0.0051	0.0002
34	0.0054	0.0051	0.0002
35	0.0054	0.0052	0.0002
36	0.0055	0.0052	0.0002
37	0.0055	0.0053	0.0002
38	0.0056	0.0054	0.0002
39	0.0057	0.0054	0.0002
40	0.0057	0.0055	0.0002
41	0.0058	0.0055	0.0002
42	0.0058	0.0056	0.0002
43	0.0059	0.0057	0.0002
44	0.0060	0.0057	0.0002
45	0.0061	0.0058	0.0002
46	0.0061	0.0059	0.0002
47	0.0062	0.0060	0.0002
48	0.0063	0.0060	0.0003
49	0.0077	0.0074	0.0003
50	0.0078	0.0075	0.0003
51	0.0079	0.0076	0.0003
52	0.0080	0.0077	0.0003
53	0.0081	0.0078	0.0003
54	0.0082	0.0079	0.0003
55	0.0083	0.0080	0.0003
56	0.0084	0.0081	0.0003
57	0.0086	0.0082	0.0003
58	0.0086	0.0083	0.0003
59	0.0088	0.0084	0.0004
60	0.0089	0.0085	0.0004
61	0.0091	0.0087	0.0004
62	0.0092	0.0088	0.0004
63	0.0094	0.0090	0.0004
64	0.0095	0.0091	0.0004
65	0.0097	0.0093	0.0004
66	0.0098	0.0094	0.0004
67	0.0100	0.0096	0.0004
68	0.0102	0.0097	0.0004
69	0.0104	0.0100	0.0004
70	0.0106	0.0101	0.0004
71	0.0108	0.0104	0.0004
72	0.0110	0.0106	0.0004
73	0.0119	0.0114	0.0005
74	0.0120	0.0115	0.0005
75	0.0124	0.0119	0.0005
76	0.0126	0.0121	0.0005
77	0.0131	0.0125	0.0005
78	0.0133	0.0128	0.0005
79	0.0138	0.0133	0.0006
80	0.0141	0.0135	0.0006
81	0.0147	0.0141	0.0006
82	0.0151	0.0144	0.0006
83	0.0158	0.0152	0.0006
84	0.0162	0.0156	0.0007
85	0.0172	0.0165	0.0007
86	0.0177	0.0170	0.0007
87	0.0189	0.0182	0.0008
88	0.0197	0.0189	0.0008
89	0.0183	0.0176	0.0007
90	0.0193	0.0185	0.0008
91	0.0219	0.0209	0.0010
92	0.0236	0.0209	0.0027
93	0.0290	0.0209	0.0082
94	0.0326	0.0209	0.0118
95	0.0462	0.0209	0.0254

```
 96              0.0631          0.0209              0.0422
 97              0.1889          0.0209              0.1681
 98              0.0379          0.0209              0.0170
 99              0.0257          0.0209              0.0048
100              0.0205          0.0197              0.0008
101              0.0205          0.0197              0.0008
102              0.0183          0.0176              0.0007
103              0.0167          0.0160              0.0007
104              0.0154          0.0148              0.0006
105              0.0144          0.0138              0.0006
106              0.0136          0.0130              0.0005
107              0.0128          0.0123              0.0005
108              0.0122          0.0117              0.0005
109              0.0112          0.0107              0.0004
110              0.0107          0.0103              0.0004
111              0.0103          0.0099              0.0004
112              0.0099          0.0095              0.0004
113              0.0096          0.0092              0.0004
114              0.0093          0.0089              0.0004
115              0.0090          0.0086              0.0004
116              0.0087          0.0084              0.0004
117              0.0085          0.0081              0.0003
118              0.0083          0.0079              0.0003
119              0.0081          0.0077              0.0003
120              0.0079          0.0075              0.0003
121              0.0063          0.0061              0.0003
122              0.0062          0.0059              0.0002
123              0.0060          0.0058              0.0002
124              0.0059          0.0056              0.0002
125              0.0057          0.0055              0.0002
126              0.0056          0.0054              0.0002
127              0.0055          0.0053              0.0002
128              0.0054          0.0052              0.0002
129              0.0053          0.0051              0.0002
130              0.0052          0.0050              0.0002
131              0.0051          0.0049              0.0002
132              0.0050          0.0048              0.0002
133              0.0049          0.0047              0.0002
134              0.0048          0.0046              0.0002
135              0.0047          0.0046              0.0002
136              0.0047          0.0045              0.0002
137              0.0046          0.0044              0.0002
138              0.0045          0.0043              0.0002
139              0.0045          0.0043              0.0002
140              0.0044          0.0042              0.0002
141              0.0043          0.0042              0.0002
142              0.0043          0.0041              0.0002
143              0.0042          0.0040              0.0002
144              0.0042          0.0040              0.0002
-------------------------------------------------------------------------
-------------------------------------------------------------------------
Total soil rain loss =      1.26(In)
Total effective rainfall =      0.33(In)
Peak flow rate in flood hydrograph =     86.48(CFS)
-------------------------------------------------------------------------
+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                    12 - H O U R    S T O R M
                R u n o f f      H y d r o g r a p h
-------------------------------------------------------------------------
            Hydrograph in   5   Minute intervals ((CFS))

-------------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0       22.5      45.0      67.5      90.0
-------------------------------------------------------------------------
  0+ 5       0.0000      0.01  Q         |         |         |         |
  0+10       0.0002      0.03  Q         |         |         |         |
  0+15       0.0008      0.08  Q         |         |         |         |
  0+20       0.0019      0.15  Q         |         |         |         |
  0+25       0.0031      0.18  Q         |         |         |         |
  0+30       0.0045      0.20  Q         |         |         |         |
  0+35       0.0059      0.21  Q         |         |         |         |
```

0+40	0.0075	0.22	Q	|	|	|	|
0+45	0.0091	0.23	Q	|	|	|	|
0+50	0.0107	0.24	Q	|	|	|	|
0+55	0.0124	0.25	Q	|	|	|	|
1+ 0	0.0141	0.25	Q	|	|	|	|
1+ 5	0.0159	0.25	Q	|	|	|	|
1+10	0.0176	0.26	Q	|	|	|	|
1+15	0.0194	0.26	Q	|	|	|	|
1+20	0.0212	0.26	Q	|	|	|	|
1+25	0.0230	0.26	Q	|	|	|	|
1+30	0.0248	0.27	Q	|	|	|	|
1+35	0.0267	0.27	Q	|	|	|	|
1+40	0.0286	0.27	Q	|	|	|	|
1+45	0.0304	0.27	Q	|	|	|	|
1+50	0.0323	0.27	Q	|	|	|	|
1+55	0.0342	0.28	Q	|	|	|	|
2+ 0	0.0361	0.28	Q	|	|	|	|
2+ 5	0.0381	0.28	Q	|	|	|	|
2+10	0.0400	0.28	Q	|	|	|	|
2+15	0.0420	0.29	Q	|	|	|	|
2+20	0.0440	0.29	Q	|	|	|	|
2+25	0.0460	0.29	Q	|	|	|	|
2+30	0.0480	0.29	Q	|	|	|	|
2+35	0.0501	0.30	Q	|	|	|	|
2+40	0.0521	0.30	Q	|	|	|	|
2+45	0.0542	0.30	Q	|	|	|	|
2+50	0.0563	0.30	Q	|	|	|	|
2+55	0.0584	0.31	Q	|	|	|	|
3+ 0	0.0605	0.31	Q	|	|	|	|
3+ 5	0.0627	0.31	Q	|	|	|	|
3+10	0.0649	0.32	Q	|	|	|	|
3+15	0.0671	0.32	Q	|	|	|	|
3+20	0.0693	0.32	Q	|	|	|	|
3+25	0.0716	0.33	Q	|	|	|	|
3+30	0.0738	0.33	Q	|	|	|	|
3+35	0.0761	0.33	Q	|	|	|	|
3+40	0.0784	0.34	Q	|	|	|	|
3+45	0.0808	0.34	Q	|	|	|	|
3+50	0.0832	0.34	QV	|	|	|	|
3+55	0.0856	0.35	QV	|	|	|	|
4+ 0	0.0880	0.35	QV	|	|	|	|
4+ 5	0.0905	0.36	QV	|	|	|	|
4+10	0.0930	0.37	QV	|	|	|	|
4+15	0.0958	0.39	QV	|	|	|	|
4+20	0.0987	0.42	QV	|	|	|	|
4+25	0.1017	0.44	QV	|	|	|	|
4+30	0.1047	0.45	QV	|	|	|	|
4+35	0.1079	0.46	QV	|	|	|	|
4+40	0.1111	0.47	QV	|	|	|	|
4+45	0.1143	0.47	QV	|	|	|	|
4+50	0.1177	0.48	QV	|	|	|	|
4+55	0.1210	0.49	QV	|	|	|	|
5+ 0	0.1244	0.50	QV	|	|	|	|
5+ 5	0.1279	0.50	QV	|	|	|	|
5+10	0.1314	0.51	QV	|	|	|	|
5+15	0.1350	0.52	QV	|	|	|	|
5+20	0.1386	0.53	QV	|	|	|	|
5+25	0.1423	0.53	QV	|	|	|	|
5+30	0.1461	0.54	QV	|	|	|	|
5+35	0.1499	0.55	QV	|	|	|	|
5+40	0.1537	0.56	QV	|	|	|	|
5+45	0.1577	0.57	QV	|	|	|	|
5+50	0.1617	0.58	QV	|	|	|	|
5+55	0.1658	0.59	Q V	|	|	|	|
6+ 0	0.1699	0.60	Q V	|	|	|	|
6+ 5	0.1742	0.62	Q V	|	|	|	|
6+10	0.1785	0.63	Q V	|	|	|	|
6+15	0.1830	0.65	Q V	|	|	|	|
6+20	0.1877	0.68	Q V	|	|	|	|
6+25	0.1924	0.69	Q V	|	|	|	|
6+30	0.1973	0.71	Q V	|	|	|	|

```
 6+35      0.2024      0.73  Q V       |         |         |         |
 6+40      0.2076      0.75  Q V       |         |         |         |
 6+45      0.2129      0.77  Q V       |         |         |         |
 6+50      0.2184      0.80  Q V       |         |         |         |
 6+55      0.2240      0.82  Q V       |         |         |         |
 7+ 0      0.2298      0.85  Q V       |         |         |         |
 7+ 5      0.2359      0.88  Q V       |         |         |         |
 7+10      0.2421      0.91  Q V       |         |         |         |
 7+15      0.2486      0.94  Q  V      |         |         |         |
 7+20      0.2554      0.98  Q  V      |         |         |         |
 7+25      0.2625      1.03  Q  V      |         |         |         |
 7+30      0.2698      1.06  Q  V      |         |         |         |
 7+35      0.2773      1.09  Q  V      |         |         |         |
 7+40      0.2855      1.20  Q  V      |         |         |         |
 7+45      0.2975      1.74  Q  V      |         |         |         |
 7+50      0.3200      3.27  |Q V      |         |         |         |
 7+55      0.3669      6.80  |  QV     |         |         |         |
 8+ 0      0.4562     12.98  |    Q    |         |         |         |
 8+ 5      0.6429     27.10  |      V  | Q       |         |         |
 8+10      0.9902     50.43  |         | V       | Q       |         |
 8+15      1.5510     81.43  |         |       V |         |     Q   |
 8+20      2.1466     86.48  |         |         |     V   |       Q |
 8+25      2.4528     44.46  |         |        Q|         V|         |
 8+30      2.6524     28.98  |         | Q       |         | V       |
 8+35      2.7937     20.51  |         Q|        |         |  V      |
 8+40      2.9004     15.50  |     Q   |         |         |   V     |
 8+45      2.9810     11.71  |    Q    |         |         |    V    |
 8+50      3.0413      8.75  |  Q      |         |         |     V   |
 8+55      3.0849      6.33  | Q       |         |         |     V   |
 9+ 0      3.1149      4.36  |Q        |         |         |     V   |
 9+ 5      3.1339      2.75  |Q        |         |         |      V  |
 9+10      3.1493      2.24  Q         |         |         |      V  |
 9+15      3.1625      1.93  Q         |         |         |      V  |
 9+20      3.1737      1.62  Q         |         |         |      V  |
 9+25      3.1846      1.59  Q         |         |         |      V  |
 9+30      3.1943      1.40  Q         |         |         |      V  |
 9+35      3.2018      1.08  Q         |         |         |      V  |
 9+40      3.2077      0.86  Q         |         |         |       V|
 9+45      3.2125      0.69  Q         |         |         |       V|
 9+50      3.2164      0.57  Q         |         |         |       V|
 9+55      3.2201      0.54  Q         |         |         |       V|
10+ 0      3.2236      0.52  Q         |         |         |       V|
10+ 5      3.2271      0.50  Q         |         |         |       V|
10+10      3.2304      0.48  Q         |         |         |       V|
10+15      3.2335      0.45  Q         |         |         |       V|
10+20      3.2363      0.42  Q         |         |         |       V|
10+25      3.2390      0.40  Q         |         |         |       V|
10+30      3.2417      0.38  Q         |         |         |       V|
10+35      3.2442      0.37  Q         |         |         |       V|
10+40      3.2466      0.35  Q         |         |         |       V|
10+45      3.2490      0.34  Q         |         |         |       V|
10+50      3.2513      0.34  Q         |         |         |       V|
10+55      3.2536      0.33  Q         |         |         |       V|
11+ 0      3.2558      0.32  Q         |         |         |       V|
11+ 5      3.2579      0.31  Q         |         |         |       V|
11+10      3.2600      0.31  Q         |         |         |       V|
11+15      3.2621      0.30  Q         |         |         |       V|
11+20      3.2641      0.29  Q         |         |         |       V|
11+25      3.2661      0.29  Q         |         |         |       V|
11+30      3.2681      0.28  Q         |         |         |       V|
11+35      3.2700      0.28  Q         |         |         |       V|
11+40      3.2719      0.27  Q         |         |         |       V|
11+45      3.2738      0.27  Q         |         |         |       V|
11+50      3.2756      0.27  Q         |         |         |       V|
11+55      3.2774      0.26  Q         |         |         |       V|
12+ 0      3.2792      0.26  Q         |         |         |       V|
12+ 5      3.2809      0.25  Q         |         |         |       V|
12+10      3.2824      0.22  Q         |         |         |       V|
12+15      3.2836      0.17  Q         |         |         |       V|
12+20      3.2842      0.10  Q         |         |         |       V|
12+25      3.2847      0.07  Q         |         |         |       V|
```

```
   12+30       3.2850      0.05  Q         |         |         |         V|
   12+35       3.2853      0.03  Q         |         |         |         V|
   12+40       3.2854      0.02  Q         |         |         |         V|
   12+45       3.2856      0.02  Q         |         |         |         V|
   12+50       3.2856      0.01  Q         |         |         |         V|
   12+55       3.2857      0.01  Q         |         |         |         V|
   13+ 0       3.2857      0.01  Q         |         |         |         V|
   13+ 5       3.2858      0.00  Q         |         |         |         V|
   13+10       3.2858      0.00  Q         |         |         |         V|
   13+15       3.2858      0.00  Q         |         |         |         V|
   13+20       3.2858      0.00  Q         |         |         |         V|
   13+25       3.2858      0.00  Q         |         |         |         V|
   13+30       3.2858      0.00  Q         |         |         |         V|
   13+35       3.2858      0.00  Q         |         |         |         V|
   13+40       3.2858      0.00  Q         |         |         |         V|
-------------------------------------------------------------------------
```

- 2 Year 24 Hour Pre-Development Unit Hydrograph – Area 'C'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/10/16   File Name exc00224.out


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------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'C' - 2 YEAR 24 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 2

       Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 78.3       0.5          0.00     B     0.300     1.000    0.300
 78.3     120.5          1.00     C     0.250     1.000    0.250

Area-averaged adjusted loss rate Fm (In/Hr) =  0.250

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
     0.52   0.004         78.3      61.0       6.40     0.040

   120.50   0.996         78.3      61.0       6.40     0.040

Area-averaged catchment yield fraction, Y =  0.040
Area-averaged low loss fraction, Yb =  0.960
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.298 (hours)
Watershed area =     121.02(Ac.)
Catchment Lag time =   0.238 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 34.9533
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.250(In/Hr)
Average low loss rate fraction (Yb) = 0.960 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.190(In)
Computed peak 30-minute rainfall =  0.400(In)
Specified peak 1-hour rainfall =  0.530(In)
Computed peak 3-hour rainfall =  0.890(In)
Specified peak 6-hour rainfall =  1.220(In)
Specified peak 24-hour rainfall =  2.050(In)


Rainfall depth area reduction factors:
Using a total area of     121.02(Ac.) (Ref: fig. E-4)
```

```
5-minute factor = 0.994     Adjusted rainfall =  0.189(In)
30-minute factor = 0.994    Adjusted rainfall =  0.398(In)
1-hour factor = 0.994       Adjusted rainfall =  0.527(In)
3-hour factor = 0.999       Adjusted rainfall =  0.889(In)
6-hour factor = 1.000       Adjusted rainfall =  1.220(In)
24-hour factor = 1.000 Adjusted rainfall =  2.050(In)
--------------------------------------------------------------------

                    U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------
               (K =      1463.59 (CFS))

  1                2.617                  38.301
  2               11.670                 132.502
  3               34.146                 328.951
  4               62.132                 409.603
  5               73.540                 166.967
  6               80.919                 107.990
  7               86.183                  77.054
  8               90.152                  58.080
  9               93.120                  43.437
 10               95.314                  32.115
 11               96.865                  22.701
 12               97.868                  14.688
 13               98.342                   6.937
 14               98.719                   5.507
 15               99.034                   4.621
 16               99.253                   3.200
 17               99.514                   3.816
 18               99.745                   3.381
 19               99.881                   1.991
 20               99.963                   1.205
 21              100.000                   0.539
--------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.1889              0.1889
  2              0.2520              0.0631
  3              0.2982              0.0462
  4              0.3361              0.0379
  5              0.3687              0.0326
  6              0.3977              0.0290
  7              0.4234              0.0257
  8              0.4470              0.0236
  9              0.4689              0.0219
 10              0.4894              0.0205
 11              0.5087              0.0193
 12              0.5270              0.0183
 13              0.5475              0.0205
 14              0.5671              0.0197
 15              0.5861              0.0189
 16              0.6044              0.0183
 17              0.6221              0.0177
 18              0.6393              0.0172
 19              0.6559              0.0167
 20              0.6722              0.0162
 21              0.6880              0.0158
 22              0.7034              0.0154
 23              0.7184              0.0151
 24              0.7332              0.0147
 25              0.7476              0.0144
 26              0.7617              0.0141
 27              0.7755              0.0138
 28              0.7890              0.0136
 29              0.8023              0.0133
 30              0.8154              0.0131
 31              0.8282              0.0128
```

32	0.8408	0.0126
33	0.8533	0.0124
34	0.8655	0.0122
35	0.8775	0.0120
36	0.8894	0.0119
37	0.9005	0.0112
38	0.9115	0.0110
39	0.9224	0.0108
40	0.9331	0.0107
41	0.9436	0.0106
42	0.9541	0.0104
43	0.9643	0.0103
44	0.9745	0.0102
45	0.9845	0.0100
46	0.9944	0.0099
47	1.0042	0.0098
48	1.0139	0.0097
49	1.0234	0.0096
50	1.0329	0.0095
51	1.0423	0.0094
52	1.0515	0.0093
53	1.0607	0.0092
54	1.0698	0.0091
55	1.0787	0.0090
56	1.0876	0.0089
57	1.0964	0.0088
58	1.1052	0.0087
59	1.1138	0.0086
60	1.1224	0.0086
61	1.1308	0.0085
62	1.1392	0.0084
63	1.1476	0.0083
64	1.1558	0.0083
65	1.1640	0.0082
66	1.1721	0.0081
67	1.1802	0.0081
68	1.1882	0.0080
69	1.1961	0.0079
70	1.2040	0.0079
71	1.2118	0.0078
72	1.2195	0.0077
73	1.2259	0.0063
74	1.2321	0.0063
75	1.2383	0.0062
76	1.2445	0.0062
77	1.2506	0.0061
78	1.2567	0.0061
79	1.2627	0.0060
80	1.2686	0.0060
81	1.2745	0.0059
82	1.2804	0.0059
83	1.2862	0.0058
84	1.2920	0.0058
85	1.2978	0.0057
86	1.3035	0.0057
87	1.3091	0.0057
88	1.3147	0.0056
89	1.3203	0.0056
90	1.3258	0.0055
91	1.3313	0.0055
92	1.3368	0.0055
93	1.3422	0.0054
94	1.3476	0.0054
95	1.3530	0.0054
96	1.3583	0.0053
97	1.3636	0.0053
98	1.3688	0.0052
99	1.3740	0.0052
100	1.3792	0.0052
101	1.3844	0.0051
102	1.3895	0.0051

103	1.3946	0.0051
104	1.3996	0.0051
105	1.4046	0.0050
106	1.4096	0.0050
107	1.4146	0.0050
108	1.4195	0.0049
109	1.4244	0.0049
110	1.4293	0.0049
111	1.4342	0.0049
112	1.4390	0.0048
113	1.4438	0.0048
114	1.4486	0.0048
115	1.4533	0.0047
116	1.4580	0.0047
117	1.4627	0.0047
118	1.4674	0.0047
119	1.4721	0.0046
120	1.4767	0.0046
121	1.4813	0.0046
122	1.4858	0.0046
123	1.4904	0.0045
124	1.4949	0.0045
125	1.4994	0.0045
126	1.5039	0.0045
127	1.5084	0.0045
128	1.5128	0.0044
129	1.5172	0.0044
130	1.5216	0.0044
131	1.5260	0.0044
132	1.5303	0.0044
133	1.5347	0.0043
134	1.5390	0.0043
135	1.5433	0.0043
136	1.5475	0.0043
137	1.5518	0.0043
138	1.5560	0.0042
139	1.5602	0.0042
140	1.5644	0.0042
141	1.5686	0.0042
142	1.5728	0.0042
143	1.5769	0.0041
144	1.5810	0.0041
145	1.5851	0.0041
146	1.5892	0.0041
147	1.5933	0.0041
148	1.5973	0.0041
149	1.6014	0.0040
150	1.6054	0.0040
151	1.6094	0.0040
152	1.6134	0.0040
153	1.6173	0.0040
154	1.6213	0.0040
155	1.6252	0.0039
156	1.6292	0.0039
157	1.6331	0.0039
158	1.6369	0.0039
159	1.6408	0.0039
160	1.6447	0.0039
161	1.6485	0.0038
162	1.6523	0.0038
163	1.6562	0.0038
164	1.6600	0.0038
165	1.6637	0.0038
166	1.6675	0.0038
167	1.6713	0.0038
168	1.6750	0.0037
169	1.6787	0.0037
170	1.6824	0.0037
171	1.6861	0.0037
172	1.6898	0.0037
173	1.6935	0.0037

174	1.6972	0.0037
175	1.7008	0.0036
176	1.7044	0.0036
177	1.7081	0.0036
178	1.7117	0.0036
179	1.7153	0.0036
180	1.7189	0.0036
181	1.7224	0.0036
182	1.7260	0.0036
183	1.7295	0.0035
184	1.7331	0.0035
185	1.7366	0.0035
186	1.7401	0.0035
187	1.7436	0.0035
188	1.7471	0.0035
189	1.7505	0.0035
190	1.7540	0.0035
191	1.7575	0.0035
192	1.7609	0.0034
193	1.7643	0.0034
194	1.7678	0.0034
195	1.7712	0.0034
196	1.7746	0.0034
197	1.7779	0.0034
198	1.7813	0.0034
199	1.7847	0.0034
200	1.7880	0.0034
201	1.7914	0.0033
202	1.7947	0.0033
203	1.7980	0.0033
204	1.8013	0.0033
205	1.8046	0.0033
206	1.8079	0.0033
207	1.8112	0.0033
208	1.8145	0.0033
209	1.8178	0.0033
210	1.8210	0.0033
211	1.8243	0.0032
212	1.8275	0.0032
213	1.8307	0.0032
214	1.8339	0.0032
215	1.8371	0.0032
216	1.8403	0.0032
217	1.8435	0.0032
218	1.8467	0.0032
219	1.8499	0.0032
220	1.8530	0.0032
221	1.8562	0.0032
222	1.8593	0.0031
223	1.8624	0.0031
224	1.8656	0.0031
225	1.8687	0.0031
226	1.8718	0.0031
227	1.8749	0.0031
228	1.8780	0.0031
229	1.8811	0.0031
230	1.8841	0.0031
231	1.8872	0.0031
232	1.8902	0.0031
233	1.8933	0.0030
234	1.8963	0.0030
235	1.8994	0.0030
236	1.9024	0.0030
237	1.9054	0.0030
238	1.9084	0.0030
239	1.9114	0.0030
240	1.9144	0.0030
241	1.9174	0.0030
242	1.9204	0.0030
243	1.9233	0.0030
244	1.9263	0.0030

245	1.9292	0.0030
246	1.9322	0.0029
247	1.9351	0.0029
248	1.9381	0.0029
249	1.9410	0.0029
250	1.9439	0.0029
251	1.9468	0.0029
252	1.9497	0.0029
253	1.9526	0.0029
254	1.9555	0.0029
255	1.9584	0.0029
256	1.9612	0.0029
257	1.9641	0.0029
258	1.9670	0.0029
259	1.9698	0.0029
260	1.9727	0.0028
261	1.9755	0.0028
262	1.9783	0.0028
263	1.9812	0.0028
264	1.9840	0.0028
265	1.9868	0.0028
266	1.9896	0.0028
267	1.9924	0.0028
268	1.9952	0.0028
269	1.9980	0.0028
270	2.0007	0.0028
271	2.0035	0.0028
272	2.0063	0.0028
273	2.0090	0.0028
274	2.0118	0.0028
275	2.0145	0.0027
276	2.0173	0.0027
277	2.0200	0.0027
278	2.0227	0.0027
279	2.0255	0.0027
280	2.0282	0.0027
281	2.0309	0.0027
282	2.0336	0.0027
283	2.0363	0.0027
284	2.0390	0.0027
285	2.0417	0.0027
286	2.0443	0.0027
287	2.0470	0.0027
288	2.0497	0.0027

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0027	0.0026	0.0001
2	0.0027	0.0026	0.0001
3	0.0027	0.0026	0.0001
4	0.0027	0.0026	0.0001
5	0.0027	0.0026	0.0001
6	0.0027	0.0026	0.0001
7	0.0027	0.0026	0.0001
8	0.0027	0.0026	0.0001
9	0.0027	0.0026	0.0001
10	0.0027	0.0026	0.0001
11	0.0028	0.0026	0.0001
12	0.0028	0.0027	0.0001
13	0.0028	0.0027	0.0001
14	0.0028	0.0027	0.0001
15	0.0028	0.0027	0.0001
16	0.0028	0.0027	0.0001
17	0.0028	0.0027	0.0001
18	0.0028	0.0027	0.0001
19	0.0028	0.0027	0.0001
20	0.0028	0.0027	0.0001
21	0.0029	0.0027	0.0001
22	0.0029	0.0028	0.0001

23	0.0029	0.0028	0.0001
24	0.0029	0.0028	0.0001
25	0.0029	0.0028	0.0001
26	0.0029	0.0028	0.0001
27	0.0029	0.0028	0.0001
28	0.0029	0.0028	0.0001
29	0.0029	0.0028	0.0001
30	0.0030	0.0028	0.0001
31	0.0030	0.0028	0.0001
32	0.0030	0.0029	0.0001
33	0.0030	0.0029	0.0001
34	0.0030	0.0029	0.0001
35	0.0030	0.0029	0.0001
36	0.0030	0.0029	0.0001
37	0.0030	0.0029	0.0001
38	0.0030	0.0029	0.0001
39	0.0031	0.0029	0.0001
40	0.0031	0.0029	0.0001
41	0.0031	0.0030	0.0001
42	0.0031	0.0030	0.0001
43	0.0031	0.0030	0.0001
44	0.0031	0.0030	0.0001
45	0.0031	0.0030	0.0001
46	0.0032	0.0030	0.0001
47	0.0032	0.0030	0.0001
48	0.0032	0.0030	0.0001
49	0.0032	0.0031	0.0001
50	0.0032	0.0031	0.0001
51	0.0032	0.0031	0.0001
52	0.0032	0.0031	0.0001
53	0.0033	0.0031	0.0001
54	0.0033	0.0031	0.0001
55	0.0033	0.0032	0.0001
56	0.0033	0.0032	0.0001
57	0.0033	0.0032	0.0001
58	0.0033	0.0032	0.0001
59	0.0033	0.0032	0.0001
60	0.0034	0.0032	0.0001
61	0.0034	0.0032	0.0001
62	0.0034	0.0032	0.0001
63	0.0034	0.0033	0.0001
64	0.0034	0.0033	0.0001
65	0.0034	0.0033	0.0001
66	0.0035	0.0033	0.0001
67	0.0035	0.0033	0.0001
68	0.0035	0.0033	0.0001
69	0.0035	0.0034	0.0001
70	0.0035	0.0034	0.0001
71	0.0035	0.0034	0.0001
72	0.0036	0.0034	0.0001
73	0.0036	0.0034	0.0001
74	0.0036	0.0035	0.0001
75	0.0036	0.0035	0.0001
76	0.0036	0.0035	0.0001
77	0.0037	0.0035	0.0001
78	0.0037	0.0035	0.0001
79	0.0037	0.0036	0.0001
80	0.0037	0.0036	0.0001
81	0.0037	0.0036	0.0002
82	0.0038	0.0036	0.0002
83	0.0038	0.0036	0.0002
84	0.0038	0.0036	0.0002
85	0.0038	0.0037	0.0002
86	0.0038	0.0037	0.0002
87	0.0039	0.0037	0.0002
88	0.0039	0.0037	0.0002
89	0.0039	0.0038	0.0002
90	0.0039	0.0038	0.0002
91	0.0040	0.0038	0.0002
92	0.0040	0.0038	0.0002
93	0.0040	0.0039	0.0002

94	0.0040	0.0039	0.0002
95	0.0041	0.0039	0.0002
96	0.0041	0.0039	0.0002
97	0.0041	0.0040	0.0002
98	0.0041	0.0040	0.0002
99	0.0042	0.0040	0.0002
100	0.0042	0.0040	0.0002
101	0.0042	0.0041	0.0002
102	0.0043	0.0041	0.0002
103	0.0043	0.0041	0.0002
104	0.0043	0.0041	0.0002
105	0.0044	0.0042	0.0002
106	0.0044	0.0042	0.0002
107	0.0044	0.0042	0.0002
108	0.0044	0.0043	0.0002
109	0.0045	0.0043	0.0002
110	0.0045	0.0043	0.0002
111	0.0045	0.0044	0.0002
112	0.0046	0.0044	0.0002
113	0.0046	0.0044	0.0002
114	0.0046	0.0045	0.0002
115	0.0047	0.0045	0.0002
116	0.0047	0.0045	0.0002
117	0.0048	0.0046	0.0002
118	0.0048	0.0046	0.0002
119	0.0049	0.0047	0.0002
120	0.0049	0.0047	0.0002
121	0.0049	0.0047	0.0002
122	0.0050	0.0048	0.0002
123	0.0050	0.0048	0.0002
124	0.0051	0.0049	0.0002
125	0.0051	0.0049	0.0002
126	0.0051	0.0049	0.0002
127	0.0052	0.0050	0.0002
128	0.0052	0.0050	0.0002
129	0.0053	0.0051	0.0002
130	0.0054	0.0051	0.0002
131	0.0054	0.0052	0.0002
132	0.0055	0.0052	0.0002
133	0.0055	0.0053	0.0002
134	0.0056	0.0054	0.0002
135	0.0057	0.0054	0.0002
136	0.0057	0.0055	0.0002
137	0.0058	0.0055	0.0002
138	0.0058	0.0056	0.0002
139	0.0059	0.0057	0.0002
140	0.0060	0.0057	0.0002
141	0.0061	0.0058	0.0002
142	0.0061	0.0059	0.0002
143	0.0062	0.0060	0.0002
144	0.0063	0.0060	0.0003
145	0.0077	0.0074	0.0003
146	0.0078	0.0075	0.0003
147	0.0079	0.0076	0.0003
148	0.0080	0.0077	0.0003
149	0.0081	0.0078	0.0003
150	0.0082	0.0079	0.0003
151	0.0083	0.0080	0.0003
152	0.0084	0.0081	0.0003
153	0.0086	0.0082	0.0003
154	0.0086	0.0083	0.0003
155	0.0088	0.0084	0.0004
156	0.0089	0.0085	0.0004
157	0.0091	0.0087	0.0004
158	0.0092	0.0088	0.0004
159	0.0094	0.0090	0.0004
160	0.0095	0.0091	0.0004
161	0.0097	0.0093	0.0004
162	0.0098	0.0094	0.0004
163	0.0100	0.0096	0.0004
164	0.0102	0.0097	0.0004

165	0.0104	0.0100	0.0004
166	0.0106	0.0101	0.0004
167	0.0108	0.0104	0.0004
168	0.0110	0.0106	0.0004
169	0.0119	0.0114	0.0005
170	0.0120	0.0115	0.0005
171	0.0124	0.0119	0.0005
172	0.0126	0.0121	0.0005
173	0.0131	0.0125	0.0005
174	0.0133	0.0128	0.0005
175	0.0138	0.0133	0.0006
176	0.0141	0.0135	0.0006
177	0.0147	0.0141	0.0006
178	0.0151	0.0144	0.0006
179	0.0158	0.0152	0.0006
180	0.0162	0.0156	0.0007
181	0.0172	0.0165	0.0007
182	0.0177	0.0170	0.0007
183	0.0189	0.0182	0.0008
184	0.0197	0.0189	0.0008
185	0.0183	0.0176	0.0007
186	0.0193	0.0185	0.0008
187	0.0219	0.0209	0.0010
188	0.0236	0.0209	0.0027
189	0.0290	0.0209	0.0082
190	0.0326	0.0209	0.0118
191	0.0462	0.0209	0.0254
192	0.0631	0.0209	0.0422
193	0.1889	0.0209	0.1681
194	0.0379	0.0209	0.0170
195	0.0257	0.0209	0.0048
196	0.0205	0.0197	0.0008
197	0.0205	0.0197	0.0008
198	0.0183	0.0176	0.0007
199	0.0167	0.0160	0.0007
200	0.0154	0.0148	0.0006
201	0.0144	0.0138	0.0006
202	0.0136	0.0130	0.0005
203	0.0128	0.0123	0.0005
204	0.0122	0.0117	0.0005
205	0.0112	0.0107	0.0004
206	0.0107	0.0103	0.0004
207	0.0103	0.0099	0.0004
208	0.0099	0.0095	0.0004
209	0.0096	0.0092	0.0004
210	0.0093	0.0089	0.0004
211	0.0090	0.0086	0.0004
212	0.0087	0.0084	0.0004
213	0.0085	0.0081	0.0003
214	0.0083	0.0079	0.0003
215	0.0081	0.0077	0.0003
216	0.0079	0.0075	0.0003
217	0.0063	0.0061	0.0003
218	0.0062	0.0059	0.0002
219	0.0060	0.0058	0.0002
220	0.0059	0.0056	0.0002
221	0.0057	0.0055	0.0002
222	0.0056	0.0054	0.0002
223	0.0055	0.0053	0.0002
224	0.0054	0.0052	0.0002
225	0.0053	0.0051	0.0002
226	0.0052	0.0050	0.0002
227	0.0051	0.0049	0.0002
228	0.0050	0.0048	0.0002
229	0.0049	0.0047	0.0002
230	0.0048	0.0046	0.0002
231	0.0047	0.0046	0.0002
232	0.0047	0.0045	0.0002
233	0.0046	0.0044	0.0002
234	0.0045	0.0043	0.0002
235	0.0045	0.0043	0.0002

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      236              0.0044          0.0042              0.0002
      237              0.0043          0.0042              0.0002
      238              0.0043          0.0041              0.0002
      239              0.0042          0.0040              0.0002
      240              0.0042          0.0040              0.0002
      241              0.0041          0.0039              0.0002
      242              0.0041          0.0039              0.0002
      243              0.0040          0.0038              0.0002
      244              0.0040          0.0038              0.0002
      245              0.0039          0.0037              0.0002
      246              0.0039          0.0037              0.0002
      247              0.0038          0.0037              0.0002
      248              0.0038          0.0036              0.0002
      249              0.0037          0.0036              0.0001
      250              0.0037          0.0035              0.0001
      251              0.0036          0.0035              0.0001
      252              0.0036          0.0035              0.0001
      253              0.0036          0.0034              0.0001
      254              0.0035          0.0034              0.0001
      255              0.0035          0.0034              0.0001
      256              0.0035          0.0033              0.0001
      257              0.0034          0.0033              0.0001
      258              0.0034          0.0033              0.0001
      259              0.0034          0.0032              0.0001
      260              0.0033          0.0032              0.0001
      261              0.0033          0.0032              0.0001
      262              0.0033          0.0031              0.0001
      263              0.0032          0.0031              0.0001
      264              0.0032          0.0031              0.0001
      265              0.0032          0.0031              0.0001
      266              0.0032          0.0030              0.0001
      267              0.0031          0.0030              0.0001
      268              0.0031          0.0030              0.0001
      269              0.0031          0.0030              0.0001
      270              0.0031          0.0029              0.0001
      271              0.0030          0.0029              0.0001
      272              0.0030          0.0029              0.0001
      273              0.0030          0.0029              0.0001
      274              0.0030          0.0028              0.0001
      275              0.0029          0.0028              0.0001
      276              0.0029          0.0028              0.0001
      277              0.0029          0.0028              0.0001
      278              0.0029          0.0028              0.0001
      279              0.0029          0.0027              0.0001
      280              0.0028          0.0027              0.0001
      281              0.0028          0.0027              0.0001
      282              0.0028          0.0027              0.0001
      283              0.0028          0.0027              0.0001
      284              0.0028          0.0026              0.0001
      285              0.0027          0.0026              0.0001
      286              0.0027          0.0026              0.0001
      287              0.0027          0.0026              0.0001
      288              0.0027          0.0026              0.0001
      ----------------------------------------------------------------------
      ----------------------------------------------------------------------
      Total soil rain loss =      1.70(In)
      Total effective rainfall =      0.34(In)
      Peak flow rate in flood hydrograph =     86.48(CFS)
      ----------------------------------------------------------------------
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                        24 - H O U R    S T O R M
                   R u n o f f      H y d r o g r a p h
      ----------------------------------------------------------------------
                Hydrograph in   5   Minute intervals ((CFS))

      ----------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0       22.5      45.0      67.5      90.0
----------------------------------------------------------------------------
  0+ 5       0.0000      0.00  Q         |         |         |         |
  0+10       0.0002      0.02  Q         |         |         |         |
  0+15       0.0005      0.05  Q         |         |         |         |
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0+20	0.0012	0.10	Q	|	|	|	|
0+25	0.0020	0.12	Q	|	|	|	|
0+30	0.0029	0.13	Q	|	|	|	|
0+35	0.0038	0.14	Q	|	|	|	|
0+40	0.0048	0.14	Q	|	|	|	|
0+45	0.0058	0.15	Q	|	|	|	|
0+50	0.0069	0.15	Q	|	|	|	|
0+55	0.0080	0.16	Q	|	|	|	|
1+ 0	0.0090	0.16	Q	|	|	|	|
1+ 5	0.0101	0.16	Q	|	|	|	|
1+10	0.0112	0.16	Q	|	|	|	|
1+15	0.0123	0.16	Q	|	|	|	|
1+20	0.0135	0.16	Q	|	|	|	|
1+25	0.0146	0.16	Q	|	|	|	|
1+30	0.0157	0.16	Q	|	|	|	|
1+35	0.0168	0.16	Q	|	|	|	|
1+40	0.0180	0.17	Q	|	|	|	|
1+45	0.0191	0.17	Q	|	|	|	|
1+50	0.0203	0.17	Q	|	|	|	|
1+55	0.0214	0.17	Q	|	|	|	|
2+ 0	0.0226	0.17	Q	|	|	|	|
2+ 5	0.0237	0.17	Q	|	|	|	|
2+10	0.0249	0.17	Q	|	|	|	|
2+15	0.0261	0.17	Q	|	|	|	|
2+20	0.0272	0.17	Q	|	|	|	|
2+25	0.0284	0.17	Q	|	|	|	|
2+30	0.0296	0.17	Q	|	|	|	|
2+35	0.0308	0.17	Q	|	|	|	|
2+40	0.0320	0.17	Q	|	|	|	|
2+45	0.0332	0.17	Q	|	|	|	|
2+50	0.0344	0.17	Q	|	|	|	|
2+55	0.0356	0.17	Q	|	|	|	|
3+ 0	0.0368	0.18	Q	|	|	|	|
3+ 5	0.0380	0.18	Q	|	|	|	|
3+10	0.0392	0.18	Q	|	|	|	|
3+15	0.0404	0.18	Q	|	|	|	|
3+20	0.0417	0.18	Q	|	|	|	|
3+25	0.0429	0.18	Q	|	|	|	|
3+30	0.0441	0.18	Q	|	|	|	|
3+35	0.0454	0.18	Q	|	|	|	|
3+40	0.0466	0.18	Q	|	|	|	|
3+45	0.0479	0.18	Q	|	|	|	|
3+50	0.0491	0.18	Q	|	|	|	|
3+55	0.0504	0.18	Q	|	|	|	|
4+ 0	0.0517	0.18	Q	|	|	|	|
4+ 5	0.0529	0.19	Q	|	|	|	|
4+10	0.0542	0.19	Q	|	|	|	|
4+15	0.0555	0.19	Q	|	|	|	|
4+20	0.0568	0.19	Q	|	|	|	|
4+25	0.0581	0.19	Q	|	|	|	|
4+30	0.0594	0.19	Q	|	|	|	|
4+35	0.0607	0.19	Q	|	|	|	|
4+40	0.0620	0.19	Q	|	|	|	|
4+45	0.0633	0.19	Q	|	|	|	|
4+50	0.0647	0.19	Q	|	|	|	|
4+55	0.0660	0.19	Q	|	|	|	|
5+ 0	0.0673	0.19	Q	|	|	|	|
5+ 5	0.0687	0.20	Q	|	|	|	|
5+10	0.0700	0.20	Q	|	|	|	|
5+15	0.0714	0.20	Q	|	|	|	|
5+20	0.0727	0.20	Q	|	|	|	|
5+25	0.0741	0.20	Q	|	|	|	|
5+30	0.0755	0.20	Q	|	|	|	|
5+35	0.0769	0.20	Q	|	|	|	|
5+40	0.0783	0.20	Q	|	|	|	|
5+45	0.0797	0.20	Q	|	|	|	|
5+50	0.0811	0.20	Q	|	|	|	|
5+55	0.0825	0.20	Q	|	|	|	|
6+ 0	0.0839	0.21	Q	|	|	|	|
6+ 5	0.0853	0.21	Q	|	|	|	|
6+10	0.0867	0.21	Q	|	|	|	|

6+15	0.0882	0.21	QV	|	|	|	|
6+20	0.0896	0.21	QV	|	|	|	|
6+25	0.0911	0.21	QV	|	|	|	|
6+30	0.0925	0.21	QV	|	|	|	|
6+35	0.0940	0.21	QV	|	|	|	|
6+40	0.0955	0.21	QV	|	|	|	|
6+45	0.0970	0.22	QV	|	|	|	|
6+50	0.0985	0.22	QV	|	|	|	|
6+55	0.1000	0.22	QV	|	|	|	|
7+ 0	0.1015	0.22	QV	|	|	|	|
7+ 5	0.1030	0.22	QV	|	|	|	|
7+10	0.1045	0.22	QV	|	|	|	|
7+15	0.1060	0.22	QV	|	|	|	|
7+20	0.1076	0.22	QV	|	|	|	|
7+25	0.1091	0.23	QV	|	|	|	|
7+30	0.1107	0.23	QV	|	|	|	|
7+35	0.1123	0.23	QV	|	|	|	|
7+40	0.1139	0.23	QV	|	|	|	|
7+45	0.1154	0.23	QV	|	|	|	|
7+50	0.1170	0.23	QV	|	|	|	|
7+55	0.1187	0.23	QV	|	|	|	|
8+ 0	0.1203	0.24	QV	|	|	|	|
8+ 5	0.1219	0.24	QV	|	|	|	|
8+10	0.1235	0.24	QV	|	|	|	|
8+15	0.1252	0.24	QV	|	|	|	|
8+20	0.1269	0.24	QV	|	|	|	|
8+25	0.1285	0.24	QV	|	|	|	|
8+30	0.1302	0.24	QV	|	|	|	|
8+35	0.1319	0.25	QV	|	|	|	|
8+40	0.1336	0.25	QV	|	|	|	|
8+45	0.1353	0.25	QV	|	|	|	|
8+50	0.1371	0.25	QV	|	|	|	|
8+55	0.1388	0.25	QV	|	|	|	|
9+ 0	0.1406	0.25	QV	|	|	|	|
9+ 5	0.1423	0.26	QV	|	|	|	|
9+10	0.1441	0.26	QV	|	|	|	|
9+15	0.1459	0.26	QV	|	|	|	|
9+20	0.1477	0.26	QV	|	|	|	|
9+25	0.1495	0.26	QV	|	|	|	|
9+30	0.1513	0.27	QV	|	|	|	|
9+35	0.1532	0.27	QV	|	|	|	|
9+40	0.1551	0.27	QV	|	|	|	|
9+45	0.1569	0.27	QV	|	|	|	|
9+50	0.1588	0.27	QV	|	|	|	|
9+55	0.1607	0.28	QV	|	|	|	|
10+ 0	0.1626	0.28	QV	|	|	|	|
10+ 5	0.1646	0.28	QV	|	|	|	|
10+10	0.1665	0.28	QV	|	|	|	|
10+15	0.1685	0.29	QV	|	|	|	|
10+20	0.1705	0.29	QV	|	|	|	|
10+25	0.1725	0.29	QV	|	|	|	|
10+30	0.1745	0.29	Q V	|	|	|	|
10+35	0.1766	0.30	Q V	|	|	|	|
10+40	0.1786	0.30	Q V	|	|	|	|
10+45	0.1807	0.30	Q V	|	|	|	|
10+50	0.1828	0.30	Q V	|	|	|	|
10+55	0.1849	0.31	Q V	|	|	|	|
11+ 0	0.1870	0.31	Q V	|	|	|	|
11+ 5	0.1892	0.31	Q V	|	|	|	|
11+10	0.1914	0.32	Q V	|	|	|	|
11+15	0.1936	0.32	Q V	|	|	|	|
11+20	0.1958	0.32	Q V	|	|	|	|
11+25	0.1981	0.33	Q V	|	|	|	|
11+30	0.2003	0.33	Q V	|	|	|	|
11+35	0.2026	0.33	Q V	|	|	|	|
11+40	0.2050	0.34	Q V	|	|	|	|
11+45	0.2073	0.34	Q V	|	|	|	|
11+50	0.2097	0.34	Q V	|	|	|	|
11+55	0.2121	0.35	Q V	|	|	|	|
12+ 0	0.2145	0.35	Q V	|	|	|	|
12+ 5	0.2170	0.36	Q V	|	|	|	|

```
12+10       0.2195      0.37  Q V       |         |         |         |
12+15       0.2223      0.39  Q V       |         |         |         |
12+20       0.2252      0.42  Q V       |         |         |         |
12+25       0.2282      0.44  Q V       |         |         |         |
12+30       0.2312      0.45  Q V       |         |         |         |
12+35       0.2344      0.46  Q V       |         |         |         |
12+40       0.2376      0.47  Q V       |         |         |         |
12+45       0.2408      0.47  Q V       |         |         |         |
12+50       0.2442      0.48  Q V       |         |         |         |
12+55       0.2475      0.49  Q V       |         |         |         |
13+ 0       0.2509      0.50  Q V       |         |         |         |
13+ 5       0.2544      0.50  Q V       |         |         |         |
13+10       0.2579      0.51  Q V       |         |         |         |
13+15       0.2615      0.52  Q  V       |         |         |         |
13+20       0.2651      0.53  Q  V       |         |         |         |
13+25       0.2688      0.53  Q  V       |         |         |         |
13+30       0.2726      0.54  Q  V       |         |         |         |
13+35       0.2764      0.55  Q  V       |         |         |         |
13+40       0.2802      0.56  Q  V       |         |         |         |
13+45       0.2842      0.57  Q  V       |         |         |         |
13+50       0.2882      0.58  Q  V       |         |         |         |
13+55       0.2923      0.59  Q  V       |         |         |         |
14+ 0       0.2964      0.60  Q  V       |         |         |         |
14+ 5       0.3007      0.62  Q  V       |         |         |         |
14+10       0.3050      0.63  Q  V       |         |         |         |
14+15       0.3095      0.65  Q  V       |         |         |         |
14+20       0.3142      0.68  Q  V       |         |         |         |
14+25       0.3189      0.69  Q  V       |         |         |         |
14+30       0.3239      0.71  Q  V       |         |         |         |
14+35       0.3289      0.73  Q  V       |         |         |         |
14+40       0.3341      0.75  Q  V       |         |         |         |
14+45       0.3394      0.77  Q  V       |         |         |         |
14+50       0.3449      0.80  Q  V       |         |         |         |
14+55       0.3505      0.82  Q   V       |         |         |         |
15+ 0       0.3563      0.85  Q   V       |         |         |         |
15+ 5       0.3624      0.88  Q   V       |         |         |         |
15+10       0.3686      0.91  Q   V       |         |         |         |
15+15       0.3751      0.94  Q   V       |         |         |         |
15+20       0.3819      0.98  Q   V       |         |         |         |
15+25       0.3890      1.03  Q   V       |         |         |         |
15+30       0.3963      1.06  Q   V       |         |         |         |
15+35       0.4038      1.09  Q   V       |         |         |         |
15+40       0.4120      1.20  Q   V       |         |         |         |
15+45       0.4240      1.74  Q   V       |         |         |         |
15+50       0.4465      3.27  |Q   V       |         |         |         |
15+55       0.4934      6.80  |  Q V       |         |         |         |
16+ 0       0.5828     12.98  |    QV      |         |         |         |
16+ 5       0.7694     27.10  |       V  | Q         |         |         |
16+10       1.1167     50.43  |          | V       | Q       |         |
16+15       1.6775     81.43  |          |       V |         |     Q   |
16+20       2.2731     86.48  |          |         |    V    |       Q |
16+25       2.5793     44.46  |          |       Q |       V |         |
16+30       2.7789     28.98  |          | Q       |         |V        |
16+35       2.9202     20.51  |        Q |         |         |  V      |
16+40       3.0269     15.50  |     Q    |         |         |   V     |
16+45       3.1075     11.71  |    Q     |         |         |    V    |
16+50       3.1678      8.75  |  Q       |         |         |     V   |
16+55       3.2114      6.33  | Q        |         |         |     V   |
17+ 0       3.2414      4.36  |Q         |         |         |      V  |
17+ 5       3.2604      2.75  |Q         |         |         |      V  |
17+10       3.2758      2.24  Q          |         |         |      V  |
17+15       3.2890      1.93  Q          |         |         |      V  |
17+20       3.3002      1.62  Q          |         |         |      V  |
17+25       3.3111      1.59  Q          |         |         |       V |
17+30       3.3208      1.40  Q          |         |         |       V |
17+35       3.3283      1.08  Q          |         |         |       V |
17+40       3.3342      0.86  Q          |         |         |       V |
17+45       3.3390      0.69  Q          |         |         |       V |
17+50       3.3429      0.57  Q          |         |         |       V |
17+55       3.3466      0.54  Q          |         |         |       V |
18+ 0       3.3501      0.52  Q          |         |         |       V |
```

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18+ 5       3.3536      0.50  Q          |          |          |        V |
18+10       3.3569      0.48  Q          |          |          |        V |
18+15       3.3600      0.45  Q          |          |          |        V |
18+20       3.3628      0.42  Q          |          |          |        V |
18+25       3.3656      0.40  Q          |          |          |        V |
18+30       3.3682      0.38  Q          |          |          |        V |
18+35       3.3707      0.37  Q          |          |          |        V |
18+40       3.3731      0.35  Q          |          |          |        V |
18+45       3.3755      0.34  Q          |          |          |        V |
18+50       3.3778      0.34  Q          |          |          |        V |
18+55       3.3801      0.33  Q          |          |          |        V |
19+ 0       3.3823      0.32  Q          |          |          |        V |
19+ 5       3.3844      0.31  Q          |          |          |        V |
19+10       3.3865      0.31  Q          |          |          |        V |
19+15       3.3886      0.30  Q          |          |          |        V |
19+20       3.3906      0.29  Q          |          |          |         V|
19+25       3.3926      0.29  Q          |          |          |         V|
19+30       3.3946      0.28  Q          |          |          |         V|
19+35       3.3965      0.28  Q          |          |          |         V|
19+40       3.3984      0.27  Q          |          |          |         V|
19+45       3.4003      0.27  Q          |          |          |         V|
19+50       3.4021      0.27  Q          |          |          |         V|
19+55       3.4039      0.26  Q          |          |          |         V|
20+ 0       3.4057      0.26  Q          |          |          |         V|
20+ 5       3.4074      0.25  Q          |          |          |         V|
20+10       3.4092      0.25  Q          |          |          |         V|
20+15       3.4109      0.25  Q          |          |          |         V|
20+20       3.4126      0.24  Q          |          |          |         V|
20+25       3.4142      0.24  Q          |          |          |         V|
20+30       3.4159      0.24  Q          |          |          |         V|
20+35       3.4175      0.24  Q          |          |          |         V|
20+40       3.4191      0.23  Q          |          |          |         V|
20+45       3.4207      0.23  Q          |          |          |         V|
20+50       3.4222      0.23  Q          |          |          |         V|
20+55       3.4238      0.22  Q          |          |          |         V|
21+ 0       3.4253      0.22  Q          |          |          |         V|
21+ 5       3.4268      0.22  Q          |          |          |         V|
21+10       3.4283      0.22  Q          |          |          |         V|
21+15       3.4298      0.21  Q          |          |          |         V|
21+20       3.4312      0.21  Q          |          |          |         V|
21+25       3.4327      0.21  Q          |          |          |         V|
21+30       3.4341      0.21  Q          |          |          |         V|
21+35       3.4355      0.21  Q          |          |          |         V|
21+40       3.4369      0.20  Q          |          |          |         V|
21+45       3.4383      0.20  Q          |          |          |         V|
21+50       3.4397      0.20  Q          |          |          |         V|
21+55       3.4411      0.20  Q          |          |          |         V|
22+ 0       3.4424      0.20  Q          |          |          |         V|
22+ 5       3.4438      0.19  Q          |          |          |         V|
22+10       3.4451      0.19  Q          |          |          |         V|
22+15       3.4464      0.19  Q          |          |          |         V|
22+20       3.4477      0.19  Q          |          |          |         V|
22+25       3.4490      0.19  Q          |          |          |         V|
22+30       3.4503      0.19  Q          |          |          |         V|
22+35       3.4515      0.18  Q          |          |          |         V|
22+40       3.4528      0.18  Q          |          |          |         V|
22+45       3.4541      0.18  Q          |          |          |         V|
22+50       3.4553      0.18  Q          |          |          |         V|
22+55       3.4565      0.18  Q          |          |          |         V|
23+ 0       3.4577      0.18  Q          |          |          |         V|
23+ 5       3.4589      0.18  Q          |          |          |         V|
23+10       3.4601      0.17  Q          |          |          |         V|
23+15       3.4613      0.17  Q          |          |          |         V|
23+20       3.4625      0.17  Q          |          |          |         V|
23+25       3.4637      0.17  Q          |          |          |         V|
23+30       3.4649      0.17  Q          |          |          |         V|
23+35       3.4660      0.17  Q          |          |          |         V|
23+40       3.4672      0.17  Q          |          |          |         V|
23+45       3.4683      0.17  Q          |          |          |         V|
23+50       3.4694      0.16  Q          |          |          |         V|
23+55       3.4705      0.16  Q          |          |          |         V|
```

```
   24+ 0       3.4717      0.16  Q         |         |         |         V|
   24+ 5       3.4727      0.16  Q         |         |         |         V|
   24+10       3.4737      0.14  Q         |         |         |         V|
   24+15       3.4744      0.11  Q         |         |         |         V|
   24+20       3.4749      0.06  Q         |         |         |         V|
   24+25       3.4752      0.04  Q         |         |         |         V|
   24+30       3.4754      0.03  Q         |         |         |         V|
   24+35       3.4755      0.02  Q         |         |         |         V|
   24+40       3.4756      0.02  Q         |         |         |         V|
   24+45       3.4757      0.01  Q         |         |         |         V|
   24+50       3.4758      0.01  Q         |         |         |         V|
   24+55       3.4758      0.01  Q         |         |         |         V|
   25+ 0       3.4758      0.00  Q         |         |         |         V|
   25+ 5       3.4758      0.00  Q         |         |         |         V|
   25+10       3.4758      0.00  Q         |         |         |         V|
   25+15       3.4759      0.00  Q         |         |         |         V|
   25+20       3.4759      0.00  Q         |         |         |         V|
   25+25       3.4759      0.00  Q         |         |         |         V|
   25+30       3.4759      0.00  Q         |         |         |         V|
   25+35       3.4759      0.00  Q         |         |         |         V|
   25+40       3.4759      0.00  Q         |         |         |          V
-------------------------------------------------------------------------
```

- 5 Year 3 Hour Pre-Development Unit Hydrograph – Area 'C'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/10/16   File Name EXC00503.out


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------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'C' - 5 YEAR 3 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 5

       Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 78.3       0.5          0.00     B     0.300     1.000    0.300
 78.3     120.5          1.00     C     0.250     1.000    0.250

Area-averaged adjusted loss rate Fm (In/Hr) =  0.250

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
     0.52   0.004         78.3      61.0       6.40     0.124

   120.50   0.996         78.3      61.0       6.40     0.124

Area-averaged catchment yield fraction, Y =  0.124
Area-averaged low loss fraction, Yb =  0.876
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.283 (hours)
Watershed area =     121.02(Ac.)
Catchment Lag time =   0.227 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 36.7734
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.250(In/Hr)
Average low loss rate fraction (Yb) = 0.876 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.260(In)
Computed peak 30-minute rainfall =  0.590(In)
Specified peak 1-hour rainfall =  0.780(In)
Computed peak 3-hour rainfall =  1.310(In)
Specified peak 6-hour rainfall =  1.810(In)
Specified peak 24-hour rainfall =  3.030(In)


Rainfall depth area reduction factors:
Using a total area of     121.02(Ac.) (Ref: fig. E-4)
```

```
5-minute factor = 0.994     Adjusted rainfall =  0.259(In)
30-minute factor = 0.994    Adjusted rainfall =  0.587(In)
1-hour factor = 0.994       Adjusted rainfall =  0.776(In)
3-hour factor = 0.999       Adjusted rainfall =  1.309(In)
6-hour factor = 1.000       Adjusted rainfall =  1.809(In)
24-hour factor = 1.000 Adjusted rainfall =  3.030(In)
--------------------------------------------------------------------

                    U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------
               (K =      1463.59 (CFS))

  1                2.797                  40.931
  2               12.765                 145.897
  3               38.676                 379.222
  4               64.714                 381.097
  5               75.492                 157.736
  6               82.583                 103.789
  7               87.659                  74.294
  8               91.397                  54.704
  9               94.190                  40.876
 10               96.134                  28.464
 11               97.498                  19.962
 12               98.175                   9.900
 13               98.595                   6.145
 14               98.952                   5.237
 15               99.199                   3.614
 16               99.460                   3.813
 17               99.720                   3.802
 18               99.870                   2.204
 19               99.961                   1.322
 20              100.000                   0.576
--------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.2585               0.2585
  2              0.3550               0.0964
  3              0.4273               0.0723
  4              0.4874               0.0601
  5              0.5397               0.0524
  6              0.5867               0.0469
  7              0.6242               0.0376
  8              0.6587               0.0345
  9              0.6907               0.0320
 10              0.7207               0.0299
 11              0.7489               0.0282
 12              0.7756               0.0267
 13              0.8057               0.0302
 14              0.8347               0.0290
 15              0.8626               0.0279
 16              0.8895               0.0269
 17              0.9156               0.0261
 18              0.9409               0.0253
 19              0.9654               0.0246
 20              0.9893               0.0239
 21              1.0126               0.0233
 22              1.0353               0.0227
 23              1.0574               0.0222
 24              1.0791               0.0217
 25              1.1003               0.0212
 26              1.1210               0.0208
 27              1.1414               0.0203
 28              1.1613               0.0200
 29              1.1809               0.0196
 30              1.2001               0.0192
 31              1.2190               0.0189
 32              1.2376               0.0186
```

```
 33              1.2559              0.0183
 34              1.2739              0.0180
 35              1.2916              0.0177
 36              1.3091              0.0175
---------------------------------------------------------------------
Unit              Unit            Unit              Effective
Period            Rainfall        Soil-Loss         Rainfall
(number)            (In)          (In)                (In)
---------------------------------------------------------------------
  1              0.0175           0.0153              0.0022
  2              0.0177           0.0155              0.0022
  3              0.0183           0.0160              0.0023
  4              0.0186           0.0163              0.0023
  5              0.0192           0.0168              0.0024
  6              0.0196           0.0172              0.0024
  7              0.0203           0.0178              0.0025
  8              0.0208           0.0182              0.0026
  9              0.0217           0.0190              0.0027
 10              0.0222           0.0194              0.0027
 11              0.0233           0.0204              0.0029
 12              0.0239           0.0209              0.0030
 13              0.0253           0.0209              0.0044
 14              0.0261           0.0209              0.0052
 15              0.0279           0.0209              0.0070
 16              0.0290           0.0209              0.0081
 17              0.0267           0.0209              0.0059
 18              0.0282           0.0209              0.0074
 19              0.0320           0.0209              0.0112
 20              0.0345           0.0209              0.0136
 21              0.0469           0.0209              0.0261
 22              0.0524           0.0209              0.0315
 23              0.0723           0.0209              0.0515
 24              0.0964           0.0209              0.0756
 25              0.2585           0.0209              0.2377
 26              0.0601           0.0209              0.0392
 27              0.0376           0.0209              0.0167
 28              0.0299           0.0209              0.0091
 29              0.0302           0.0209              0.0093
 30              0.0269           0.0209              0.0061
 31              0.0246           0.0209              0.0037
 32              0.0227           0.0199              0.0028
 33              0.0212           0.0186              0.0026
 34              0.0200           0.0175              0.0025
 35              0.0189           0.0166              0.0023
 36              0.0180           0.0158              0.0022
---------------------------------------------------------------------
---------------------------------------------------------------------
Total soil rain loss =      0.70(In)
Total effective rainfall =      0.61(In)
Peak flow rate in flood hydrograph =    140.40(CFS)
---------------------------------------------------------------------
+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                  3 - H O U R    S T O R M
               R u n o f f      H y d r o g r a p h
---------------------------------------------------------------------
            Hydrograph in   5   Minute intervals ((CFS))

---------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0       50.0     100.0     150.0     200.0
---------------------------------------------------------------------
  0+ 5       0.0006      0.09  Q         |         |         |         |
  0+10       0.0034      0.41  Q         |         |         |         |
  0+15       0.0119      1.23  Q         |         |         |         |
  0+20       0.0262      2.08  Q         |         |         |         |
  0+25       0.0432      2.47  Q         |         |         |         |
  0+30       0.0622      2.75  Q         |         |         |         |
  0+35       0.0827      2.98  Q         |         |         |         |
  0+40       0.1046      3.18  Q         |         |         |         |
  0+45       0.1277      3.36  Q         |         |         |         |
  0+50       0.1519      3.51  Q         |         |         |         |
  0+55       0.1772      3.67  QV        |         |         |         |
```

```
   1+ 0       0.2034      3.81  QV        |         |         |         |
   1+ 5       0.2311      4.02  QV        |         |         |         |
   1+10       0.2614      4.41  QV        |         |         |         |
   1+15       0.2975      5.24  |Q        |         |         |         |
   1+20       0.3419      6.44  |QV       |         |         |         |
   1+25       0.3954      7.77  |QV       |         |         |         |
   1+30       0.4567      8.90  |QV       |         |         |         |
   1+35       0.5209      9.32  |Q V      |         |         |         |
   1+40       0.5911     10.20  | QV      |         |         |         |
   1+45       0.6812     13.08  | Q V     |         |         |         |
   1+50       0.8036     17.77  |  Q V    |         |         |         |
   1+55       0.9814     25.82  |    QV   |         |         |         |
   2+ 0       1.2391     37.42  |      QV |         |         |         |
   2+ 5       1.6509     59.79  |         VQ        |         |         |
   2+10       2.3028     94.66  |         |   V   Q |         |         |
   2+15       3.2697    140.40  |         |         |V      Q |         |
   2+20       4.1686    130.52  |         |         |     QV  |         |
   2+25       4.6906     75.78  |         |    Q    |         V         |
   2+30       5.0576     53.29  |         Q         |         | V       |
   2+35       5.3358     40.39  |       Q |         |         |   V     |
   2+40       5.5512     31.28  |     Q   |         |         |     V   |
   2+45       5.7138     23.60  |   Q     |         |         |      V  |
   2+50       5.8332     17.34  |  Q      |         |         |      V  |
   2+55       5.9222     12.92  | Q       |         |         |       V |
   3+ 0       5.9854      9.18  |Q        |         |         |       V |
   3+ 5       6.0345      7.14  |Q        |         |         |        V|
   3+10       6.0747      5.83  |Q        |         |         |        V|
   3+15       6.1035      4.19  Q         |         |         |        V|
   3+20       6.1242      3.00  Q         |         |         |        V|
   3+25       6.1403      2.33  Q         |         |         |        V|
   3+30       6.1509      1.55  Q         |         |         |        V|
   3+35       6.1578      1.00  Q         |         |         |        V|
   3+40       6.1619      0.59  Q         |         |         |        V|
   3+45       6.1639      0.30  Q         |         |         |        V|
   3+50       6.1652      0.19  Q         |         |         |        V|
   3+55       6.1660      0.11  Q         |         |         |        V|
   4+ 0       6.1665      0.08  Q         |         |         |        V|
   4+ 5       6.1669      0.05  Q         |         |         |        V|
   4+10       6.1672      0.04  Q         |         |         |        V|
   4+15       6.1674      0.03  Q         |         |         |        V|
   4+20       6.1675      0.02  Q         |         |         |        V|
   4+25       6.1676      0.01  Q         |         |         |        V|
   4+30       6.1676      0.00  Q         |         |         |        V|
   4+35       6.1676      0.00  Q         |         |         |        V|
-------------------------------------------------------------------------
```

- 5 Year 6 Hour Pre-Development Unit Hydrograph – Area 'C'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989-2012, Version 7.2

       Study date  10/10/16   File Name EXC00506.out


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'C' - 5 YEAR 6 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 5

       Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 78.3       0.5          0.00     B     0.300     1.000    0.300
 78.3     120.5          1.00     C     0.250     1.000    0.250

Area-averaged adjusted loss rate Fm (In/Hr) =  0.250

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
     0.52   0.004         78.3      61.0       6.40     0.124

   120.50   0.996         78.3      61.0       6.40     0.124

Area-averaged catchment yield fraction, Y =  0.124
Area-averaged low loss fraction, Yb =  0.876
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.283 (hours)
Watershed area =     121.02(Ac.)
Catchment Lag time =   0.227 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 36.7742
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.250(In/Hr)
Average low loss rate fraction (Yb) = 0.876 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.260(In)
Computed peak 30-minute rainfall =  0.590(In)
Specified peak 1-hour rainfall =  0.780(In)
Computed peak 3-hour rainfall =  1.310(In)
Specified peak 6-hour rainfall =  1.810(In)
Specified peak 24-hour rainfall =  3.030(In)


Rainfall depth area reduction factors:
Using a total area of     121.02(Ac.) (Ref: fig. E-4)
```

```
5-minute factor = 0.994     Adjusted rainfall =  0.259(In)
30-minute factor = 0.994    Adjusted rainfall =  0.587(In)
1-hour factor = 0.994       Adjusted rainfall =  0.776(In)
3-hour factor = 0.999       Adjusted rainfall =  1.309(In)
6-hour factor = 1.000       Adjusted rainfall =  1.809(In)
24-hour factor = 1.000 Adjusted rainfall =  3.030(In)
--------------------------------------------------------------------

                    U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------
               (K =      1463.59 (CFS))

  1                2.797                  40.932
  2               12.766                 145.904
  3               38.678                 379.245
  4               64.715                 381.083
  5               75.492                 157.732
  6               82.584                 103.787
  7               87.660                  74.292
  8               91.397                  54.702
  9               94.190                  40.875
 10               96.135                  28.463
 11               97.499                  19.960
 12               98.175                   9.898
 13               98.595                   6.145
 14               98.953                   5.237
 15               99.199                   3.613
 16               99.460                   3.814
 17               99.720                   3.802
 18               99.870                   2.204
 19               99.961                   1.322
 20              100.000                   0.576
--------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.2585               0.2585
  2              0.3550               0.0964
  3              0.4273               0.0723
  4              0.4874               0.0601
  5              0.5397               0.0524
  6              0.5867               0.0469
  7              0.6242               0.0376
  8              0.6587               0.0345
  9              0.6907               0.0320
 10              0.7207               0.0299
 11              0.7489               0.0282
 12              0.7756               0.0267
 13              0.8057               0.0302
 14              0.8347               0.0290
 15              0.8626               0.0279
 16              0.8895               0.0269
 17              0.9156               0.0261
 18              0.9409               0.0253
 19              0.9654               0.0246
 20              0.9893               0.0239
 21              1.0126               0.0233
 22              1.0353               0.0227
 23              1.0574               0.0222
 24              1.0791               0.0217
 25              1.1003               0.0212
 26              1.1210               0.0208
 27              1.1414               0.0203
 28              1.1613               0.0200
 29              1.1809               0.0196
 30              1.2001               0.0192
 31              1.2190               0.0189
 32              1.2376               0.0186
```

33	1.2559	0.0183
34	1.2739	0.0180
35	1.2916	0.0177
36	1.3091	0.0175
37	1.3259	0.0169
38	1.3425	0.0166
39	1.3589	0.0164
40	1.3751	0.0162
41	1.3910	0.0159
42	1.4068	0.0157
43	1.4223	0.0155
44	1.4376	0.0153
45	1.4528	0.0152
46	1.4678	0.0150
47	1.4826	0.0148
48	1.4973	0.0146
49	1.5117	0.0145
50	1.5261	0.0143
51	1.5402	0.0142
52	1.5543	0.0140
53	1.5682	0.0139
54	1.5819	0.0137
55	1.5955	0.0136
56	1.6090	0.0135
57	1.6223	0.0134
58	1.6356	0.0132
59	1.6487	0.0131
60	1.6617	0.0130
61	1.6745	0.0129
62	1.6873	0.0128
63	1.7000	0.0127
64	1.7125	0.0125
65	1.7249	0.0124
66	1.7373	0.0123
67	1.7495	0.0122
68	1.7617	0.0121
69	1.7737	0.0120
70	1.7857	0.0120
71	1.7975	0.0119
72	1.8093	0.0118

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0118	0.0103	0.0015
2	0.0119	0.0104	0.0015
3	0.0120	0.0106	0.0015
4	0.0121	0.0106	0.0015
5	0.0123	0.0108	0.0015
6	0.0124	0.0109	0.0015
7	0.0127	0.0111	0.0016
8	0.0128	0.0112	0.0016
9	0.0130	0.0114	0.0016
10	0.0131	0.0115	0.0016
11	0.0134	0.0117	0.0017
12	0.0135	0.0118	0.0017
13	0.0137	0.0120	0.0017
14	0.0139	0.0122	0.0017
15	0.0142	0.0124	0.0018
16	0.0143	0.0126	0.0018
17	0.0146	0.0128	0.0018
18	0.0148	0.0130	0.0018
19	0.0152	0.0133	0.0019
20	0.0153	0.0134	0.0019
21	0.0157	0.0138	0.0019
22	0.0159	0.0140	0.0020
23	0.0164	0.0144	0.0020
24	0.0166	0.0146	0.0021
25	0.0175	0.0153	0.0022
26	0.0177	0.0155	0.0022

```
 27              0.0183          0.0160              0.0023
 28              0.0186          0.0163              0.0023
 29              0.0192          0.0168              0.0024
 30              0.0196          0.0172              0.0024
 31              0.0203          0.0178              0.0025
 32              0.0208          0.0182              0.0026
 33              0.0217          0.0190              0.0027
 34              0.0222          0.0194              0.0027
 35              0.0233          0.0204              0.0029
 36              0.0239          0.0209              0.0030
 37              0.0253          0.0209              0.0044
 38              0.0261          0.0209              0.0052
 39              0.0279          0.0209              0.0070
 40              0.0290          0.0209              0.0081
 41              0.0267          0.0209              0.0059
 42              0.0282          0.0209              0.0074
 43              0.0320          0.0209              0.0112
 44              0.0345          0.0209              0.0136
 45              0.0469          0.0209              0.0261
 46              0.0524          0.0209              0.0315
 47              0.0723          0.0209              0.0515
 48              0.0964          0.0209              0.0756
 49              0.2585          0.0209              0.2377
 50              0.0601          0.0209              0.0392
 51              0.0376          0.0209              0.0167
 52              0.0299          0.0209              0.0091
 53              0.0302          0.0209              0.0093
 54              0.0269          0.0209              0.0061
 55              0.0246          0.0209              0.0037
 56              0.0227          0.0199              0.0028
 57              0.0212          0.0186              0.0026
 58              0.0200          0.0175              0.0025
 59              0.0189          0.0166              0.0023
 60              0.0180          0.0158              0.0022
 61              0.0169          0.0148              0.0021
 62              0.0162          0.0142              0.0020
 63              0.0155          0.0136              0.0019
 64              0.0150          0.0131              0.0019
 65              0.0145          0.0127              0.0018
 66              0.0140          0.0123              0.0017
 67              0.0136          0.0119              0.0017
 68              0.0132          0.0116              0.0016
 69              0.0129          0.0113              0.0016
 70              0.0125          0.0110              0.0016
 71              0.0122          0.0107              0.0015
 72              0.0120          0.0105              0.0015
-------------------------------------------------------------------
-------------------------------------------------------------------
Total soil rain loss =      1.14(In)
Total effective rainfall =      0.67(In)
Peak flow rate in flood hydrograph =    140.40(CFS)
-------------------------------------------------------------------
+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                  6 - H O U R    S T O R M
               R u n o f f      H y d r o g r a p h
-------------------------------------------------------------------
            Hydrograph in   5   Minute intervals ((CFS))

-------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0       50.0     100.0     150.0     200.0
-------------------------------------------------------------------
  0+ 5       0.0004      0.06  Q         |         |         |         |
  0+10       0.0023      0.27  Q         |         |         |         |
  0+15       0.0080      0.83  Q         |         |         |         |
  0+20       0.0176      1.39  Q         |         |         |         |
  0+25       0.0289      1.64  Q         |         |         |         |
  0+30       0.0413      1.81  Q         |         |         |         |
  0+35       0.0547      1.94  Q         |         |         |         |
  0+40       0.0687      2.04  Q         |         |         |         |
  0+45       0.0834      2.13  Q         |         |         |         |
  0+50       0.0985      2.19  Q         |         |         |         |
```

```
0+55      0.1140     2.25  Q         |         |         |         |
1+ 0      0.1298     2.30  Q         |         |         |         |
1+ 5      0.1459     2.34  Q         |         |         |         |
1+10      0.1623     2.38  Q         |         |         |         |
1+15      0.1789     2.42  QV        |         |         |         |
1+20      0.1958     2.46  QV        |         |         |         |
1+25      0.2130     2.50  QV        |         |         |         |
1+30      0.2305     2.54  QV        |         |         |         |
1+35      0.2483     2.58  QV        |         |         |         |
1+40      0.2664     2.63  QV        |         |         |         |
1+45      0.2848     2.67  QV        |         |         |         |
1+50      0.3035     2.72  QV        |         |         |         |
1+55      0.3226     2.77  QV        |         |         |         |
2+ 0      0.3420     2.82  Q V       |         |         |         |
2+ 5      0.3618     2.88  Q V       |         |         |         |
2+10      0.3820     2.94  Q V       |         |         |         |
2+15      0.4028     3.02  Q V       |         |         |         |
2+20      0.4242     3.10  Q V       |         |         |         |
2+25      0.4461     3.18  Q V       |         |         |         |
2+30      0.4685     3.26  Q V       |         |         |         |
2+35      0.4915     3.34  Q V       |         |         |         |
2+40      0.5151     3.43  Q  V      |         |         |         |
2+45      0.5394     3.52  Q  V      |         |         |         |
2+50      0.5643     3.63  Q  V      |         |         |         |
2+55      0.5901     3.74  Q  V      |         |         |         |
3+ 0      0.6167     3.86  Q  V      |         |         |         |
3+ 5      0.6446     4.06  Q  V      |         |         |         |
3+10      0.6752     4.44  Q  V      |         |         |         |
3+15      0.7114     5.26  |Q  V      |         |         |         |
3+20      0.7559     6.46  |Q  V      |         |         |         |
3+25      0.8095     7.78  |Q  V      |         |         |         |
3+30      0.8708     8.91  |Q   V     |         |         |         |
3+35      0.9350     9.33  |Q   V     |         |         |         |
3+40      1.0053    10.20  | Q  V     |         |         |         |
3+45      1.0954    13.08  | Q   V    |         |         |         |
3+50      1.2177    17.77  |  Q   V   |         |         |         |
3+55      1.3956    25.82  |    Q  V  |         |         |         |
4+ 0      1.6533    37.42  |      Q V |         |         |         |
4+ 5      2.0651    59.79  |          |QV       |         |         |
4+10      2.7170    94.66  |          |     V Q |         |         |
4+15      3.6839   140.40  |          |         |V      Q |         |
4+20      4.5828   130.52  |          |         |     Q   |         |
4+25      5.1047    75.78  |          |    Q    |         V         |
4+30      5.4718    53.29  |         Q|         |         | V       |
4+35      5.7500    40.39  |        Q |         |         |  V      |
4+40      5.9654    31.28  |     Q    |         |         |    V    |
4+45      6.1279    23.60  |   Q      |         |         |     V   |
4+50      6.2473    17.34  |  Q       |         |         |     V   |
4+55      6.3363    12.92  | Q        |         |         |      V  |
5+ 0      6.3995     9.18  |Q         |         |         |      V  |
5+ 5      6.4493     7.23  |Q         |         |         |      V  |
5+10      6.4921     6.21  |Q         |         |         |       V |
5+15      6.5289     5.35  |Q         |         |         |       V |
5+20      6.5628     4.92  Q          |         |         |       V |
5+25      6.5937     4.50  Q          |         |         |       V |
5+30      6.6203     3.85  Q          |         |         |       V |
5+35      6.6435     3.38  Q          |         |         |        V|
5+40      6.6642     3.00  Q          |         |         |        V|
5+45      6.6829     2.72  Q          |         |         |        V|
5+50      6.7007     2.59  Q          |         |         |        V|
5+55      6.7179     2.49  Q          |         |         |        V|
6+ 0      6.7345     2.41  Q          |         |         |        V|
6+ 5      6.7501     2.28  Q          |         |         |        V|
6+10      6.7639     2.00  Q          |         |         |        V|
6+15      6.7736     1.40  Q          |         |         |        V|
6+20      6.7792     0.82  Q          |         |         |        V|
6+25      6.7831     0.57  Q          |         |         |        V|
6+30      6.7859     0.40  Q          |         |         |        V|
6+35      6.7878     0.28  Q          |         |         |        V|
6+40      6.7892     0.20  Q          |         |         |        V|
6+45      6.7901     0.13  Q          |         |         |        V|
```

```
    6+50       6.7907      0.09  Q         |         |         |        V|
    6+55       6.7911      0.06  Q         |         |         |        V|
    7+ 0       6.7914      0.04  Q         |         |         |        V|
    7+ 5       6.7916      0.03  Q         |         |         |        V|
    7+10       6.7918      0.02  Q         |         |         |        V|
    7+15       6.7919      0.02  Q         |         |         |        V|
    7+20       6.7920      0.01  Q         |         |         |        V|
    7+25       6.7921      0.01  Q         |         |         |        V|
    7+30       6.7921      0.00  Q         |         |         |        V|
    7+35       6.7921      0.00  Q         |         |         |         V
--------------------------------------------------------------------------
```

- 5 Year 12 Hour Pre-Development Unit Hydrograph – Area 'C'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/10/16   File Name EXC00512.out


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'C' - 5 YEAR 12 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 5

       Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 78.3       0.5          0.00     B     0.300     1.000    0.300
 78.3     120.5          1.00     C     0.250     1.000    0.250

Area-averaged adjusted loss rate Fm (In/Hr) =  0.250

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
     0.52   0.004         78.3      61.0       6.40     0.124

   120.50   0.996         78.3      61.0       6.40     0.124

Area-averaged catchment yield fraction, Y =  0.124
Area-averaged low loss fraction, Yb =  0.876
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.283 (hours)
Watershed area =     121.02(Ac.)
Catchment Lag time =   0.227 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 36.7734
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.250(In/Hr)
Average low loss rate fraction (Yb) = 0.876 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.260(In)
Computed peak 30-minute rainfall =  0.590(In)
Specified peak 1-hour rainfall =  0.780(In)
Computed peak 3-hour rainfall =  1.310(In)
Specified peak 6-hour rainfall =  1.810(In)
Specified peak 24-hour rainfall =  3.030(In)


Rainfall depth area reduction factors:
Using a total area of     121.02(Ac.) (Ref: fig. E-4)
```

```
5-minute factor = 0.994     Adjusted rainfall =  0.259(In)
30-minute factor = 0.994    Adjusted rainfall =  0.587(In)
1-hour factor = 0.994       Adjusted rainfall =  0.776(In)
3-hour factor = 0.999       Adjusted rainfall =  1.309(In)
6-hour factor = 1.000       Adjusted rainfall =  1.809(In)
24-hour factor = 1.000 Adjusted rainfall =  3.030(In)
--------------------------------------------------------------------

                    U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------
               (K =      1463.59 (CFS))

  1                2.797                  40.931
  2               12.765                 145.897
  3               38.676                 379.222
  4               64.714                 381.097
  5               75.492                 157.736
  6               82.583                 103.789
  7               87.659                  74.294
  8               91.397                  54.704
  9               94.190                  40.876
 10               96.134                  28.464
 11               97.498                  19.962
 12               98.175                   9.900
 13               98.595                   6.145
 14               98.952                   5.237
 15               99.199                   3.614
 16               99.460                   3.813
 17               99.720                   3.802
 18               99.870                   2.204
 19               99.961                   1.322
 20              100.000                   0.576
--------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.2585               0.2585
  2              0.3550               0.0964
  3              0.4273               0.0723
  4              0.4874               0.0601
  5              0.5397               0.0524
  6              0.5867               0.0469
  7              0.6242               0.0376
  8              0.6587               0.0345
  9              0.6907               0.0320
 10              0.7207               0.0299
 11              0.7489               0.0282
 12              0.7756               0.0267
 13              0.8057               0.0302
 14              0.8347               0.0290
 15              0.8626               0.0279
 16              0.8895               0.0269
 17              0.9156               0.0261
 18              0.9409               0.0253
 19              0.9654               0.0246
 20              0.9893               0.0239
 21              1.0126               0.0233
 22              1.0353               0.0227
 23              1.0574               0.0222
 24              1.0791               0.0217
 25              1.1003               0.0212
 26              1.1210               0.0208
 27              1.1414               0.0203
 28              1.1613               0.0200
 29              1.1809               0.0196
 30              1.2001               0.0192
 31              1.2190               0.0189
 32              1.2376               0.0186
```

33	1.2559	0.0183
34	1.2739	0.0180
35	1.2916	0.0177
36	1.3091	0.0175
37	1.3259	0.0169
38	1.3425	0.0166
39	1.3589	0.0164
40	1.3751	0.0162
41	1.3910	0.0159
42	1.4068	0.0157
43	1.4223	0.0155
44	1.4376	0.0153
45	1.4528	0.0152
46	1.4678	0.0150
47	1.4826	0.0148
48	1.4973	0.0146
49	1.5117	0.0145
50	1.5261	0.0143
51	1.5402	0.0142
52	1.5543	0.0140
53	1.5682	0.0139
54	1.5819	0.0137
55	1.5955	0.0136
56	1.6090	0.0135
57	1.6223	0.0134
58	1.6356	0.0132
59	1.6487	0.0131
60	1.6617	0.0130
61	1.6745	0.0129
62	1.6873	0.0128
63	1.7000	0.0127
64	1.7125	0.0125
65	1.7249	0.0124
66	1.7373	0.0123
67	1.7495	0.0122
68	1.7617	0.0121
69	1.7737	0.0120
70	1.7857	0.0120
71	1.7975	0.0119
72	1.8093	0.0118
73	1.8186	0.0093
74	1.8278	0.0092
75	1.8370	0.0091
76	1.8461	0.0091
77	1.8551	0.0090
78	1.8640	0.0089
79	1.8728	0.0089
80	1.8816	0.0088
81	1.8903	0.0087
82	1.8990	0.0086
83	1.9075	0.0086
84	1.9161	0.0085
85	1.9245	0.0084
86	1.9329	0.0084
87	1.9412	0.0083
88	1.9495	0.0083
89	1.9577	0.0082
90	1.9658	0.0082
91	1.9739	0.0081
92	1.9820	0.0080
93	1.9900	0.0080
94	1.9979	0.0079
95	2.0058	0.0079
96	2.0136	0.0078
97	2.0214	0.0078
98	2.0291	0.0077
99	2.0368	0.0077
100	2.0444	0.0076
101	2.0520	0.0076
102	2.0595	0.0075
103	2.0670	0.0075

104	2.0744	0.0074
105	2.0818	0.0074
106	2.0892	0.0074
107	2.0965	0.0073
108	2.1037	0.0073
109	2.1110	0.0072
110	2.1181	0.0072
111	2.1253	0.0071
112	2.1324	0.0071
113	2.1394	0.0071
114	2.1465	0.0070
115	2.1534	0.0070
116	2.1604	0.0069
117	2.1673	0.0069
118	2.1742	0.0069
119	2.1810	0.0068
120	2.1878	0.0068
121	2.1945	0.0068
122	2.2013	0.0067
123	2.2080	0.0067
124	2.2146	0.0067
125	2.2212	0.0066
126	2.2278	0.0066
127	2.2344	0.0066
128	2.2409	0.0065
129	2.2474	0.0065
130	2.2539	0.0065
131	2.2603	0.0064
132	2.2667	0.0064
133	2.2731	0.0064
134	2.2794	0.0063
135	2.2857	0.0063
136	2.2920	0.0063
137	2.2983	0.0063
138	2.3045	0.0062
139	2.3107	0.0062
140	2.3168	0.0062
141	2.3230	0.0061
142	2.3291	0.0061
143	2.3352	0.0061
144	2.3412	0.0061

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0061	0.0053	0.0008
2	0.0061	0.0053	0.0008
3	0.0061	0.0054	0.0008
4	0.0062	0.0054	0.0008
5	0.0062	0.0055	0.0008
6	0.0063	0.0055	0.0008
7	0.0063	0.0055	0.0008
8	0.0063	0.0056	0.0008
9	0.0064	0.0056	0.0008
10	0.0064	0.0056	0.0008
11	0.0065	0.0057	0.0008
12	0.0065	0.0057	0.0008
13	0.0066	0.0058	0.0008
14	0.0066	0.0058	0.0008
15	0.0067	0.0059	0.0008
16	0.0067	0.0059	0.0008
17	0.0068	0.0060	0.0008
18	0.0068	0.0060	0.0008
19	0.0069	0.0061	0.0009
20	0.0069	0.0061	0.0009
21	0.0070	0.0062	0.0009
22	0.0071	0.0062	0.0009
23	0.0071	0.0063	0.0009
24	0.0072	0.0063	0.0009
25	0.0073	0.0064	0.0009

26	0.0073	0.0064	0.0009
27	0.0074	0.0065	0.0009
28	0.0074	0.0065	0.0009
29	0.0075	0.0066	0.0009
30	0.0076	0.0066	0.0009
31	0.0077	0.0067	0.0010
32	0.0077	0.0068	0.0010
33	0.0078	0.0069	0.0010
34	0.0079	0.0069	0.0010
35	0.0080	0.0070	0.0010
36	0.0080	0.0070	0.0010
37	0.0082	0.0071	0.0010
38	0.0082	0.0072	0.0010
39	0.0083	0.0073	0.0010
40	0.0084	0.0073	0.0010
41	0.0085	0.0075	0.0011
42	0.0086	0.0075	0.0011
43	0.0087	0.0076	0.0011
44	0.0088	0.0077	0.0011
45	0.0089	0.0078	0.0011
46	0.0090	0.0079	0.0011
47	0.0091	0.0080	0.0011
48	0.0092	0.0081	0.0011
49	0.0118	0.0103	0.0015
50	0.0119	0.0104	0.0015
51	0.0120	0.0106	0.0015
52	0.0121	0.0106	0.0015
53	0.0123	0.0108	0.0015
54	0.0124	0.0109	0.0015
55	0.0127	0.0111	0.0016
56	0.0128	0.0112	0.0016
57	0.0130	0.0114	0.0016
58	0.0131	0.0115	0.0016
59	0.0134	0.0117	0.0017
60	0.0135	0.0118	0.0017
61	0.0137	0.0120	0.0017
62	0.0139	0.0122	0.0017
63	0.0142	0.0124	0.0018
64	0.0143	0.0126	0.0018
65	0.0146	0.0128	0.0018
66	0.0148	0.0130	0.0018
67	0.0152	0.0133	0.0019
68	0.0153	0.0134	0.0019
69	0.0157	0.0138	0.0019
70	0.0159	0.0140	0.0020
71	0.0164	0.0144	0.0020
72	0.0166	0.0146	0.0021
73	0.0175	0.0153	0.0022
74	0.0177	0.0155	0.0022
75	0.0183	0.0160	0.0023
76	0.0186	0.0163	0.0023
77	0.0192	0.0168	0.0024
78	0.0196	0.0172	0.0024
79	0.0203	0.0178	0.0025
80	0.0208	0.0182	0.0026
81	0.0217	0.0190	0.0027
82	0.0222	0.0194	0.0027
83	0.0233	0.0204	0.0029
84	0.0239	0.0209	0.0030
85	0.0253	0.0209	0.0044
86	0.0261	0.0209	0.0052
87	0.0279	0.0209	0.0070
88	0.0290	0.0209	0.0081
89	0.0267	0.0209	0.0059
90	0.0282	0.0209	0.0074
91	0.0320	0.0209	0.0112
92	0.0345	0.0209	0.0136
93	0.0469	0.0209	0.0261
94	0.0524	0.0209	0.0315
95	0.0723	0.0209	0.0515
96	0.0964	0.0209	0.0756

```
 97              0.2585          0.0209              0.2377
 98              0.0601          0.0209              0.0392
 99              0.0376          0.0209              0.0167
100              0.0299          0.0209              0.0091
101              0.0302          0.0209              0.0093
102              0.0269          0.0209              0.0061
103              0.0246          0.0209              0.0037
104              0.0227          0.0199              0.0028
105              0.0212          0.0186              0.0026
106              0.0200          0.0175              0.0025
107              0.0189          0.0166              0.0023
108              0.0180          0.0158              0.0022
109              0.0169          0.0148              0.0021
110              0.0162          0.0142              0.0020
111              0.0155          0.0136              0.0019
112              0.0150          0.0131              0.0019
113              0.0145          0.0127              0.0018
114              0.0140          0.0123              0.0017
115              0.0136          0.0119              0.0017
116              0.0132          0.0116              0.0016
117              0.0129          0.0113              0.0016
118              0.0125          0.0110              0.0016
119              0.0122          0.0107              0.0015
120              0.0120          0.0105              0.0015
121              0.0093          0.0082              0.0012
122              0.0091          0.0079              0.0011
123              0.0089          0.0078              0.0011
124              0.0086          0.0076              0.0011
125              0.0084          0.0074              0.0010
126              0.0083          0.0072              0.0010
127              0.0081          0.0071              0.0010
128              0.0079          0.0069              0.0010
129              0.0078          0.0068              0.0010
130              0.0076          0.0067              0.0009
131              0.0075          0.0066              0.0009
132              0.0074          0.0064              0.0009
133              0.0072          0.0063              0.0009
134              0.0071          0.0062              0.0009
135              0.0070          0.0061              0.0009
136              0.0069          0.0060              0.0009
137              0.0068          0.0059              0.0008
138              0.0067          0.0058              0.0008
139              0.0066          0.0057              0.0008
140              0.0065          0.0057              0.0008
141              0.0064          0.0056              0.0008
142              0.0063          0.0055              0.0008
143              0.0062          0.0054              0.0008
144              0.0061          0.0054              0.0008
-------------------------------------------------------------------
-------------------------------------------------------------------
Total soil rain loss =      1.60(In)
Total effective rainfall =      0.74(In)
Peak flow rate in flood hydrograph =    140.40(CFS)
-------------------------------------------------------------------
+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                    12 - H O U R    S T O R M
                R u n o f f      H y d r o g r a p h
-------------------------------------------------------------------
            Hydrograph in   5   Minute intervals ((CFS))

-------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0       50.0     100.0     150.0     200.0
-------------------------------------------------------------------
  0+ 5       0.0002      0.03  Q         |         |         |         |
  0+10       0.0012      0.14  Q         |         |         |         |
  0+15       0.0041      0.43  Q         |         |         |         |
  0+20       0.0090      0.71  Q         |         |         |         |
  0+25       0.0148      0.84  Q         |         |         |         |
  0+30       0.0211      0.92  Q         |         |         |         |
  0+35       0.0279      0.98  Q         |         |         |         |
  0+40       0.0350      1.03  Q         |         |         |         |
```

```
0+45      0.0423      1.07  Q          |          |          |          |
0+50      0.0499      1.10  Q          |          |          |          |
0+55      0.0576      1.12  Q          |          |          |          |
1+ 0      0.0654      1.13  Q          |          |          |          |
1+ 5      0.0733      1.15  Q          |          |          |          |
1+10      0.0813      1.16  Q          |          |          |          |
1+15      0.0894      1.17  Q          |          |          |          |
1+20      0.0975      1.18  Q          |          |          |          |
1+25      0.1057      1.19  Q          |          |          |          |
1+30      0.1140      1.20  Q          |          |          |          |
1+35      0.1224      1.22  Q          |          |          |          |
1+40      0.1308      1.23  Q          |          |          |          |
1+45      0.1393      1.23  Q          |          |          |          |
1+50      0.1479      1.24  Q          |          |          |          |
1+55      0.1565      1.25  Q          |          |          |          |
2+ 0      0.1653      1.26  Q          |          |          |          |
2+ 5      0.1740      1.28  Q          |          |          |          |
2+10      0.1829      1.29  Q          |          |          |          |
2+15      0.1918      1.30  QV         |          |          |          |
2+20      0.2008      1.31  QV         |          |          |          |
2+25      0.2099      1.32  QV         |          |          |          |
2+30      0.2191      1.33  QV         |          |          |          |
2+35      0.2284      1.34  QV         |          |          |          |
2+40      0.2377      1.36  QV         |          |          |          |
2+45      0.2471      1.37  QV         |          |          |          |
2+50      0.2566      1.38  QV         |          |          |          |
2+55      0.2663      1.39  QV         |          |          |          |
3+ 0      0.2760      1.41  QV         |          |          |          |
3+ 5      0.2857      1.42  QV         |          |          |          |
3+10      0.2956      1.44  QV         |          |          |          |
3+15      0.3056      1.45  QV         |          |          |          |
3+20      0.3157      1.47  QV         |          |          |          |
3+25      0.3259      1.48  QV         |          |          |          |
3+30      0.3363      1.50  QV         |          |          |          |
3+35      0.3467      1.51  QV         |          |          |          |
3+40      0.3572      1.53  QV         |          |          |          |
3+45      0.3679      1.55  QV         |          |          |          |
3+50      0.3787      1.57  Q V        |          |          |          |
3+55      0.3896      1.58  Q V        |          |          |          |
4+ 0      0.4006      1.60  Q V        |          |          |          |
4+ 5      0.4119      1.64  Q V        |          |          |          |
4+10      0.4236      1.70  Q V        |          |          |          |
4+15      0.4362      1.83  Q V        |          |          |          |
4+20      0.4498      1.97  Q V        |          |          |          |
4+25      0.4638      2.04  Q V        |          |          |          |
4+30      0.4782      2.09  Q V        |          |          |          |
4+35      0.4930      2.14  Q V        |          |          |          |
4+40      0.5080      2.18  Q V        |          |          |          |
4+45      0.5233      2.22  Q V        |          |          |          |
4+50      0.5388      2.26  Q V        |          |          |          |
4+55      0.5546      2.29  Q V        |          |          |          |
5+ 0      0.5706      2.33  Q  V       |          |          |          |
5+ 5      0.5869      2.36  Q  V       |          |          |          |
5+10      0.6033      2.39  Q  V       |          |          |          |
5+15      0.6201      2.43  Q  V       |          |          |          |
5+20      0.6371      2.47  Q  V       |          |          |          |
5+25      0.6543      2.50  Q  V       |          |          |          |
5+30      0.6718      2.54  Q  V       |          |          |          |
5+35      0.6896      2.58  Q  V       |          |          |          |
5+40      0.7077      2.63  Q  V       |          |          |          |
5+45      0.7261      2.67  Q  V       |          |          |          |
5+50      0.7448      2.72  Q  V       |          |          |          |
5+55      0.7639      2.77  Q   V      |          |          |          |
6+ 0      0.7833      2.82  Q   V      |          |          |          |
6+ 5      0.8031      2.88  Q   V      |          |          |          |
6+10      0.8233      2.94  Q   V      |          |          |          |
6+15      0.8441      3.02  Q   V      |          |          |          |
6+20      0.8655      3.10  Q   V      |          |          |          |
6+25      0.8874      3.18  Q   V      |          |          |          |
6+30      0.9098      3.26  Q   V      |          |          |          |
6+35      0.9328      3.34  Q    V     |          |          |          |
```

```
 6+40      0.9564     3.43  Q    V    |         |         |         |
 6+45      0.9807     3.52  Q    V    |         |         |         |
 6+50      1.0056     3.63  Q    V    |         |         |         |
 6+55      1.0314     3.74  Q    V    |         |         |         |
 7+ 0      1.0580     3.86  Q    V    |         |         |         |
 7+ 5      1.0859     4.06  Q    V    |         |         |         |
 7+10      1.1165     4.44  Q    V    |         |         |         |
 7+15      1.1527     5.26  |Q    V   |         |         |         |
 7+20      1.1972     6.46  |Q    V   |         |         |         |
 7+25      1.2508     7.78  |Q    V   |         |         |         |
 7+30      1.3121     8.91  |Q     V  |         |         |         |
 7+35      1.3763     9.33  |Q     V  |         |         |         |
 7+40      1.4466    10.20  | Q    V  |         |         |         |
 7+45      1.5367    13.08  | Q     V |         |         |         |
 7+50      1.6590    17.77  |  Q    V |         |         |         |
 7+55      1.8368    25.82  |    Q   V|         |         |         |
 8+ 0      2.0946    37.42  |       Q  |V        |         |         |
 8+ 5      2.5063    59.79  |          |Q V      |         |         |
 8+10      3.1582    94.66  |          |     V Q |         |         |
 8+15      4.1252   140.40  |          |         | V     Q |         |
 8+20      5.0241   130.52  |          |         |     Q   |         |
 8+25      5.5460    75.78  |          |    Q    |       V |         |
 8+30      5.9130    53.29  |          |  Q      |         |V        |
 8+35      6.1912    40.39  |        Q |         |         |  V      |
 8+40      6.4067    31.28  |      Q   |         |         |   V     |
 8+45      6.5692    23.60  |   Q      |         |         |    V    |
 8+50      6.6886    17.34  |  Q       |         |         |    V    |
 8+55      6.7776    12.92  | Q        |         |         |     V   |
 9+ 0      6.8408     9.18  |Q         |         |         |     V   |
 9+ 5      6.8906     7.23  |Q         |         |         |     V   |
 9+10      6.9334     6.21  |Q         |         |         |      V  |
 9+15      6.9702     5.35  |Q         |         |         |      V  |
 9+20      7.0041     4.92  Q          |         |         |      V  |
 9+25      7.0350     4.50  Q          |         |         |      V  |
 9+30      7.0616     3.85  Q          |         |         |      V  |
 9+35      7.0848     3.38  Q          |         |         |       V |
 9+40      7.1055     3.00  Q          |         |         |       V |
 9+45      7.1242     2.72  Q          |         |         |       V |
 9+50      7.1420     2.59  Q          |         |         |       V |
 9+55      7.1592     2.49  Q          |         |         |       V |
10+ 0      7.1758     2.41  Q          |         |         |       V |
10+ 5      7.1918     2.32  Q          |         |         |       V |
10+10      7.2070     2.22  Q          |         |         |       V |
10+15      7.2211     2.05  Q          |         |         |       V |
10+20      7.2341     1.88  Q          |         |         |       V |
10+25      7.2465     1.79  Q          |         |         |       V |
10+30      7.2583     1.72  Q          |         |         |       V |
10+35      7.2697     1.65  Q          |         |         |       V |
10+40      7.2807     1.60  Q          |         |         |        V|
10+45      7.2914     1.55  Q          |         |         |        V|
10+50      7.3018     1.51  Q          |         |         |        V|
10+55      7.3119     1.47  Q          |         |         |        V|
11+ 0      7.3219     1.44  Q          |         |         |        V|
11+ 5      7.3316     1.41  Q          |         |         |        V|
11+10      7.3411     1.38  Q          |         |         |        V|
11+15      7.3504     1.36  Q          |         |         |        V|
11+20      7.3596     1.33  Q          |         |         |        V|
11+25      7.3686     1.31  Q          |         |         |        V|
11+30      7.3774     1.28  Q          |         |         |        V|
11+35      7.3861     1.26  Q          |         |         |        V|
11+40      7.3947     1.24  Q          |         |         |        V|
11+45      7.4031     1.22  Q          |         |         |        V|
11+50      7.4114     1.20  Q          |         |         |        V|
11+55      7.4195     1.18  Q          |         |         |        V|
12+ 0      7.4275     1.17  Q          |         |         |        V|
12+ 5      7.4353     1.12  Q          |         |         |        V|
12+10      7.4421     1.00  Q          |         |         |        V|
12+15      7.4469     0.70  Q          |         |         |        V|
12+20      7.4497     0.40  Q          |         |         |        V|
12+25      7.4516     0.28  Q          |         |         |        V|
12+30      7.4530     0.20  Q          |         |         |        V|
```

```
   12+35       7.4540      0.14  Q         |         |         |         V|
   12+40       7.4547      0.10  Q         |         |         |         V|
   12+45       7.4551      0.07  Q         |         |         |         V|
   12+50       7.4554      0.04  Q         |         |         |         V|
   12+55       7.4556      0.03  Q         |         |         |         V|
   13+ 0       7.4558      0.02  Q         |         |         |         V|
   13+ 5       7.4559      0.02  Q         |         |         |         V|
   13+10       7.4560      0.01  Q         |         |         |         V|
   13+15       7.4560      0.01  Q         |         |         |         V|
   13+20       7.4561      0.01  Q         |         |         |         V|
   13+25       7.4561      0.00  Q         |         |         |         V|
   13+30       7.4561      0.00  Q         |         |         |         V|
   13+35       7.4561      0.00  Q         |         |         |          V
-------------------------------------------------------------------------
```

- 5 Year 24 Hour Pre-Development Unit Hydrograph – Area 'C'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/10/16   File Name EXC00524.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'C' - 5 YEAR 24 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 5

       Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 78.3       0.5          0.00     B     0.300     1.000    0.300
 78.3     120.5          1.00     C     0.250     1.000    0.250

Area-averaged adjusted loss rate Fm (In/Hr) =  0.250

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
     0.52   0.004         78.3      61.0       6.40     0.124

   120.50   0.996         78.3      61.0       6.40     0.124

Area-averaged catchment yield fraction, Y =  0.124
Area-averaged low loss fraction, Yb =  0.876
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.283 (hours)
Watershed area =     121.02(Ac.)
Catchment Lag time =   0.227 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 36.7734
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.250(In/Hr)
Average low loss rate fraction (Yb) = 0.876 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.260(In)
Computed peak 30-minute rainfall =  0.590(In)
Specified peak 1-hour rainfall =  0.780(In)
Computed peak 3-hour rainfall =  1.310(In)
Specified peak 6-hour rainfall =  1.810(In)
Specified peak 24-hour rainfall =  3.030(In)


Rainfall depth area reduction factors:
Using a total area of     121.02(Ac.) (Ref: fig. E-4)
```

```
5-minute factor = 0.994     Adjusted rainfall =  0.259(In)
30-minute factor = 0.994    Adjusted rainfall =  0.587(In)
1-hour factor = 0.994       Adjusted rainfall =  0.776(In)
3-hour factor = 0.999       Adjusted rainfall =  1.309(In)
6-hour factor = 1.000       Adjusted rainfall =  1.809(In)
24-hour factor = 1.000 Adjusted rainfall =  3.030(In)
--------------------------------------------------------------------

                    U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------
               (K =      1463.59 (CFS))

  1                2.797                  40.931
  2               12.765                 145.897
  3               38.676                 379.222
  4               64.714                 381.097
  5               75.492                 157.736
  6               82.583                 103.789
  7               87.659                  74.294
  8               91.397                  54.704
  9               94.190                  40.876
 10               96.134                  28.464
 11               97.498                  19.962
 12               98.175                   9.900
 13               98.595                   6.145
 14               98.952                   5.237
 15               99.199                   3.614
 16               99.460                   3.813
 17               99.720                   3.802
 18               99.870                   2.204
 19               99.961                   1.322
 20              100.000                   0.576
--------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.2585               0.2585
  2              0.3550               0.0964
  3              0.4273               0.0723
  4              0.4874               0.0601
  5              0.5397               0.0524
  6              0.5867               0.0469
  7              0.6242               0.0376
  8              0.6587               0.0345
  9              0.6907               0.0320
 10              0.7207               0.0299
 11              0.7489               0.0282
 12              0.7756               0.0267
 13              0.8057               0.0302
 14              0.8347               0.0290
 15              0.8626               0.0279
 16              0.8895               0.0269
 17              0.9156               0.0261
 18              0.9409               0.0253
 19              0.9654               0.0246
 20              0.9893               0.0239
 21              1.0126               0.0233
 22              1.0353               0.0227
 23              1.0574               0.0222
 24              1.0791               0.0217
 25              1.1003               0.0212
 26              1.1210               0.0208
 27              1.1414               0.0203
 28              1.1613               0.0200
 29              1.1809               0.0196
 30              1.2001               0.0192
 31              1.2190               0.0189
 32              1.2376               0.0186
```

33	1.2559	0.0183
34	1.2739	0.0180
35	1.2916	0.0177
36	1.3091	0.0175
37	1.3259	0.0169
38	1.3425	0.0166
39	1.3589	0.0164
40	1.3751	0.0162
41	1.3910	0.0159
42	1.4068	0.0157
43	1.4223	0.0155
44	1.4376	0.0153
45	1.4528	0.0152
46	1.4678	0.0150
47	1.4826	0.0148
48	1.4973	0.0146
49	1.5117	0.0145
50	1.5261	0.0143
51	1.5402	0.0142
52	1.5543	0.0140
53	1.5682	0.0139
54	1.5819	0.0137
55	1.5955	0.0136
56	1.6090	0.0135
57	1.6223	0.0134
58	1.6356	0.0132
59	1.6487	0.0131
60	1.6617	0.0130
61	1.6745	0.0129
62	1.6873	0.0128
63	1.7000	0.0127
64	1.7125	0.0125
65	1.7249	0.0124
66	1.7373	0.0123
67	1.7495	0.0122
68	1.7617	0.0121
69	1.7737	0.0120
70	1.7857	0.0120
71	1.7975	0.0119
72	1.8093	0.0118
73	1.8186	0.0093
74	1.8278	0.0092
75	1.8370	0.0091
76	1.8461	0.0091
77	1.8551	0.0090
78	1.8640	0.0089
79	1.8728	0.0089
80	1.8816	0.0088
81	1.8903	0.0087
82	1.8990	0.0086
83	1.9075	0.0086
84	1.9161	0.0085
85	1.9245	0.0084
86	1.9329	0.0084
87	1.9412	0.0083
88	1.9495	0.0083
89	1.9577	0.0082
90	1.9658	0.0082
91	1.9739	0.0081
92	1.9820	0.0080
93	1.9900	0.0080
94	1.9979	0.0079
95	2.0058	0.0079
96	2.0136	0.0078
97	2.0214	0.0078
98	2.0291	0.0077
99	2.0368	0.0077
100	2.0444	0.0076
101	2.0520	0.0076
102	2.0595	0.0075
103	2.0670	0.0075

104	2.0744	0.0074
105	2.0818	0.0074
106	2.0892	0.0074
107	2.0965	0.0073
108	2.1037	0.0073
109	2.1110	0.0072
110	2.1181	0.0072
111	2.1253	0.0071
112	2.1324	0.0071
113	2.1394	0.0071
114	2.1465	0.0070
115	2.1534	0.0070
116	2.1604	0.0069
117	2.1673	0.0069
118	2.1742	0.0069
119	2.1810	0.0068
120	2.1878	0.0068
121	2.1945	0.0068
122	2.2013	0.0067
123	2.2080	0.0067
124	2.2146	0.0067
125	2.2212	0.0066
126	2.2278	0.0066
127	2.2344	0.0066
128	2.2409	0.0065
129	2.2474	0.0065
130	2.2539	0.0065
131	2.2603	0.0064
132	2.2667	0.0064
133	2.2731	0.0064
134	2.2794	0.0063
135	2.2857	0.0063
136	2.2920	0.0063
137	2.2983	0.0063
138	2.3045	0.0062
139	2.3107	0.0062
140	2.3168	0.0062
141	2.3230	0.0061
142	2.3291	0.0061
143	2.3352	0.0061
144	2.3412	0.0061
145	2.3473	0.0060
146	2.3533	0.0060
147	2.3593	0.0060
148	2.3652	0.0060
149	2.3711	0.0059
150	2.3770	0.0059
151	2.3829	0.0059
152	2.3888	0.0059
153	2.3946	0.0058
154	2.4004	0.0058
155	2.4062	0.0058
156	2.4120	0.0058
157	2.4177	0.0057
158	2.4234	0.0057
159	2.4291	0.0057
160	2.4348	0.0057
161	2.4404	0.0056
162	2.4461	0.0056
163	2.4517	0.0056
164	2.4572	0.0056
165	2.4628	0.0056
166	2.4683	0.0055
167	2.4739	0.0055
168	2.4794	0.0055
169	2.4848	0.0055
170	2.4903	0.0055
171	2.4957	0.0054
172	2.5011	0.0054
173	2.5065	0.0054
174	2.5119	0.0054

175	2.5173	0.0054
176	2.5226	0.0053
177	2.5279	0.0053
178	2.5332	0.0053
179	2.5385	0.0053
180	2.5438	0.0053
181	2.5490	0.0052
182	2.5543	0.0052
183	2.5595	0.0052
184	2.5647	0.0052
185	2.5698	0.0052
186	2.5750	0.0052
187	2.5801	0.0051
188	2.5852	0.0051
189	2.5903	0.0051
190	2.5954	0.0051
191	2.6005	0.0051
192	2.6056	0.0051
193	2.6106	0.0050
194	2.6156	0.0050
195	2.6206	0.0050
196	2.6256	0.0050
197	2.6306	0.0050
198	2.6355	0.0050
199	2.6405	0.0049
200	2.6454	0.0049
201	2.6503	0.0049
202	2.6552	0.0049
203	2.6601	0.0049
204	2.6650	0.0049
205	2.6698	0.0048
206	2.6746	0.0048
207	2.6795	0.0048
208	2.6843	0.0048
209	2.6891	0.0048
210	2.6938	0.0048
211	2.6986	0.0048
212	2.7034	0.0047
213	2.7081	0.0047
214	2.7128	0.0047
215	2.7175	0.0047
216	2.7222	0.0047
217	2.7269	0.0047
218	2.7316	0.0047
219	2.7362	0.0047
220	2.7408	0.0046
221	2.7455	0.0046
222	2.7501	0.0046
223	2.7547	0.0046
224	2.7593	0.0046
225	2.7638	0.0046
226	2.7684	0.0046
227	2.7730	0.0045
228	2.7775	0.0045
229	2.7820	0.0045
230	2.7865	0.0045
231	2.7910	0.0045
232	2.7955	0.0045
233	2.8000	0.0045
234	2.8044	0.0045
235	2.8089	0.0045
236	2.8133	0.0044
237	2.8178	0.0044
238	2.8222	0.0044
239	2.8266	0.0044
240	2.8310	0.0044
241	2.8353	0.0044
242	2.8397	0.0044
243	2.8441	0.0044
244	2.8484	0.0043
245	2.8528	0.0043

246	2.8571	0.0043
247	2.8614	0.0043
248	2.8657	0.0043
249	2.8700	0.0043
250	2.8743	0.0043
251	2.8785	0.0043
252	2.8828	0.0043
253	2.8870	0.0042
254	2.8913	0.0042
255	2.8955	0.0042
256	2.8997	0.0042
257	2.9039	0.0042
258	2.9081	0.0042
259	2.9123	0.0042
260	2.9165	0.0042
261	2.9207	0.0042
262	2.9248	0.0042
263	2.9290	0.0041
264	2.9331	0.0041
265	2.9372	0.0041
266	2.9413	0.0041
267	2.9454	0.0041
268	2.9495	0.0041
269	2.9536	0.0041
270	2.9577	0.0041
271	2.9618	0.0041
272	2.9658	0.0041
273	2.9699	0.0040
274	2.9739	0.0040
275	2.9780	0.0040
276	2.9820	0.0040
277	2.9860	0.0040
278	2.9900	0.0040
279	2.9940	0.0040
280	2.9980	0.0040
281	3.0020	0.0040
282	3.0059	0.0040
283	3.0099	0.0040
284	3.0138	0.0040
285	3.0178	0.0039
286	3.0217	0.0039
287	3.0256	0.0039
288	3.0295	0.0039

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0039	0.0034	0.0005
2	0.0039	0.0034	0.0005
3	0.0039	0.0035	0.0005
4	0.0040	0.0035	0.0005
5	0.0040	0.0035	0.0005
6	0.0040	0.0035	0.0005
7	0.0040	0.0035	0.0005
8	0.0040	0.0035	0.0005
9	0.0040	0.0035	0.0005
10	0.0040	0.0035	0.0005
11	0.0040	0.0035	0.0005
12	0.0041	0.0036	0.0005
13	0.0041	0.0036	0.0005
14	0.0041	0.0036	0.0005
15	0.0041	0.0036	0.0005
16	0.0041	0.0036	0.0005
17	0.0041	0.0036	0.0005
18	0.0041	0.0036	0.0005
19	0.0042	0.0036	0.0005
20	0.0042	0.0037	0.0005
21	0.0042	0.0037	0.0005
22	0.0042	0.0037	0.0005
23	0.0042	0.0037	0.0005

24	0.0042	0.0037	0.0005
25	0.0043	0.0037	0.0005
26	0.0043	0.0037	0.0005
27	0.0043	0.0038	0.0005
28	0.0043	0.0038	0.0005
29	0.0043	0.0038	0.0005
30	0.0043	0.0038	0.0005
31	0.0044	0.0038	0.0005
32	0.0044	0.0038	0.0005
33	0.0044	0.0038	0.0005
34	0.0044	0.0039	0.0005
35	0.0044	0.0039	0.0005
36	0.0044	0.0039	0.0005
37	0.0045	0.0039	0.0006
38	0.0045	0.0039	0.0006
39	0.0045	0.0039	0.0006
40	0.0045	0.0040	0.0006
41	0.0045	0.0040	0.0006
42	0.0045	0.0040	0.0006
43	0.0046	0.0040	0.0006
44	0.0046	0.0040	0.0006
45	0.0046	0.0040	0.0006
46	0.0046	0.0041	0.0006
47	0.0047	0.0041	0.0006
48	0.0047	0.0041	0.0006
49	0.0047	0.0041	0.0006
50	0.0047	0.0041	0.0006
51	0.0047	0.0041	0.0006
52	0.0047	0.0042	0.0006
53	0.0048	0.0042	0.0006
54	0.0048	0.0042	0.0006
55	0.0048	0.0042	0.0006
56	0.0048	0.0042	0.0006
57	0.0049	0.0043	0.0006
58	0.0049	0.0043	0.0006
59	0.0049	0.0043	0.0006
60	0.0049	0.0043	0.0006
61	0.0050	0.0043	0.0006
62	0.0050	0.0044	0.0006
63	0.0050	0.0044	0.0006
64	0.0050	0.0044	0.0006
65	0.0051	0.0044	0.0006
66	0.0051	0.0044	0.0006
67	0.0051	0.0045	0.0006
68	0.0051	0.0045	0.0006
69	0.0052	0.0045	0.0006
70	0.0052	0.0045	0.0006
71	0.0052	0.0046	0.0006
72	0.0052	0.0046	0.0006
73	0.0053	0.0046	0.0007
74	0.0053	0.0046	0.0007
75	0.0053	0.0047	0.0007
76	0.0053	0.0047	0.0007
77	0.0054	0.0047	0.0007
78	0.0054	0.0047	0.0007
79	0.0054	0.0048	0.0007
80	0.0055	0.0048	0.0007
81	0.0055	0.0048	0.0007
82	0.0055	0.0048	0.0007
83	0.0056	0.0049	0.0007
84	0.0056	0.0049	0.0007
85	0.0056	0.0049	0.0007
86	0.0056	0.0049	0.0007
87	0.0057	0.0050	0.0007
88	0.0057	0.0050	0.0007
89	0.0058	0.0050	0.0007
90	0.0058	0.0051	0.0007
91	0.0058	0.0051	0.0007
92	0.0059	0.0051	0.0007
93	0.0059	0.0052	0.0007
94	0.0059	0.0052	0.0007

95	0.0060	0.0052	0.0007
96	0.0060	0.0053	0.0007
97	0.0061	0.0053	0.0008
98	0.0061	0.0053	0.0008
99	0.0061	0.0054	0.0008
100	0.0062	0.0054	0.0008
101	0.0062	0.0055	0.0008
102	0.0063	0.0055	0.0008
103	0.0063	0.0055	0.0008
104	0.0063	0.0056	0.0008
105	0.0064	0.0056	0.0008
106	0.0064	0.0056	0.0008
107	0.0065	0.0057	0.0008
108	0.0065	0.0057	0.0008
109	0.0066	0.0058	0.0008
110	0.0066	0.0058	0.0008
111	0.0067	0.0059	0.0008
112	0.0067	0.0059	0.0008
113	0.0068	0.0060	0.0008
114	0.0068	0.0060	0.0008
115	0.0069	0.0061	0.0009
116	0.0069	0.0061	0.0009
117	0.0070	0.0062	0.0009
118	0.0071	0.0062	0.0009
119	0.0071	0.0063	0.0009
120	0.0072	0.0063	0.0009
121	0.0073	0.0064	0.0009
122	0.0073	0.0064	0.0009
123	0.0074	0.0065	0.0009
124	0.0074	0.0065	0.0009
125	0.0075	0.0066	0.0009
126	0.0076	0.0066	0.0009
127	0.0077	0.0067	0.0010
128	0.0077	0.0068	0.0010
129	0.0078	0.0069	0.0010
130	0.0079	0.0069	0.0010
131	0.0080	0.0070	0.0010
132	0.0080	0.0070	0.0010
133	0.0082	0.0071	0.0010
134	0.0082	0.0072	0.0010
135	0.0083	0.0073	0.0010
136	0.0084	0.0073	0.0010
137	0.0085	0.0075	0.0011
138	0.0086	0.0075	0.0011
139	0.0087	0.0076	0.0011
140	0.0088	0.0077	0.0011
141	0.0089	0.0078	0.0011
142	0.0090	0.0079	0.0011
143	0.0091	0.0080	0.0011
144	0.0092	0.0081	0.0011
145	0.0118	0.0103	0.0015
146	0.0119	0.0104	0.0015
147	0.0120	0.0106	0.0015
148	0.0121	0.0106	0.0015
149	0.0123	0.0108	0.0015
150	0.0124	0.0109	0.0015
151	0.0127	0.0111	0.0016
152	0.0128	0.0112	0.0016
153	0.0130	0.0114	0.0016
154	0.0131	0.0115	0.0016
155	0.0134	0.0117	0.0017
156	0.0135	0.0118	0.0017
157	0.0137	0.0120	0.0017
158	0.0139	0.0122	0.0017
159	0.0142	0.0124	0.0018
160	0.0143	0.0126	0.0018
161	0.0146	0.0128	0.0018
162	0.0148	0.0130	0.0018
163	0.0152	0.0133	0.0019
164	0.0153	0.0134	0.0019
165	0.0157	0.0138	0.0019

166	0.0159	0.0140	0.0020
167	0.0164	0.0144	0.0020
168	0.0166	0.0146	0.0021
169	0.0175	0.0153	0.0022
170	0.0177	0.0155	0.0022
171	0.0183	0.0160	0.0023
172	0.0186	0.0163	0.0023
173	0.0192	0.0168	0.0024
174	0.0196	0.0172	0.0024
175	0.0203	0.0178	0.0025
176	0.0208	0.0182	0.0026
177	0.0217	0.0190	0.0027
178	0.0222	0.0194	0.0027
179	0.0233	0.0204	0.0029
180	0.0239	0.0209	0.0030
181	0.0253	0.0209	0.0044
182	0.0261	0.0209	0.0052
183	0.0279	0.0209	0.0070
184	0.0290	0.0209	0.0081
185	0.0267	0.0209	0.0059
186	0.0282	0.0209	0.0074
187	0.0320	0.0209	0.0112
188	0.0345	0.0209	0.0136
189	0.0469	0.0209	0.0261
190	0.0524	0.0209	0.0315
191	0.0723	0.0209	0.0515
192	0.0964	0.0209	0.0756
193	0.2585	0.0209	0.2377
194	0.0601	0.0209	0.0392
195	0.0376	0.0209	0.0167
196	0.0299	0.0209	0.0091
197	0.0302	0.0209	0.0093
198	0.0269	0.0209	0.0061
199	0.0246	0.0209	0.0037
200	0.0227	0.0199	0.0028
201	0.0212	0.0186	0.0026
202	0.0200	0.0175	0.0025
203	0.0189	0.0166	0.0023
204	0.0180	0.0158	0.0022
205	0.0169	0.0148	0.0021
206	0.0162	0.0142	0.0020
207	0.0155	0.0136	0.0019
208	0.0150	0.0131	0.0019
209	0.0145	0.0127	0.0018
210	0.0140	0.0123	0.0017
211	0.0136	0.0119	0.0017
212	0.0132	0.0116	0.0016
213	0.0129	0.0113	0.0016
214	0.0125	0.0110	0.0016
215	0.0122	0.0107	0.0015
216	0.0120	0.0105	0.0015
217	0.0093	0.0082	0.0012
218	0.0091	0.0079	0.0011
219	0.0089	0.0078	0.0011
220	0.0086	0.0076	0.0011
221	0.0084	0.0074	0.0010
222	0.0083	0.0072	0.0010
223	0.0081	0.0071	0.0010
224	0.0079	0.0069	0.0010
225	0.0078	0.0068	0.0010
226	0.0076	0.0067	0.0009
227	0.0075	0.0066	0.0009
228	0.0074	0.0064	0.0009
229	0.0072	0.0063	0.0009
230	0.0071	0.0062	0.0009
231	0.0070	0.0061	0.0009
232	0.0069	0.0060	0.0009
233	0.0068	0.0059	0.0008
234	0.0067	0.0058	0.0008
235	0.0066	0.0057	0.0008
236	0.0065	0.0057	0.0008

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      237              0.0064          0.0056              0.0008
      238              0.0063          0.0055              0.0008
      239              0.0062          0.0054              0.0008
      240              0.0061          0.0054              0.0008
      241              0.0060          0.0053              0.0007
      242              0.0060          0.0052              0.0007
      243              0.0059          0.0052              0.0007
      244              0.0058          0.0051              0.0007
      245              0.0057          0.0050              0.0007
      246              0.0057          0.0050              0.0007
      247              0.0056          0.0049              0.0007
      248              0.0055          0.0049              0.0007
      249              0.0055          0.0048              0.0007
      250              0.0054          0.0047              0.0007
      251              0.0054          0.0047              0.0007
      252              0.0053          0.0046              0.0007
      253              0.0052          0.0046              0.0006
      254              0.0052          0.0045              0.0006
      255              0.0051          0.0045              0.0006
      256              0.0051          0.0045              0.0006
      257              0.0050          0.0044              0.0006
      258              0.0050          0.0044              0.0006
      259              0.0049          0.0043              0.0006
      260              0.0049          0.0043              0.0006
      261              0.0048          0.0042              0.0006
      262              0.0048          0.0042              0.0006
      263              0.0048          0.0042              0.0006
      264              0.0047          0.0041              0.0006
      265              0.0047          0.0041              0.0006
      266              0.0046          0.0041              0.0006
      267              0.0046          0.0040              0.0006
      268              0.0046          0.0040              0.0006
      269              0.0045          0.0040              0.0006
      270              0.0045          0.0039              0.0006
      271              0.0045          0.0039              0.0006
      272              0.0044          0.0039              0.0005
      273              0.0044          0.0038              0.0005
      274              0.0043          0.0038              0.0005
      275              0.0043          0.0038              0.0005
      276              0.0043          0.0038              0.0005
      277              0.0042          0.0037              0.0005
      278              0.0042          0.0037              0.0005
      279              0.0042          0.0037              0.0005
      280              0.0042          0.0036              0.0005
      281              0.0041          0.0036              0.0005
      282              0.0041          0.0036              0.0005
      283              0.0041          0.0036              0.0005
      284              0.0040          0.0035              0.0005
      285              0.0040          0.0035              0.0005
      286              0.0040          0.0035              0.0005
      287              0.0040          0.0035              0.0005
      288              0.0039          0.0034              0.0005
      ------------------------------------------------------------------------
      ------------------------------------------------------------------------
      Total soil rain loss =      2.20(In)
      Total effective rainfall =      0.82(In)
      Peak flow rate in flood hydrograph =    140.40(CFS)
      ------------------------------------------------------------------------
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                        24 - H O U R    S T O R M
                    R u n o f f      H y d r o g r a p h
      ------------------------------------------------------------------------
                Hydrograph in   5   Minute intervals ((CFS))

      ------------------------------------------------------------------------
 Time(h+m) Volume Ac.Ft   Q(CFS)  0       50.0     100.0     150.0     200.0
 ------------------------------------------------------------------------
   0+ 5       0.0001      0.02  Q         |         |         |         |
   0+10       0.0008      0.09  Q         |         |         |         |
   0+15       0.0027      0.27  Q         |         |         |         |
   0+20       0.0058      0.46  Q         |         |         |         |
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0+25	0.0095	0.54	Q	|	|	|	|
0+30	0.0136	0.59	Q	|	|	|	|
0+35	0.0179	0.63	Q	|	|	|	|
0+40	0.0224	0.66	Q	|	|	|	|
0+45	0.0271	0.68	Q	|	|	|	|
0+50	0.0319	0.70	Q	|	|	|	|
0+55	0.0368	0.71	Q	|	|	|	|
1+ 0	0.0417	0.71	Q	|	|	|	|
1+ 5	0.0467	0.72	Q	|	|	|	|
1+10	0.0517	0.72	Q	|	|	|	|
1+15	0.0567	0.73	Q	|	|	|	|
1+20	0.0617	0.73	Q	|	|	|	|
1+25	0.0668	0.74	Q	|	|	|	|
1+30	0.0719	0.74	Q	|	|	|	|
1+35	0.0770	0.74	Q	|	|	|	|
1+40	0.0822	0.75	Q	|	|	|	|
1+45	0.0874	0.75	Q	|	|	|	|
1+50	0.0925	0.75	Q	|	|	|	|
1+55	0.0977	0.76	Q	|	|	|	|
2+ 0	0.1030	0.76	Q	|	|	|	|
2+ 5	0.1082	0.76	Q	|	|	|	|
2+10	0.1135	0.76	Q	|	|	|	|
2+15	0.1188	0.77	Q	|	|	|	|
2+20	0.1241	0.77	Q	|	|	|	|
2+25	0.1294	0.77	Q	|	|	|	|
2+30	0.1347	0.78	Q	|	|	|	|
2+35	0.1401	0.78	Q	|	|	|	|
2+40	0.1455	0.78	Q	|	|	|	|
2+45	0.1509	0.78	Q	|	|	|	|
2+50	0.1563	0.79	Q	|	|	|	|
2+55	0.1617	0.79	Q	|	|	|	|
3+ 0	0.1672	0.79	Q	|	|	|	|
3+ 5	0.1727	0.80	Q	|	|	|	|
3+10	0.1782	0.80	Q	|	|	|	|
3+15	0.1837	0.80	Q	|	|	|	|
3+20	0.1893	0.81	Q	|	|	|	|
3+25	0.1949	0.81	Q	|	|	|	|
3+30	0.2005	0.81	Q	|	|	|	|
3+35	0.2061	0.82	Q	|	|	|	|
3+40	0.2117	0.82	QV	|	|	|	|
3+45	0.2174	0.82	QV	|	|	|	|
3+50	0.2231	0.83	QV	|	|	|	|
3+55	0.2288	0.83	QV	|	|	|	|
4+ 0	0.2345	0.83	QV	|	|	|	|
4+ 5	0.2403	0.84	QV	|	|	|	|
4+10	0.2461	0.84	QV	|	|	|	|
4+15	0.2519	0.84	QV	|	|	|	|
4+20	0.2577	0.85	QV	|	|	|	|
4+25	0.2636	0.85	QV	|	|	|	|
4+30	0.2695	0.86	QV	|	|	|	|
4+35	0.2754	0.86	QV	|	|	|	|
4+40	0.2814	0.86	QV	|	|	|	|
4+45	0.2873	0.87	QV	|	|	|	|
4+50	0.2933	0.87	QV	|	|	|	|
4+55	0.2994	0.87	QV	|	|	|	|
5+ 0	0.3054	0.88	QV	|	|	|	|
5+ 5	0.3115	0.88	QV	|	|	|	|
5+10	0.3176	0.89	QV	|	|	|	|
5+15	0.3237	0.89	QV	|	|	|	|
5+20	0.3299	0.90	QV	|	|	|	|
5+25	0.3361	0.90	QV	|	|	|	|
5+30	0.3423	0.90	QV	|	|	|	|
5+35	0.3486	0.91	QV	|	|	|	|
5+40	0.3549	0.91	QV	|	|	|	|
5+45	0.3612	0.92	QV	|	|	|	|
5+50	0.3675	0.92	QV	|	|	|	|
5+55	0.3739	0.93	QV	|	|	|	|
6+ 0	0.3803	0.93	QV	|	|	|	|
6+ 5	0.3868	0.94	QV	|	|	|	|
6+10	0.3932	0.94	QV	|	|	|	|
6+15	0.3998	0.95	QV	|	|	|	|

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 6+20       0.4063      0.95  QV       |          |          |          |
 6+25       0.4129      0.96  QV       |          |          |          |
 6+30       0.4195      0.96  Q V      |          |          |          |
 6+35       0.4261      0.97  Q V      |          |          |          |
 6+40       0.4328      0.97  Q V      |          |          |          |
 6+45       0.4396      0.98  Q V      |          |          |          |
 6+50       0.4463      0.98  Q V      |          |          |          |
 6+55       0.4531      0.99  Q V      |          |          |          |
 7+ 0       0.4599      0.99  Q V      |          |          |          |
 7+ 5       0.4668      1.00  Q V      |          |          |          |
 7+10       0.4737      1.00  Q V      |          |          |          |
 7+15       0.4807      1.01  Q V      |          |          |          |
 7+20       0.4877      1.02  Q V      |          |          |          |
 7+25       0.4947      1.02  Q V      |          |          |          |
 7+30       0.5018      1.03  Q V      |          |          |          |
 7+35       0.5089      1.03  Q V      |          |          |          |
 7+40       0.5161      1.04  Q V      |          |          |          |
 7+45       0.5233      1.05  Q V      |          |          |          |
 7+50       0.5305      1.05  Q V      |          |          |          |
 7+55       0.5378      1.06  Q V      |          |          |          |
 8+ 0       0.5451      1.07  Q V      |          |          |          |
 8+ 5       0.5525      1.07  Q V      |          |          |          |
 8+10       0.5600      1.08  Q V      |          |          |          |
 8+15       0.5674      1.09  Q V      |          |          |          |
 8+20       0.5750      1.09  Q V      |          |          |          |
 8+25       0.5825      1.10  Q V      |          |          |          |
 8+30       0.5902      1.11  Q V      |          |          |          |
 8+35       0.5978      1.11  Q V      |          |          |          |
 8+40       0.6056      1.12  Q V      |          |          |          |
 8+45       0.6134      1.13  Q V      |          |          |          |
 8+50       0.6212      1.14  Q V      |          |          |          |
 8+55       0.6291      1.15  Q  V     |          |          |          |
 9+ 0       0.6370      1.15  Q  V     |          |          |          |
 9+ 5       0.6450      1.16  Q  V     |          |          |          |
 9+10       0.6531      1.17  Q  V     |          |          |          |
 9+15       0.6612      1.18  Q  V     |          |          |          |
 9+20       0.6694      1.19  Q  V     |          |          |          |
 9+25       0.6776      1.20  Q  V     |          |          |          |
 9+30       0.6860      1.21  Q  V     |          |          |          |
 9+35       0.6943      1.22  Q  V     |          |          |          |
 9+40       0.7028      1.23  Q  V     |          |          |          |
 9+45       0.7113      1.23  Q  V     |          |          |          |
 9+50       0.7198      1.24  Q  V     |          |          |          |
 9+55       0.7285      1.25  Q  V     |          |          |          |
10+ 0       0.7372      1.26  Q  V     |          |          |          |
10+ 5       0.7460      1.28  Q  V     |          |          |          |
10+10       0.7548      1.29  Q  V     |          |          |          |
10+15       0.7638      1.30  Q  V     |          |          |          |
10+20       0.7728      1.31  Q  V     |          |          |          |
10+25       0.7819      1.32  Q  V     |          |          |          |
10+30       0.7910      1.33  Q  V     |          |          |          |
10+35       0.8003      1.34  Q  V     |          |          |          |
10+40       0.8096      1.36  Q  V     |          |          |          |
10+45       0.8191      1.37  Q  V     |          |          |          |
10+50       0.8286      1.38  Q  V     |          |          |          |
10+55       0.8382      1.39  Q   V    |          |          |          |
11+ 0       0.8479      1.41  Q   V    |          |          |          |
11+ 5       0.8577      1.42  Q   V    |          |          |          |
11+10       0.8676      1.44  Q   V    |          |          |          |
11+15       0.8776      1.45  Q   V    |          |          |          |
11+20       0.8877      1.47  Q   V    |          |          |          |
11+25       0.8979      1.48  Q   V    |          |          |          |
11+30       0.9082      1.50  Q   V    |          |          |          |
11+35       0.9186      1.51  Q   V    |          |          |          |
11+40       0.9292      1.53  Q   V    |          |          |          |
11+45       0.9398      1.55  Q   V    |          |          |          |
11+50       0.9506      1.57  Q   V    |          |          |          |
11+55       0.9615      1.58  Q   V    |          |          |          |
12+ 0       0.9726      1.60  Q   V    |          |          |          |
12+ 5       0.9838      1.64  Q   V    |          |          |          |
12+10       0.9955      1.70  Q   V    |          |          |          |
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12+15       1.0082      1.83  Q   V     |          |          |          |
12+20       1.0217      1.97  Q   V     |          |          |          |
12+25       1.0357      2.04  Q   V     |          |          |          |
12+30       1.0502      2.09  Q    V    |          |          |          |
12+35       1.0649      2.14  Q    V    |          |          |          |
12+40       1.0799      2.18  Q    V    |          |          |          |
12+45       1.0952      2.22  Q    V    |          |          |          |
12+50       1.1107      2.26  Q    V    |          |          |          |
12+55       1.1265      2.29  Q    V    |          |          |          |
13+ 0       1.1426      2.33  Q    V    |          |          |          |
13+ 5       1.1588      2.36  Q    V    |          |          |          |
13+10       1.1753      2.39  Q    V    |          |          |          |
13+15       1.1920      2.43  Q    V    |          |          |          |
13+20       1.2090      2.47  Q    V    |          |          |          |
13+25       1.2262      2.50  Q    V    |          |          |          |
13+30       1.2437      2.54  Q    V    |          |          |          |
13+35       1.2615      2.58  Q     V   |          |          |          |
13+40       1.2796      2.63  Q     V   |          |          |          |
13+45       1.2980      2.67  Q     V   |          |          |          |
13+50       1.3167      2.72  Q     V   |          |          |          |
13+55       1.3358      2.77  Q     V   |          |          |          |
14+ 0       1.3552      2.82  Q     V   |          |          |          |
14+ 5       1.3750      2.88  Q     V   |          |          |          |
14+10       1.3953      2.94  Q     V   |          |          |          |
14+15       1.4161      3.02  Q     V   |          |          |          |
14+20       1.4374      3.10  Q     V   |          |          |          |
14+25       1.4593      3.18  Q      V  |          |          |          |
14+30       1.4817      3.26  Q      V  |          |          |          |
14+35       1.5047      3.34  Q      V  |          |          |          |
14+40       1.5283      3.43  Q      V  |          |          |          |
14+45       1.5526      3.52  Q      V  |          |          |          |
14+50       1.5776      3.63  Q      V  |          |          |          |
14+55       1.6033      3.74  Q      V  |          |          |          |
15+ 0       1.6299      3.86  Q      V  |          |          |          |
15+ 5       1.6578      4.06  Q      V  |          |          |          |
15+10       1.6884      4.44  Q       V |          |          |          |
15+15       1.7247      5.26  |Q      V |          |          |          |
15+20       1.7692      6.46  |Q      V |          |          |          |
15+25       1.8227      7.78  |Q      V |          |          |          |
15+30       1.8840      8.91  |Q       V|          |          |          |
15+35       1.9483      9.33  |Q       V|          |          |          |
15+40       2.0185     10.20  | Q      V|          |          |          |
15+45       2.1086     13.08  | Q       V          |          |          |
15+50       2.2310     17.77  |  Q      V          |          |          |
15+55       2.4088     25.82  |    Q    |V         |          |          |
16+ 0       2.6665     37.42  |      Q  | V        |          |          |
16+ 5       3.0783     59.79  |         |Q  V      |          |          |
16+10       3.7302     94.66  |         |     VQ   |          |          |
16+15       4.6971    140.40  |         |          | V     Q  |          |
16+20       5.5960    130.52  |         |          |    Q     |          |
16+25       6.1179     75.78  |         |    Q     |       V  |          |
16+30       6.4850     53.29  |         Q          |          |V         |
16+35       6.7632     40.39  |       Q  |         |          | V        |
16+40       6.9786     31.28  |     Q    |         |          |  V       |
16+45       7.1411     23.60  |   Q      |         |          |   V      |
16+50       7.2606     17.34  |  Q       |         |          |   V      |
16+55       7.3495     12.92  | Q        |         |          |    V     |
17+ 0       7.4127      9.18  |Q         |         |          |    V     |
17+ 5       7.4625      7.23  |Q         |         |          |    V     |
17+10       7.5053      6.21  |Q         |         |          |     V    |
17+15       7.5421      5.35  |Q         |         |          |     V    |
17+20       7.5760      4.92  Q          |         |          |     V    |
17+25       7.6070      4.50  Q          |         |          |     V    |
17+30       7.6335      3.85  Q          |         |          |     V    |
17+35       7.6567      3.38  Q          |         |          |     V    |
17+40       7.6774      3.00  Q          |         |          |     V    |
17+45       7.6961      2.72  Q          |         |          |      V   |
17+50       7.7140      2.59  Q          |         |          |      V   |
17+55       7.7311      2.49  Q          |         |          |      V   |
18+ 0       7.7477      2.41  Q          |         |          |      V   |
18+ 5       7.7637      2.32  Q          |         |          |      V   |
```

18+10	7.7790	2.22	Q	|	|	|	V |
18+15	7.7931	2.05	Q	|	|	|	V |
18+20	7.8061	1.88	Q	|	|	|	V |
18+25	7.8184	1.79	Q	|	|	|	V |
18+30	7.8302	1.72	Q	|	|	|	V |
18+35	7.8416	1.65	Q	|	|	|	V |
18+40	7.8526	1.60	Q	|	|	|	V |
18+45	7.8633	1.55	Q	|	|	|	V |
18+50	7.8737	1.51	Q	|	|	|	V |
18+55	7.8839	1.47	Q	|	|	|	V |
19+ 0	7.8938	1.44	Q	|	|	|	V |
19+ 5	7.9035	1.41	Q	|	|	|	V |
19+10	7.9130	1.38	Q	|	|	|	V |
19+15	7.9224	1.36	Q	|	|	|	V |
19+20	7.9315	1.33	Q	|	|	|	V |
19+25	7.9405	1.31	Q	|	|	|	V |
19+30	7.9494	1.28	Q	|	|	|	V |
19+35	7.9580	1.26	Q	|	|	|	V |
19+40	7.9666	1.24	Q	|	|	|	V |
19+45	7.9750	1.22	Q	|	|	|	V |
19+50	7.9833	1.20	Q	|	|	|	V |
19+55	7.9914	1.18	Q	|	|	|	V |
20+ 0	7.9995	1.17	Q	|	|	|	V |
20+ 5	8.0074	1.15	Q	|	|	|	V |
20+10	8.0152	1.13	Q	|	|	|	V |
20+15	8.0229	1.12	Q	|	|	|	V |
20+20	8.0305	1.10	Q	|	|	|	V |
20+25	8.0380	1.09	Q	|	|	|	V |
20+30	8.0455	1.08	Q	|	|	|	V |
20+35	8.0528	1.06	Q	|	|	|	V |
20+40	8.0600	1.05	Q	|	|	|	V |
20+45	8.0671	1.04	Q	|	|	|	V |
20+50	8.0742	1.02	Q	|	|	|	V |
20+55	8.0812	1.01	Q	|	|	|	V |
21+ 0	8.0881	1.00	Q	|	|	|	V |
21+ 5	8.0949	0.99	Q	|	|	|	V |
21+10	8.1016	0.98	Q	|	|	|	V |
21+15	8.1083	0.97	Q	|	|	|	V|
21+20	8.1149	0.96	Q	|	|	|	V|
21+25	8.1214	0.95	Q	|	|	|	V|
21+30	8.1279	0.94	Q	|	|	|	V|
21+35	8.1343	0.93	Q	|	|	|	V|
21+40	8.1406	0.92	Q	|	|	|	V|
21+45	8.1469	0.91	Q	|	|	|	V|
21+50	8.1531	0.90	Q	|	|	|	V|
21+55	8.1592	0.89	Q	|	|	|	V|
22+ 0	8.1653	0.88	Q	|	|	|	V|
22+ 5	8.1714	0.88	Q	|	|	|	V|
22+10	8.1774	0.87	Q	|	|	|	V|
22+15	8.1833	0.86	Q	|	|	|	V|
22+20	8.1892	0.85	Q	|	|	|	V|
22+25	8.1950	0.85	Q	|	|	|	V|
22+30	8.2008	0.84	Q	|	|	|	V|
22+35	8.2065	0.83	Q	|	|	|	V|
22+40	8.2122	0.82	Q	|	|	|	V|
22+45	8.2178	0.82	Q	|	|	|	V|
22+50	8.2234	0.81	Q	|	|	|	V|
22+55	8.2289	0.80	Q	|	|	|	V|
23+ 0	8.2344	0.80	Q	|	|	|	V|
23+ 5	8.2399	0.79	Q	|	|	|	V|
23+10	8.2453	0.79	Q	|	|	|	V|
23+15	8.2507	0.78	Q	|	|	|	V|
23+20	8.2560	0.77	Q	|	|	|	V|
23+25	8.2613	0.77	Q	|	|	|	V|
23+30	8.2665	0.76	Q	|	|	|	V|
23+35	8.2718	0.76	Q	|	|	|	V|
23+40	8.2769	0.75	Q	|	|	|	V|
23+45	8.2821	0.75	Q	|	|	|	V|
23+50	8.2872	0.74	Q	|	|	|	V|
23+55	8.2922	0.74	Q	|	|	|	V|
24+ 0	8.2973	0.73	Q	|	|	|	V|

```
   24+ 5       8.3021      0.71  Q         |         |         |         V|
   24+10       8.3065      0.63  Q         |         |         |         V|
   24+15       8.3095      0.44  Q         |         |         |         V|
   24+20       8.3113      0.26  Q         |         |         |         V|
   24+25       8.3125      0.18  Q         |         |         |         V|
   24+30       8.3134      0.13  Q         |         |         |         V|
   24+35       8.3140      0.09  Q         |         |         |         V|
   24+40       8.3144      0.06  Q         |         |         |         V|
   24+45       8.3147      0.04  Q         |         |         |         V|
   24+50       8.3149      0.03  Q         |         |         |         V|
   24+55       8.3150      0.02  Q         |         |         |         V|
   25+ 0       8.3151      0.01  Q         |         |         |         V|
   25+ 5       8.3152      0.01  Q         |         |         |         V|
   25+10       8.3152      0.01  Q         |         |         |         V|
   25+15       8.3153      0.01  Q         |         |         |         V|
   25+20       8.3153      0.00  Q         |         |         |         V|
   25+25       8.3153      0.00  Q         |         |         |         V|
   25+30       8.3153      0.00  Q         |         |         |         V|
   25+35       8.3153      0.00  Q         |         |         |         V|
-------------------------------------------------------------------------
```

- 25 Year 3 Hour Pre-Development Unit Hydrograph – Area 'C'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/10/16   File Name exc02503.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

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RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'C' - 25 YEAR 3 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 25

       Antecedent Moisture Condition = 2

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 78.3       0.5          0.00     B     0.300     1.000    0.300
 78.3     120.5          1.00     C     0.250     1.000    0.250

Area-averaged adjusted loss rate Fm (In/Hr) =  0.250

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC2)          Yield Fr
     0.52   0.004         78.3      78.3       2.77     0.514

   120.50   0.996         78.3      78.3       2.77     0.514

Area-averaged catchment yield fraction, Y =  0.514
Area-averaged low loss fraction, Yb =  0.486
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.269 (hours)
Watershed area =     121.02(Ac.)
Catchment Lag time =   0.215 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 38.6949
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.250(In/Hr)
Average low loss rate fraction (Yb) = 0.486 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.400(In)
Computed peak 30-minute rainfall =  0.870(In)
Specified peak 1-hour rainfall =  1.150(In)
Computed peak 3-hour rainfall =  1.940(In)
Specified peak 6-hour rainfall =  2.710(In)
Specified peak 24-hour rainfall =  4.490(In)


Rainfall depth area reduction factors:
Using a total area of     121.02(Ac.) (Ref: fig. E-4)
```

```
5-minute factor = 0.994     Adjusted rainfall =  0.398(In)
30-minute factor = 0.994    Adjusted rainfall =  0.865(In)
1-hour factor = 0.994       Adjusted rainfall =  1.143(In)
3-hour factor = 0.999       Adjusted rainfall =  1.939(In)
6-hour factor = 1.000       Adjusted rainfall =  2.709(In)
24-hour factor = 1.000 Adjusted rainfall =  4.489(In)
--------------------------------------------------------------------

                     U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------
               (K =      1463.59 (CFS))

  1               2.995                 43.829
  2              13.989                160.918
  3              43.256                428.344
  4              67.124                349.330
  5              77.365                149.878
  6              84.208                100.164
  7              89.047                 70.817
  8              92.595                 51.921
  9              95.138                 37.229
 10              96.882                 25.516
 11              97.940                 15.495
 12              98.435                  7.234
 13              98.836                  5.881
 14              99.134                  4.360
 15              99.390                  3.748
 16              99.679                  4.228
 17              99.852                  2.532
 18              99.954                  1.493
 19             100.000                  0.669
--------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.3977              0.3977
  2              0.5372              0.1395
  3              0.6405              0.1033
  4              0.7256              0.0851
  5              0.7993              0.0737
  6              0.8651              0.0658
  7              0.9204              0.0554
  8              0.9713              0.0508
  9              1.0184              0.0472
 10              1.0626              0.0441
 11              1.1041              0.0416
 12              1.1435              0.0394
 13              1.1883              0.0448
 14              1.2314              0.0431
 15              1.2729              0.0415
 16              1.3130              0.0401
 17              1.3518              0.0388
 18              1.3894              0.0376
 19              1.4260              0.0366
 20              1.4616              0.0356
 21              1.4963              0.0347
 22              1.5301              0.0338
 23              1.5631              0.0330
 24              1.5954              0.0323
 25              1.6270              0.0316
 26              1.6580              0.0310
 27              1.6883              0.0303
 28              1.7181              0.0298
 29              1.7473              0.0292
 30              1.7760              0.0287
 31              1.8042              0.0282
 32              1.8319              0.0277
 33              1.8592              0.0273
```

```
 34              1.8861              0.0269
 35              1.9125              0.0265
 36              1.9386              0.0261
---------------------------------------------------------------------
Unit              Unit            Unit              Effective
Period            Rainfall        Soil-Loss         Rainfall
(number)            (In)          (In)                (In)
---------------------------------------------------------------------
  1              0.0261           0.0127              0.0134
  2              0.0265           0.0128              0.0136
  3              0.0273           0.0133              0.0140
  4              0.0277           0.0135              0.0143
  5              0.0287           0.0139              0.0148
  6              0.0292           0.0142              0.0150
  7              0.0303           0.0147              0.0156
  8              0.0310           0.0150              0.0159
  9              0.0323           0.0157              0.0166
 10              0.0330           0.0160              0.0170
 11              0.0347           0.0168              0.0178
 12              0.0356           0.0173              0.0183
 13              0.0376           0.0183              0.0194
 14              0.0388           0.0188              0.0200
 15              0.0415           0.0202              0.0213
 16              0.0431           0.0209              0.0222
 17              0.0394           0.0191              0.0202
 18              0.0416           0.0202              0.0214
 19              0.0472           0.0209              0.0263
 20              0.0508           0.0209              0.0300
 21              0.0658           0.0209              0.0449
 22              0.0737           0.0209              0.0529
 23              0.1033           0.0209              0.0824
 24              0.1395           0.0209              0.1186
 25              0.3977           0.0209              0.3769
 26              0.0851           0.0209              0.0643
 27              0.0554           0.0209              0.0345
 28              0.0441           0.0209              0.0233
 29              0.0448           0.0209              0.0240
 30              0.0401           0.0195              0.0206
 31              0.0366           0.0178              0.0188
 32              0.0338           0.0164              0.0174
 33              0.0316           0.0153              0.0163
 34              0.0298           0.0145              0.0153
 35              0.0282           0.0137              0.0145
 36              0.0269           0.0130              0.0138
---------------------------------------------------------------------
---------------------------------------------------------------------
Total soil rain loss =      0.63(In)
Total effective rainfall =      1.31(In)
Peak flow rate in flood hydrograph =    239.55(CFS)
---------------------------------------------------------------------
+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                    3 - H O U R    S T O R M
                R u n o f f      H y d r o g r a p h
---------------------------------------------------------------------
            Hydrograph in   5   Minute intervals ((CFS))

---------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0       75.0     150.0     225.0     300.0
---------------------------------------------------------------------
  0+ 5       0.0040      0.59  Q         |         |         |         |
  0+10       0.0230      2.75  Q         |         |         |         |
  0+15       0.0819      8.55  VQ        |         |         |         |
  0+20       0.1741     13.40  VQ        |         |         |         |
  0+25       0.2824     15.72  V Q       |         |         |         |
  0+30       0.4024     17.43  |VQ       |         |         |         |
  0+35       0.5321     18.82  |VQ       |         |         |         |
  0+40       0.6699     20.01  | Q       |         |         |         |
  0+45       0.8149     21.07  | Q       |         |         |         |
  0+50       0.9665     22.01  | Q       |         |         |         |
  0+55       1.1242     22.90  |  Q      |         |         |         |
  1+ 0       1.2876     23.73  |  Q      |         |         |         |
```

```
   1+ 5       1.4574     24.65  |  QV     |         |         |         |
   1+10       1.6337     25.61  |  QV     |         |         |         |
   1+15       1.8176     26.70  |  Q V    |         |         |         |
   1+20       2.0098     27.90  |  Q  V   |         |         |         |
   1+25       2.2104     29.13  |  Q  V   |         |         |         |
   1+30       2.4175     30.06  |   Q  V  |         |         |         |
   1+35       2.6265     30.36  |   Q  V  |         |         |         |
   1+40       2.8437     31.53  |   Q   V |         |         |         |
   1+45       3.0867     35.28  |   Q    V|         |         |         |
   1+50       3.3726     41.51  |    Q    V         |         |         |
   1+55       3.7350     52.62  |      Q  |V        |         |         |
   2+ 0       4.2081     68.71  |        Q| V       |         |         |
   2+ 5       4.9264    104.29  |         |  QV     |         |         |
   2+10       6.0367    161.21  |         |       V |Q        |         |
   2+15       7.6865    239.55  |         |         |  V      |Q        |
   2+20       9.0680    200.59  |         |         |    QV   |         |
   2+25       9.9113    122.45  |         |     Q   |         V         |
   2+30      10.5387     91.10  |         | Q       |         | V       |
   2+35      11.0405     72.85  |        Q|         |         |  V      |
   2+40      11.4557     60.29  |       Q |         |         |   V     |
   2+45      11.7992     49.88  |     Q   |         |         |    V    |
   2+50      12.0851     41.52  |    Q    |         |         |     V   |
   2+55      12.3240     34.68  |   Q     |         |         |      V  |
   3+ 0      12.5266     29.42  |  Q      |         |         |       V |
   3+ 5      12.7077     26.30  |  Q      |         |         |       V |
   3+10      12.8601     22.14  | Q       |         |         |        V|
   3+15      12.9639     15.07  | Q       |         |         |        V|
   3+20      13.0304      9.65  |Q        |         |         |        V|
   3+25      13.0754      6.53  Q         |         |         |        V|
   3+30      13.1056      4.39  Q         |         |         |        V|
   3+35      13.1252      2.85  Q         |         |         |        V|
   3+40      13.1373      1.76  Q         |         |         |        V|
   3+45      13.1451      1.14  Q         |         |         |        V|
   3+50      13.1501      0.73  Q         |         |         |        V|
   3+55      13.1534      0.48  Q         |         |         |        V|
   4+ 0      13.1559      0.36  Q         |         |         |        V|
   4+ 5      13.1577      0.26  Q         |         |         |        V|
   4+10      13.1590      0.19  Q         |         |         |        V|
   4+15      13.1599      0.13  Q         |         |         |        V|
   4+20      13.1603      0.07  Q         |         |         |        V|
   4+25      13.1605      0.03  Q         |         |         |        V|
   4+30      13.1606      0.01  Q         |         |         |         V
-------------------------------------------------------------------------
```

- 25 Year 6 Hour Pre-Development Unit Hydrograph – Area 'C'

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       U n i t   H y d r o g r a p h   A n a l y s i s

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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

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RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'C' - 25 YEAR 6 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 25

       Antecedent Moisture Condition = 2

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 78.3       0.5          0.00     B     0.300     1.000    0.300
 78.3     120.5          1.00     C     0.250     1.000    0.250

Area-averaged adjusted loss rate Fm (In/Hr) =  0.250

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC2)          Yield Fr
     0.52   0.004         78.3      78.3       2.77     0.514

   120.50   0.996         78.3      78.3       2.77     0.514

Area-averaged catchment yield fraction, Y =  0.514
Area-averaged low loss fraction, Yb =  0.486
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.269 (hours)
Watershed area =     121.02(Ac.)
Catchment Lag time =   0.215 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 38.6949
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.250(In/Hr)
Average low loss rate fraction (Yb) = 0.486 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.400(In)
Computed peak 30-minute rainfall =  0.870(In)
Specified peak 1-hour rainfall =  1.150(In)
Computed peak 3-hour rainfall =  1.940(In)
Specified peak 6-hour rainfall =  2.710(In)
Specified peak 24-hour rainfall =  4.490(In)


Rainfall depth area reduction factors:
Using a total area of     121.02(Ac.) (Ref: fig. E-4)
```

```
5-minute factor = 0.994     Adjusted rainfall =  0.398(In)
30-minute factor = 0.994    Adjusted rainfall =  0.865(In)
1-hour factor = 0.994       Adjusted rainfall =  1.143(In)
3-hour factor = 0.999       Adjusted rainfall =  1.939(In)
6-hour factor = 1.000       Adjusted rainfall =  2.709(In)
24-hour factor = 1.000 Adjusted rainfall =  4.489(In)
--------------------------------------------------------------------

                     U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------
               (K =      1463.59 (CFS))

  1               2.995                 43.829
  2              13.989                160.918
  3              43.256                428.344
  4              67.124                349.330
  5              77.365                149.878
  6              84.208                100.164
  7              89.047                 70.817
  8              92.595                 51.921
  9              95.138                 37.229
 10              96.882                 25.516
 11              97.940                 15.495
 12              98.435                  7.234
 13              98.836                  5.881
 14              99.134                  4.360
 15              99.390                  3.748
 16              99.679                  4.228
 17              99.852                  2.532
 18              99.954                  1.493
 19             100.000                  0.669
--------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.3977              0.3977
  2              0.5372              0.1395
  3              0.6405              0.1033
  4              0.7256              0.0851
  5              0.7993              0.0737
  6              0.8651              0.0658
  7              0.9204              0.0554
  8              0.9713              0.0508
  9              1.0184              0.0472
 10              1.0626              0.0441
 11              1.1041              0.0416
 12              1.1435              0.0394
 13              1.1883              0.0448
 14              1.2314              0.0431
 15              1.2729              0.0415
 16              1.3130              0.0401
 17              1.3518              0.0388
 18              1.3894              0.0376
 19              1.4260              0.0366
 20              1.4616              0.0356
 21              1.4963              0.0347
 22              1.5301              0.0338
 23              1.5631              0.0330
 24              1.5954              0.0323
 25              1.6270              0.0316
 26              1.6580              0.0310
 27              1.6883              0.0303
 28              1.7181              0.0298
 29              1.7473              0.0292
 30              1.7760              0.0287
 31              1.8042              0.0282
 32              1.8319              0.0277
 33              1.8592              0.0273
```

34	1.8861	0.0269
35	1.9125	0.0265
36	1.9386	0.0261
37	1.9644	0.0258
38	1.9899	0.0255
39	2.0150	0.0251
40	2.0398	0.0248
41	2.0642	0.0245
42	2.0884	0.0242
43	2.1122	0.0239
44	2.1358	0.0236
45	2.1591	0.0233
46	2.1821	0.0230
47	2.2049	0.0228
48	2.2274	0.0225
49	2.2497	0.0223
50	2.2717	0.0220
51	2.2936	0.0218
52	2.3152	0.0216
53	2.3365	0.0214
54	2.3577	0.0212
55	2.3787	0.0210
56	2.3995	0.0208
57	2.4201	0.0206
58	2.4405	0.0204
59	2.4607	0.0202
60	2.4807	0.0200
61	2.5006	0.0199
62	2.5203	0.0197
63	2.5399	0.0195
64	2.5592	0.0194
65	2.5785	0.0192
66	2.5975	0.0191
67	2.6165	0.0189
68	2.6353	0.0188
69	2.6539	0.0186
70	2.6724	0.0185
71	2.6907	0.0184
72	2.7090	0.0182

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0182	0.0089	0.0094
2	0.0184	0.0089	0.0094
3	0.0186	0.0091	0.0096
4	0.0188	0.0091	0.0097
5	0.0191	0.0093	0.0098
6	0.0192	0.0093	0.0099
7	0.0195	0.0095	0.0101
8	0.0197	0.0096	0.0101
9	0.0200	0.0097	0.0103
10	0.0202	0.0098	0.0104
11	0.0206	0.0100	0.0106
12	0.0208	0.0101	0.0107
13	0.0212	0.0103	0.0109
14	0.0214	0.0104	0.0110
15	0.0218	0.0106	0.0112
16	0.0220	0.0107	0.0113
17	0.0225	0.0109	0.0116
18	0.0228	0.0111	0.0117
19	0.0233	0.0113	0.0120
20	0.0236	0.0114	0.0121
21	0.0242	0.0117	0.0124
22	0.0245	0.0119	0.0126
23	0.0251	0.0122	0.0129
24	0.0255	0.0124	0.0131
25	0.0261	0.0127	0.0134
26	0.0265	0.0128	0.0136
27	0.0273	0.0133	0.0140

```
 28              0.0277          0.0135              0.0143
 29              0.0287          0.0139              0.0148
 30              0.0292          0.0142              0.0150
 31              0.0303          0.0147              0.0156
 32              0.0310          0.0150              0.0159
 33              0.0323          0.0157              0.0166
 34              0.0330          0.0160              0.0170
 35              0.0347          0.0168              0.0178
 36              0.0356          0.0173              0.0183
 37              0.0376          0.0183              0.0194
 38              0.0388          0.0188              0.0200
 39              0.0415          0.0202              0.0213
 40              0.0431          0.0209              0.0222
 41              0.0394          0.0191              0.0202
 42              0.0416          0.0202              0.0214
 43              0.0472          0.0209              0.0263
 44              0.0508          0.0209              0.0300
 45              0.0658          0.0209              0.0449
 46              0.0737          0.0209              0.0529
 47              0.1033          0.0209              0.0824
 48              0.1395          0.0209              0.1186
 49              0.3977          0.0209              0.3769
 50              0.0851          0.0209              0.0643
 51              0.0554          0.0209              0.0345
 52              0.0441          0.0209              0.0233
 53              0.0448          0.0209              0.0240
 54              0.0401          0.0195              0.0206
 55              0.0366          0.0178              0.0188
 56              0.0338          0.0164              0.0174
 57              0.0316          0.0153              0.0163
 58              0.0298          0.0145              0.0153
 59              0.0282          0.0137              0.0145
 60              0.0269          0.0130              0.0138
 61              0.0258          0.0125              0.0133
 62              0.0248          0.0120              0.0127
 63              0.0239          0.0116              0.0123
 64              0.0230          0.0112              0.0118
 65              0.0223          0.0108              0.0115
 66              0.0216          0.0105              0.0111
 67              0.0210          0.0102              0.0108
 68              0.0204          0.0099              0.0105
 69              0.0199          0.0097              0.0102
 70              0.0194          0.0094              0.0100
 71              0.0189          0.0092              0.0097
 72              0.0185          0.0090              0.0095
--------------------------------------------------------------------
--------------------------------------------------------------------
Total soil rain loss =      1.01(In)
Total effective rainfall =      1.70(In)
Peak flow rate in flood hydrograph =    239.55(CFS)
--------------------------------------------------------------------
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                  6 - H O U R    S T O R M
               R u n o f f      H y d r o g r a p h
--------------------------------------------------------------------
            Hydrograph in   5   Minute intervals ((CFS))

--------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0       75.0     150.0     225.0     300.0
--------------------------------------------------------------------
  0+ 5       0.0028      0.41  Q         |         |         |         |
  0+10       0.0161      1.92  Q         |         |         |         |
  0+15       0.0571      5.96  Q         |         |         |         |
  0+20       0.1210      9.29  VQ        |         |         |         |
  0+25       0.1954     10.79  VQ        |         |         |         |
  0+30       0.2770     11.85  VQ        |         |         |         |
  0+35       0.3642     12.66  VQ        |         |         |         |
  0+40       0.4557     13.29  |Q        |         |         |         |
  0+45       0.5507     13.80  |Q        |         |         |         |
  0+50       0.6486     14.21  |Q        |         |         |         |
  0+55       0.7486     14.53  |Q        |         |         |         |
```

```
1+ 0       0.8505     14.78  |Q        |         |         |         |
1+ 5       0.9540     15.04  | Q       |         |         |         |
1+10       1.0592     15.28  | Q       |         |         |         |
1+15       1.1662     15.53  | Q       |         |         |         |
1+20       1.2749     15.79  | Q       |         |         |         |
1+25       1.3854     16.05  | QV      |         |         |         |
1+30       1.4977     16.30  | QV      |         |         |         |
1+35       1.6117     16.56  | QV      |         |         |         |
1+40       1.7276     16.82  | Q V     |         |         |         |
1+45       1.8454     17.11  | Q V     |         |         |         |
1+50       1.9652     17.39  | Q V     |         |         |         |
1+55       2.0871     17.71  | Q V     |         |         |         |
2+ 0       2.2113     18.03  | Q  V    |         |         |         |
2+ 5       2.3378     18.37  | Q  V    |         |         |         |
2+10       2.4667     18.72  | Q  V    |         |         |         |
2+15       2.5981     19.08  | Q   V   |         |         |         |
2+20       2.7322     19.46  | Q   V   |         |         |         |
2+25       2.8692     19.90  | Q   V   |         |         |         |
2+30       3.0093     20.35  | Q    V  |         |         |         |
2+35       3.1529     20.85  | Q    V  |         |         |         |
2+40       3.3001     21.38  | Q    V  |         |         |         |
2+45       3.4514     21.96  | Q     V |         |         |         |
2+50       3.6069     22.58  |  Q    V |         |         |         |
2+55       3.7673     23.28  |  Q    V |         |         |         |
3+ 0       3.9327     24.02  |  Q     V|         |         |         |
3+ 5       4.1039     24.86  |  Q     V|         |         |         |
3+10       4.2814     25.77  |  Q     V|         |         |         |
3+15       4.4661     26.82  |  Q      V         |         |         |
3+20       4.6587     27.96  |  Q      V         |         |         |
3+25       4.8595     29.16  |  Q       |V       |         |         |
3+30       5.0666     30.07  |   Q      |V       |         |         |
3+35       5.2757     30.36  |   Q      | V      |         |         |
3+40       5.4928     31.53  |   Q      | V      |         |         |
3+45       5.7358     35.28  |   Q      |  V     |         |         |
3+50       6.0217     41.51  |    Q     |   V    |         |         |
3+55       6.3841     52.62  |      Q   |   V    |         |         |
4+ 0       6.8573     68.71  |        Q |    V   |         |         |
4+ 5       7.5755    104.29  |          |  Q   V |         |         |
4+10       8.6858    161.21  |          |        VQ        |         |
4+15      10.3356    239.55  |          |          |   V   |Q        |
4+20      11.7171    200.59  |          |          |    QV |         |
4+25      12.5604    122.45  |          |     Q    |       V|        |
4+30      13.1879     91.10  |          | Q        |        V        |
4+35      13.6896     72.85  |        Q |          |         |V       |
4+40      14.1048     60.29  |        Q |          |         | V      |
4+45      14.4483     49.88  |     Q    |          |         |  V     |
4+50      14.7343     41.52  |    Q     |          |         |   V    |
4+55      14.9731     34.68  |   Q      |          |         |   V    |
5+ 0      15.1757     29.42  |  Q       |          |         |    V   |
5+ 5      15.3608     26.88  |  Q       |          |         |    V   |
5+10      15.5318     24.84  |  Q       |          |         |     V  |
5+15      15.6926     23.35  |  Q       |          |         |     V  |
5+20      15.8458     22.24  | Q        |          |         |     V  |
5+25      15.9879     20.63  | Q        |          |         |      V |
5+30      16.1210     19.32  | Q        |          |         |      V |
5+35      16.2464     18.21  | Q        |          |         |      V |
5+40      16.3656     17.31  | Q        |          |         |       V|
5+45      16.4807     16.70  | Q        |          |         |       V|
5+50      16.5921     16.18  | Q        |          |         |       V|
5+55      16.7002     15.70  | Q        |          |         |       V|
6+ 0      16.8053     15.26  | Q        |          |         |        V|
6+ 5      16.9049     14.46  |Q         |          |         |        V|
6+10      16.9916     12.60  |Q         |          |         |        V|
6+15      17.0488      8.30  |Q         |          |         |        V|
6+20      17.0822      4.85  Q          |          |         |        V|
6+25      17.1052      3.34  Q          |          |         |        V|
6+30      17.1213      2.32  Q          |          |         |        V|
6+35      17.1323      1.61  Q          |          |         |        V|
6+40      17.1398      1.09  Q          |          |         |        V|
6+45      17.1447      0.71  Q          |          |         |        V|
6+50      17.1479      0.46  Q          |          |         |        V|
```

```
    6+55      17.1500      0.30  Q         |         |         |         V|
    7+ 0      17.1516      0.23  Q         |         |         |         V|
    7+ 5      17.1527      0.17  Q         |         |         |         V|
    7+10      17.1536      0.12  Q         |         |         |         V|
    7+15      17.1542      0.09  Q         |         |         |         V|
    7+20      17.1545      0.05  Q         |         |         |         V|
    7+25      17.1546      0.02  Q         |         |         |         V|
    7+30      17.1547      0.01  Q         |         |         |         V|
--------------------------------------------------------------------------
```

- 25 Year 12 Hour Pre-Development Unit Hydrograph – Area 'C'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989-2012, Version 7.2

       Study date  10/10/16   File Name exc02512.out


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'C' - 25 YEAR 12 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 25

       Antecedent Moisture Condition = 2

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 78.3       0.5          0.00     B     0.300     1.000    0.300
 78.3     120.5          1.00     C     0.250     1.000    0.250

Area-averaged adjusted loss rate Fm (In/Hr) =  0.250

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC2)          Yield Fr
     0.52   0.004         78.3      78.3       2.77     0.514

   120.50   0.996         78.3      78.3       2.77     0.514

Area-averaged catchment yield fraction, Y =  0.514
Area-averaged low loss fraction, Yb =  0.486
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.269 (hours)
Watershed area =     121.02(Ac.)
Catchment Lag time =   0.215 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 38.6949
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.250(In/Hr)
Average low loss rate fraction (Yb) = 0.486 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.400(In)
Computed peak 30-minute rainfall =  0.870(In)
Specified peak 1-hour rainfall =  1.150(In)
Computed peak 3-hour rainfall =  1.940(In)
Specified peak 6-hour rainfall =  2.710(In)
Specified peak 24-hour rainfall =  4.490(In)


Rainfall depth area reduction factors:
Using a total area of     121.02(Ac.) (Ref: fig. E-4)
```

```
5-minute factor = 0.994     Adjusted rainfall =  0.398(In)
30-minute factor = 0.994    Adjusted rainfall =  0.865(In)
1-hour factor = 0.994       Adjusted rainfall =  1.143(In)
3-hour factor = 0.999       Adjusted rainfall =  1.939(In)
6-hour factor = 1.000       Adjusted rainfall =  2.709(In)
24-hour factor = 1.000 Adjusted rainfall =  4.489(In)
------------------------------------------------------------------------

                     U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
------------------------------------------------------------------------
               (K =      1463.59 (CFS))

  1                2.995                 43.829
  2               13.989                160.918
  3               43.256                428.344
  4               67.124                349.330
  5               77.365                149.878
  6               84.208                100.164
  7               89.047                 70.817
  8               92.595                 51.921
  9               95.138                 37.229
 10               96.882                 25.516
 11               97.940                 15.495
 12               98.435                  7.234
 13               98.836                  5.881
 14               99.134                  4.360
 15               99.390                  3.748
 16               99.679                  4.228
 17               99.852                  2.532
 18               99.954                  1.493
 19              100.000                  0.669
------------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.3977              0.3977
  2              0.5372              0.1395
  3              0.6405              0.1033
  4              0.7256              0.0851
  5              0.7993              0.0737
  6              0.8651              0.0658
  7              0.9204              0.0554
  8              0.9713              0.0508
  9              1.0184              0.0472
 10              1.0626              0.0441
 11              1.1041              0.0416
 12              1.1435              0.0394
 13              1.1883              0.0448
 14              1.2314              0.0431
 15              1.2729              0.0415
 16              1.3130              0.0401
 17              1.3518              0.0388
 18              1.3894              0.0376
 19              1.4260              0.0366
 20              1.4616              0.0356
 21              1.4963              0.0347
 22              1.5301              0.0338
 23              1.5631              0.0330
 24              1.5954              0.0323
 25              1.6270              0.0316
 26              1.6580              0.0310
 27              1.6883              0.0303
 28              1.7181              0.0298
 29              1.7473              0.0292
 30              1.7760              0.0287
 31              1.8042              0.0282
 32              1.8319              0.0277
 33              1.8592              0.0273
```

34	1.8861	0.0269
35	1.9125	0.0265
36	1.9386	0.0261
37	1.9644	0.0258
38	1.9899	0.0255
39	2.0150	0.0251
40	2.0398	0.0248
41	2.0642	0.0245
42	2.0884	0.0242
43	2.1122	0.0239
44	2.1358	0.0236
45	2.1591	0.0233
46	2.1821	0.0230
47	2.2049	0.0228
48	2.2274	0.0225
49	2.2497	0.0223
50	2.2717	0.0220
51	2.2936	0.0218
52	2.3152	0.0216
53	2.3365	0.0214
54	2.3577	0.0212
55	2.3787	0.0210
56	2.3995	0.0208
57	2.4201	0.0206
58	2.4405	0.0204
59	2.4607	0.0202
60	2.4807	0.0200
61	2.5006	0.0199
62	2.5203	0.0197
63	2.5399	0.0195
64	2.5592	0.0194
65	2.5785	0.0192
66	2.5975	0.0191
67	2.6165	0.0189
68	2.6353	0.0188
69	2.6539	0.0186
70	2.6724	0.0185
71	2.6907	0.0184
72	2.7090	0.0182
73	2.7226	0.0136
74	2.7362	0.0135
75	2.7496	0.0134
76	2.7629	0.0133
77	2.7761	0.0132
78	2.7891	0.0131
79	2.8021	0.0130
80	2.8150	0.0129
81	2.8278	0.0128
82	2.8404	0.0127
83	2.8530	0.0126
84	2.8655	0.0125
85	2.8779	0.0124
86	2.8902	0.0123
87	2.9024	0.0122
88	2.9145	0.0121
89	2.9265	0.0120
90	2.9384	0.0119
91	2.9503	0.0119
92	2.9621	0.0118
93	2.9738	0.0117
94	2.9854	0.0116
95	2.9969	0.0115
96	3.0084	0.0115
97	3.0197	0.0114
98	3.0310	0.0113
99	3.0423	0.0112
100	3.0534	0.0112
101	3.0645	0.0111
102	3.0756	0.0110
103	3.0865	0.0110
104	3.0974	0.0109

105	3.1082	0.0108
106	3.1190	0.0108
107	3.1297	0.0107
108	3.1403	0.0106
109	3.1508	0.0106
110	3.1613	0.0105
111	3.1718	0.0104
112	3.1822	0.0104
113	3.1925	0.0103
114	3.2028	0.0103
115	3.2130	0.0102
116	3.2231	0.0102
117	3.2332	0.0101
118	3.2433	0.0100
119	3.2532	0.0100
120	3.2632	0.0099
121	3.2731	0.0099
122	3.2829	0.0098
123	3.2927	0.0098
124	3.3024	0.0097
125	3.3121	0.0097
126	3.3217	0.0096
127	3.3313	0.0096
128	3.3408	0.0095
129	3.3503	0.0095
130	3.3598	0.0094
131	3.3691	0.0094
132	3.3785	0.0093
133	3.3878	0.0093
134	3.3971	0.0093
135	3.4063	0.0092
136	3.4154	0.0092
137	3.4246	0.0091
138	3.4337	0.0091
139	3.4427	0.0090
140	3.4517	0.0090
141	3.4607	0.0090
142	3.4696	0.0089
143	3.4785	0.0089
144	3.4873	0.0088

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0088	0.0043	0.0045
2	0.0089	0.0043	0.0046
3	0.0090	0.0044	0.0046
4	0.0090	0.0044	0.0046
5	0.0091	0.0044	0.0047
6	0.0091	0.0044	0.0047
7	0.0092	0.0045	0.0047
8	0.0093	0.0045	0.0048
9	0.0093	0.0045	0.0048
10	0.0094	0.0046	0.0048
11	0.0095	0.0046	0.0049
12	0.0095	0.0046	0.0049
13	0.0096	0.0047	0.0050
14	0.0097	0.0047	0.0050
15	0.0098	0.0047	0.0050
16	0.0098	0.0048	0.0051
17	0.0099	0.0048	0.0051
18	0.0100	0.0049	0.0051
19	0.0101	0.0049	0.0052
20	0.0102	0.0049	0.0052
21	0.0103	0.0050	0.0053
22	0.0103	0.0050	0.0053
23	0.0104	0.0051	0.0054
24	0.0105	0.0051	0.0054
25	0.0106	0.0052	0.0055
26	0.0107	0.0052	0.0055

27	0.0108	0.0053	0.0056
28	0.0109	0.0053	0.0056
29	0.0110	0.0054	0.0057
30	0.0111	0.0054	0.0057
31	0.0112	0.0055	0.0058
32	0.0113	0.0055	0.0058
33	0.0115	0.0056	0.0059
34	0.0115	0.0056	0.0059
35	0.0117	0.0057	0.0060
36	0.0118	0.0057	0.0061
37	0.0119	0.0058	0.0061
38	0.0120	0.0058	0.0062
39	0.0122	0.0059	0.0063
40	0.0123	0.0060	0.0063
41	0.0125	0.0061	0.0064
42	0.0126	0.0061	0.0065
43	0.0128	0.0062	0.0066
44	0.0129	0.0063	0.0066
45	0.0131	0.0064	0.0067
46	0.0132	0.0064	0.0068
47	0.0134	0.0065	0.0069
48	0.0135	0.0066	0.0070
49	0.0182	0.0089	0.0094
50	0.0184	0.0089	0.0094
51	0.0186	0.0091	0.0096
52	0.0188	0.0091	0.0097
53	0.0191	0.0093	0.0098
54	0.0192	0.0093	0.0099
55	0.0195	0.0095	0.0101
56	0.0197	0.0096	0.0101
57	0.0200	0.0097	0.0103
58	0.0202	0.0098	0.0104
59	0.0206	0.0100	0.0106
60	0.0208	0.0101	0.0107
61	0.0212	0.0103	0.0109
62	0.0214	0.0104	0.0110
63	0.0218	0.0106	0.0112
64	0.0220	0.0107	0.0113
65	0.0225	0.0109	0.0116
66	0.0228	0.0111	0.0117
67	0.0233	0.0113	0.0120
68	0.0236	0.0114	0.0121
69	0.0242	0.0117	0.0124
70	0.0245	0.0119	0.0126
71	0.0251	0.0122	0.0129
72	0.0255	0.0124	0.0131
73	0.0261	0.0127	0.0134
74	0.0265	0.0128	0.0136
75	0.0273	0.0133	0.0140
76	0.0277	0.0135	0.0143
77	0.0287	0.0139	0.0148
78	0.0292	0.0142	0.0150
79	0.0303	0.0147	0.0156
80	0.0310	0.0150	0.0159
81	0.0323	0.0157	0.0166
82	0.0330	0.0160	0.0170
83	0.0347	0.0168	0.0178
84	0.0356	0.0173	0.0183
85	0.0376	0.0183	0.0194
86	0.0388	0.0188	0.0200
87	0.0415	0.0202	0.0213
88	0.0431	0.0209	0.0222
89	0.0394	0.0191	0.0202
90	0.0416	0.0202	0.0214
91	0.0472	0.0209	0.0263
92	0.0508	0.0209	0.0300
93	0.0658	0.0209	0.0449
94	0.0737	0.0209	0.0529
95	0.1033	0.0209	0.0824
96	0.1395	0.0209	0.1186
97	0.3977	0.0209	0.3769

```
 98              0.0851          0.0209              0.0643
 99              0.0554          0.0209              0.0345
100              0.0441          0.0209              0.0233
101              0.0448          0.0209              0.0240
102              0.0401          0.0195              0.0206
103              0.0366          0.0178              0.0188
104              0.0338          0.0164              0.0174
105              0.0316          0.0153              0.0163
106              0.0298          0.0145              0.0153
107              0.0282          0.0137              0.0145
108              0.0269          0.0130              0.0138
109              0.0258          0.0125              0.0133
110              0.0248          0.0120              0.0127
111              0.0239          0.0116              0.0123
112              0.0230          0.0112              0.0118
113              0.0223          0.0108              0.0115
114              0.0216          0.0105              0.0111
115              0.0210          0.0102              0.0108
116              0.0204          0.0099              0.0105
117              0.0199          0.0097              0.0102
118              0.0194          0.0094              0.0100
119              0.0189          0.0092              0.0097
120              0.0185          0.0090              0.0095
121              0.0136          0.0066              0.0070
122              0.0133          0.0065              0.0068
123              0.0130          0.0063              0.0067
124              0.0127          0.0062              0.0065
125              0.0124          0.0060              0.0064
126              0.0121          0.0059              0.0062
127              0.0119          0.0058              0.0061
128              0.0116          0.0056              0.0060
129              0.0114          0.0055              0.0059
130              0.0112          0.0054              0.0057
131              0.0110          0.0053              0.0056
132              0.0108          0.0052              0.0055
133              0.0106          0.0051              0.0054
134              0.0104          0.0050              0.0053
135              0.0102          0.0050              0.0053
136              0.0100          0.0049              0.0052
137              0.0099          0.0048              0.0051
138              0.0097          0.0047              0.0050
139              0.0096          0.0047              0.0049
140              0.0094          0.0046              0.0049
141              0.0093          0.0045              0.0048
142              0.0092          0.0045              0.0047
143              0.0090          0.0044              0.0047
144              0.0089          0.0043              0.0046
-------------------------------------------------------------------------
-------------------------------------------------------------------------
Total soil rain loss =      1.39(In)
Total effective rainfall =      2.10(In)
Peak flow rate in flood hydrograph =    239.55(CFS)
-------------------------------------------------------------------------
+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                    12 - H O U R    S T O R M
                R u n o f f      H y d r o g r a p h
-------------------------------------------------------------------------
            Hydrograph in   5   Minute intervals ((CFS))

-------------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0       75.0     150.0     225.0     300.0
-------------------------------------------------------------------------
  0+ 5       0.0014      0.20  Q         |         |         |         |
  0+10       0.0078      0.93  Q         |         |         |         |
  0+15       0.0277      2.89  Q         |         |         |         |
  0+20       0.0586      4.49  Q         |         |         |         |
  0+25       0.0944      5.20  Q         |         |         |         |
  0+30       0.1336      5.69  Q         |         |         |         |
  0+35       0.1753      6.05  Q         |         |         |         |
  0+40       0.2189      6.33  Q         |         |         |         |
  0+45       0.2640      6.55  Q         |         |         |         |
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0+50       0.3102      6.71  Q          |          |          |          |
0+55       0.3572      6.83  Q          |          |          |          |
1+ 0       0.4048      6.91  Q          |          |          |          |
1+ 5       0.4529      6.98  Q          |          |          |          |
1+10       0.5015      7.06  Q          |          |          |          |
1+15       0.5506      7.13  QV         |          |          |          |
1+20       0.6001      7.20  QV         |          |          |          |
1+25       0.6502      7.27  QV         |          |          |          |
1+30       0.7006      7.33  QV         |          |          |          |
1+35       0.7515      7.39  QV         |          |          |          |
1+40       0.8028      7.45  QV         |          |          |          |
1+45       0.8545      7.51  |Q         |          |          |          |
1+50       0.9066      7.57  |Q         |          |          |          |
1+55       0.9592      7.63  |Q         |          |          |          |
2+ 0       1.0121      7.69  |Q         |          |          |          |
2+ 5       1.0656      7.76  |QV        |          |          |          |
2+10       1.1195      7.82  |QV        |          |          |          |
2+15       1.1738      7.89  |QV        |          |          |          |
2+20       1.2286      7.96  |QV        |          |          |          |
2+25       1.2840      8.03  |QV        |          |          |          |
2+30       1.3398      8.10  |QV        |          |          |          |
2+35       1.3961      8.18  |QV        |          |          |          |
2+40       1.4530      8.25  |QV        |          |          |          |
2+45       1.5104      8.33  |QV        |          |          |          |
2+50       1.5683      8.41  |QV        |          |          |          |
2+55       1.6268      8.50  |Q V       |          |          |          |
3+ 0       1.6859      8.58  |Q V       |          |          |          |
3+ 5       1.7456      8.67  |Q V       |          |          |          |
3+10       1.8058      8.75  |Q V       |          |          |          |
3+15       1.8668      8.84  |Q V       |          |          |          |
3+20       1.9283      8.94  |Q V       |          |          |          |
3+25       1.9905      9.03  |Q V       |          |          |          |
3+30       2.0534      9.13  |Q V       |          |          |          |
3+35       2.1170      9.23  |Q V       |          |          |          |
3+40       2.1813      9.34  |Q  V      |          |          |          |
3+45       2.2464      9.45  |Q  V      |          |          |          |
3+50       2.3122      9.55  |Q  V      |          |          |          |
3+55       2.3788      9.67  |Q  V      |          |          |          |
4+ 0       2.4461      9.79  |Q  V      |          |          |          |
4+ 5       2.5151     10.01  |Q  V      |          |          |          |
4+10       2.5874     10.50  |Q  V      |          |          |          |
4+15       2.6674     11.62  |Q   V     |          |          |          |
4+20       2.7539     12.55  |Q   V     |          |          |          |
4+25       2.8437     13.04  |Q   V     |          |          |          |
4+30       2.9362     13.42  |Q   V     |          |          |          |
4+35       3.0308     13.75  |Q   V     |          |          |          |
4+40       3.1274     14.03  |Q   V     |          |          |          |
4+45       3.2258     14.28  |Q    V    |          |          |          |
4+50       3.3258     14.52  |Q    V    |          |          |          |
4+55       3.4272     14.74  |Q    V    |          |          |          |
5+ 0       3.5301     14.94  |Q    V    |          |          |          |
5+ 5       3.6345     15.15  | Q   V    |          |          |          |
5+10       3.7403     15.37  | Q    V   |          |          |          |
5+15       3.8477     15.59  | Q    V   |          |          |          |
5+20       3.9566     15.82  | Q    V   |          |          |          |
5+25       4.0672     16.06  | Q    V   |          |          |          |
5+30       4.1795     16.30  | Q    V   |          |          |          |
5+35       4.2936     16.56  | Q     V  |          |          |          |
5+40       4.4094     16.82  | Q     V  |          |          |          |
5+45       4.5272     17.11  | Q     V  |          |          |          |
5+50       4.6470     17.39  | Q     V  |          |          |          |
5+55       4.7690     17.71  | Q      V |          |          |          |
6+ 0       4.8931     18.03  | Q      V |          |          |          |
6+ 5       5.0196     18.37  | Q      V |          |          |          |
6+10       5.1486     18.72  | Q      V |          |          |          |
6+15       5.2800     19.08  | Q      V |          |          |          |
6+20       5.4140     19.46  | Q       V          |          |          |
6+25       5.5510     19.90  | Q       V          |          |          |
6+30       5.6912     20.35  | Q       V          |          |          |
6+35       5.8348     20.85  | Q       |V         |          |          |
6+40       5.9820     21.38  | Q       |V         |          |          |
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 6+45      6.1333     21.96  | Q       |V        |         |         |
 6+50      6.2888     22.58  |  Q      |V        |         |         |
 6+55      6.4491     23.28  |  Q      | V       |         |         |
 7+ 0      6.6145     24.02  |  Q      | V       |         |         |
 7+ 5      6.7858     24.86  |  Q      | V       |         |         |
 7+10      6.9632     25.77  |  Q      |  V      |         |         |
 7+15      7.1479     26.82  |  Q      |  V      |         |         |
 7+20      7.3405     27.96  |  Q      |  V      |         |         |
 7+25      7.5413     29.16  |  Q      |   V     |         |         |
 7+30      7.7484     30.07  |   Q     |   V     |         |         |
 7+35      7.9575     30.36  |   Q     |    V    |         |         |
 7+40      8.1747     31.53  |   Q     |    V    |         |         |
 7+45      8.4177     35.28  |   Q     |    V    |         |         |
 7+50      8.7035     41.51  |    Q    |     V   |         |         |
 7+55      9.0659     52.62  |      Q  |      V  |         |         |
 8+ 0      9.5391     68.71  |       Q |       V |         |         |
 8+ 5     10.2574    104.29  |         |  Q     V|         |         |
 8+10     11.3677    161.21  |         |        |Q        |         |
 8+15     13.0175    239.55  |         |        |   V     |Q        |
 8+20     14.3990    200.59  |         |        |     QV  |         |
 8+25     15.2423    122.45  |         |    Q   |       V |         |
 8+30     15.8697     91.10  |         | Q      |        V|         |
 8+35     16.3714     72.85  |         |       Q|         V         |
 8+40     16.7867     60.29  |       Q |        |          V        |
 8+45     17.1302     49.88  |     Q   |        |          | V      |
 8+50     17.4161     41.52  |    Q    |        |          | V      |
 8+55     17.6549     34.68  |   Q     |        |          |  V     |
 9+ 0     17.8575     29.42  |  Q      |        |          |  V     |
 9+ 5     18.0426     26.88  |  Q      |        |          |   V    |
 9+10     18.2137     24.84  |  Q      |        |          |   V    |
 9+15     18.3745     23.35  |  Q      |        |          |   V    |
 9+20     18.5277     22.24  | Q       |        |          |   V    |
 9+25     18.6698     20.63  | Q       |        |          |    V   |
 9+30     18.8028     19.32  | Q       |        |          |    V   |
 9+35     18.9282     18.21  | Q       |        |          |    V   |
 9+40     19.0475     17.31  | Q       |        |          |    V   |
 9+45     19.1625     16.70  | Q       |        |          |     V  |
 9+50     19.2739     16.18  | Q       |        |          |     V  |
 9+55     19.3820     15.70  | Q       |        |          |     V  |
10+ 0     19.4872     15.26  | Q       |        |          |     V  |
10+ 5     19.5889     14.76  |Q        |        |          |     V  |
10+10     19.6854     14.03  |Q        |        |          |      V |
10+15     19.7730     12.71  |Q        |        |          |      V |
10+20     19.8528     11.60  |Q        |        |          |      V |
10+25     19.9284     10.97  |Q        |        |          |      V |
10+30     20.0005     10.47  |Q        |        |          |      V |
10+35     20.0698     10.07  |Q        |        |          |      V |
10+40     20.1367      9.72  |Q        |        |          |       V|
10+45     20.2016      9.42  |Q        |        |          |       V|
10+50     20.2646      9.15  |Q        |        |          |       V|
10+55     20.3261      8.93  |Q        |        |          |       V|
11+ 0     20.3863      8.73  |Q        |        |          |       V|
11+ 5     20.4451      8.54  |Q        |        |          |       V|
11+10     20.5028      8.37  |Q        |        |          |       V|
11+15     20.5593      8.21  |Q        |        |          |       V|
11+20     20.6147      8.05  |Q        |        |          |       V|
11+25     20.6691      7.90  |Q        |        |          |        V|
11+30     20.7226      7.76  |Q        |        |          |        V|
11+35     20.7752      7.63  |Q        |        |          |        V|
11+40     20.8269      7.51  |Q        |        |          |        V|
11+45     20.8778      7.39  Q         |        |          |        V|
11+50     20.9279      7.28  Q         |        |          |        V|
11+55     20.9773      7.17  Q         |        |          |        V|
12+ 0     21.0259      7.06  Q         |        |          |        V|
12+ 5     21.0725      6.76  Q         |        |          |        V|
12+10     21.1134      5.94  Q         |        |          |        V|
12+15     21.1404      3.92  Q         |        |          |        V|
12+20     21.1561      2.28  Q         |        |          |        V|
12+25     21.1669      1.57  Q         |        |          |        V|
12+30     21.1744      1.09  Q         |        |          |        V|
12+35     21.1796      0.76  Q         |        |          |        V|
```

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   12+40      21.1831      0.51  Q         |         |         |        V|
   12+45      21.1855      0.34  Q         |         |         |        V|
   12+50      21.1869      0.22  Q         |         |         |        V|
   12+55      21.1879      0.14  Q         |         |         |        V|
   13+ 0      21.1887      0.11  Q         |         |         |        V|
   13+ 5      21.1892      0.08  Q         |         |         |        V|
   13+10      21.1896      0.06  Q         |         |         |        V|
   13+15      21.1899      0.04  Q         |         |         |        V|
   13+20      21.1901      0.02  Q         |         |         |        V|
   13+25      21.1901      0.01  Q         |         |         |        V|
   13+30      21.1902      0.00  Q         |         |         |         V
-------------------------------------------------------------------------
```

- 25 Year 24 Hour Pre-Development Unit Hydrograph – Area 'C'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/10/16   File Name exc02524.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'C' - 25 YEAR 24 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 25

       Antecedent Moisture Condition = 2

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 78.3       0.5          0.00     B     0.300     1.000    0.300
 78.3     120.5          1.00     C     0.250     1.000    0.250

Area-averaged adjusted loss rate Fm (In/Hr) =  0.250

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC2)          Yield Fr
     0.52   0.004         78.3      78.3       2.77     0.514

   120.50   0.996         78.3      78.3       2.77     0.514

Area-averaged catchment yield fraction, Y =  0.514
Area-averaged low loss fraction, Yb =  0.486
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.269 (hours)
Watershed area =     121.02(Ac.)
Catchment Lag time =   0.215 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 38.6949
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.250(In/Hr)
Average low loss rate fraction (Yb) = 0.486 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.400(In)
Computed peak 30-minute rainfall =  0.870(In)
Specified peak 1-hour rainfall =  1.150(In)
Computed peak 3-hour rainfall =  1.940(In)
Specified peak 6-hour rainfall =  2.710(In)
Specified peak 24-hour rainfall =  4.490(In)


Rainfall depth area reduction factors:
Using a total area of     121.02(Ac.) (Ref: fig. E-4)
```

```
5-minute factor = 0.994     Adjusted rainfall =  0.398(In)
30-minute factor = 0.994    Adjusted rainfall =  0.865(In)
1-hour factor = 0.994       Adjusted rainfall =  1.143(In)
3-hour factor = 0.999       Adjusted rainfall =  1.939(In)
6-hour factor = 1.000       Adjusted rainfall =  2.709(In)
24-hour factor = 1.000 Adjusted rainfall =  4.489(In)
--------------------------------------------------------------------

                     U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------
               (K =      1463.59 (CFS))

  1               2.995                 43.829
  2              13.989                160.918
  3              43.256                428.344
  4              67.124                349.330
  5              77.365                149.878
  6              84.208                100.164
  7              89.047                 70.817
  8              92.595                 51.921
  9              95.138                 37.229
 10              96.882                 25.516
 11              97.940                 15.495
 12              98.435                  7.234
 13              98.836                  5.881
 14              99.134                  4.360
 15              99.390                  3.748
 16              99.679                  4.228
 17              99.852                  2.532
 18              99.954                  1.493
 19             100.000                  0.669
--------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.3977              0.3977
  2              0.5372              0.1395
  3              0.6405              0.1033
  4              0.7256              0.0851
  5              0.7993              0.0737
  6              0.8651              0.0658
  7              0.9204              0.0554
  8              0.9713              0.0508
  9              1.0184              0.0472
 10              1.0626              0.0441
 11              1.1041              0.0416
 12              1.1435              0.0394
 13              1.1883              0.0448
 14              1.2314              0.0431
 15              1.2729              0.0415
 16              1.3130              0.0401
 17              1.3518              0.0388
 18              1.3894              0.0376
 19              1.4260              0.0366
 20              1.4616              0.0356
 21              1.4963              0.0347
 22              1.5301              0.0338
 23              1.5631              0.0330
 24              1.5954              0.0323
 25              1.6270              0.0316
 26              1.6580              0.0310
 27              1.6883              0.0303
 28              1.7181              0.0298
 29              1.7473              0.0292
 30              1.7760              0.0287
 31              1.8042              0.0282
 32              1.8319              0.0277
 33              1.8592              0.0273
```

34	1.8861	0.0269
35	1.9125	0.0265
36	1.9386	0.0261
37	1.9644	0.0258
38	1.9899	0.0255
39	2.0150	0.0251
40	2.0398	0.0248
41	2.0642	0.0245
42	2.0884	0.0242
43	2.1122	0.0239
44	2.1358	0.0236
45	2.1591	0.0233
46	2.1821	0.0230
47	2.2049	0.0228
48	2.2274	0.0225
49	2.2497	0.0223
50	2.2717	0.0220
51	2.2936	0.0218
52	2.3152	0.0216
53	2.3365	0.0214
54	2.3577	0.0212
55	2.3787	0.0210
56	2.3995	0.0208
57	2.4201	0.0206
58	2.4405	0.0204
59	2.4607	0.0202
60	2.4807	0.0200
61	2.5006	0.0199
62	2.5203	0.0197
63	2.5399	0.0195
64	2.5592	0.0194
65	2.5785	0.0192
66	2.5975	0.0191
67	2.6165	0.0189
68	2.6353	0.0188
69	2.6539	0.0186
70	2.6724	0.0185
71	2.6907	0.0184
72	2.7090	0.0182
73	2.7226	0.0136
74	2.7362	0.0135
75	2.7496	0.0134
76	2.7629	0.0133
77	2.7761	0.0132
78	2.7891	0.0131
79	2.8021	0.0130
80	2.8150	0.0129
81	2.8278	0.0128
82	2.8404	0.0127
83	2.8530	0.0126
84	2.8655	0.0125
85	2.8779	0.0124
86	2.8902	0.0123
87	2.9024	0.0122
88	2.9145	0.0121
89	2.9265	0.0120
90	2.9384	0.0119
91	2.9503	0.0119
92	2.9621	0.0118
93	2.9738	0.0117
94	2.9854	0.0116
95	2.9969	0.0115
96	3.0084	0.0115
97	3.0197	0.0114
98	3.0310	0.0113
99	3.0423	0.0112
100	3.0534	0.0112
101	3.0645	0.0111
102	3.0756	0.0110
103	3.0865	0.0110
104	3.0974	0.0109

105	3.1082	0.0108
106	3.1190	0.0108
107	3.1297	0.0107
108	3.1403	0.0106
109	3.1508	0.0106
110	3.1613	0.0105
111	3.1718	0.0104
112	3.1822	0.0104
113	3.1925	0.0103
114	3.2028	0.0103
115	3.2130	0.0102
116	3.2231	0.0102
117	3.2332	0.0101
118	3.2433	0.0100
119	3.2532	0.0100
120	3.2632	0.0099
121	3.2731	0.0099
122	3.2829	0.0098
123	3.2927	0.0098
124	3.3024	0.0097
125	3.3121	0.0097
126	3.3217	0.0096
127	3.3313	0.0096
128	3.3408	0.0095
129	3.3503	0.0095
130	3.3598	0.0094
131	3.3691	0.0094
132	3.3785	0.0093
133	3.3878	0.0093
134	3.3971	0.0093
135	3.4063	0.0092
136	3.4154	0.0092
137	3.4246	0.0091
138	3.4337	0.0091
139	3.4427	0.0090
140	3.4517	0.0090
141	3.4607	0.0090
142	3.4696	0.0089
143	3.4785	0.0089
144	3.4873	0.0088
145	3.4961	0.0088
146	3.5049	0.0088
147	3.5136	0.0087
148	3.5223	0.0087
149	3.5310	0.0087
150	3.5396	0.0086
151	3.5482	0.0086
152	3.5567	0.0085
153	3.5652	0.0085
154	3.5737	0.0085
155	3.5821	0.0084
156	3.5905	0.0084
157	3.5989	0.0084
158	3.6072	0.0083
159	3.6155	0.0083
160	3.6238	0.0083
161	3.6320	0.0082
162	3.6403	0.0082
163	3.6484	0.0082
164	3.6566	0.0081
165	3.6647	0.0081
166	3.6728	0.0081
167	3.6808	0.0080
168	3.6888	0.0080
169	3.6968	0.0080
170	3.7048	0.0080
171	3.7127	0.0079
172	3.7206	0.0079
173	3.7284	0.0079
174	3.7363	0.0078
175	3.7441	0.0078

176	3.7519	0.0078
177	3.7596	0.0078
178	3.7674	0.0077
179	3.7751	0.0077
180	3.7827	0.0077
181	3.7904	0.0076
182	3.7980	0.0076
183	3.8056	0.0076
184	3.8131	0.0076
185	3.8207	0.0075
186	3.8282	0.0075
187	3.8357	0.0075
188	3.8431	0.0075
189	3.8506	0.0074
190	3.8580	0.0074
191	3.8654	0.0074
192	3.8727	0.0074
193	3.8801	0.0073
194	3.8874	0.0073
195	3.8947	0.0073
196	3.9019	0.0073
197	3.9092	0.0072
198	3.9164	0.0072
199	3.9236	0.0072
200	3.9308	0.0072
201	3.9379	0.0072
202	3.9450	0.0071
203	3.9521	0.0071
204	3.9592	0.0071
205	3.9663	0.0071
206	3.9733	0.0070
207	3.9803	0.0070
208	3.9873	0.0070
209	3.9943	0.0070
210	4.0013	0.0070
211	4.0082	0.0069
212	4.0151	0.0069
213	4.0220	0.0069
214	4.0289	0.0069
215	4.0357	0.0068
216	4.0426	0.0068
217	4.0494	0.0068
218	4.0562	0.0068
219	4.0629	0.0068
220	4.0697	0.0068
221	4.0764	0.0067
222	4.0831	0.0067
223	4.0898	0.0067
224	4.0965	0.0067
225	4.1031	0.0067
226	4.1098	0.0066
227	4.1164	0.0066
228	4.1230	0.0066
229	4.1296	0.0066
230	4.1361	0.0066
231	4.1427	0.0065
232	4.1492	0.0065
233	4.1557	0.0065
234	4.1622	0.0065
235	4.1687	0.0065
236	4.1751	0.0065
237	4.1816	0.0064
238	4.1880	0.0064
239	4.1944	0.0064
240	4.2008	0.0064
241	4.2071	0.0064
242	4.2135	0.0064
243	4.2198	0.0063
244	4.2261	0.0063
245	4.2325	0.0063
246	4.2387	0.0063

247	4.2450	0.0063
248	4.2513	0.0063
249	4.2575	0.0062
250	4.2637	0.0062
251	4.2699	0.0062
252	4.2761	0.0062
253	4.2823	0.0062
254	4.2885	0.0062
255	4.2946	0.0061
256	4.3007	0.0061
257	4.3068	0.0061
258	4.3129	0.0061
259	4.3190	0.0061
260	4.3251	0.0061
261	4.3311	0.0061
262	4.3372	0.0060
263	4.3432	0.0060
264	4.3492	0.0060
265	4.3552	0.0060
266	4.3612	0.0060
267	4.3672	0.0060
268	4.3731	0.0060
269	4.3791	0.0059
270	4.3850	0.0059
271	4.3909	0.0059
272	4.3968	0.0059
273	4.4027	0.0059
274	4.4085	0.0059
275	4.4144	0.0059
276	4.4202	0.0058
277	4.4261	0.0058
278	4.4319	0.0058
279	4.4377	0.0058
280	4.4435	0.0058
281	4.4493	0.0058
282	4.4550	0.0058
283	4.4608	0.0057
284	4.4665	0.0057
285	4.4722	0.0057
286	4.4779	0.0057
287	4.4836	0.0057
288	4.4893	0.0057

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0057	0.0028	0.0029
2	0.0057	0.0028	0.0029
3	0.0057	0.0028	0.0029
4	0.0057	0.0028	0.0030
5	0.0058	0.0028	0.0030
6	0.0058	0.0028	0.0030
7	0.0058	0.0028	0.0030
8	0.0058	0.0028	0.0030
9	0.0058	0.0028	0.0030
10	0.0059	0.0028	0.0030
11	0.0059	0.0029	0.0030
12	0.0059	0.0029	0.0030
13	0.0059	0.0029	0.0030
14	0.0059	0.0029	0.0031
15	0.0060	0.0029	0.0031
16	0.0060	0.0029	0.0031
17	0.0060	0.0029	0.0031
18	0.0060	0.0029	0.0031
19	0.0061	0.0029	0.0031
20	0.0061	0.0029	0.0031
21	0.0061	0.0030	0.0031
22	0.0061	0.0030	0.0031
23	0.0061	0.0030	0.0032
24	0.0062	0.0030	0.0032

25	0.0062	0.0030	0.0032
26	0.0062	0.0030	0.0032
27	0.0062	0.0030	0.0032
28	0.0063	0.0030	0.0032
29	0.0063	0.0031	0.0032
30	0.0063	0.0031	0.0032
31	0.0063	0.0031	0.0033
32	0.0064	0.0031	0.0033
33	0.0064	0.0031	0.0033
34	0.0064	0.0031	0.0033
35	0.0064	0.0031	0.0033
36	0.0065	0.0031	0.0033
37	0.0065	0.0032	0.0033
38	0.0065	0.0032	0.0033
39	0.0065	0.0032	0.0034
40	0.0066	0.0032	0.0034
41	0.0066	0.0032	0.0034
42	0.0066	0.0032	0.0034
43	0.0067	0.0032	0.0034
44	0.0067	0.0032	0.0034
45	0.0067	0.0033	0.0035
46	0.0067	0.0033	0.0035
47	0.0068	0.0033	0.0035
48	0.0068	0.0033	0.0035
49	0.0068	0.0033	0.0035
50	0.0068	0.0033	0.0035
51	0.0069	0.0033	0.0035
52	0.0069	0.0034	0.0036
53	0.0070	0.0034	0.0036
54	0.0070	0.0034	0.0036
55	0.0070	0.0034	0.0036
56	0.0070	0.0034	0.0036
57	0.0071	0.0034	0.0036
58	0.0071	0.0035	0.0037
59	0.0072	0.0035	0.0037
60	0.0072	0.0035	0.0037
61	0.0072	0.0035	0.0037
62	0.0072	0.0035	0.0037
63	0.0073	0.0035	0.0037
64	0.0073	0.0036	0.0038
65	0.0074	0.0036	0.0038
66	0.0074	0.0036	0.0038
67	0.0074	0.0036	0.0038
68	0.0075	0.0036	0.0038
69	0.0075	0.0036	0.0039
70	0.0075	0.0037	0.0039
71	0.0076	0.0037	0.0039
72	0.0076	0.0037	0.0039
73	0.0077	0.0037	0.0039
74	0.0077	0.0037	0.0040
75	0.0078	0.0038	0.0040
76	0.0078	0.0038	0.0040
77	0.0078	0.0038	0.0040
78	0.0079	0.0038	0.0040
79	0.0079	0.0038	0.0041
80	0.0080	0.0039	0.0041
81	0.0080	0.0039	0.0041
82	0.0080	0.0039	0.0041
83	0.0081	0.0039	0.0042
84	0.0081	0.0040	0.0042
85	0.0082	0.0040	0.0042
86	0.0082	0.0040	0.0042
87	0.0083	0.0040	0.0043
88	0.0083	0.0040	0.0043
89	0.0084	0.0041	0.0043
90	0.0084	0.0041	0.0043
91	0.0085	0.0041	0.0044
92	0.0085	0.0041	0.0044
93	0.0086	0.0042	0.0044
94	0.0087	0.0042	0.0045
95	0.0087	0.0042	0.0045

96	0.0088	0.0043	0.0045
97	0.0088	0.0043	0.0045
98	0.0089	0.0043	0.0046
99	0.0090	0.0044	0.0046
100	0.0090	0.0044	0.0046
101	0.0091	0.0044	0.0047
102	0.0091	0.0044	0.0047
103	0.0092	0.0045	0.0047
104	0.0093	0.0045	0.0048
105	0.0093	0.0045	0.0048
106	0.0094	0.0046	0.0048
107	0.0095	0.0046	0.0049
108	0.0095	0.0046	0.0049
109	0.0096	0.0047	0.0050
110	0.0097	0.0047	0.0050
111	0.0098	0.0047	0.0050
112	0.0098	0.0048	0.0051
113	0.0099	0.0048	0.0051
114	0.0100	0.0049	0.0051
115	0.0101	0.0049	0.0052
116	0.0102	0.0049	0.0052
117	0.0103	0.0050	0.0053
118	0.0103	0.0050	0.0053
119	0.0104	0.0051	0.0054
120	0.0105	0.0051	0.0054
121	0.0106	0.0052	0.0055
122	0.0107	0.0052	0.0055
123	0.0108	0.0053	0.0056
124	0.0109	0.0053	0.0056
125	0.0110	0.0054	0.0057
126	0.0111	0.0054	0.0057
127	0.0112	0.0055	0.0058
128	0.0113	0.0055	0.0058
129	0.0115	0.0056	0.0059
130	0.0115	0.0056	0.0059
131	0.0117	0.0057	0.0060
132	0.0118	0.0057	0.0061
133	0.0119	0.0058	0.0061
134	0.0120	0.0058	0.0062
135	0.0122	0.0059	0.0063
136	0.0123	0.0060	0.0063
137	0.0125	0.0061	0.0064
138	0.0126	0.0061	0.0065
139	0.0128	0.0062	0.0066
140	0.0129	0.0063	0.0066
141	0.0131	0.0064	0.0067
142	0.0132	0.0064	0.0068
143	0.0134	0.0065	0.0069
144	0.0135	0.0066	0.0070
145	0.0182	0.0089	0.0094
146	0.0184	0.0089	0.0094
147	0.0186	0.0091	0.0096
148	0.0188	0.0091	0.0097
149	0.0191	0.0093	0.0098
150	0.0192	0.0093	0.0099
151	0.0195	0.0095	0.0101
152	0.0197	0.0096	0.0101
153	0.0200	0.0097	0.0103
154	0.0202	0.0098	0.0104
155	0.0206	0.0100	0.0106
156	0.0208	0.0101	0.0107
157	0.0212	0.0103	0.0109
158	0.0214	0.0104	0.0110
159	0.0218	0.0106	0.0112
160	0.0220	0.0107	0.0113
161	0.0225	0.0109	0.0116
162	0.0228	0.0111	0.0117
163	0.0233	0.0113	0.0120
164	0.0236	0.0114	0.0121
165	0.0242	0.0117	0.0124
166	0.0245	0.0119	0.0126

167	0.0251	0.0122	0.0129
168	0.0255	0.0124	0.0131
169	0.0261	0.0127	0.0134
170	0.0265	0.0128	0.0136
171	0.0273	0.0133	0.0140
172	0.0277	0.0135	0.0143
173	0.0287	0.0139	0.0148
174	0.0292	0.0142	0.0150
175	0.0303	0.0147	0.0156
176	0.0310	0.0150	0.0159
177	0.0323	0.0157	0.0166
178	0.0330	0.0160	0.0170
179	0.0347	0.0168	0.0178
180	0.0356	0.0173	0.0183
181	0.0376	0.0183	0.0194
182	0.0388	0.0188	0.0200
183	0.0415	0.0202	0.0213
184	0.0431	0.0209	0.0222
185	0.0394	0.0191	0.0202
186	0.0416	0.0202	0.0214
187	0.0472	0.0209	0.0263
188	0.0508	0.0209	0.0300
189	0.0658	0.0209	0.0449
190	0.0737	0.0209	0.0529
191	0.1033	0.0209	0.0824
192	0.1395	0.0209	0.1186
193	0.3977	0.0209	0.3769
194	0.0851	0.0209	0.0643
195	0.0554	0.0209	0.0345
196	0.0441	0.0209	0.0233
197	0.0448	0.0209	0.0240
198	0.0401	0.0195	0.0206
199	0.0366	0.0178	0.0188
200	0.0338	0.0164	0.0174
201	0.0316	0.0153	0.0163
202	0.0298	0.0145	0.0153
203	0.0282	0.0137	0.0145
204	0.0269	0.0130	0.0138
205	0.0258	0.0125	0.0133
206	0.0248	0.0120	0.0127
207	0.0239	0.0116	0.0123
208	0.0230	0.0112	0.0118
209	0.0223	0.0108	0.0115
210	0.0216	0.0105	0.0111
211	0.0210	0.0102	0.0108
212	0.0204	0.0099	0.0105
213	0.0199	0.0097	0.0102
214	0.0194	0.0094	0.0100
215	0.0189	0.0092	0.0097
216	0.0185	0.0090	0.0095
217	0.0136	0.0066	0.0070
218	0.0133	0.0065	0.0068
219	0.0130	0.0063	0.0067
220	0.0127	0.0062	0.0065
221	0.0124	0.0060	0.0064
222	0.0121	0.0059	0.0062
223	0.0119	0.0058	0.0061
224	0.0116	0.0056	0.0060
225	0.0114	0.0055	0.0059
226	0.0112	0.0054	0.0057
227	0.0110	0.0053	0.0056
228	0.0108	0.0052	0.0055
229	0.0106	0.0051	0.0054
230	0.0104	0.0050	0.0053
231	0.0102	0.0050	0.0053
232	0.0100	0.0049	0.0052
233	0.0099	0.0048	0.0051
234	0.0097	0.0047	0.0050
235	0.0096	0.0047	0.0049
236	0.0094	0.0046	0.0049
237	0.0093	0.0045	0.0048

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      238              0.0092          0.0045              0.0047
      239              0.0090          0.0044              0.0047
      240              0.0089          0.0043              0.0046
      241              0.0088          0.0043              0.0045
      242              0.0087          0.0042              0.0045
      243              0.0086          0.0042              0.0044
      244              0.0085          0.0041              0.0044
      245              0.0084          0.0041              0.0043
      246              0.0083          0.0040              0.0043
      247              0.0082          0.0040              0.0042
      248              0.0081          0.0039              0.0042
      249              0.0080          0.0039              0.0041
      250              0.0079          0.0038              0.0041
      251              0.0078          0.0038              0.0040
      252              0.0077          0.0038              0.0040
      253              0.0076          0.0037              0.0039
      254              0.0076          0.0037              0.0039
      255              0.0075          0.0036              0.0039
      256              0.0074          0.0036              0.0038
      257              0.0073          0.0036              0.0038
      258              0.0073          0.0035              0.0037
      259              0.0072          0.0035              0.0037
      260              0.0071          0.0035              0.0037
      261              0.0071          0.0034              0.0036
      262              0.0070          0.0034              0.0036
      263              0.0069          0.0034              0.0036
      264              0.0069          0.0033              0.0035
      265              0.0068          0.0033              0.0035
      266              0.0068          0.0033              0.0035
      267              0.0067          0.0032              0.0034
      268              0.0066          0.0032              0.0034
      269              0.0066          0.0032              0.0034
      270              0.0065          0.0032              0.0034
      271              0.0065          0.0031              0.0033
      272              0.0064          0.0031              0.0033
      273              0.0064          0.0031              0.0033
      274              0.0063          0.0031              0.0033
      275              0.0063          0.0030              0.0032
      276              0.0062          0.0030              0.0032
      277              0.0062          0.0030              0.0032
      278              0.0061          0.0030              0.0032
      279              0.0061          0.0030              0.0031
      280              0.0060          0.0029              0.0031
      281              0.0060          0.0029              0.0031
      282              0.0060          0.0029              0.0031
      283              0.0059          0.0029              0.0030
      284              0.0059          0.0029              0.0030
      285              0.0058          0.0028              0.0030
      286              0.0058          0.0028              0.0030
      287              0.0057          0.0028              0.0030
      288              0.0057          0.0028              0.0029
      ---------------------------------------------------------------------
      ---------------------------------------------------------------------
      Total soil rain loss =      1.87(In)
      Total effective rainfall =      2.62(In)
      Peak flow rate in flood hydrograph =    239.55(CFS)
      ---------------------------------------------------------------------
      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                        24 - H O U R    S T O R M
                   R u n o f f      H y d r o g r a p h
      ---------------------------------------------------------------------
                Hydrograph in   5   Minute intervals ((CFS))

      ---------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0       75.0     150.0     225.0     300.0
---------------------------------------------------------------------------
  0+ 5       0.0009      0.13  Q         |         |         |         |
  0+10       0.0050      0.60  Q         |         |         |         |
  0+15       0.0178      1.85  Q         |         |         |         |
  0+20       0.0376      2.88  Q         |         |         |         |
  0+25       0.0605      3.33  Q         |         |         |         |
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0+30       0.0855      3.63  Q          |          |          |          |
0+35       0.1121      3.85  Q          |          |          |          |
0+40       0.1397      4.02  Q          |          |          |          |
0+45       0.1682      4.14  Q          |          |          |          |
0+50       0.1973      4.23  Q          |          |          |          |
0+55       0.2269      4.29  Q          |          |          |          |
1+ 0       0.2566      4.32  Q          |          |          |          |
1+ 5       0.2866      4.36  Q          |          |          |          |
1+10       0.3168      4.38  Q          |          |          |          |
1+15       0.3472      4.41  Q          |          |          |          |
1+20       0.3778      4.44  Q          |          |          |          |
1+25       0.4085      4.46  Q          |          |          |          |
1+30       0.4393      4.48  Q          |          |          |          |
1+35       0.4703      4.50  Q          |          |          |          |
1+40       0.5014      4.51  Q          |          |          |          |
1+45       0.5326      4.53  Q          |          |          |          |
1+50       0.5639      4.55  Q          |          |          |          |
1+55       0.5954      4.56  Q          |          |          |          |
2+ 0       0.6269      4.58  Q          |          |          |          |
2+ 5       0.6586      4.60  Q          |          |          |          |
2+10       0.6904      4.62  QV         |          |          |          |
2+15       0.7223      4.63  QV         |          |          |          |
2+20       0.7543      4.65  QV         |          |          |          |
2+25       0.7865      4.67  QV         |          |          |          |
2+30       0.8187      4.69  QV         |          |          |          |
2+35       0.8511      4.70  QV         |          |          |          |
2+40       0.8837      4.72  QV         |          |          |          |
2+45       0.9163      4.74  QV         |          |          |          |
2+50       0.9491      4.76  QV         |          |          |          |
2+55       0.9820      4.78  QV         |          |          |          |
3+ 0       1.0150      4.80  QV         |          |          |          |
3+ 5       1.0482      4.82  QV         |          |          |          |
3+10       1.0815      4.83  QV         |          |          |          |
3+15       1.1149      4.85  QV         |          |          |          |
3+20       1.1485      4.87  QV         |          |          |          |
3+25       1.1822      4.89  QV         |          |          |          |
3+30       1.2160      4.91  QV         |          |          |          |
3+35       1.2500      4.93  QV         |          |          |          |
3+40       1.2841      4.96  QV         |          |          |          |
3+45       1.3184      4.98  QV         |          |          |          |
3+50       1.3528      5.00  Q V        |          |          |          |
3+55       1.3874      5.02  Q V        |          |          |          |
4+ 0       1.4221      5.04  Q V        |          |          |          |
4+ 5       1.4570      5.06  Q V        |          |          |          |
4+10       1.4920      5.08  Q V        |          |          |          |
4+15       1.5271      5.11  Q V        |          |          |          |
4+20       1.5625      5.13  Q V        |          |          |          |
4+25       1.5979      5.15  Q V        |          |          |          |
4+30       1.6336      5.17  Q V        |          |          |          |
4+35       1.6694      5.20  Q V        |          |          |          |
4+40       1.7053      5.22  Q V        |          |          |          |
4+45       1.7414      5.24  Q V        |          |          |          |
4+50       1.7777      5.27  Q V        |          |          |          |
4+55       1.8142      5.29  Q V        |          |          |          |
5+ 0       1.8508      5.32  Q V        |          |          |          |
5+ 5       1.8876      5.34  Q V        |          |          |          |
5+10       1.9246      5.37  Q V        |          |          |          |
5+15       1.9617      5.39  Q V        |          |          |          |
5+20       1.9990      5.42  Q  V       |          |          |          |
5+25       2.0365      5.45  Q  V       |          |          |          |
5+30       2.0742      5.47  Q  V       |          |          |          |
5+35       2.1121      5.50  Q  V       |          |          |          |
5+40       2.1502      5.53  Q  V       |          |          |          |
5+45       2.1884      5.55  Q  V       |          |          |          |
5+50       2.2269      5.58  Q  V       |          |          |          |
5+55       2.2655      5.61  Q  V       |          |          |          |
6+ 0       2.3043      5.64  Q  V       |          |          |          |
6+ 5       2.3434      5.67  Q  V       |          |          |          |
6+10       2.3826      5.70  Q  V       |          |          |          |
6+15       2.4220      5.73  Q  V       |          |          |          |
6+20       2.4617      5.76  Q  V       |          |          |          |
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 6+25      2.5016     5.79  Q  V      |         |         |         |
 6+30      2.5416     5.82  Q  V      |         |         |         |
 6+35      2.5819     5.85  Q  V      |         |         |         |
 6+40      2.6224     5.88  Q  V      |         |         |         |
 6+45      2.6632     5.92  Q   V     |         |         |         |
 6+50      2.7041     5.95  Q   V     |         |         |         |
 6+55      2.7453     5.98  Q   V     |         |         |         |
 7+ 0      2.7868     6.01  Q   V     |         |         |         |
 7+ 5      2.8284     6.05  Q   V     |         |         |         |
 7+10      2.8703     6.08  Q   V     |         |         |         |
 7+15      2.9125     6.12  Q   V     |         |         |         |
 7+20      2.9549     6.16  Q   V     |         |         |         |
 7+25      2.9975     6.19  Q   V     |         |         |         |
 7+30      3.0404     6.23  Q   V     |         |         |         |
 7+35      3.0836     6.27  Q   V     |         |         |         |
 7+40      3.1270     6.30  Q   V     |         |         |         |
 7+45      3.1707     6.34  Q   V     |         |         |         |
 7+50      3.2146     6.38  Q   V     |         |         |         |
 7+55      3.2589     6.42  Q   V     |         |         |         |
 8+ 0      3.3034     6.46  Q    V    |         |         |         |
 8+ 5      3.3482     6.51  Q    V    |         |         |         |
 8+10      3.3933     6.55  Q    V    |         |         |         |
 8+15      3.4387     6.59  Q    V    |         |         |         |
 8+20      3.4843     6.63  Q    V    |         |         |         |
 8+25      3.5303     6.68  Q    V    |         |         |         |
 8+30      3.5766     6.72  Q    V    |         |         |         |
 8+35      3.6232     6.77  Q    V    |         |         |         |
 8+40      3.6702     6.81  Q    V    |         |         |         |
 8+45      3.7174     6.86  Q    V    |         |         |         |
 8+50      3.7650     6.91  Q    V    |         |         |         |
 8+55      3.8130     6.96  Q    V    |         |         |         |
 9+ 0      3.8612     7.01  Q    V    |         |         |         |
 9+ 5      3.9099     7.06  Q    V    |         |         |         |
 9+10      3.9588     7.11  Q     V   |         |         |         |
 9+15      4.0082     7.17  Q     V   |         |         |         |
 9+20      4.0579     7.22  Q     V   |         |         |         |
 9+25      4.1080     7.28  Q     V   |         |         |         |
 9+30      4.1585     7.33  Q     V   |         |         |         |
 9+35      4.2094     7.39  Q     V   |         |         |         |
 9+40      4.2607     7.45  Q     V   |         |         |         |
 9+45      4.3124     7.51  |Q    V   |         |         |         |
 9+50      4.3645     7.57  |Q    V   |         |         |         |
 9+55      4.4170     7.63  |Q    V   |         |         |         |
10+ 0      4.4700     7.69  |Q    V   |         |         |         |
10+ 5      4.5234     7.76  |Q    V   |         |         |         |
10+10      4.5773     7.82  |Q    V   |         |         |         |
10+15      4.6317     7.89  |Q     V  |         |         |         |
10+20      4.6865     7.96  |Q     V  |         |         |         |
10+25      4.7418     8.03  |Q     V  |         |         |         |
10+30      4.7976     8.10  |Q     V  |         |         |         |
10+35      4.8540     8.18  |Q     V  |         |         |         |
10+40      4.9108     8.25  |Q     V  |         |         |         |
10+45      4.9682     8.33  |Q     V  |         |         |         |
10+50      5.0262     8.41  |Q     V  |         |         |         |
10+55      5.0847     8.50  |Q     V  |         |         |         |
11+ 0      5.1437     8.58  |Q     V  |         |         |         |
11+ 5      5.2034     8.67  |Q     V  |         |         |         |
11+10      5.2637     8.75  |Q     V  |         |         |         |
11+15      5.3246     8.84  |Q      V |         |         |         |
11+20      5.3862     8.94  |Q      V |         |         |         |
11+25      5.4484     9.03  |Q      V |         |         |         |
11+30      5.5113     9.13  |Q      V |         |         |         |
11+35      5.5749     9.23  |Q      V |         |         |         |
11+40      5.6392     9.34  |Q      V |         |         |         |
11+45      5.7042     9.45  |Q      V |         |         |         |
11+50      5.7700     9.55  |Q      V |         |         |         |
11+55      5.8366     9.67  |Q      V |         |         |         |
12+ 0      5.9040     9.79  |Q      V |         |         |         |
12+ 5      5.9730    10.01  |Q       V|         |         |         |
12+10      6.0453    10.50  |Q       V|         |         |         |
12+15      6.1253    11.62  |Q       V|         |         |         |
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12+20      6.2117     12.55  |Q       V|         |         |         |
12+25      6.3016     13.04  |Q       V|         |         |         |
12+30      6.3940     13.42  |Q       V|         |         |         |
12+35      6.4887     13.75  |Q       V|         |         |         |
12+40      6.5853     14.03  |Q       V|         |         |         |
12+45      6.6837     14.28  |Q        V         |         |         |
12+50      6.7836     14.52  |Q        V         |         |         |
12+55      6.8851     14.74  |Q        V         |         |         |
13+ 0      6.9880     14.94  |Q        V         |         |         |
13+ 5      7.0924     15.15  | Q       V         |         |         |
13+10      7.1982     15.37  | Q       V         |         |         |
13+15      7.3056     15.59  | Q       |V        |         |         |
13+20      7.4145     15.82  | Q       |V        |         |         |
13+25      7.5251     16.06  | Q       |V        |         |         |
13+30      7.6374     16.30  | Q       |V        |         |         |
13+35      7.7514     16.56  | Q       |V        |         |         |
13+40      7.8673     16.82  | Q       |V        |         |         |
13+45      7.9851     17.11  | Q       | V       |         |         |
13+50      8.1049     17.39  | Q       | V       |         |         |
13+55      8.2268     17.71  | Q       | V       |         |         |
14+ 0      8.3510     18.03  | Q       | V       |         |         |
14+ 5      8.4775     18.37  | Q       | V       |         |         |
14+10      8.6064     18.72  | Q       |  V      |         |         |
14+15      8.7378     19.08  | Q       |  V      |         |         |
14+20      8.8719     19.46  | Q       |  V      |         |         |
14+25      9.0089     19.90  | Q       |  V      |         |         |
14+30      9.1490     20.35  | Q       |  V      |         |         |
14+35      9.2926     20.85  | Q       |   V     |         |         |
14+40      9.4399     21.38  | Q       |   V     |         |         |
14+45      9.5911     21.96  | Q       |   V     |         |         |
14+50      9.7467     22.58  |  Q      |   V     |         |         |
14+55      9.9070     23.28  |  Q      |    V    |         |         |
15+ 0     10.0724     24.02  |  Q      |    V    |         |         |
15+ 5     10.2436     24.86  |  Q      |    V    |         |         |
15+10     10.4211     25.77  |  Q      |    V    |         |         |
15+15     10.6058     26.82  |  Q      |     V   |         |         |
15+20     10.7984     27.96  |  Q      |     V   |         |         |
15+25     10.9992     29.16  |  Q      |     V   |         |         |
15+30     11.2063     30.07  |   Q     |     V   |         |         |
15+35     11.4154     30.36  |   Q     |      V  |         |         |
15+40     11.6325     31.53  |   Q     |      V  |         |         |
15+45     11.8755     35.28  |   Q     |       V |         |         |
15+50     12.1614     41.51  |    Q    |       V |         |         |
15+55     12.5238     52.62  |      Q  |       V |         |         |
16+ 0     12.9970     68.71  |        Q|        V|         |         |
16+ 5     13.7153    104.29  |         |  Q      V         |         |
16+10     14.8255    161.21  |         |         |QV       |         |
16+15     16.4754    239.55  |         |         |   V     |Q        |
16+20     17.8569    200.59  |         |         |     QV  |         |
16+25     18.7002    122.45  |         |    Q    |       V |         |
16+30     19.3276     91.10  |         | Q       |        V|         |
16+35     19.8293     72.85  |        Q|         |         V         |
16+40     20.2445     60.29  |       Q |         |         V         |
16+45     20.5880     49.88  |     Q   |         |         |V        |
16+50     20.8740     41.52  |    Q    |         |         |V        |
16+55     21.1128     34.68  |   Q     |         |         | V       |
17+ 0     21.3154     29.42  |  Q      |         |         | V       |
17+ 5     21.5005     26.88  |  Q      |         |         | V       |
17+10     21.6716     24.84  |  Q      |         |         | V       |
17+15     21.8323     23.35  |  Q      |         |         |  V      |
17+20     21.9855     22.24  | Q       |         |         |  V      |
17+25     22.1276     20.63  | Q       |         |         |  V      |
17+30     22.2607     19.32  | Q       |         |         |  V      |
17+35     22.3861     18.21  | Q       |         |         |  V      |
17+40     22.5053     17.31  | Q       |         |         |   V     |
17+45     22.6204     16.70  | Q       |         |         |   V     |
17+50     22.7318     16.18  | Q       |         |         |   V     |
17+55     22.8399     15.70  | Q       |         |         |   V     |
18+ 0     22.9450     15.26  | Q       |         |         |   V     |
18+ 5     23.0467     14.76  |Q        |         |         |   V     |
18+10     23.1433     14.03  |Q        |         |         |    V    |
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18+15      23.2308     12.71  |Q        |         |         |    V    |
18+20      23.3107     11.60  |Q        |         |         |    V    |
18+25      23.3862     10.97  |Q        |         |         |    V    |
18+30      23.4584     10.47  |Q        |         |         |    V    |
18+35      23.5277     10.07  |Q        |         |         |    V    |
18+40      23.5946      9.72  |Q        |         |         |    V    |
18+45      23.6595      9.42  |Q        |         |         |    V    |
18+50      23.7225      9.15  |Q        |         |         |    V    |
18+55      23.7840      8.93  |Q        |         |         |     V   |
19+ 0      23.8441      8.73  |Q        |         |         |     V   |
19+ 5      23.9030      8.54  |Q        |         |         |     V   |
19+10      23.9606      8.37  |Q        |         |         |     V   |
19+15      24.0171      8.21  |Q        |         |         |     V   |
19+20      24.0726      8.05  |Q        |         |         |     V   |
19+25      24.1270      7.90  |Q        |         |         |     V   |
19+30      24.1805      7.76  |Q        |         |         |     V   |
19+35      24.2330      7.63  |Q        |         |         |     V   |
19+40      24.2848      7.51  |Q        |         |         |     V   |
19+45      24.3357      7.39  Q        |         |         |     V   |
19+50      24.3858      7.28  Q        |         |         |     V   |
19+55      24.4351      7.17  Q        |         |         |      V  |
20+ 0      24.4838      7.06  Q        |         |         |      V  |
20+ 5      24.5317      6.96  Q        |         |         |      V  |
20+10      24.5790      6.86  Q        |         |         |      V  |
20+15      24.6256      6.77  Q        |         |         |      V  |
20+20      24.6716      6.68  Q        |         |         |      V  |
20+25      24.7170      6.59  Q        |         |         |      V  |
20+30      24.7618      6.50  Q        |         |         |      V  |
20+35      24.8060      6.42  Q        |         |         |      V  |
20+40      24.8497      6.34  Q        |         |         |      V  |
20+45      24.8929      6.27  Q        |         |         |      V  |
20+50      24.9355      6.19  Q        |         |         |      V  |
20+55      24.9776      6.12  Q        |         |         |      V  |
21+ 0      25.0193      6.05  Q        |         |         |      V  |
21+ 5      25.0605      5.98  Q        |         |         |      V  |
21+10      25.1012      5.91  Q        |         |         |       V |
21+15      25.1415      5.85  Q        |         |         |       V |
21+20      25.1814      5.79  Q        |         |         |       V |
21+25      25.2208      5.73  Q        |         |         |       V |
21+30      25.2598      5.67  Q        |         |         |       V |
21+35      25.2985      5.61  Q        |         |         |       V |
21+40      25.3367      5.55  Q        |         |         |       V |
21+45      25.3746      5.50  Q        |         |         |       V |
21+50      25.4121      5.44  Q        |         |         |       V |
21+55      25.4492      5.39  Q        |         |         |       V |
22+ 0      25.4860      5.34  Q        |         |         |       V |
22+ 5      25.5224      5.29  Q        |         |         |       V |
22+10      25.5585      5.24  Q        |         |         |       V |
22+15      25.5943      5.20  Q        |         |         |       V |
22+20      25.6298      5.15  Q        |         |         |       V |
22+25      25.6649      5.10  Q        |         |         |       V |
22+30      25.6998      5.06  Q        |         |         |       V |
22+35      25.7343      5.02  Q        |         |         |        V|
22+40      25.7686      4.97  Q        |         |         |        V|
22+45      25.8026      4.93  Q        |         |         |        V|
22+50      25.8363      4.89  Q        |         |         |        V|
22+55      25.8697      4.85  Q        |         |         |        V|
23+ 0      25.9029      4.81  Q        |         |         |        V|
23+ 5      25.9358      4.78  Q        |         |         |        V|
23+10      25.9684      4.74  Q        |         |         |        V|
23+15      26.0008      4.70  Q        |         |         |        V|
23+20      26.0329      4.67  Q        |         |         |        V|
23+25      26.0648      4.63  Q        |         |         |        V|
23+30      26.0965      4.60  Q        |         |         |        V|
23+35      26.1279      4.56  Q        |         |         |        V|
23+40      26.1591      4.53  Q        |         |         |        V|
23+45      26.1901      4.50  Q        |         |         |        V|
23+50      26.2208      4.47  Q        |         |         |        V|
23+55      26.2514      4.43  Q        |         |         |        V|
24+ 0      26.2817      4.40  Q        |         |         |        V|
24+ 5      26.3109      4.25  Q        |         |         |        V|
```

```
   24+10      26.3367      3.75  Q         |         |         |         V|
   24+15      26.3538      2.47  Q         |         |         |         V|
   24+20      26.3636      1.44  Q         |         |         |         V|
   24+25      26.3704      0.99  Q         |         |         |         V|
   24+30      26.3752      0.69  Q         |         |         |         V|
   24+35      26.3785      0.48  Q         |         |         |         V|
   24+40      26.3807      0.32  Q         |         |         |         V|
   24+45      26.3822      0.21  Q         |         |         |         V|
   24+50      26.3831      0.14  Q         |         |         |         V|
   24+55      26.3837      0.09  Q         |         |         |         V|
   25+ 0      26.3842      0.07  Q         |         |         |         V|
   25+ 5      26.3845      0.05  Q         |         |         |         V|
   25+10      26.3848      0.04  Q         |         |         |         V|
   25+15      26.3850      0.03  Q         |         |         |         V|
   25+20      26.3851      0.01  Q         |         |         |         V|
   25+25      26.3851      0.01  Q         |         |         |         V|
   25+30      26.3851      0.00  Q         |         |         |          V
------------------------------------------------------------------------------
```

- 100 Year 3 Hour Pre-Development Unit Hydrograph – Area 'C'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/10/16   File Name exc10003.out


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------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'C' - 100 YEAR 3 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 100

       Antecedent Moisture Condition = 3

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 78.3       0.5          0.00     B     0.300     1.000    0.300
 78.3     120.5          1.00     C     0.250     1.000    0.250

Area-averaged adjusted loss rate Fm (In/Hr) =  0.250

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC3)          Yield Fr
     0.52   0.004         78.3      93.0       0.76     0.855

   120.50   0.996         78.3      93.0       0.76     0.855

Area-averaged catchment yield fraction, Y =  0.855
Area-averaged low loss fraction, Yb =  0.145
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.262 (hours)
Watershed area =     121.02(Ac.)
Catchment Lag time =   0.210 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 39.7482
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.250(In/Hr)
Average low loss rate fraction (Yb) = 0.145 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.520(In)
Computed peak 30-minute rainfall =  1.090(In)
Specified peak 1-hour rainfall =  1.450(In)
Computed peak 3-hour rainfall =  2.430(In)
Specified peak 6-hour rainfall =  3.360(In)
Specified peak 24-hour rainfall =  5.630(In)


Rainfall depth area reduction factors:
Using a total area of     121.02(Ac.) (Ref: fig. E-4)
```

```
5-minute factor = 0.994     Adjusted rainfall =  0.517(In)
30-minute factor = 0.994    Adjusted rainfall =  1.084(In)
1-hour factor = 0.994       Adjusted rainfall =  1.442(In)
3-hour factor = 0.999       Adjusted rainfall =  2.428(In)
6-hour factor = 1.000       Adjusted rainfall =  3.359(In)
24-hour factor = 1.000 Adjusted rainfall =  5.629(In)
------------------------------------------------------------------------

                     U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
------------------------------------------------------------------------
               (K =      1463.59 (CFS))

  1                3.106                  45.464
  2               14.711                 169.842
  3               45.630                 452.532
  4               68.335                 332.306
  5               78.344                 146.486
  6               85.025                  97.781
  7               89.761                  69.314
  8               93.184                  50.099
  9               95.601                  35.383
 10               97.228                  23.808
 11               98.107                  12.865
 12               98.567                   6.732
 13               98.954                   5.672
 14               99.221                   3.896
 15               99.511                   4.246
 16               99.764                   3.701
 17               99.907                   2.094
 18              100.000                   1.365
------------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.5171              0.5171
  2              0.6885              0.1714
  3              0.8140              0.1255
  4              0.9167              0.1027
  5              1.0052              0.0885
  6              1.0838              0.0786
  7              1.1548              0.0710
  8              1.2201              0.0653
  9              1.2807              0.0606
 10              1.3375              0.0568
 11              1.3910              0.0535
 12              1.4418              0.0507
 13              1.4976              0.0558
 14              1.5512              0.0536
 15              1.6028              0.0516
 16              1.6527              0.0498
 17              1.7009              0.0482
 18              1.7476              0.0468
 19              1.7931              0.0454
 20              1.8372              0.0442
 21              1.8803              0.0430
 22              1.9222              0.0420
 23              1.9632              0.0410
 24              2.0033              0.0400
 25              2.0424              0.0392
 26              2.0808              0.0384
 27              2.1184              0.0376
 28              2.1553              0.0369
 29              2.1915              0.0362
 30              2.2270              0.0355
 31              2.2619              0.0349
 32              2.2963              0.0343
 33              2.3300              0.0338
 34              2.3633              0.0332
```

```
 35              2.3960              0.0327
 36              2.4283              0.0322
-------------------------------------------------------------------
Unit              Unit            Unit              Effective
Period            Rainfall        Soil-Loss         Rainfall
(number)            (In)          (In)                (In)
-------------------------------------------------------------------
  1              0.0322           0.0047              0.0276
  2              0.0327           0.0047              0.0280
  3              0.0338           0.0049              0.0289
  4              0.0343           0.0050              0.0294
  5              0.0355           0.0051              0.0304
  6              0.0362           0.0052              0.0310
  7              0.0376           0.0054              0.0322
  8              0.0384           0.0056              0.0328
  9              0.0400           0.0058              0.0343
 10              0.0410           0.0059              0.0350
 11              0.0430           0.0062              0.0368
 12              0.0442           0.0064              0.0378
 13              0.0468           0.0068              0.0400
 14              0.0482           0.0070              0.0413
 15              0.0516           0.0075              0.0442
 16              0.0536           0.0078              0.0458
 17              0.0507           0.0073              0.0434
 18              0.0535           0.0077              0.0458
 19              0.0606           0.0088              0.0519
 20              0.0653           0.0094              0.0558
 21              0.0786           0.0114              0.0672
 22              0.0885           0.0128              0.0757
 23              0.1255           0.0182              0.1074
 24              0.1714           0.0209              0.1506
 25              0.5171           0.0209              0.4962
 26              0.1027           0.0149              0.0878
 27              0.0710           0.0103              0.0607
 28              0.0568           0.0082              0.0486
 29              0.0558           0.0081              0.0477
 30              0.0498           0.0072              0.0426
 31              0.0454           0.0066              0.0388
 32              0.0420           0.0061              0.0359
 33              0.0392           0.0057              0.0335
 34              0.0369           0.0053              0.0315
 35              0.0349           0.0051              0.0299
 36              0.0332           0.0048              0.0284
-------------------------------------------------------------------
-------------------------------------------------------------------
Total soil rain loss =      0.29(In)
Total effective rainfall =      2.13(In)
Peak flow rate in flood hydrograph =    327.48(CFS)
-------------------------------------------------------------------
+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                    3 - H O U R    S T O R M
                R u n o f f      H y d r o g r a p h
-------------------------------------------------------------------
            Hydrograph in   5   Minute intervals ((CFS))

-------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0      100.0     200.0     300.0     400.0
-------------------------------------------------------------------
  0+ 5       0.0086      1.25  Q         |         |         |         |
  0+10       0.0497      5.96  Q         |         |         |         |
  0+15       0.1774     18.55  VQ        |         |         |         |
  0+20       0.3708     28.07  V Q       |         |         |         |
  0+25       0.5965     32.79  |V Q      |         |         |         |
  0+30       0.8462     36.26  |V Q      |         |         |         |
  0+35       1.1156     39.11  | VQ      |         |         |         |
  0+40       1.4015     41.51  | V Q     |         |         |         |
  0+45       1.7023     43.67  |  VQ     |         |         |         |
  0+50       2.0162     45.58  |  VQ     |         |         |         |
  0+55       2.3426     47.39  |   Q     |         |         |         |
  1+ 0       2.6808     49.10  |   Q     |         |         |         |
  1+ 5       3.0323     51.04  |    Q    |         |         |         |
```

```
   1+10       3.3975     53.02  |    QV   |         |         |         |
   1+15       3.7787     55.36  |    Q V  |         |         |         |
   1+20       4.1772     57.85  |    Q V  |         |         |         |
   1+25       4.5938     60.50  |     Q V |         |         |         |
   1+30       5.0250     62.60  |     Q  V|         |         |         |
   1+35       5.4630     63.61  |     Q   V         |         |         |
   1+40       5.9171     65.93  |     Q   V         |         |         |
   1+45       6.4053     70.89  |      Q  |V        |         |         |
   1+50       6.9394     77.54  |      Q  | V       |         |         |
   1+55       7.5463     88.13  |       Q |   V     |         |         |
   2+ 0       8.2660    104.50  |         Q    V    |         |         |
   2+ 5       9.2806    147.32  |         |   Q  V  |         |         |
   2+10      10.7996    220.56  |         |         V Q       |         |
   2+15      13.0550    327.48  |         |         |   V     | Q       |
   2+20      14.8684    263.31  |         |         |     QV  |         |
   2+25      16.0483    171.32  |         |       Q |        V|         |
   2+30      16.9828    135.68  |         |  Q      |         |V        |
   2+35      17.7679    113.99  |         |Q        |         |  V      |
   2+40      18.4409     97.73  |        Q|         |         |   V     |
   2+45      19.0187     83.89  |       Q |         |         |    V    |
   2+50      19.5177     72.46  |      Q  |         |         |     V   |
   2+55      19.9489     62.61  |     Q   |         |         |      V  |
   3+ 0      20.3335     55.84  |    Q    |         |         |      V  |
   3+ 5      20.6823     50.65  |    Q    |         |         |       V |
   3+10      20.9751     42.52  |   Q     |         |         |       V |
   3+15      21.1682     28.04  | Q       |         |         |        V|
   3+20      21.2867     17.20  |Q        |         |         |        V|
   3+25      21.3662     11.55  |Q        |         |         |        V|
   3+30      21.4201      7.82  Q         |         |         |        V|
   3+35      21.4540      4.92  Q         |         |         |        V|
   3+40      21.4763      3.25  Q         |         |         |        V|
   3+45      21.4907      2.09  Q         |         |         |        V|
   3+50      21.4999      1.33  Q         |         |         |        V|
   3+55      21.5061      0.90  Q         |         |         |        V|
   4+ 0      21.5106      0.66  Q         |         |         |        V|
   4+ 5      21.5139      0.47  Q         |         |         |        V|
   4+10      21.5163      0.34  Q         |         |         |        V|
   4+15      21.5177      0.21  Q         |         |         |        V|
   4+20      21.5184      0.10  Q         |         |         |        V|
   4+25      21.5187      0.04  Q         |         |         |        V|
-------------------------------------------------------------------------
```

- 100 Year 6 Hour Pre-Development Unit Hydrograph – Area 'C'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/10/16   File Name exc10006.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'C' - 100 YEAR 6 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 100

       Antecedent Moisture Condition = 3

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 78.3       0.5          0.00     B     0.300     1.000    0.300
 78.3     120.5          1.00     C     0.250     1.000    0.250

Area-averaged adjusted loss rate Fm (In/Hr) =  0.250

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC3)          Yield Fr
     0.52   0.004         78.3      93.0       0.76     0.855

   120.50   0.996         78.3      93.0       0.76     0.855

Area-averaged catchment yield fraction, Y =  0.855
Area-averaged low loss fraction, Yb =  0.145
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.262 (hours)
Watershed area =     121.02(Ac.)
Catchment Lag time =   0.210 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 39.7482
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.250(In/Hr)
Average low loss rate fraction (Yb) = 0.145 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.520(In)
Computed peak 30-minute rainfall =  1.090(In)
Specified peak 1-hour rainfall =  1.450(In)
Computed peak 3-hour rainfall =  2.430(In)
Specified peak 6-hour rainfall =  3.360(In)
Specified peak 24-hour rainfall =  5.630(In)


Rainfall depth area reduction factors:
Using a total area of     121.02(Ac.) (Ref: fig. E-4)
```

```
5-minute factor = 0.994     Adjusted rainfall =  0.517(In)
30-minute factor = 0.994    Adjusted rainfall =  1.084(In)
1-hour factor = 0.994       Adjusted rainfall =  1.442(In)
3-hour factor = 0.999       Adjusted rainfall =  2.428(In)
6-hour factor = 1.000       Adjusted rainfall =  3.359(In)
24-hour factor = 1.000 Adjusted rainfall =  5.629(In)
--------------------------------------------------------------------

                     U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------
               (K =      1463.59 (CFS))

  1                3.106                  45.464
  2               14.711                 169.842
  3               45.630                 452.532
  4               68.335                 332.306
  5               78.344                 146.486
  6               85.025                  97.781
  7               89.761                  69.314
  8               93.184                  50.099
  9               95.601                  35.383
 10               97.228                  23.808
 11               98.107                  12.865
 12               98.567                   6.732
 13               98.954                   5.672
 14               99.221                   3.896
 15               99.511                   4.246
 16               99.764                   3.701
 17               99.907                   2.094
 18              100.000                   1.365
--------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.5171              0.5171
  2              0.6885              0.1714
  3              0.8140              0.1255
  4              0.9167              0.1027
  5              1.0052              0.0885
  6              1.0838              0.0786
  7              1.1548              0.0710
  8              1.2201              0.0653
  9              1.2807              0.0606
 10              1.3375              0.0568
 11              1.3910              0.0535
 12              1.4418              0.0507
 13              1.4976              0.0558
 14              1.5512              0.0536
 15              1.6028              0.0516
 16              1.6527              0.0498
 17              1.7009              0.0482
 18              1.7476              0.0468
 19              1.7931              0.0454
 20              1.8372              0.0442
 21              1.8803              0.0430
 22              1.9222              0.0420
 23              1.9632              0.0410
 24              2.0033              0.0400
 25              2.0424              0.0392
 26              2.0808              0.0384
 27              2.1184              0.0376
 28              2.1553              0.0369
 29              2.1915              0.0362
 30              2.2270              0.0355
 31              2.2619              0.0349
 32              2.2963              0.0343
 33              2.3300              0.0338
 34              2.3633              0.0332
```

35	2.3960	0.0327
36	2.4283	0.0322
37	2.4596	0.0313
38	2.4905	0.0309
39	2.5209	0.0305
40	2.5510	0.0300
41	2.5806	0.0297
42	2.6099	0.0293
43	2.6388	0.0289
44	2.6674	0.0285
45	2.6956	0.0282
46	2.7234	0.0279
47	2.7510	0.0275
48	2.7782	0.0272
49	2.8051	0.0269
50	2.8318	0.0266
51	2.8582	0.0264
52	2.8843	0.0261
53	2.9101	0.0258
54	2.9356	0.0256
55	2.9610	0.0253
56	2.9860	0.0251
57	3.0109	0.0248
58	3.0355	0.0246
59	3.0599	0.0244
60	3.0840	0.0242
61	3.1080	0.0239
62	3.1317	0.0237
63	3.1553	0.0235
64	3.1786	0.0233
65	3.2017	0.0231
66	3.2247	0.0230
67	3.2475	0.0228
68	3.2701	0.0226
69	3.2925	0.0224
70	3.3147	0.0222
71	3.3368	0.0221
72	3.3587	0.0219

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0219	0.0032	0.0187
2	0.0221	0.0032	0.0189
3	0.0224	0.0032	0.0192
4	0.0226	0.0033	0.0193
5	0.0230	0.0033	0.0196
6	0.0231	0.0033	0.0198
7	0.0235	0.0034	0.0201
8	0.0237	0.0034	0.0203
9	0.0242	0.0035	0.0207
10	0.0244	0.0035	0.0209
11	0.0248	0.0036	0.0212
12	0.0251	0.0036	0.0214
13	0.0256	0.0037	0.0219
14	0.0258	0.0037	0.0221
15	0.0264	0.0038	0.0226
16	0.0266	0.0039	0.0228
17	0.0272	0.0039	0.0233
18	0.0275	0.0040	0.0236
19	0.0282	0.0041	0.0241
20	0.0285	0.0041	0.0244
21	0.0293	0.0042	0.0250
22	0.0297	0.0043	0.0254
23	0.0305	0.0044	0.0261
24	0.0309	0.0045	0.0264
25	0.0322	0.0047	0.0276
26	0.0327	0.0047	0.0280
27	0.0338	0.0049	0.0289
28	0.0343	0.0050	0.0294

29	0.0355	0.0051	0.0304
30	0.0362	0.0052	0.0310
31	0.0376	0.0054	0.0322
32	0.0384	0.0056	0.0328
33	0.0400	0.0058	0.0343
34	0.0410	0.0059	0.0350
35	0.0430	0.0062	0.0368
36	0.0442	0.0064	0.0378
37	0.0468	0.0068	0.0400
38	0.0482	0.0070	0.0413
39	0.0516	0.0075	0.0442
40	0.0536	0.0078	0.0458
41	0.0507	0.0073	0.0434
42	0.0535	0.0077	0.0458
43	0.0606	0.0088	0.0519
44	0.0653	0.0094	0.0558
45	0.0786	0.0114	0.0672
46	0.0885	0.0128	0.0757
47	0.1255	0.0182	0.1074
48	0.1714	0.0209	0.1506
49	0.5171	0.0209	0.4962
50	0.1027	0.0149	0.0878
51	0.0710	0.0103	0.0607
52	0.0568	0.0082	0.0486
53	0.0558	0.0081	0.0477
54	0.0498	0.0072	0.0426
55	0.0454	0.0066	0.0388
56	0.0420	0.0061	0.0359
57	0.0392	0.0057	0.0335
58	0.0369	0.0053	0.0315
59	0.0349	0.0051	0.0299
60	0.0332	0.0048	0.0284
61	0.0313	0.0045	0.0268
62	0.0300	0.0043	0.0257
63	0.0289	0.0042	0.0247
64	0.0279	0.0040	0.0238
65	0.0269	0.0039	0.0230
66	0.0261	0.0038	0.0223
67	0.0253	0.0037	0.0217
68	0.0246	0.0036	0.0210
69	0.0239	0.0035	0.0205
70	0.0233	0.0034	0.0200
71	0.0228	0.0033	0.0195
72	0.0222	0.0032	0.0190

Total soil rain loss = 0.43(In)
Total effective rainfall = 2.93(In)
Peak flow rate in flood hydrograph = 327.48(CFS)

++

6 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	100.0	200.0	300.0	400.0
0+ 5	0.0059	0.85	Q	|	|	|	|
0+10	0.0337	4.04	Q	|	|	|	|
0+15	0.1202	12.56	VQ	|	|	|	|
0+20	0.2504	18.91	VQ	|	|	|	|
0+25	0.4011	21.87	V Q	|	|	|	|
0+30	0.5660	23.95	V Q	|	|	|	|
0+35	0.7419	25.54	|VQ	|	|	|	|
0+40	0.9264	26.78	|VQ	|	|	|	|
0+45	1.1177	27.78	|VQ	|	|	|	|
0+50	1.3145	28.57	|VQ	|	|	|	|
0+55	1.5155	29.19	| Q	|	|	|	|
1+ 0	1.7201	29.70	| Q	|	|	|	|

```
1+ 5       1.9282     30.22  | VQ      |         |         |         |
1+10       2.1396     30.70  | VQ      |         |         |         |
1+15       2.3547     31.23  |  Q      |         |         |         |
1+20       2.5733     31.75  |  Q      |         |         |         |
1+25       2.7956     32.28  |  Q      |         |         |         |
1+30       3.0215     32.80  |  QV     |         |         |         |
1+35       3.2511     33.33  |  QV     |         |         |         |
1+40       3.4843     33.87  |  QV     |         |         |         |
1+45       3.7217     34.46  |  Q V    |         |         |         |
1+50       3.9631     35.06  |  Q V    |         |         |         |
1+55       4.2091     35.71  |  Q V    |         |         |         |
2+ 0       4.4595     36.37  |  Q  V   |         |         |         |
2+ 5       4.7152     37.12  |  Q  V   |         |         |         |
2+10       4.9763     37.92  |  Q  V   |         |         |         |
2+15       5.2443     38.91  |  Q   V  |         |         |         |
2+20       5.5189     39.87  |  Q   V  |         |         |         |
2+25       5.8002     40.85  |   Q  V  |         |         |         |
2+30       6.0884     41.84  |   Q   V |         |         |         |
2+35       6.3841     42.94  |   Q   V |         |         |         |
2+40       6.6876     44.06  |   Q    V|         |         |         |
2+45       6.9996     45.32  |   Q    V|         |         |         |
2+50       7.3207     46.62  |   Q    V|         |         |         |
2+55       7.6519     48.09  |   Q     V         |         |         |
3+ 0       7.9938     49.64  |   Q     V         |         |         |
3+ 5       8.3480     51.43  |    Q    |V        |         |         |
3+10       8.7152     53.32  |    Q    |V        |         |         |
3+15       9.0978     55.55  |    Q    | V       |         |         |
3+20       9.4968     57.94  |    Q    | V       |         |         |
3+25       9.9137     60.53  |     Q   |  V      |         |         |
3+30      10.3449     62.60  |     Q   |   V     |         |         |
3+35      10.7829     63.61  |     Q   |   V     |         |         |
3+40      11.2370     65.93  |     Q   |    V    |         |         |
3+45      11.7252     70.89  |      Q  |    V    |         |         |
3+50      12.2592     77.54  |      Q  |     V   |         |         |
3+55      12.8662     88.13  |       Q |      V  |         |         |
4+ 0      13.5859    104.50  |         Q       V |         |         |
4+ 5      14.6005    147.32  |         |   Q    V|         |         |
4+10      16.1195    220.56  |         |         |VQ       |         |
4+15      18.3749    327.48  |         |         |   V     | Q       |
4+20      20.1883    263.31  |         |         |     QV  |         |
4+25      21.3682    171.32  |         |      Q  |       V |         |
4+30      22.3027    135.68  |         |  Q      |         V         |
4+35      23.0878    113.99  |         |Q        |         |V        |
4+40      23.7608     97.73  |        Q|         |         | V       |
4+45      24.3386     83.89  |       Q |         |         | V       |
4+50      24.8376     72.46  |      Q  |         |         |  V      |
4+55      25.2688     62.61  |     Q   |         |         |   V     |
5+ 0      25.6534     55.84  |    Q    |         |         |   V     |
5+ 5      26.0106     51.86  |    Q    |         |         |    V    |
5+10      26.3428     48.24  |   Q     |         |         |    V    |
5+15      26.6573     45.66  |   Q     |         |         |     V   |
5+20      26.9535     43.02  |   Q     |         |         |     V   |
5+25      27.2310     40.29  |   Q     |         |         |     V   |
5+30      27.4937     38.14  |  Q      |         |         |      V  |
5+35      27.7419     36.04  |  Q      |         |         |      V  |
5+40      27.9806     34.67  |  Q      |         |         |      V  |
5+45      28.2112     33.47  |  Q      |         |         |       V |
5+50      28.4343     32.39  |  Q      |         |         |       V |
5+55      28.6506     31.42  |  Q      |         |         |       V |
6+ 0      28.8608     30.52  |  Q      |         |         |        V|
6+ 5      29.0596     28.86  | Q       |         |         |        V|
6+10      29.2315     24.96  | Q       |         |         |        V|
6+15      29.3411     15.92  |Q        |         |         |        V|
6+20      29.4055      9.34  Q         |         |         |        V|
6+25      29.4494      6.38  Q         |         |         |        V|
6+30      29.4798      4.40  Q         |         |         |        V|
6+35      29.5005      3.01  Q         |         |         |        V|
6+40      29.5142      2.00  Q         |         |         |        V|
6+45      29.5231      1.29  Q         |         |         |        V|
6+50      29.5288      0.82  Q         |         |         |        V|
6+55      29.5326      0.56  Q         |         |         |        V|
```

```
    7+ 0      29.5355      0.42  Q         |         |         |        V|
    7+ 5      29.5376      0.30  Q         |         |         |        V|
    7+10      29.5391      0.22  Q         |         |         |        V|
    7+15      29.5401      0.14  Q         |         |         |        V|
    7+20      29.5405      0.07  Q         |         |         |        V|
    7+25      29.5407      0.03  Q         |         |         |         V
--------------------------------------------------------------------------
```

- 100 Year 12 Hour Pre-Development Unit Hydrograph – Area 'C'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989-2012, Version 7.2

       Study date  10/10/16   File Name exc10012.out


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'C' - 100 YEAR 12 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 100

       Antecedent Moisture Condition = 3

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 78.3       0.5          0.00     B     0.300     1.000    0.300
 78.3     120.5          1.00     C     0.250     1.000    0.250

Area-averaged adjusted loss rate Fm (In/Hr) =  0.250

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC3)          Yield Fr
     0.52   0.004         78.3      93.0       0.76     0.855

   120.50   0.996         78.3      93.0       0.76     0.855

Area-averaged catchment yield fraction, Y =  0.855
Area-averaged low loss fraction, Yb =  0.145
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.262 (hours)
Watershed area =     121.02(Ac.)
Catchment Lag time =   0.210 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 39.7482
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.250(In/Hr)
Average low loss rate fraction (Yb) = 0.145 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.520(In)
Computed peak 30-minute rainfall =  1.090(In)
Specified peak 1-hour rainfall =  1.450(In)
Computed peak 3-hour rainfall =  2.430(In)
Specified peak 6-hour rainfall =  3.360(In)
Specified peak 24-hour rainfall =  5.630(In)


Rainfall depth area reduction factors:
Using a total area of     121.02(Ac.) (Ref: fig. E-4)
```

```
5-minute factor = 0.994     Adjusted rainfall =  0.517(In)
30-minute factor = 0.994    Adjusted rainfall =  1.084(In)
1-hour factor = 0.994       Adjusted rainfall =  1.442(In)
3-hour factor = 0.999       Adjusted rainfall =  2.428(In)
6-hour factor = 1.000       Adjusted rainfall =  3.359(In)
24-hour factor = 1.000 Adjusted rainfall =  5.629(In)
--------------------------------------------------------------------

                     U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------
               (K =      1463.59 (CFS))

  1                3.106                  45.464
  2               14.711                 169.842
  3               45.630                 452.532
  4               68.335                 332.306
  5               78.344                 146.486
  6               85.025                  97.781
  7               89.761                  69.314
  8               93.184                  50.099
  9               95.601                  35.383
 10               97.228                  23.808
 11               98.107                  12.865
 12               98.567                   6.732
 13               98.954                   5.672
 14               99.221                   3.896
 15               99.511                   4.246
 16               99.764                   3.701
 17               99.907                   2.094
 18              100.000                   1.365
--------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.5171              0.5171
  2              0.6885              0.1714
  3              0.8140              0.1255
  4              0.9167              0.1027
  5              1.0052              0.0885
  6              1.0838              0.0786
  7              1.1548              0.0710
  8              1.2201              0.0653
  9              1.2807              0.0606
 10              1.3375              0.0568
 11              1.3910              0.0535
 12              1.4418              0.0507
 13              1.4976              0.0558
 14              1.5512              0.0536
 15              1.6028              0.0516
 16              1.6527              0.0498
 17              1.7009              0.0482
 18              1.7476              0.0468
 19              1.7931              0.0454
 20              1.8372              0.0442
 21              1.8803              0.0430
 22              1.9222              0.0420
 23              1.9632              0.0410
 24              2.0033              0.0400
 25              2.0424              0.0392
 26              2.0808              0.0384
 27              2.1184              0.0376
 28              2.1553              0.0369
 29              2.1915              0.0362
 30              2.2270              0.0355
 31              2.2619              0.0349
 32              2.2963              0.0343
 33              2.3300              0.0338
 34              2.3633              0.0332
```

35	2.3960	0.0327
36	2.4283	0.0322
37	2.4596	0.0313
38	2.4905	0.0309
39	2.5209	0.0305
40	2.5510	0.0300
41	2.5806	0.0297
42	2.6099	0.0293
43	2.6388	0.0289
44	2.6674	0.0285
45	2.6956	0.0282
46	2.7234	0.0279
47	2.7510	0.0275
48	2.7782	0.0272
49	2.8051	0.0269
50	2.8318	0.0266
51	2.8582	0.0264
52	2.8843	0.0261
53	2.9101	0.0258
54	2.9356	0.0256
55	2.9610	0.0253
56	2.9860	0.0251
57	3.0109	0.0248
58	3.0355	0.0246
59	3.0599	0.0244
60	3.0840	0.0242
61	3.1080	0.0239
62	3.1317	0.0237
63	3.1553	0.0235
64	3.1786	0.0233
65	3.2017	0.0231
66	3.2247	0.0230
67	3.2475	0.0228
68	3.2701	0.0226
69	3.2925	0.0224
70	3.3147	0.0222
71	3.3368	0.0221
72	3.3587	0.0219
73	3.3760	0.0173
74	3.3932	0.0172
75	3.4102	0.0170
76	3.4271	0.0169
77	3.4438	0.0167
78	3.4604	0.0166
79	3.4768	0.0165
80	3.4932	0.0163
81	3.5094	0.0162
82	3.5254	0.0161
83	3.5414	0.0160
84	3.5572	0.0158
85	3.5730	0.0157
86	3.5886	0.0156
87	3.6040	0.0155
88	3.6194	0.0154
89	3.6347	0.0153
90	3.6498	0.0152
91	3.6649	0.0151
92	3.6798	0.0150
93	3.6947	0.0148
94	3.7094	0.0147
95	3.7241	0.0147
96	3.7386	0.0146
97	3.7531	0.0145
98	3.7675	0.0144
99	3.7818	0.0143
100	3.7959	0.0142
101	3.8100	0.0141
102	3.8240	0.0140
103	3.8380	0.0139
104	3.8518	0.0138
105	3.8656	0.0138

106	3.8792	0.0137
107	3.8928	0.0136
108	3.9063	0.0135
109	3.9198	0.0134
110	3.9331	0.0134
111	3.9464	0.0133
112	3.9596	0.0132
113	3.9727	0.0131
114	3.9858	0.0131
115	3.9988	0.0130
116	4.0117	0.0129
117	4.0246	0.0128
118	4.0373	0.0128
119	4.0500	0.0127
120	4.0627	0.0126
121	4.0753	0.0126
122	4.0878	0.0125
123	4.1002	0.0124
124	4.1126	0.0124
125	4.1249	0.0123
126	4.1372	0.0123
127	4.1494	0.0122
128	4.1615	0.0121
129	4.1736	0.0121
130	4.1856	0.0120
131	4.1976	0.0120
132	4.2095	0.0119
133	4.2214	0.0119
134	4.2332	0.0118
135	4.2449	0.0117
136	4.2566	0.0117
137	4.2682	0.0116
138	4.2798	0.0116
139	4.2913	0.0115
140	4.3028	0.0115
141	4.3142	0.0114
142	4.3256	0.0114
143	4.3369	0.0113
144	4.3482	0.0113

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0113	0.0016	0.0096
2	0.0113	0.0016	0.0097
3	0.0114	0.0017	0.0098
4	0.0115	0.0017	0.0098
5	0.0116	0.0017	0.0099
6	0.0116	0.0017	0.0099
7	0.0117	0.0017	0.0100
8	0.0118	0.0017	0.0101
9	0.0119	0.0017	0.0102
10	0.0120	0.0017	0.0102
11	0.0121	0.0017	0.0103
12	0.0121	0.0018	0.0104
13	0.0123	0.0018	0.0105
14	0.0123	0.0018	0.0105
15	0.0124	0.0018	0.0106
16	0.0125	0.0018	0.0107
17	0.0126	0.0018	0.0108
18	0.0127	0.0018	0.0109
19	0.0128	0.0019	0.0110
20	0.0129	0.0019	0.0110
21	0.0131	0.0019	0.0112
22	0.0131	0.0019	0.0112
23	0.0133	0.0019	0.0114
24	0.0134	0.0019	0.0114
25	0.0135	0.0020	0.0116
26	0.0136	0.0020	0.0116
27	0.0138	0.0020	0.0118

28	0.0138	0.0020	0.0118
29	0.0140	0.0020	0.0120
30	0.0141	0.0020	0.0121
31	0.0143	0.0021	0.0122
32	0.0144	0.0021	0.0123
33	0.0146	0.0021	0.0124
34	0.0147	0.0021	0.0125
35	0.0148	0.0021	0.0127
36	0.0150	0.0022	0.0128
37	0.0152	0.0022	0.0130
38	0.0153	0.0022	0.0131
39	0.0155	0.0022	0.0132
40	0.0156	0.0023	0.0133
41	0.0158	0.0023	0.0135
42	0.0160	0.0023	0.0136
43	0.0162	0.0023	0.0139
44	0.0163	0.0024	0.0140
45	0.0166	0.0024	0.0142
46	0.0167	0.0024	0.0143
47	0.0170	0.0025	0.0145
48	0.0172	0.0025	0.0147
49	0.0219	0.0032	0.0187
50	0.0221	0.0032	0.0189
51	0.0224	0.0032	0.0192
52	0.0226	0.0033	0.0193
53	0.0230	0.0033	0.0196
54	0.0231	0.0033	0.0198
55	0.0235	0.0034	0.0201
56	0.0237	0.0034	0.0203
57	0.0242	0.0035	0.0207
58	0.0244	0.0035	0.0209
59	0.0248	0.0036	0.0212
60	0.0251	0.0036	0.0214
61	0.0256	0.0037	0.0219
62	0.0258	0.0037	0.0221
63	0.0264	0.0038	0.0226
64	0.0266	0.0039	0.0228
65	0.0272	0.0039	0.0233
66	0.0275	0.0040	0.0236
67	0.0282	0.0041	0.0241
68	0.0285	0.0041	0.0244
69	0.0293	0.0042	0.0250
70	0.0297	0.0043	0.0254
71	0.0305	0.0044	0.0261
72	0.0309	0.0045	0.0264
73	0.0322	0.0047	0.0276
74	0.0327	0.0047	0.0280
75	0.0338	0.0049	0.0289
76	0.0343	0.0050	0.0294
77	0.0355	0.0051	0.0304
78	0.0362	0.0052	0.0310
79	0.0376	0.0054	0.0322
80	0.0384	0.0056	0.0328
81	0.0400	0.0058	0.0343
82	0.0410	0.0059	0.0350
83	0.0430	0.0062	0.0368
84	0.0442	0.0064	0.0378
85	0.0468	0.0068	0.0400
86	0.0482	0.0070	0.0413
87	0.0516	0.0075	0.0442
88	0.0536	0.0078	0.0458
89	0.0507	0.0073	0.0434
90	0.0535	0.0077	0.0458
91	0.0606	0.0088	0.0519
92	0.0653	0.0094	0.0558
93	0.0786	0.0114	0.0672
94	0.0885	0.0128	0.0757
95	0.1255	0.0182	0.1074
96	0.1714	0.0209	0.1506
97	0.5171	0.0209	0.4962
98	0.1027	0.0149	0.0878

```
 99              0.0710          0.0103              0.0607
100              0.0568          0.0082              0.0486
101              0.0558          0.0081              0.0477
102              0.0498          0.0072              0.0426
103              0.0454          0.0066              0.0388
104              0.0420          0.0061              0.0359
105              0.0392          0.0057              0.0335
106              0.0369          0.0053              0.0315
107              0.0349          0.0051              0.0299
108              0.0332          0.0048              0.0284
109              0.0313          0.0045              0.0268
110              0.0300          0.0043              0.0257
111              0.0289          0.0042              0.0247
112              0.0279          0.0040              0.0238
113              0.0269          0.0039              0.0230
114              0.0261          0.0038              0.0223
115              0.0253          0.0037              0.0217
116              0.0246          0.0036              0.0210
117              0.0239          0.0035              0.0205
118              0.0233          0.0034              0.0200
119              0.0228          0.0033              0.0195
120              0.0222          0.0032              0.0190
121              0.0173          0.0025              0.0148
122              0.0169          0.0024              0.0144
123              0.0165          0.0024              0.0141
124              0.0161          0.0023              0.0138
125              0.0157          0.0023              0.0134
126              0.0154          0.0022              0.0132
127              0.0151          0.0022              0.0129
128              0.0147          0.0021              0.0126
129              0.0145          0.0021              0.0124
130              0.0142          0.0021              0.0121
131              0.0139          0.0020              0.0119
132              0.0137          0.0020              0.0117
133              0.0134          0.0019              0.0115
134              0.0132          0.0019              0.0113
135              0.0130          0.0019              0.0111
136              0.0128          0.0018              0.0109
137              0.0126          0.0018              0.0108
138              0.0124          0.0018              0.0106
139              0.0122          0.0018              0.0104
140              0.0120          0.0017              0.0103
141              0.0119          0.0017              0.0101
142              0.0117          0.0017              0.0100
143              0.0115          0.0017              0.0099
144              0.0114          0.0016              0.0097
-------------------------------------------------------------------
-------------------------------------------------------------------
Total soil rain loss =      0.57(In)
Total effective rainfall =      3.78(In)
Peak flow rate in flood hydrograph =    327.48(CFS)
-------------------------------------------------------------------
+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                  12 - H O U R    S T O R M
               R u n o f f      H y d r o g r a p h
-------------------------------------------------------------------
            Hydrograph in   5   Minute intervals ((CFS))

-------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0      100.0     200.0     300.0     400.0
-------------------------------------------------------------------
  0+ 5       0.0030      0.44  Q         |         |         |         |
  0+10       0.0173      2.08  Q         |         |         |         |
  0+15       0.0618      6.45  Q         |         |         |         |
  0+20       0.1285      9.69  Q         |         |         |         |
  0+25       0.2054     11.17  VQ        |         |         |         |
  0+30       0.2893     12.18  VQ        |         |         |         |
  0+35       0.3784     12.94  VQ        |         |         |         |
  0+40       0.4714     13.50  VQ        |         |         |         |
  0+45       0.5674     13.94  VQ        |         |         |         |
  0+50       0.6657     14.27  VQ        |         |         |         |
```

```
0+55       0.7655     14.49  VQ        |         |         |         |
1+ 0       0.8664     14.66  VQ        |         |         |         |
1+ 5       0.9685     14.82  |Q        |         |         |         |
1+10       1.0716     14.96  |Q        |         |         |         |
1+15       1.1757     15.12  |Q        |         |         |         |
1+20       1.2808     15.26  |Q        |         |         |         |
1+25       1.3868     15.40  |Q        |         |         |         |
1+30       1.4938     15.53  |Q        |         |         |         |
1+35       1.6016     15.65  |Q        |         |         |         |
1+40       1.7102     15.77  |Q        |         |         |         |
1+45       1.8197     15.90  |Q        |         |         |         |
1+50       1.9300     16.02  |QV       |         |         |         |
1+55       2.0413     16.16  |QV       |         |         |         |
2+ 0       2.1534     16.29  |QV       |         |         |         |
2+ 5       2.2666     16.42  |QV       |         |         |         |
2+10       2.3806     16.56  |QV       |         |         |         |
2+15       2.4957     16.71  |QV       |         |         |         |
2+20       2.6117     16.85  |QV       |         |         |         |
2+25       2.7288     17.00  |QV       |         |         |         |
2+30       2.8468     17.15  |QV       |         |         |         |
2+35       2.9660     17.31  |Q V      |         |         |         |
2+40       3.0863     17.46  |Q V      |         |         |         |
2+45       3.2077     17.63  |Q V      |         |         |         |
2+50       3.3302     17.79  |Q V      |         |         |         |
2+55       3.4540     17.97  |Q V      |         |         |         |
3+ 0       3.5789     18.14  |Q V      |         |         |         |
3+ 5       3.7051     18.32  |Q V      |         |         |         |
3+10       3.8325     18.50  |Q  V     |         |         |         |
3+15       3.9613     18.70  |Q  V     |         |         |         |
3+20       4.0913     18.89  |Q  V     |         |         |         |
3+25       4.2228     19.09  |Q  V     |         |         |         |
3+30       4.3557     19.29  |Q  V     |         |         |         |
3+35       4.4901     19.51  |Q  V     |         |         |         |
3+40       4.6259     19.72  |Q  V     |         |         |         |
3+45       4.7633     19.95  |Q   V    |         |         |         |
3+50       4.9022     20.18  | Q  V    |         |         |         |
3+55       5.0429     20.42  | Q  V    |         |         |         |
4+ 0       5.1852     20.66  | Q  V    |         |         |         |
4+ 5       5.3304     21.09  | Q  V    |         |         |         |
4+10       5.4819     22.00  | Q  V    |         |         |         |
4+15       5.6472     24.00  | Q  V    |         |         |         |
4+20       5.8232     25.55  | Q   V   |         |         |         |
4+25       6.0051     26.42  | Q   V   |         |         |         |
4+30       6.1917     27.10  | Q   V   |         |         |         |
4+35       6.3824     27.69  | Q   V   |         |         |         |
4+40       6.5767     28.21  | Q   V   |         |         |         |
4+45       6.7744     28.71  | Q    V  |         |         |         |
4+50       6.9752     29.15  | Q    V  |         |         |         |
4+55       7.1790     29.59  | Q    V  |         |         |         |
5+ 0       7.3856     30.00  | Q    V  |         |         |         |
5+ 5       7.5952     30.44  |  Q   V  |         |         |         |
5+10       7.8078     30.87  |  Q    V |         |         |         |
5+15       8.0236     31.33  |  Q    V |         |         |         |
5+20       8.2426     31.80  |  Q    V |         |         |         |
5+25       8.4650     32.30  |  Q    V |         |         |         |
5+30       8.6909     32.80  |  Q     V|         |         |         |
5+35       8.9205     33.33  |  Q     V|         |         |         |
5+40       9.1537     33.87  |  Q     V|         |         |         |
5+45       9.3911     34.46  |  Q     V|         |         |         |
5+50       9.6325     35.06  |  Q      V         |         |         |
5+55       9.8785     35.71  |  Q      V         |         |         |
6+ 0      10.1289     36.37  |  Q      V         |         |         |
6+ 5      10.3846     37.12  |  Q      V         |         |         |
6+10      10.6457     37.92  |  Q      |V        |         |         |
6+15      10.9137     38.91  |  Q      |V        |         |         |
6+20      11.1883     39.87  |  Q      |V        |         |         |
6+25      11.4696     40.85  |   Q     | V       |         |         |
6+30      11.7578     41.84  |   Q     | V       |         |         |
6+35      12.0535     42.94  |   Q     | V       |         |         |
6+40      12.3569     44.06  |   Q     | V       |         |         |
6+45      12.6690     45.32  |   Q     |  V      |         |         |
```

```
 6+50      12.9901     46.62  |   Q     |  V      |         |         |
 6+55      13.3213     48.09  |   Q     |  V      |         |         |
 7+ 0      13.6632     49.64  |   Q     |   V     |         |         |
 7+ 5      14.0174     51.43  |    Q    |   V     |         |         |
 7+10      14.3846     53.32  |    Q    |    V    |         |         |
 7+15      14.7672     55.55  |    Q    |    V    |         |         |
 7+20      15.1662     57.94  |    Q    |    V    |         |         |
 7+25      15.5831     60.53  |     Q   |     V   |         |         |
 7+30      16.0143     62.60  |     Q   |     V   |         |         |
 7+35      16.4523     63.61  |     Q   |      V  |         |         |
 7+40      16.9064     65.93  |     Q   |      V  |         |         |
 7+45      17.3946     70.89  |      Q  |       V |         |         |
 7+50      17.9286     77.54  |      Q  |       V |         |         |
 7+55      18.5356     88.13  |       Q |        V|         |         |
 8+ 0      19.2553    104.50  |         Q         V         |         |
 8+ 5      20.2699    147.32  |          |   Q     |V        |         |
 8+10      21.7889    220.56  |          |         | Q       |         |
 8+15      24.0443    327.48  |          |         |    V    | Q       |
 8+20      25.8577    263.31  |          |         |     QV  |         |
 8+25      27.0376    171.32  |          |      Q  |       V |         |
 8+30      27.9721    135.68  |          |  Q      |        V|         |
 8+35      28.7571    113.99  |          |Q        |         V         |
 8+40      29.4302     97.73  |         Q|         |         V         |
 8+45      30.0080     83.89  |        Q |         |         |V        |
 8+50      30.5070     72.46  |       Q  |         |         | V       |
 8+55      30.9382     62.61  |      Q   |         |         | V       |
 9+ 0      31.3228     55.84  |     Q    |         |         | V       |
 9+ 5      31.6800     51.86  |     Q    |         |         |  V      |
 9+10      32.0122     48.24  |    Q     |         |         |  V      |
 9+15      32.3267     45.66  |    Q     |         |         |  V      |
 9+20      32.6229     43.02  |    Q     |         |         |   V     |
 9+25      32.9004     40.29  |    Q     |         |         |   V     |
 9+30      33.1631     38.14  |   Q      |         |         |   V     |
 9+35      33.4113     36.04  |   Q      |         |         |    V    |
 9+40      33.6500     34.67  |   Q      |         |         |    V    |
 9+45      33.8805     33.47  |   Q      |         |         |    V    |
 9+50      34.1036     32.39  |   Q      |         |         |    V    |
 9+55      34.3200     31.42  |   Q      |         |         |     V   |
10+ 0      34.5302     30.52  |   Q      |         |         |     V   |
10+ 5      34.7336     29.53  |  Q       |         |         |     V   |
10+10      34.9273     28.13  |  Q       |         |         |     V   |
10+15      35.1044     25.71  |  Q       |         |         |     V   |
10+20      35.2683     23.81  |  Q       |         |         |      V  |
10+25      35.4244     22.66  |  Q       |         |         |      V  |
10+30      35.5742     21.75  |  Q       |         |         |      V  |
10+35      35.7187     20.98  |  Q       |         |         |      V  |
10+40      35.8585     20.31  |  Q       |         |         |      V  |
10+45      35.9944     19.73  |Q         |         |         |      V  |
10+50      36.1268     19.22  |Q         |         |         |      V  |
10+55      36.2561     18.77  |Q         |         |         |       V |
11+ 0      36.3826     18.37  |Q         |         |         |       V |
11+ 5      36.5065     17.99  |Q         |         |         |       V |
11+10      36.6280     17.64  |Q         |         |         |       V |
11+15      36.7471     17.30  |Q         |         |         |       V |
11+20      36.8641     16.98  |Q         |         |         |       V |
11+25      36.9789     16.68  |Q         |         |         |       V |
11+30      37.0918     16.39  |Q         |         |         |       V |
11+35      37.2029     16.12  |Q         |         |         |        V|
11+40      37.3122     15.87  |Q         |         |         |        V|
11+45      37.4197     15.62  |Q         |         |         |        V|
11+50      37.5257     15.38  |Q         |         |         |        V|
11+55      37.6301     15.16  |Q         |         |         |        V|
12+ 0      37.7329     14.94  |Q         |         |         |        V|
12+ 5      37.8313     14.29  |Q         |         |         |        V|
12+10      37.9171     12.46  |Q         |         |         |        V|
12+15      37.9719      7.95  Q          |         |         |        V|
12+20      38.0039      4.65  Q          |         |         |        V|
12+25      38.0257      3.18  Q          |         |         |        V|
12+30      38.0409      2.19  Q          |         |         |        V|
12+35      38.0512      1.50  Q          |         |         |        V|
12+40      38.0581      1.00  Q          |         |         |        V|
```

```
   12+45      38.0625      0.64  Q         |         |         |        V|
   12+50      38.0653      0.41  Q         |         |         |        V|
   12+55      38.0672      0.28  Q         |         |         |        V|
   13+ 0      38.0686      0.21  Q         |         |         |        V|
   13+ 5      38.0697      0.15  Q         |         |         |        V|
   13+10      38.0705      0.11  Q         |         |         |        V|
   13+15      38.0710      0.07  Q         |         |         |        V|
   13+20      38.0712      0.03  Q         |         |         |        V|
   13+25      38.0713      0.01  Q         |         |         |         V
-------------------------------------------------------------------------
```

- 100 Year 24 Hour Pre-Development Unit Hydrograph – Area 'C'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989-2012, Version 7.2

       Study date  10/13/16   File Name EXC10024.out


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'C' - 100 YEAR 24 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 100

       Antecedent Moisture Condition = 3

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 78.3       0.5          0.00     B     0.300     1.000    0.300
 78.3     120.5          1.00     C     0.250     1.000    0.250

Area-averaged adjusted loss rate Fm (In/Hr) =  0.250

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC3)          Yield Fr
     0.52   0.004         78.3      93.0       0.76     0.855

   120.50   0.996         78.3      93.0       0.76     0.855

Area-averaged catchment yield fraction, Y =  0.855
Area-averaged low loss fraction, Yb =  0.145
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.262 (hours)
Watershed area =     121.02(Ac.)
Catchment Lag time =   0.210 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 39.7482
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.250(In/Hr)
Average low loss rate fraction (Yb) = 0.145 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.520(In)
Computed peak 30-minute rainfall =  1.090(In)
Specified peak 1-hour rainfall =  1.450(In)
Computed peak 3-hour rainfall =  2.430(In)
Specified peak 6-hour rainfall =  3.360(In)
Specified peak 24-hour rainfall =  5.630(In)


Rainfall depth area reduction factors:
Using a total area of     121.02(Ac.) (Ref: fig. E-4)
```

```
5-minute factor = 0.994     Adjusted rainfall =  0.517(In)
30-minute factor = 0.994    Adjusted rainfall =  1.084(In)
1-hour factor = 0.994       Adjusted rainfall =  1.442(In)
3-hour factor = 0.999       Adjusted rainfall =  2.428(In)
6-hour factor = 1.000       Adjusted rainfall =  3.359(In)
24-hour factor = 1.000 Adjusted rainfall =  5.629(In)
--------------------------------------------------------------------

                     U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------
               (K =      1463.59 (CFS))

  1                3.106                 45.464
  2               14.711                169.842
  3               45.630                452.532
  4               68.335                332.306
  5               78.344                146.486
  6               85.025                 97.781
  7               89.761                 69.314
  8               93.184                 50.099
  9               95.601                 35.383
 10               97.228                 23.808
 11               98.107                 12.865
 12               98.567                  6.732
 13               98.954                  5.672
 14               99.221                  3.896
 15               99.511                  4.246
 16               99.764                  3.701
 17               99.907                  2.094
 18              100.000                  1.365
--------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.5171              0.5171
  2              0.6885              0.1714
  3              0.8140              0.1255
  4              0.9167              0.1027
  5              1.0052              0.0885
  6              1.0838              0.0786
  7              1.1548              0.0710
  8              1.2201              0.0653
  9              1.2807              0.0606
 10              1.3375              0.0568
 11              1.3910              0.0535
 12              1.4418              0.0507
 13              1.4976              0.0558
 14              1.5512              0.0536
 15              1.6028              0.0516
 16              1.6527              0.0498
 17              1.7009              0.0482
 18              1.7476              0.0468
 19              1.7931              0.0454
 20              1.8372              0.0442
 21              1.8803              0.0430
 22              1.9222              0.0420
 23              1.9632              0.0410
 24              2.0033              0.0400
 25              2.0424              0.0392
 26              2.0808              0.0384
 27              2.1184              0.0376
 28              2.1553              0.0369
 29              2.1915              0.0362
 30              2.2270              0.0355
 31              2.2619              0.0349
 32              2.2963              0.0343
 33              2.3300              0.0338
 34              2.3633              0.0332
```

35	2.3960	0.0327
36	2.4283	0.0322
37	2.4596	0.0313
38	2.4905	0.0309
39	2.5209	0.0305
40	2.5510	0.0300
41	2.5806	0.0297
42	2.6099	0.0293
43	2.6388	0.0289
44	2.6674	0.0285
45	2.6956	0.0282
46	2.7234	0.0279
47	2.7510	0.0275
48	2.7782	0.0272
49	2.8051	0.0269
50	2.8318	0.0266
51	2.8582	0.0264
52	2.8843	0.0261
53	2.9101	0.0258
54	2.9356	0.0256
55	2.9610	0.0253
56	2.9860	0.0251
57	3.0109	0.0248
58	3.0355	0.0246
59	3.0599	0.0244
60	3.0840	0.0242
61	3.1080	0.0239
62	3.1317	0.0237
63	3.1553	0.0235
64	3.1786	0.0233
65	3.2017	0.0231
66	3.2247	0.0230
67	3.2475	0.0228
68	3.2701	0.0226
69	3.2925	0.0224
70	3.3147	0.0222
71	3.3368	0.0221
72	3.3587	0.0219
73	3.3760	0.0173
74	3.3932	0.0172
75	3.4102	0.0170
76	3.4271	0.0169
77	3.4438	0.0167
78	3.4604	0.0166
79	3.4768	0.0165
80	3.4932	0.0163
81	3.5094	0.0162
82	3.5254	0.0161
83	3.5414	0.0160
84	3.5572	0.0158
85	3.5730	0.0157
86	3.5886	0.0156
87	3.6040	0.0155
88	3.6194	0.0154
89	3.6347	0.0153
90	3.6498	0.0152
91	3.6649	0.0151
92	3.6798	0.0150
93	3.6947	0.0148
94	3.7094	0.0147
95	3.7241	0.0147
96	3.7386	0.0146
97	3.7531	0.0145
98	3.7675	0.0144
99	3.7818	0.0143
100	3.7959	0.0142
101	3.8100	0.0141
102	3.8240	0.0140
103	3.8380	0.0139
104	3.8518	0.0138
105	3.8656	0.0138

106	3.8792	0.0137
107	3.8928	0.0136
108	3.9063	0.0135
109	3.9198	0.0134
110	3.9331	0.0134
111	3.9464	0.0133
112	3.9596	0.0132
113	3.9727	0.0131
114	3.9858	0.0131
115	3.9988	0.0130
116	4.0117	0.0129
117	4.0246	0.0128
118	4.0373	0.0128
119	4.0500	0.0127
120	4.0627	0.0126
121	4.0753	0.0126
122	4.0878	0.0125
123	4.1002	0.0124
124	4.1126	0.0124
125	4.1249	0.0123
126	4.1372	0.0123
127	4.1494	0.0122
128	4.1615	0.0121
129	4.1736	0.0121
130	4.1856	0.0120
131	4.1976	0.0120
132	4.2095	0.0119
133	4.2214	0.0119
134	4.2332	0.0118
135	4.2449	0.0117
136	4.2566	0.0117
137	4.2682	0.0116
138	4.2798	0.0116
139	4.2913	0.0115
140	4.3028	0.0115
141	4.3142	0.0114
142	4.3256	0.0114
143	4.3369	0.0113
144	4.3482	0.0113
145	4.3594	0.0112
146	4.3706	0.0112
147	4.3817	0.0111
148	4.3928	0.0111
149	4.4038	0.0110
150	4.4148	0.0110
151	4.4258	0.0109
152	4.4367	0.0109
153	4.4475	0.0109
154	4.4583	0.0108
155	4.4691	0.0108
156	4.4798	0.0107
157	4.4905	0.0107
158	4.5011	0.0106
159	4.5117	0.0106
160	4.5222	0.0105
161	4.5327	0.0105
162	4.5432	0.0105
163	4.5536	0.0104
164	4.5640	0.0104
165	4.5744	0.0103
166	4.5847	0.0103
167	4.5949	0.0103
168	4.6052	0.0102
169	4.6154	0.0102
170	4.6255	0.0102
171	4.6356	0.0101
172	4.6457	0.0101
173	4.6558	0.0100
174	4.6658	0.0100
175	4.6757	0.0100
176	4.6857	0.0099

177	4.6956	0.0099
178	4.7054	0.0099
179	4.7153	0.0098
180	4.7251	0.0098
181	4.7348	0.0098
182	4.7446	0.0097
183	4.7542	0.0097
184	4.7639	0.0097
185	4.7735	0.0096
186	4.7831	0.0096
187	4.7927	0.0096
188	4.8022	0.0095
189	4.8117	0.0095
190	4.8212	0.0095
191	4.8306	0.0094
192	4.8400	0.0094
193	4.8494	0.0094
194	4.8588	0.0093
195	4.8681	0.0093
196	4.8774	0.0093
197	4.8866	0.0093
198	4.8958	0.0092
199	4.9050	0.0092
200	4.9142	0.0092
201	4.9233	0.0091
202	4.9324	0.0091
203	4.9415	0.0091
204	4.9506	0.0091
205	4.9596	0.0090
206	4.9686	0.0090
207	4.9776	0.0090
208	4.9865	0.0089
209	4.9954	0.0089
210	5.0043	0.0089
211	5.0132	0.0089
212	5.0220	0.0088
213	5.0308	0.0088
214	5.0396	0.0088
215	5.0484	0.0088
216	5.0571	0.0087
217	5.0658	0.0087
218	5.0745	0.0087
219	5.0832	0.0087
220	5.0918	0.0086
221	5.1004	0.0086
222	5.1090	0.0086
223	5.1176	0.0086
224	5.1261	0.0085
225	5.1346	0.0085
226	5.1431	0.0085
227	5.1516	0.0085
228	5.1600	0.0084
229	5.1684	0.0084
230	5.1768	0.0084
231	5.1852	0.0084
232	5.1935	0.0084
233	5.2019	0.0083
234	5.2102	0.0083
235	5.2185	0.0083
236	5.2267	0.0083
237	5.2350	0.0082
238	5.2432	0.0082
239	5.2514	0.0082
240	5.2595	0.0082
241	5.2677	0.0082
242	5.2758	0.0081
243	5.2839	0.0081
244	5.2920	0.0081
245	5.3001	0.0081
246	5.3081	0.0080
247	5.3162	0.0080

248	5.3242	0.0080
249	5.3322	0.0080
250	5.3401	0.0080
251	5.3481	0.0079
252	5.3560	0.0079
253	5.3639	0.0079
254	5.3718	0.0079
255	5.3797	0.0079
256	5.3875	0.0078
257	5.3953	0.0078
258	5.4032	0.0078
259	5.4109	0.0078
260	5.4187	0.0078
261	5.4265	0.0078
262	5.4342	0.0077
263	5.4419	0.0077
264	5.4496	0.0077
265	5.4573	0.0077
266	5.4650	0.0077
267	5.4726	0.0076
268	5.4802	0.0076
269	5.4878	0.0076
270	5.4954	0.0076
271	5.5030	0.0076
272	5.5106	0.0076
273	5.5181	0.0075
274	5.5256	0.0075
275	5.5331	0.0075
276	5.5406	0.0075
277	5.5481	0.0075
278	5.5555	0.0075
279	5.5630	0.0074
280	5.5704	0.0074
281	5.5778	0.0074
282	5.5852	0.0074
283	5.5925	0.0074
284	5.5999	0.0074
285	5.6072	0.0073
286	5.6146	0.0073
287	5.6219	0.0073
288	5.6291	0.0073

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0073	0.0011	0.0062
2	0.0073	0.0011	0.0062
3	0.0073	0.0011	0.0063
4	0.0074	0.0011	0.0063
5	0.0074	0.0011	0.0063
6	0.0074	0.0011	0.0063
7	0.0074	0.0011	0.0064
8	0.0075	0.0011	0.0064
9	0.0075	0.0011	0.0064
10	0.0075	0.0011	0.0064
11	0.0075	0.0011	0.0064
12	0.0076	0.0011	0.0065
13	0.0076	0.0011	0.0065
14	0.0076	0.0011	0.0065
15	0.0076	0.0011	0.0065
16	0.0077	0.0011	0.0066
17	0.0077	0.0011	0.0066
18	0.0077	0.0011	0.0066
19	0.0078	0.0011	0.0066
20	0.0078	0.0011	0.0066
21	0.0078	0.0011	0.0067
22	0.0078	0.0011	0.0067
23	0.0079	0.0011	0.0067
24	0.0079	0.0011	0.0067
25	0.0079	0.0011	0.0068

26	0.0079	0.0011	0.0068
27	0.0080	0.0012	0.0068
28	0.0080	0.0012	0.0068
29	0.0080	0.0012	0.0069
30	0.0081	0.0012	0.0069
31	0.0081	0.0012	0.0069
32	0.0081	0.0012	0.0070
33	0.0082	0.0012	0.0070
34	0.0082	0.0012	0.0070
35	0.0082	0.0012	0.0070
36	0.0083	0.0012	0.0071
37	0.0083	0.0012	0.0071
38	0.0083	0.0012	0.0071
39	0.0084	0.0012	0.0072
40	0.0084	0.0012	0.0072
41	0.0084	0.0012	0.0072
42	0.0085	0.0012	0.0072
43	0.0085	0.0012	0.0073
44	0.0085	0.0012	0.0073
45	0.0086	0.0012	0.0073
46	0.0086	0.0012	0.0074
47	0.0087	0.0013	0.0074
48	0.0087	0.0013	0.0074
49	0.0087	0.0013	0.0075
50	0.0088	0.0013	0.0075
51	0.0088	0.0013	0.0075
52	0.0088	0.0013	0.0076
53	0.0089	0.0013	0.0076
54	0.0089	0.0013	0.0076
55	0.0090	0.0013	0.0077
56	0.0090	0.0013	0.0077
57	0.0091	0.0013	0.0077
58	0.0091	0.0013	0.0078
59	0.0091	0.0013	0.0078
60	0.0092	0.0013	0.0078
61	0.0092	0.0013	0.0079
62	0.0093	0.0013	0.0079
63	0.0093	0.0013	0.0080
64	0.0093	0.0014	0.0080
65	0.0094	0.0014	0.0080
66	0.0094	0.0014	0.0081
67	0.0095	0.0014	0.0081
68	0.0095	0.0014	0.0082
69	0.0096	0.0014	0.0082
70	0.0096	0.0014	0.0082
71	0.0097	0.0014	0.0083
72	0.0097	0.0014	0.0083
73	0.0098	0.0014	0.0084
74	0.0098	0.0014	0.0084
75	0.0099	0.0014	0.0085
76	0.0099	0.0014	0.0085
77	0.0100	0.0014	0.0086
78	0.0100	0.0015	0.0086
79	0.0101	0.0015	0.0087
80	0.0102	0.0015	0.0087
81	0.0102	0.0015	0.0087
82	0.0103	0.0015	0.0088
83	0.0103	0.0015	0.0088
84	0.0104	0.0015	0.0089
85	0.0105	0.0015	0.0090
86	0.0105	0.0015	0.0090
87	0.0106	0.0015	0.0091
88	0.0106	0.0015	0.0091
89	0.0107	0.0016	0.0092
90	0.0108	0.0016	0.0092
91	0.0109	0.0016	0.0093
92	0.0109	0.0016	0.0093
93	0.0110	0.0016	0.0094
94	0.0110	0.0016	0.0094
95	0.0111	0.0016	0.0095
96	0.0112	0.0016	0.0096

97	0.0113	0.0016	0.0096
98	0.0113	0.0016	0.0097
99	0.0114	0.0017	0.0098
100	0.0115	0.0017	0.0098
101	0.0116	0.0017	0.0099
102	0.0116	0.0017	0.0099
103	0.0117	0.0017	0.0100
104	0.0118	0.0017	0.0101
105	0.0119	0.0017	0.0102
106	0.0120	0.0017	0.0102
107	0.0121	0.0017	0.0103
108	0.0121	0.0018	0.0104
109	0.0123	0.0018	0.0105
110	0.0123	0.0018	0.0105
111	0.0124	0.0018	0.0106
112	0.0125	0.0018	0.0107
113	0.0126	0.0018	0.0108
114	0.0127	0.0018	0.0109
115	0.0128	0.0019	0.0110
116	0.0129	0.0019	0.0110
117	0.0131	0.0019	0.0112
118	0.0131	0.0019	0.0112
119	0.0133	0.0019	0.0114
120	0.0134	0.0019	0.0114
121	0.0135	0.0020	0.0116
122	0.0136	0.0020	0.0116
123	0.0138	0.0020	0.0118
124	0.0138	0.0020	0.0118
125	0.0140	0.0020	0.0120
126	0.0141	0.0020	0.0121
127	0.0143	0.0021	0.0122
128	0.0144	0.0021	0.0123
129	0.0146	0.0021	0.0124
130	0.0147	0.0021	0.0125
131	0.0148	0.0021	0.0127
132	0.0150	0.0022	0.0128
133	0.0152	0.0022	0.0130
134	0.0153	0.0022	0.0131
135	0.0155	0.0022	0.0132
136	0.0156	0.0023	0.0133
137	0.0158	0.0023	0.0135
138	0.0160	0.0023	0.0136
139	0.0162	0.0023	0.0139
140	0.0163	0.0024	0.0140
141	0.0166	0.0024	0.0142
142	0.0167	0.0024	0.0143
143	0.0170	0.0025	0.0145
144	0.0172	0.0025	0.0147
145	0.0219	0.0032	0.0187
146	0.0221	0.0032	0.0189
147	0.0224	0.0032	0.0192
148	0.0226	0.0033	0.0193
149	0.0230	0.0033	0.0196
150	0.0231	0.0033	0.0198
151	0.0235	0.0034	0.0201
152	0.0237	0.0034	0.0203
153	0.0242	0.0035	0.0207
154	0.0244	0.0035	0.0209
155	0.0248	0.0036	0.0212
156	0.0251	0.0036	0.0214
157	0.0256	0.0037	0.0219
158	0.0258	0.0037	0.0221
159	0.0264	0.0038	0.0226
160	0.0266	0.0039	0.0228
161	0.0272	0.0039	0.0233
162	0.0275	0.0040	0.0236
163	0.0282	0.0041	0.0241
164	0.0285	0.0041	0.0244
165	0.0293	0.0042	0.0250
166	0.0297	0.0043	0.0254
167	0.0305	0.0044	0.0261

168	0.0309	0.0045	0.0264
169	0.0322	0.0047	0.0276
170	0.0327	0.0047	0.0280
171	0.0338	0.0049	0.0289
172	0.0343	0.0050	0.0294
173	0.0355	0.0051	0.0304
174	0.0362	0.0052	0.0310
175	0.0376	0.0054	0.0322
176	0.0384	0.0056	0.0328
177	0.0400	0.0058	0.0343
178	0.0410	0.0059	0.0350
179	0.0430	0.0062	0.0368
180	0.0442	0.0064	0.0378
181	0.0468	0.0068	0.0400
182	0.0482	0.0070	0.0413
183	0.0516	0.0075	0.0442
184	0.0536	0.0078	0.0458
185	0.0507	0.0073	0.0434
186	0.0535	0.0077	0.0458
187	0.0606	0.0088	0.0519
188	0.0653	0.0094	0.0558
189	0.0786	0.0114	0.0672
190	0.0885	0.0128	0.0757
191	0.1255	0.0182	0.1074
192	0.1714	0.0209	0.1506
193	0.5171	0.0209	0.4962
194	0.1027	0.0149	0.0878
195	0.0710	0.0103	0.0607
196	0.0568	0.0082	0.0486
197	0.0558	0.0081	0.0477
198	0.0498	0.0072	0.0426
199	0.0454	0.0066	0.0388
200	0.0420	0.0061	0.0359
201	0.0392	0.0057	0.0335
202	0.0369	0.0053	0.0315
203	0.0349	0.0051	0.0299
204	0.0332	0.0048	0.0284
205	0.0313	0.0045	0.0268
206	0.0300	0.0043	0.0257
207	0.0289	0.0042	0.0247
208	0.0279	0.0040	0.0238
209	0.0269	0.0039	0.0230
210	0.0261	0.0038	0.0223
211	0.0253	0.0037	0.0217
212	0.0246	0.0036	0.0210
213	0.0239	0.0035	0.0205
214	0.0233	0.0034	0.0200
215	0.0228	0.0033	0.0195
216	0.0222	0.0032	0.0190
217	0.0173	0.0025	0.0148
218	0.0169	0.0024	0.0144
219	0.0165	0.0024	0.0141
220	0.0161	0.0023	0.0138
221	0.0157	0.0023	0.0134
222	0.0154	0.0022	0.0132
223	0.0151	0.0022	0.0129
224	0.0147	0.0021	0.0126
225	0.0145	0.0021	0.0124
226	0.0142	0.0021	0.0121
227	0.0139	0.0020	0.0119
228	0.0137	0.0020	0.0117
229	0.0134	0.0019	0.0115
230	0.0132	0.0019	0.0113
231	0.0130	0.0019	0.0111
232	0.0128	0.0018	0.0109
233	0.0126	0.0018	0.0108
234	0.0124	0.0018	0.0106
235	0.0122	0.0018	0.0104
236	0.0120	0.0017	0.0103
237	0.0119	0.0017	0.0101
238	0.0117	0.0017	0.0100

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      239              0.0115          0.0017              0.0099
      240              0.0114          0.0016              0.0097
      241              0.0112          0.0016              0.0096
      242              0.0111          0.0016              0.0095
      243              0.0109          0.0016              0.0094
      244              0.0108          0.0016              0.0092
      245              0.0107          0.0015              0.0091
      246              0.0105          0.0015              0.0090
      247              0.0104          0.0015              0.0089
      248              0.0103          0.0015              0.0088
      249              0.0102          0.0015              0.0087
      250              0.0101          0.0015              0.0086
      251              0.0100          0.0014              0.0085
      252              0.0099          0.0014              0.0084
      253              0.0098          0.0014              0.0083
      254              0.0097          0.0014              0.0083
      255              0.0096          0.0014              0.0082
      256              0.0095          0.0014              0.0081
      257              0.0094          0.0014              0.0080
      258              0.0093          0.0013              0.0079
      259              0.0092          0.0013              0.0079
      260              0.0091          0.0013              0.0078
      261              0.0090          0.0013              0.0077
      262              0.0089          0.0013              0.0076
      263              0.0089          0.0013              0.0076
      264              0.0088          0.0013              0.0075
      265              0.0087          0.0013              0.0074
      266              0.0086          0.0012              0.0074
      267              0.0086          0.0012              0.0073
      268              0.0085          0.0012              0.0073
      269              0.0084          0.0012              0.0072
      270              0.0084          0.0012              0.0071
      271              0.0083          0.0012              0.0071
      272              0.0082          0.0012              0.0070
      273              0.0082          0.0012              0.0070
      274              0.0081          0.0012              0.0069
      275              0.0080          0.0012              0.0069
      276              0.0080          0.0012              0.0068
      277              0.0079          0.0011              0.0068
      278              0.0078          0.0011              0.0067
      279              0.0078          0.0011              0.0067
      280              0.0077          0.0011              0.0066
      281              0.0077          0.0011              0.0066
      282              0.0076          0.0011              0.0065
      283              0.0076          0.0011              0.0065
      284              0.0075          0.0011              0.0064
      285              0.0075          0.0011              0.0064
      286              0.0074          0.0011              0.0063
      287              0.0074          0.0011              0.0063
      288              0.0073          0.0011              0.0063
      ----------------------------------------------------------------------
      ----------------------------------------------------------------------
      Total soil rain loss =      0.76(In)
      Total effective rainfall =      4.87(In)
      Peak flow rate in flood hydrograph =    327.48(CFS)
      ----------------------------------------------------------------------
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                        24 - H O U R    S T O R M
                   R u n o f f      H y d r o g r a p h
      ----------------------------------------------------------------------
                Hydrograph in   5   Minute intervals ((CFS))

      ----------------------------------------------------------------------
 Time(h+m) Volume Ac.Ft   Q(CFS)  0      100.0     200.0     300.0     400.0
 ----------------------------------------------------------------------
   0+ 5       0.0020      0.28  Q         |         |         |         |
   0+10       0.0112      1.34  Q         |         |         |         |
   0+15       0.0399      4.17  Q         |         |         |         |
   0+20       0.0830      6.25  Q         |         |         |         |
   0+25       0.1324      7.18  Q         |         |         |         |
   0+30       0.1863      7.82  Q         |         |         |         |
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0+35	0.2433	8.28	Q	|	|	|	|
0+40	0.3026	8.61	Q	|	|	|	|
0+45	0.3636	8.86	Q	|	|	|	|
0+50	0.4259	9.04	Q	|	|	|	|
0+55	0.4890	9.15	Q	|	|	|	|
1+ 0	0.5525	9.23	Q	|	|	|	|
1+ 5	0.6165	9.29	Q	|	|	|	|
1+10	0.6809	9.35	Q	|	|	|	|
1+15	0.7457	9.41	Q	|	|	|	|
1+20	0.8109	9.46	Q	|	|	|	|
1+25	0.8764	9.51	Q	|	|	|	|
1+30	0.9422	9.55	Q	|	|	|	|
1+35	1.0082	9.59	Q	|	|	|	|
1+40	1.0744	9.62	Q	|	|	|	|
1+45	1.1409	9.66	Q	|	|	|	|
1+50	1.2077	9.69	Q	|	|	|	|
1+55	1.2746	9.72	QV	|	|	|	|
2+ 0	1.3419	9.76	QV	|	|	|	|
2+ 5	1.4093	9.80	QV	|	|	|	|
2+10	1.4770	9.83	QV	|	|	|	|
2+15	1.5450	9.87	QV	|	|	|	|
2+20	1.6132	9.90	QV	|	|	|	|
2+25	1.6817	9.94	QV	|	|	|	|
2+30	1.7504	9.98	QV	|	|	|	|
2+35	1.8194	10.02	|Q	|	|	|	|
2+40	1.8887	10.06	|Q	|	|	|	|
2+45	1.9582	10.09	|Q	|	|	|	|
2+50	2.0280	10.13	|Q	|	|	|	|
2+55	2.0980	10.17	|Q	|	|	|	|
3+ 0	2.1684	10.21	|Q	|	|	|	|
3+ 5	2.2390	10.25	|Q	|	|	|	|
3+10	2.3099	10.29	|Q	|	|	|	|
3+15	2.3811	10.34	|Q	|	|	|	|
3+20	2.4525	10.38	|Q	|	|	|	|
3+25	2.5243	10.42	|QV	|	|	|	|
3+30	2.5963	10.46	|QV	|	|	|	|
3+35	2.6687	10.50	|QV	|	|	|	|
3+40	2.7413	10.55	|QV	|	|	|	|
3+45	2.8142	10.59	|QV	|	|	|	|
3+50	2.8875	10.63	|QV	|	|	|	|
3+55	2.9610	10.68	|QV	|	|	|	|
4+ 0	3.0349	10.72	|QV	|	|	|	|
4+ 5	3.1090	10.77	|QV	|	|	|	|
4+10	3.1835	10.82	|QV	|	|	|	|
4+15	3.2584	10.86	|QV	|	|	|	|
4+20	3.3335	10.91	|QV	|	|	|	|
4+25	3.4090	10.96	|QV	|	|	|	|
4+30	3.4848	11.01	|QV	|	|	|	|
4+35	3.5609	11.06	|QV	|	|	|	|
4+40	3.6374	11.10	|QV	|	|	|	|
4+45	3.7142	11.16	|Q V	|	|	|	|
4+50	3.7914	11.20	|Q V	|	|	|	|
4+55	3.8689	11.26	|Q V	|	|	|	|
5+ 0	3.9468	11.31	|Q V	|	|	|	|
5+ 5	4.0250	11.36	|Q V	|	|	|	|
5+10	4.1036	11.41	|Q V	|	|	|	|
5+15	4.1826	11.47	|Q V	|	|	|	|
5+20	4.2620	11.52	|Q V	|	|	|	|
5+25	4.3417	11.58	|Q V	|	|	|	|
5+30	4.4218	11.63	|Q V	|	|	|	|
5+35	4.5023	11.69	|Q V	|	|	|	|
5+40	4.5832	11.75	|Q V	|	|	|	|
5+45	4.6645	11.80	|Q V	|	|	|	|
5+50	4.7462	11.86	|Q V	|	|	|	|
5+55	4.8283	11.92	|Q V	|	|	|	|
6+ 0	4.9108	11.98	|Q V	|	|	|	|
6+ 5	4.9938	12.04	|Q V	|	|	|	|
6+10	5.0772	12.10	|Q V	|	|	|	|
6+15	5.1610	12.17	|Q V	|	|	|	|
6+20	5.2452	12.23	|Q V	|	|	|	|
6+25	5.3299	12.30	|Q V	|	|	|	|

```
 6+30      5.4150     12.36  |Q  V     |         |         |         |
 6+35      5.5006     12.43  |Q  V     |         |         |         |
 6+40      5.5867     12.49  |Q  V     |         |         |         |
 6+45      5.6732     12.56  |Q  V     |         |         |         |
 6+50      5.7602     12.63  |Q  V     |         |         |         |
 6+55      5.8476     12.70  |Q  V     |         |         |         |
 7+ 0      5.9356     12.77  |Q  V     |         |         |         |
 7+ 5      6.0241     12.84  |Q  V     |         |         |         |
 7+10      6.1130     12.92  |Q  V     |         |         |         |
 7+15      6.2025     12.99  |Q   V    |         |         |         |
 7+20      6.2925     13.07  |Q   V    |         |         |         |
 7+25      6.3830     13.14  |Q   V    |         |         |         |
 7+30      6.4740     13.22  |Q   V    |         |         |         |
 7+35      6.5656     13.30  |Q   V    |         |         |         |
 7+40      6.6578     13.38  |Q   V    |         |         |         |
 7+45      6.7505     13.46  |Q   V    |         |         |         |
 7+50      6.8438     13.54  |Q   V    |         |         |         |
 7+55      6.9376     13.63  |Q   V    |         |         |         |
 8+ 0      7.0321     13.71  |Q   V    |         |         |         |
 8+ 5      7.1271     13.80  |Q   V    |         |         |         |
 8+10      7.2227     13.89  |Q   V    |         |         |         |
 8+15      7.3190     13.98  |Q   V    |         |         |         |
 8+20      7.4159     14.07  |Q    V   |         |         |         |
 8+25      7.5134     14.16  |Q    V   |         |         |         |
 8+30      7.6116     14.25  |Q    V   |         |         |         |
 8+35      7.7104     14.35  |Q    V   |         |         |         |
 8+40      7.8099     14.45  |Q    V   |         |         |         |
 8+45      7.9101     14.55  |Q    V   |         |         |         |
 8+50      8.0110     14.65  |Q    V   |         |         |         |
 8+55      8.1126     14.75  |Q    V   |         |         |         |
 9+ 0      8.2149     14.86  |Q    V   |         |         |         |
 9+ 5      8.3180     14.96  |Q    V   |         |         |         |
 9+10      8.4218     15.07  |Q    V   |         |         |         |
 9+15      8.5264     15.18  |Q    V   |         |         |         |
 9+20      8.6317     15.30  |Q     V  |         |         |         |
 9+25      8.7379     15.41  |Q     V  |         |         |         |
 9+30      8.8448     15.53  |Q     V  |         |         |         |
 9+35      8.9526     15.65  |Q     V  |         |         |         |
 9+40      9.0612     15.77  |Q     V  |         |         |         |
 9+45      9.1707     15.90  |Q     V  |         |         |         |
 9+50      9.2810     16.02  |Q     V  |         |         |         |
 9+55      9.3923     16.16  |Q     V  |         |         |         |
10+ 0      9.5045     16.29  |Q     V  |         |         |         |
10+ 5      9.6176     16.42  |Q     V  |         |         |         |
10+10      9.7316     16.56  |Q     V  |         |         |         |
10+15      9.8467     16.71  |Q      V |         |         |         |
10+20      9.9627     16.85  |Q      V |         |         |         |
10+25     10.0798     17.00  |Q      V |         |         |         |
10+30     10.1979     17.15  |Q      V |         |         |         |
10+35     10.3171     17.31  |Q      V |         |         |         |
10+40     10.4373     17.46  |Q      V |         |         |         |
10+45     10.5587     17.63  |Q      V |         |         |         |
10+50     10.6812     17.79  |Q      V |         |         |         |
10+55     10.8050     17.97  |Q      V |         |         |         |
11+ 0     10.9299     18.14  |Q      V |         |         |         |
11+ 5     11.0561     18.32  |Q       V|         |         |         |
11+10     11.1835     18.50  |Q       V|         |         |         |
11+15     11.3123     18.70  |Q       V|         |         |         |
11+20     11.4424     18.89  |Q       V|         |         |         |
11+25     11.5738     19.09  |Q       V|         |         |         |
11+30     11.7067     19.29  |Q       V|         |         |         |
11+35     11.8411     19.51  |Q       V|         |         |         |
11+40     11.9769     19.72  |Q       V|         |         |         |
11+45     12.1143     19.95  |Q       V|         |         |         |
11+50     12.2533     20.18  | Q      V|         |         |         |
11+55     12.3939     20.42  | Q       V         |         |         |
12+ 0     12.5362     20.66  | Q       V         |         |         |
12+ 5     12.6815     21.09  | Q       V         |         |         |
12+10     12.8329     22.00  | Q       V         |         |         |
12+15     12.9982     24.00  | Q       V         |         |         |
12+20     13.1742     25.55  | Q       V         |         |         |
```

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12+25      13.3561     26.42  | Q       V         |         |         |
12+30      13.5427     27.10  | Q       |V        |         |         |
12+35      13.7334     27.69  | Q       |V        |         |         |
12+40      13.9278     28.21  | Q       |V        |         |         |
12+45      14.1255     28.71  | Q       |V        |         |         |
12+50      14.3262     29.15  | Q       |V        |         |         |
12+55      14.5300     29.59  | Q       |V        |         |         |
13+ 0      14.7366     30.00  | Q       | V       |         |         |
13+ 5      14.9462     30.44  |  Q      | V       |         |         |
13+10      15.1588     30.87  |  Q      | V       |         |         |
13+15      15.3746     31.33  |  Q      | V       |         |         |
13+20      15.5936     31.80  |  Q      | V       |         |         |
13+25      15.8160     32.30  |  Q      | V       |         |         |
13+30      16.0419     32.80  |  Q      |  V      |         |         |
13+35      16.2715     33.33  |  Q      |  V      |         |         |
13+40      16.5047     33.87  |  Q      |  V      |         |         |
13+45      16.7421     34.46  |  Q      |  V      |         |         |
13+50      16.9835     35.06  |  Q      |  V      |         |         |
13+55      17.2295     35.71  |  Q      |   V     |         |         |
14+ 0      17.4800     36.37  |  Q      |   V     |         |         |
14+ 5      17.7356     37.12  |  Q      |   V     |         |         |
14+10      17.9967     37.92  |  Q      |   V     |         |         |
14+15      18.2647     38.91  |  Q      |   V     |         |         |
14+20      18.5393     39.87  |  Q      |    V    |         |         |
14+25      18.8206     40.85  |   Q     |    V    |         |         |
14+30      19.1088     41.84  |   Q     |    V    |         |         |
14+35      19.4045     42.94  |   Q     |    V    |         |         |
14+40      19.7080     44.06  |   Q     |     V   |         |         |
14+45      20.0201     45.32  |   Q     |     V   |         |         |
14+50      20.3411     46.62  |   Q     |     V   |         |         |
14+55      20.6723     48.09  |   Q     |     V   |         |         |
15+ 0      21.0142     49.64  |   Q     |      V  |         |         |
15+ 5      21.3684     51.43  |    Q    |      V  |         |         |
15+10      21.7356     53.32  |    Q    |      V  |         |         |
15+15      22.1182     55.55  |    Q    |       V |         |         |
15+20      22.5172     57.94  |    Q    |       V |         |         |
15+25      22.9341     60.53  |     Q   |       V |         |         |
15+30      23.3653     62.60  |     Q   |        V|         |         |
15+35      23.8034     63.61  |     Q   |        V|         |         |
15+40      24.2574     65.93  |     Q   |        V|         |         |
15+45      24.7456     70.89  |      Q  |         V         |         |
15+50      25.2797     77.54  |      Q  |         V         |         |
15+55      25.8867     88.13  |       Q |          V        |         |
16+ 0      26.6063    104.50  |         Q          V        |         |
16+ 5      27.6209    147.32  |          |   Q     | V       |         |
16+10      29.1399    220.56  |          |         | QV      |         |
16+15      31.3953    327.48  |          |         |   V     | Q       |
16+20      33.2087    263.31  |          |         |    QV   |         |
16+25      34.3887    171.32  |          |      Q  |      V  |         |
16+30      35.3231    135.68  |          |  Q      |      V  |         |
16+35      36.1082    113.99  |         |Q        |       V|         |
16+40      36.7812     97.73  |        Q|         |       V|         |
16+45      37.3590     83.89  |       Q |         |        V         |
16+50      37.8580     72.46  |      Q  |         |        V         |
16+55      38.2892     62.61  |     Q   |         |         |V       |
17+ 0      38.6738     55.84  |    Q    |         |         |V       |
17+ 5      39.0310     51.86  |    Q    |         |         |V       |
17+10      39.3632     48.24  |   Q     |         |         | V      |
17+15      39.6777     45.66  |   Q     |         |         | V      |
17+20      39.9739     43.02  |   Q     |         |         | V      |
17+25      40.2514     40.29  |   Q     |         |         | V      |
17+30      40.5141     38.14  |  Q      |         |         | V      |
17+35      40.7623     36.04  |  Q      |         |         |  V     |
17+40      41.0011     34.67  |  Q      |         |         |  V     |
17+45      41.2316     33.47  |  Q      |         |         |  V     |
17+50      41.4547     32.39  |  Q      |         |         |  V     |
17+55      41.6710     31.42  |  Q      |         |         |  V     |
18+ 0      41.8812     30.52  |  Q      |         |         |   V    |
18+ 5      42.0846     29.53  | Q       |         |         |   V    |
18+10      42.2783     28.13  | Q       |         |         |   V    |
18+15      42.4554     25.71  | Q       |         |         |   V    |
```

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18+20      42.6194     23.81  | Q       |         |         |   V     |
18+25      42.7754     22.66  | Q       |         |         |   V     |
18+30      42.9252     21.75  | Q       |         |         |   V     |
18+35      43.0697     20.98  | Q       |         |         |    V    |
18+40      43.2096     20.31  | Q       |         |         |    V    |
18+45      43.3454     19.73  |Q        |         |         |    V    |
18+50      43.4778     19.22  |Q        |         |         |    V    |
18+55      43.6071     18.77  |Q        |         |         |    V    |
19+ 0      43.7336     18.37  |Q        |         |         |    V    |
19+ 5      43.8575     17.99  |Q        |         |         |    V    |
19+10      43.9790     17.64  |Q        |         |         |    V    |
19+15      44.0982     17.30  |Q        |         |         |    V    |
19+20      44.2151     16.98  |Q        |         |         |     V   |
19+25      44.3300     16.68  |Q        |         |         |     V   |
19+30      44.4429     16.39  |Q        |         |         |     V   |
19+35      44.5539     16.12  |Q        |         |         |     V   |
19+40      44.6632     15.87  |Q        |         |         |     V   |
19+45      44.7708     15.62  |Q        |         |         |     V   |
19+50      44.8767     15.38  |Q        |         |         |     V   |
19+55      44.9811     15.16  |Q        |         |         |     V   |
20+ 0      45.0839     14.94  |Q        |         |         |     V   |
20+ 5      45.1854     14.72  |Q        |         |         |     V   |
20+10      45.2854     14.52  |Q        |         |         |     V   |
20+15      45.3840     14.32  |Q        |         |         |     V   |
20+20      45.4814     14.14  |Q        |         |         |      V  |
20+25      45.5774     13.95  |Q        |         |         |      V  |
20+30      45.6723     13.77  |Q        |         |         |      V  |
20+35      45.7660     13.60  |Q        |         |         |      V  |
20+40      45.8585     13.44  |Q        |         |         |      V  |
20+45      45.9500     13.28  |Q        |         |         |      V  |
20+50      46.0403     13.12  |Q        |         |         |      V  |
20+55      46.1297     12.97  |Q        |         |         |      V  |
21+ 0      46.2180     12.82  |Q        |         |         |      V  |
21+ 5      46.3053     12.68  |Q        |         |         |      V  |
21+10      46.3917     12.54  |Q        |         |         |      V  |
21+15      46.4771     12.41  |Q        |         |         |      V  |
21+20      46.5616     12.28  |Q        |         |         |      V  |
21+25      46.6453     12.15  |Q        |         |         |      V  |
21+30      46.7281     12.02  |Q        |         |         |       V |
21+35      46.8101     11.90  |Q        |         |         |       V |
21+40      46.8913     11.79  |Q        |         |         |       V |
21+45      46.9716     11.67  |Q        |         |         |       V |
21+50      47.0512     11.56  |Q        |         |         |       V |
21+55      47.1301     11.45  |Q        |         |         |       V |
22+ 0      47.2082     11.34  |Q        |         |         |       V |
22+ 5      47.2856     11.24  |Q        |         |         |       V |
22+10      47.3623     11.14  |Q        |         |         |       V |
22+15      47.4384     11.04  |Q        |         |         |       V |
22+20      47.5137     10.94  |Q        |         |         |       V |
22+25      47.5884     10.85  |Q        |         |         |       V |
22+30      47.6625     10.75  |Q        |         |         |       V |
22+35      47.7359     10.66  |Q        |         |         |       V |
22+40      47.8088     10.58  |Q        |         |         |       V |
22+45      47.8810     10.49  |Q        |         |         |       V |
22+50      47.9527     10.40  |Q        |         |         |        V|
22+55      48.0237     10.32  |Q        |         |         |        V|
23+ 0      48.0942     10.24  |Q        |         |         |        V|
23+ 5      48.1642     10.16  |Q        |         |         |        V|
23+10      48.2336     10.08  |Q        |         |         |        V|
23+15      48.3025     10.00  |Q        |         |         |        V|
23+20      48.3709      9.93  Q        |         |         |        V|
23+25      48.4388      9.86  Q        |         |         |        V|
23+30      48.5062      9.78  Q        |         |         |        V|
23+35      48.5731      9.71  Q        |         |         |        V|
23+40      48.6395      9.64  Q        |         |         |        V|
23+45      48.7054      9.57  Q        |         |         |        V|
23+50      48.7709      9.51  Q        |         |         |        V|
23+55      48.8359      9.44  Q        |         |         |        V|
24+ 0      48.9005      9.38  Q        |         |         |        V|
24+ 5      48.9627      9.03  Q        |         |         |        V|
24+10      49.0172      7.91  Q        |         |         |        V|
```

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   24+15      49.0519      5.04  Q         |         |         |         V|
   24+20      49.0722      2.94  Q         |         |         |         V|
   24+25      49.0860      2.01  Q         |         |         |         V|
   24+30      49.0956      1.39  Q         |         |         |         V|
   24+35      49.1022      0.95  Q         |         |         |         V|
   24+40      49.1065      0.63  Q         |         |         |         V|
   24+45      49.1093      0.41  Q         |         |         |         V|
   24+50      49.1111      0.26  Q         |         |         |         V|
   24+55      49.1123      0.18  Q         |         |         |         V|
   25+ 0      49.1132      0.13  Q         |         |         |         V|
   25+ 5      49.1139      0.10  Q         |         |         |         V|
   25+10      49.1144      0.07  Q         |         |         |         V|
   25+15      49.1147      0.05  Q         |         |         |         V|
   25+20      49.1149      0.02  Q         |         |         |         V|
   25+25      49.1149      0.01  Q         |         |         |         V|
-------------------------------------------------------------------------
```

- 2 Year 3 Hour Post-Development Unit Hydrograph – Area 'C'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989-2012, Version 7.2

       Study date  10/13/16   File Name PRC00203.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'C' - 2 YEAR 3 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 2

       Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 74.6       0.5          0.00     B     0.300     0.748    0.224
 74.6     120.5          1.00     C     0.250     0.748    0.187

Area-averaged adjusted loss rate Fm (In/Hr) =  0.187

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
     0.39   0.003         74.6      56.5       7.69     0.016
     0.13   0.001         98.0      98.0       0.20     0.890

    90.13   0.745         74.6      56.5       7.69     0.016
    30.37   0.251         98.0      98.0       0.20     0.890

Area-averaged catchment yield fraction, Y =  0.236
Area-averaged low loss fraction, Yb =  0.764
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.267 (hours)
Watershed area =     121.02(Ac.)
Catchment Lag time =   0.214 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 39.0137
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.187(In/Hr)
Average low loss rate fraction (Yb) = 0.764 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.190(In)
Computed peak 30-minute rainfall =  0.400(In)
Specified peak 1-hour rainfall =  0.530(In)
Computed peak 3-hour rainfall =  0.890(In)
Specified peak 6-hour rainfall =  1.220(In)
Specified peak 24-hour rainfall =  2.050(In)
```

```
Rainfall depth area reduction factors:
Using a total area of     121.02(Ac.) (Ref: fig. E-4)

5-minute factor = 0.994     Adjusted rainfall =  0.189(In)
30-minute factor = 0.994    Adjusted rainfall =  0.398(In)
1-hour factor = 0.994       Adjusted rainfall =  0.527(In)
3-hour factor = 0.999       Adjusted rainfall =  0.889(In)
6-hour factor = 1.000       Adjusted rainfall =  1.220(In)
24-hour factor = 1.000 Adjusted rainfall =  2.050(In)
```

U n i t H y d r o g r a p h

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 1463.59 (CFS))	
1	3.028	44.320
2	14.204	163.567
3	43.985	435.866
4	67.499	344.149
5	77.664	148.780
6	84.461	99.478
7	89.267	70.334
8	92.777	51.383
9	95.283	36.677
10	96.990	24.977
11	97.996	14.721
12	98.475	7.020
13	98.874	5.834
14	99.160	4.186
15	99.426	3.891
16	99.708	4.122
17	99.870	2.383
18	100.000	1.897

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.1889	0.1889
2	0.2520	0.0631
3	0.2982	0.0462
4	0.3361	0.0379
5	0.3687	0.0326
6	0.3977	0.0290
7	0.4234	0.0257
8	0.4470	0.0236
9	0.4689	0.0219
10	0.4894	0.0205
11	0.5087	0.0193
12	0.5270	0.0183
13	0.5475	0.0205
14	0.5671	0.0197
15	0.5861	0.0189
16	0.6044	0.0183
17	0.6221	0.0177
18	0.6393	0.0172
19	0.6559	0.0167
20	0.6722	0.0162
21	0.6880	0.0158
22	0.7034	0.0154
23	0.7184	0.0151
24	0.7332	0.0147
25	0.7476	0.0144
26	0.7617	0.0141
27	0.7755	0.0138
28	0.7890	0.0136
29	0.8023	0.0133
30	0.8154	0.0131
31	0.8282	0.0128
32	0.8408	0.0126

```
 33              0.8533              0.0124
 34              0.8655              0.0122
 35              0.8775              0.0120
 36              0.8894              0.0119
---------------------------------------------------------------------
Unit              Unit            Unit              Effective
Period            Rainfall        Soil-Loss         Rainfall
(number)            (In)          (In)                (In)
---------------------------------------------------------------------
  1              0.0119           0.0091              0.0028
  2              0.0120           0.0092              0.0028
  3              0.0124           0.0095              0.0029
  4              0.0126           0.0096              0.0030
  5              0.0131           0.0100              0.0031
  6              0.0133           0.0102              0.0031
  7              0.0138           0.0106              0.0033
  8              0.0141           0.0108              0.0033
  9              0.0147           0.0112              0.0035
 10              0.0151           0.0115              0.0036
 11              0.0158           0.0121              0.0037
 12              0.0162           0.0124              0.0038
 13              0.0172           0.0131              0.0040
 14              0.0177           0.0135              0.0042
 15              0.0189           0.0145              0.0045
 16              0.0197           0.0150              0.0046
 17              0.0183           0.0140              0.0043
 18              0.0193           0.0148              0.0046
 19              0.0219           0.0156              0.0063
 20              0.0236           0.0156              0.0080
 21              0.0290           0.0156              0.0134
 22              0.0326           0.0156              0.0171
 23              0.0462           0.0156              0.0306
 24              0.0631           0.0156              0.0475
 25              0.1889           0.0156              0.1733
 26              0.0379           0.0156              0.0223
 27              0.0257           0.0156              0.0101
 28              0.0205           0.0156              0.0049
 29              0.0205           0.0156              0.0049
 30              0.0183           0.0140              0.0043
 31              0.0167           0.0127              0.0039
 32              0.0154           0.0118              0.0036
 33              0.0144           0.0110              0.0034
 34              0.0136           0.0104              0.0032
 35              0.0128           0.0098              0.0030
 36              0.0122           0.0093              0.0029
---------------------------------------------------------------------
---------------------------------------------------------------------
Total soil rain loss =      0.46(In)
Total effective rainfall =      0.43(In)
Peak flow rate in flood hydrograph =    104.11(CFS)
---------------------------------------------------------------------
+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                    3 - H O U R    S T O R M
                R u n o f f      H y d r o g r a p h
---------------------------------------------------------------------
            Hydrograph in   5   Minute intervals ((CFS))

---------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0       50.0     100.0     150.0     200.0
---------------------------------------------------------------------
  0+ 5       0.0009      0.12  Q         |         |         |         |
  0+10       0.0049      0.58  Q         |         |         |         |
  0+15       0.0174      1.81  Q         |         |         |         |
  0+20       0.0367      2.81  Q         |         |         |         |
  0+25       0.0594      3.29  Q         |         |         |         |
  0+30       0.0845      3.65  Q         |         |         |         |
  0+35       0.1116      3.94  QV        |         |         |         |
  0+40       0.1405      4.18  QV        |         |         |         |
  0+45       0.1708      4.41  QV        |         |         |         |
  0+50       0.2025      4.60  QV        |         |         |         |
  0+55       0.2355      4.79  Q V       |         |         |         |
```

```
   1+ 0       0.2696      4.96  Q V       |         |         |         |
   1+ 5       0.3052      5.16  |QV       |         |         |         |
   1+10       0.3421      5.36  |Q V      |         |         |         |
   1+15       0.3805      5.59  |Q V      |         |         |         |
   1+20       0.4208      5.84  |Q V      |         |         |         |
   1+25       0.4628      6.10  |Q  V     |         |         |         |
   1+30       0.5063      6.31  |Q  V     |         |         |         |
   1+35       0.5506      6.43  |Q   V    |         |         |         |
   1+40       0.5979      6.87  |Q   V    |         |         |         |
   1+45       0.6546      8.24  |Q    V   |         |         |         |
   1+50       0.7282     10.68  | Q   V   |         |         |         |
   1+55       0.8322     15.11  |  Q   V  |         |         |         |
   2+ 0       0.9836     21.97  |   Q    V|         |         |         |
   2+ 5       1.2493     38.59  |      Q  |V        |         |         |
   2+10       1.7024     65.78  |         |  Q V    |         |         |
   2+15       2.4193    104.11  |         |        Q V        |         |
   2+20       2.9969     83.86  |         |     Q   |      V  |         |
   2+25       3.3242     47.53  |         Q|        |         V         |
   2+30       3.5535     33.28  |     Q   |        |         | V       |
   2+35       3.7253     24.95  |   Q     |        |         |   V     |
   2+40       3.8600     19.55  |  Q      |        |         |    V    |
   2+45       3.9653     15.30  |  Q      |        |         |     V   |
   2+50       4.0474     11.92  | Q       |        |         |      V  |
   2+55       4.1105      9.17  |Q        |        |         |       V |
   3+ 0       4.1602      7.20  |Q        |        |         |       V |
   3+ 5       4.2036      6.31  |Q        |        |         |       V |
   3+10       4.2396      5.22  |Q        |        |         |        V|
   3+15       4.2649      3.67  Q         |        |         |        V|
   3+20       4.2821      2.50  Q         |        |         |        V|
   3+25       4.2935      1.65  Q         |        |         |        V|
   3+30       4.3012      1.13  Q         |        |         |        V|
   3+35       4.3051      0.56  Q         |        |         |        V|
   3+40       4.3076      0.36  Q         |        |         |        V|
   3+45       4.3091      0.23  Q         |        |         |        V|
   3+50       4.3101      0.15  Q         |        |         |        V|
   3+55       4.3108      0.10  Q         |        |         |        V|
   4+ 0       4.3113      0.07  Q         |        |         |        V|
   4+ 5       4.3117      0.05  Q         |        |         |        V|
   4+10       4.3119      0.04  Q         |        |         |        V|
   4+15       4.3121      0.03  Q         |        |         |        V|
   4+20       4.3122      0.01  Q         |        |         |        V|
   4+25       4.3122      0.01  Q         |        |         |         V
-------------------------------------------------------------------------
```

- 2 Year 6 Hour Post-Development Unit Hydrograph – Area 'C'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989-2012, Version 7.2

       Study date  10/13/16   File Name PRC00206.out


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'C' - 2 YEAR 6 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 2

       Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 74.6       0.5          0.00     B     0.300     0.748    0.224
 74.6     120.5          1.00     C     0.250     0.748    0.187

Area-averaged adjusted loss rate Fm (In/Hr) =  0.187

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
     0.39   0.003         74.6      56.5       7.69     0.016
     0.13   0.001         98.0      98.0       0.20     0.890

    90.13   0.745         74.6      56.5       7.69     0.016
    30.37   0.251         98.0      98.0       0.20     0.890

Area-averaged catchment yield fraction, Y =  0.236
Area-averaged low loss fraction, Yb =  0.764
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.267 (hours)
Watershed area =     121.02(Ac.)
Catchment Lag time =   0.214 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 39.0137
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.187(In/Hr)
Average low loss rate fraction (Yb) = 0.764 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.190(In)
Computed peak 30-minute rainfall =  0.400(In)
Specified peak 1-hour rainfall =  0.530(In)
Computed peak 3-hour rainfall =  0.890(In)
Specified peak 6-hour rainfall =  1.220(In)
Specified peak 24-hour rainfall =  2.050(In)
```

```
Rainfall depth area reduction factors:
Using a total area of     121.02(Ac.) (Ref: fig. E-4)

5-minute factor = 0.994     Adjusted rainfall =  0.189(In)
30-minute factor = 0.994    Adjusted rainfall =  0.398(In)
1-hour factor = 0.994       Adjusted rainfall =  0.527(In)
3-hour factor = 0.999       Adjusted rainfall =  0.889(In)
6-hour factor = 1.000       Adjusted rainfall =  1.220(In)
24-hour factor = 1.000 Adjusted rainfall =  2.050(In)
```

U n i t H y d r o g r a p h

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 1463.59 (CFS))	
1	3.028	44.320
2	14.204	163.567
3	43.985	435.866
4	67.499	344.149
5	77.664	148.780
6	84.461	99.478
7	89.267	70.334
8	92.777	51.383
9	95.283	36.677
10	96.990	24.977
11	97.996	14.721
12	98.475	7.020
13	98.874	5.834
14	99.160	4.186
15	99.426	3.891
16	99.708	4.122
17	99.870	2.383
18	100.000	1.897

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.1889	0.1889
2	0.2520	0.0631
3	0.2982	0.0462
4	0.3361	0.0379
5	0.3687	0.0326
6	0.3977	0.0290
7	0.4234	0.0257
8	0.4470	0.0236
9	0.4689	0.0219
10	0.4894	0.0205
11	0.5087	0.0193
12	0.5270	0.0183
13	0.5475	0.0205
14	0.5671	0.0197
15	0.5861	0.0189
16	0.6044	0.0183
17	0.6221	0.0177
18	0.6393	0.0172
19	0.6559	0.0167
20	0.6722	0.0162
21	0.6880	0.0158
22	0.7034	0.0154
23	0.7184	0.0151
24	0.7332	0.0147
25	0.7476	0.0144
26	0.7617	0.0141
27	0.7755	0.0138
28	0.7890	0.0136
29	0.8023	0.0133
30	0.8154	0.0131
31	0.8282	0.0128
32	0.8408	0.0126

33	0.8533	0.0124
34	0.8655	0.0122
35	0.8775	0.0120
36	0.8894	0.0119
37	0.9005	0.0112
38	0.9115	0.0110
39	0.9224	0.0108
40	0.9331	0.0107
41	0.9436	0.0106
42	0.9541	0.0104
43	0.9643	0.0103
44	0.9745	0.0102
45	0.9845	0.0100
46	0.9944	0.0099
47	1.0042	0.0098
48	1.0139	0.0097
49	1.0234	0.0096
50	1.0329	0.0095
51	1.0423	0.0094
52	1.0515	0.0093
53	1.0607	0.0092
54	1.0698	0.0091
55	1.0787	0.0090
56	1.0876	0.0089
57	1.0964	0.0088
58	1.1052	0.0087
59	1.1138	0.0086
60	1.1224	0.0086
61	1.1308	0.0085
62	1.1392	0.0084
63	1.1476	0.0083
64	1.1558	0.0083
65	1.1640	0.0082
66	1.1721	0.0081
67	1.1802	0.0081
68	1.1882	0.0080
69	1.1961	0.0079
70	1.2040	0.0079
71	1.2118	0.0078
72	1.2195	0.0077

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0077	0.0059	0.0018
2	0.0078	0.0060	0.0018
3	0.0079	0.0061	0.0019
4	0.0080	0.0061	0.0019
5	0.0081	0.0062	0.0019
6	0.0082	0.0063	0.0019
7	0.0083	0.0064	0.0020
8	0.0084	0.0064	0.0020
9	0.0086	0.0065	0.0020
10	0.0086	0.0066	0.0020
11	0.0088	0.0067	0.0021
12	0.0089	0.0068	0.0021
13	0.0091	0.0069	0.0021
14	0.0092	0.0070	0.0022
15	0.0094	0.0072	0.0022
16	0.0095	0.0072	0.0022
17	0.0097	0.0074	0.0023
18	0.0098	0.0075	0.0023
19	0.0100	0.0077	0.0024
20	0.0102	0.0078	0.0024
21	0.0104	0.0080	0.0025
22	0.0106	0.0081	0.0025
23	0.0108	0.0083	0.0026
24	0.0110	0.0084	0.0026
25	0.0119	0.0091	0.0028
26	0.0120	0.0092	0.0028

```
 27              0.0124          0.0095              0.0029
 28              0.0126          0.0096              0.0030
 29              0.0131          0.0100              0.0031
 30              0.0133          0.0102              0.0031
 31              0.0138          0.0106              0.0033
 32              0.0141          0.0108              0.0033
 33              0.0147          0.0112              0.0035
 34              0.0151          0.0115              0.0036
 35              0.0158          0.0121              0.0037
 36              0.0162          0.0124              0.0038
 37              0.0172          0.0131              0.0040
 38              0.0177          0.0135              0.0042
 39              0.0189          0.0145              0.0045
 40              0.0197          0.0150              0.0046
 41              0.0183          0.0140              0.0043
 42              0.0193          0.0148              0.0046
 43              0.0219          0.0156              0.0063
 44              0.0236          0.0156              0.0080
 45              0.0290          0.0156              0.0134
 46              0.0326          0.0156              0.0171
 47              0.0462          0.0156              0.0306
 48              0.0631          0.0156              0.0475
 49              0.1889          0.0156              0.1733
 50              0.0379          0.0156              0.0223
 51              0.0257          0.0156              0.0101
 52              0.0205          0.0156              0.0049
 53              0.0205          0.0156              0.0049
 54              0.0183          0.0140              0.0043
 55              0.0167          0.0127              0.0039
 56              0.0154          0.0118              0.0036
 57              0.0144          0.0110              0.0034
 58              0.0136          0.0104              0.0032
 59              0.0128          0.0098              0.0030
 60              0.0122          0.0093              0.0029
 61              0.0112          0.0085              0.0026
 62              0.0107          0.0082              0.0025
 63              0.0103          0.0079              0.0024
 64              0.0099          0.0076              0.0023
 65              0.0096          0.0073              0.0023
 66              0.0093          0.0071              0.0022
 67              0.0090          0.0069              0.0021
 68              0.0087          0.0067              0.0021
 69              0.0085          0.0065              0.0020
 70              0.0083          0.0063              0.0019
 71              0.0081          0.0062              0.0019
 72              0.0079          0.0060              0.0019
-------------------------------------------------------------------
-------------------------------------------------------------------
Total soil rain loss =      0.71(In)
Total effective rainfall =      0.51(In)
Peak flow rate in flood hydrograph =    104.11(CFS)
-------------------------------------------------------------------
+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                    6 - H O U R    S T O R M
                R u n o f f      H y d r o g r a p h
-------------------------------------------------------------------
            Hydrograph in   5   Minute intervals ((CFS))

      -------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0       50.0     100.0     150.0     200.0
-------------------------------------------------------------------------
  0+ 5       0.0006      0.08  Q         |         |         |         |
  0+10       0.0032      0.38  Q         |         |         |         |
  0+15       0.0113      1.18  Q         |         |         |         |
  0+20       0.0238      1.82  Q         |         |         |         |
  0+25       0.0384      2.11  Q         |         |         |         |
  0+30       0.0544      2.32  Q         |         |         |         |
  0+35       0.0714      2.48  Q         |         |         |         |
  0+40       0.0893      2.60  Q         |         |         |         |
  0+45       0.1079      2.70  Q         |         |         |         |
  0+50       0.1271      2.78  Q         |         |         |         |
```

```
0+55       0.1467      2.85  QV        |         |         |         |
1+ 0       0.1666      2.90  QV        |         |         |         |
1+ 5       0.1869      2.95  QV        |         |         |         |
1+10       0.2076      3.00  QV        |         |         |         |
1+15       0.2285      3.05  QV        |         |         |         |
1+20       0.2499      3.10  QV        |         |         |         |
1+25       0.2716      3.15  Q V       |         |         |         |
1+30       0.2937      3.21  Q V       |         |         |         |
1+35       0.3162      3.26  Q V       |         |         |         |
1+40       0.3390      3.31  Q V       |         |         |         |
1+45       0.3622      3.37  Q V       |         |         |         |
1+50       0.3859      3.43  Q  V      |         |         |         |
1+55       0.4099      3.50  Q  V      |         |         |         |
2+ 0       0.4345      3.56  Q  V      |         |         |         |
2+ 5       0.4596      3.64  Q  V      |         |         |         |
2+10       0.4853      3.74  Q  V      |         |         |         |
2+15       0.5120      3.87  Q   V     |         |         |         |
2+20       0.5395      4.00  Q   V     |         |         |         |
2+25       0.5678      4.11  Q   V     |         |         |         |
2+30       0.5968      4.22  Q   V     |         |         |         |
2+35       0.6267      4.33  Q   V     |         |         |         |
2+40       0.6573      4.45  Q    V    |         |         |         |
2+45       0.6889      4.58  Q    V    |         |         |         |
2+50       0.7213      4.71  Q    V    |         |         |         |
2+55       0.7548      4.86  Q    V    |         |         |         |
3+ 0       0.7893      5.02  |Q    V    |         |         |         |
3+ 5       0.8251      5.20  |Q    V    |         |         |         |
3+10       0.8623      5.39  |Q    V    |         |         |         |
3+15       0.9009      5.61  |Q     V   |         |         |         |
3+20       0.9412      5.85  |Q     V   |         |         |         |
3+25       0.9833      6.11  |Q     V   |         |         |         |
3+30       1.0267      6.31  |Q      V  |         |         |         |
3+35       1.0710      6.43  |Q      V  |         |         |         |
3+40       1.1183      6.87  |Q      V  |         |         |         |
3+45       1.1751      8.24  |Q       V |         |         |         |
3+50       1.2486     10.68  | Q      V |         |         |         |
3+55       1.3527     15.11  |  Q      V|         |         |         |
4+ 0       1.5040     21.97  |   Q     |V        |         |         |
4+ 5       1.7698     38.59  |      Q  |  V      |         |         |
4+10       2.2228     65.78  |         |  Q   V  |         |         |
4+15       2.9398    104.11  |         |       Q  V        |         |
4+20       3.5174     83.86  |         |     Q   |      V  |         |
4+25       3.8447     47.53  |        Q|         |         V         |
4+30       4.0739     33.28  |     Q   |         |         |V        |
4+35       4.2458     24.95  |    Q    |         |         |  V      |
4+40       4.3804     19.55  |  Q      |         |         |   V     |
4+45       4.4858     15.30  |  Q      |         |         |    V    |
4+50       4.5679     11.92  | Q       |         |         |    V    |
4+55       4.6310      9.17  |Q        |         |         |     V   |
5+ 0       4.6806      7.20  |Q        |         |         |     V   |
5+ 5       4.7249      6.43  |Q        |         |         |      V  |
5+10       4.7646      5.77  |Q        |         |         |      V  |
5+15       4.8014      5.34  |Q        |         |         |      V  |
5+20       4.8358      5.01  |Q        |         |         |      V  |
5+25       4.8665      4.45  Q         |         |         |       V |
5+30       4.8946      4.09  Q         |         |         |       V |
5+35       4.9194      3.60  Q         |         |         |       V |
5+40       4.9430      3.43  Q         |         |         |       V |
5+45       4.9657      3.29  Q         |         |         |       V |
5+50       4.9876      3.18  Q         |         |         |        V|
5+55       5.0088      3.08  Q         |         |         |        V|
6+ 0       5.0294      2.99  Q         |         |         |        V|
6+ 5       5.0489      2.83  Q         |         |         |        V|
6+10       5.0658      2.46  Q         |         |         |        V|
6+15       5.0768      1.60  Q         |         |         |        V|
6+20       5.0833      0.94  Q         |         |         |        V|
6+25       5.0877      0.64  Q         |         |         |        V|
6+30       5.0908      0.45  Q         |         |         |        V|
6+35       5.0929      0.31  Q         |         |         |        V|
6+40       5.0943      0.21  Q         |         |         |        V|
6+45       5.0953      0.14  Q         |         |         |        V|
```

```
    6+50       5.0959      0.09  Q         |         |         |         V|
    6+55       5.0963      0.06  Q         |         |         |         V|
    7+ 0       5.0966      0.04  Q         |         |         |         V|
    7+ 5       5.0968      0.03  Q         |         |         |         V|
    7+10       5.0969      0.02  Q         |         |         |         V|
    7+15       5.0971      0.02  Q         |         |         |         V|
    7+20       5.0971      0.01  Q         |         |         |         V|
    7+25       5.0971      0.00  Q         |         |         |         V|
-------------------------------------------------------------------------
```

- 2 Year 12 Hour Post-Development Unit Hydrograph – Area 'C'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/13/16   File Name PRC00212.out


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'C' - 2 YEAR 12 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 2

       Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 74.6       0.5          0.00     B     0.300     0.748    0.224
 74.6     120.5          1.00     C     0.250     0.748    0.187

Area-averaged adjusted loss rate Fm (In/Hr) =  0.187

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
     0.39   0.003         74.6      56.5       7.69     0.016
     0.13   0.001         98.0      98.0       0.20     0.890

    90.13   0.745         74.6      56.5       7.69     0.016
    30.37   0.251         98.0      98.0       0.20     0.890

Area-averaged catchment yield fraction, Y =  0.236
Area-averaged low loss fraction, Yb =  0.764
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.267 (hours)
Watershed area =     121.02(Ac.)
Catchment Lag time =   0.214 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 39.0137
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.187(In/Hr)
Average low loss rate fraction (Yb) = 0.764 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.190(In)
Computed peak 30-minute rainfall =  0.400(In)
Specified peak 1-hour rainfall =  0.530(In)
Computed peak 3-hour rainfall =  0.890(In)
Specified peak 6-hour rainfall =  1.220(In)
Specified peak 24-hour rainfall =  2.050(In)
```

```
Rainfall depth area reduction factors:
Using a total area of     121.02(Ac.) (Ref: fig. E-4)

5-minute factor = 0.994     Adjusted rainfall =  0.189(In)
30-minute factor = 0.994    Adjusted rainfall =  0.398(In)
1-hour factor = 0.994       Adjusted rainfall =  0.527(In)
3-hour factor = 0.999       Adjusted rainfall =  0.889(In)
6-hour factor = 1.000       Adjusted rainfall =  1.220(In)
24-hour factor = 1.000 Adjusted rainfall =  2.050(In)
------------------------------------------------------------------------

                      U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
------------------------------------------------------------------------
               (K =      1463.59 (CFS))

  1                3.028                  44.320
  2               14.204                 163.567
  3               43.985                 435.866
  4               67.499                 344.149
  5               77.664                 148.780
  6               84.461                  99.478
  7               89.267                  70.334
  8               92.777                  51.383
  9               95.283                  36.677
 10               96.990                  24.977
 11               97.996                  14.721
 12               98.475                   7.020
 13               98.874                   5.834
 14               99.160                   4.186
 15               99.426                   3.891
 16               99.708                   4.122
 17               99.870                   2.383
 18              100.000                   1.897
------------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.1889               0.1889
  2              0.2520               0.0631
  3              0.2982               0.0462
  4              0.3361               0.0379
  5              0.3687               0.0326
  6              0.3977               0.0290
  7              0.4234               0.0257
  8              0.4470               0.0236
  9              0.4689               0.0219
 10              0.4894               0.0205
 11              0.5087               0.0193
 12              0.5270               0.0183
 13              0.5475               0.0205
 14              0.5671               0.0197
 15              0.5861               0.0189
 16              0.6044               0.0183
 17              0.6221               0.0177
 18              0.6393               0.0172
 19              0.6559               0.0167
 20              0.6722               0.0162
 21              0.6880               0.0158
 22              0.7034               0.0154
 23              0.7184               0.0151
 24              0.7332               0.0147
 25              0.7476               0.0144
 26              0.7617               0.0141
 27              0.7755               0.0138
 28              0.7890               0.0136
 29              0.8023               0.0133
 30              0.8154               0.0131
 31              0.8282               0.0128
 32              0.8408               0.0126
```

33	0.8533	0.0124
34	0.8655	0.0122
35	0.8775	0.0120
36	0.8894	0.0119
37	0.9005	0.0112
38	0.9115	0.0110
39	0.9224	0.0108
40	0.9331	0.0107
41	0.9436	0.0106
42	0.9541	0.0104
43	0.9643	0.0103
44	0.9745	0.0102
45	0.9845	0.0100
46	0.9944	0.0099
47	1.0042	0.0098
48	1.0139	0.0097
49	1.0234	0.0096
50	1.0329	0.0095
51	1.0423	0.0094
52	1.0515	0.0093
53	1.0607	0.0092
54	1.0698	0.0091
55	1.0787	0.0090
56	1.0876	0.0089
57	1.0964	0.0088
58	1.1052	0.0087
59	1.1138	0.0086
60	1.1224	0.0086
61	1.1308	0.0085
62	1.1392	0.0084
63	1.1476	0.0083
64	1.1558	0.0083
65	1.1640	0.0082
66	1.1721	0.0081
67	1.1802	0.0081
68	1.1882	0.0080
69	1.1961	0.0079
70	1.2040	0.0079
71	1.2118	0.0078
72	1.2195	0.0077
73	1.2259	0.0063
74	1.2321	0.0063
75	1.2383	0.0062
76	1.2445	0.0062
77	1.2506	0.0061
78	1.2567	0.0061
79	1.2627	0.0060
80	1.2686	0.0060
81	1.2745	0.0059
82	1.2804	0.0059
83	1.2862	0.0058
84	1.2920	0.0058
85	1.2978	0.0057
86	1.3035	0.0057
87	1.3091	0.0057
88	1.3147	0.0056
89	1.3203	0.0056
90	1.3258	0.0055
91	1.3313	0.0055
92	1.3368	0.0055
93	1.3422	0.0054
94	1.3476	0.0054
95	1.3530	0.0054
96	1.3583	0.0053
97	1.3636	0.0053
98	1.3688	0.0052
99	1.3740	0.0052
100	1.3792	0.0052
101	1.3844	0.0051
102	1.3895	0.0051
103	1.3946	0.0051

104	1.3996	0.0051
105	1.4046	0.0050
106	1.4096	0.0050
107	1.4146	0.0050
108	1.4195	0.0049
109	1.4244	0.0049
110	1.4293	0.0049
111	1.4342	0.0049
112	1.4390	0.0048
113	1.4438	0.0048
114	1.4486	0.0048
115	1.4533	0.0047
116	1.4580	0.0047
117	1.4627	0.0047
118	1.4674	0.0047
119	1.4721	0.0046
120	1.4767	0.0046
121	1.4813	0.0046
122	1.4858	0.0046
123	1.4904	0.0045
124	1.4949	0.0045
125	1.4994	0.0045
126	1.5039	0.0045
127	1.5084	0.0045
128	1.5128	0.0044
129	1.5172	0.0044
130	1.5216	0.0044
131	1.5260	0.0044
132	1.5303	0.0044
133	1.5347	0.0043
134	1.5390	0.0043
135	1.5433	0.0043
136	1.5475	0.0043
137	1.5518	0.0043
138	1.5560	0.0042
139	1.5602	0.0042
140	1.5644	0.0042
141	1.5686	0.0042
142	1.5728	0.0042
143	1.5769	0.0041
144	1.5810	0.0041

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0041	0.0031	0.0010
2	0.0041	0.0032	0.0010
3	0.0042	0.0032	0.0010
4	0.0042	0.0032	0.0010
5	0.0042	0.0032	0.0010
6	0.0043	0.0032	0.0010
7	0.0043	0.0033	0.0010
8	0.0043	0.0033	0.0010
9	0.0044	0.0033	0.0010
10	0.0044	0.0033	0.0010
11	0.0044	0.0034	0.0010
12	0.0044	0.0034	0.0010
13	0.0045	0.0034	0.0011
14	0.0045	0.0034	0.0011
15	0.0045	0.0035	0.0011
16	0.0046	0.0035	0.0011
17	0.0046	0.0035	0.0011
18	0.0046	0.0035	0.0011
19	0.0047	0.0036	0.0011
20	0.0047	0.0036	0.0011
21	0.0048	0.0036	0.0011
22	0.0048	0.0037	0.0011
23	0.0049	0.0037	0.0011
24	0.0049	0.0037	0.0012
25	0.0049	0.0038	0.0012

26	0.0050	0.0038	0.0012
27	0.0050	0.0038	0.0012
28	0.0051	0.0039	0.0012
29	0.0051	0.0039	0.0012
30	0.0051	0.0039	0.0012
31	0.0052	0.0040	0.0012
32	0.0052	0.0040	0.0012
33	0.0053	0.0041	0.0013
34	0.0054	0.0041	0.0013
35	0.0054	0.0041	0.0013
36	0.0055	0.0042	0.0013
37	0.0055	0.0042	0.0013
38	0.0056	0.0043	0.0013
39	0.0057	0.0043	0.0013
40	0.0057	0.0044	0.0013
41	0.0058	0.0044	0.0014
42	0.0058	0.0045	0.0014
43	0.0059	0.0045	0.0014
44	0.0060	0.0046	0.0014
45	0.0061	0.0046	0.0014
46	0.0061	0.0047	0.0014
47	0.0062	0.0047	0.0015
48	0.0063	0.0048	0.0015
49	0.0077	0.0059	0.0018
50	0.0078	0.0060	0.0018
51	0.0079	0.0061	0.0019
52	0.0080	0.0061	0.0019
53	0.0081	0.0062	0.0019
54	0.0082	0.0063	0.0019
55	0.0083	0.0064	0.0020
56	0.0084	0.0064	0.0020
57	0.0086	0.0065	0.0020
58	0.0086	0.0066	0.0020
59	0.0088	0.0067	0.0021
60	0.0089	0.0068	0.0021
61	0.0091	0.0069	0.0021
62	0.0092	0.0070	0.0022
63	0.0094	0.0072	0.0022
64	0.0095	0.0072	0.0022
65	0.0097	0.0074	0.0023
66	0.0098	0.0075	0.0023
67	0.0100	0.0077	0.0024
68	0.0102	0.0078	0.0024
69	0.0104	0.0080	0.0025
70	0.0106	0.0081	0.0025
71	0.0108	0.0083	0.0026
72	0.0110	0.0084	0.0026
73	0.0119	0.0091	0.0028
74	0.0120	0.0092	0.0028
75	0.0124	0.0095	0.0029
76	0.0126	0.0096	0.0030
77	0.0131	0.0100	0.0031
78	0.0133	0.0102	0.0031
79	0.0138	0.0106	0.0033
80	0.0141	0.0108	0.0033
81	0.0147	0.0112	0.0035
82	0.0151	0.0115	0.0036
83	0.0158	0.0121	0.0037
84	0.0162	0.0124	0.0038
85	0.0172	0.0131	0.0040
86	0.0177	0.0135	0.0042
87	0.0189	0.0145	0.0045
88	0.0197	0.0150	0.0046
89	0.0183	0.0140	0.0043
90	0.0193	0.0148	0.0046
91	0.0219	0.0156	0.0063
92	0.0236	0.0156	0.0080
93	0.0290	0.0156	0.0134
94	0.0326	0.0156	0.0171
95	0.0462	0.0156	0.0306
96	0.0631	0.0156	0.0475

97	0.1889	0.0156	0.1733
98	0.0379	0.0156	0.0223
99	0.0257	0.0156	0.0101
100	0.0205	0.0156	0.0049
101	0.0205	0.0156	0.0049
102	0.0183	0.0140	0.0043
103	0.0167	0.0127	0.0039
104	0.0154	0.0118	0.0036
105	0.0144	0.0110	0.0034
106	0.0136	0.0104	0.0032
107	0.0128	0.0098	0.0030
108	0.0122	0.0093	0.0029
109	0.0112	0.0085	0.0026
110	0.0107	0.0082	0.0025
111	0.0103	0.0079	0.0024
112	0.0099	0.0076	0.0023
113	0.0096	0.0073	0.0023
114	0.0093	0.0071	0.0022
115	0.0090	0.0069	0.0021
116	0.0087	0.0067	0.0021
117	0.0085	0.0065	0.0020
118	0.0083	0.0063	0.0019
119	0.0081	0.0062	0.0019
120	0.0079	0.0060	0.0019
121	0.0063	0.0048	0.0015
122	0.0062	0.0047	0.0015
123	0.0060	0.0046	0.0014
124	0.0059	0.0045	0.0014
125	0.0057	0.0044	0.0014
126	0.0056	0.0043	0.0013
127	0.0055	0.0042	0.0013
128	0.0054	0.0041	0.0013
129	0.0053	0.0040	0.0012
130	0.0052	0.0040	0.0012
131	0.0051	0.0039	0.0012
132	0.0050	0.0038	0.0012
133	0.0049	0.0038	0.0012
134	0.0048	0.0037	0.0011
135	0.0047	0.0036	0.0011
136	0.0047	0.0036	0.0011
137	0.0046	0.0035	0.0011
138	0.0045	0.0035	0.0011
139	0.0045	0.0034	0.0011
140	0.0044	0.0034	0.0010
141	0.0043	0.0033	0.0010
142	0.0043	0.0033	0.0010
143	0.0042	0.0032	0.0010
144	0.0042	0.0032	0.0010

Total soil rain loss = 0.99(In)
Total effective rainfall = 0.59(In)
Peak flow rate in flood hydrograph = 104.11(CFS)

++

12 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	50.0	100.0	150.0	200.0
0+ 5	0.0003	0.04	Q	|	|	|	|
0+10	0.0017	0.20	Q	|	|	|	|
0+15	0.0060	0.63	Q	|	|	|	|
0+20	0.0127	0.96	Q	|	|	|	|
0+25	0.0203	1.12	Q	|	|	|	|
0+30	0.0287	1.22	Q	|	|	|	|
0+35	0.0377	1.30	Q	|	|	|	|
0+40	0.0470	1.36	Q	|	|	|	|

```
0+45      0.0566      1.40  Q          |          |          |          |
0+50      0.0665      1.43  Q          |          |          |          |
0+55      0.0766      1.46  Q          |          |          |          |
1+ 0      0.0867      1.48  Q          |          |          |          |
1+ 5      0.0970      1.49  Q          |          |          |          |
1+10      0.1074      1.51  Q          |          |          |          |
1+15      0.1179      1.52  Q          |          |          |          |
1+20      0.1284      1.54  Q          |          |          |          |
1+25      0.1391      1.55  Q          |          |          |          |
1+30      0.1499      1.56  QV         |          |          |          |
1+35      0.1607      1.58  QV         |          |          |          |
1+40      0.1717      1.59  QV         |          |          |          |
1+45      0.1827      1.60  QV         |          |          |          |
1+50      0.1938      1.61  QV         |          |          |          |
1+55      0.2050      1.63  QV         |          |          |          |
2+ 0      0.2163      1.64  QV         |          |          |          |
2+ 5      0.2277      1.65  QV         |          |          |          |
2+10      0.2392      1.67  QV         |          |          |          |
2+15      0.2508      1.68  QV         |          |          |          |
2+20      0.2625      1.70  QV         |          |          |          |
2+25      0.2743      1.71  QV         |          |          |          |
2+30      0.2862      1.73  QV         |          |          |          |
2+35      0.2982      1.74  Q V        |          |          |          |
2+40      0.3103      1.76  Q V        |          |          |          |
2+45      0.3225      1.77  Q V        |          |          |          |
2+50      0.3348      1.79  Q V        |          |          |          |
2+55      0.3473      1.81  Q V        |          |          |          |
3+ 0      0.3598      1.83  Q V        |          |          |          |
3+ 5      0.3725      1.84  Q V        |          |          |          |
3+10      0.3854      1.86  Q V        |          |          |          |
3+15      0.3983      1.88  Q V        |          |          |          |
3+20      0.4114      1.90  Q V        |          |          |          |
3+25      0.4247      1.92  Q V        |          |          |          |
3+30      0.4380      1.94  Q V        |          |          |          |
3+35      0.4516      1.96  Q  V       |          |          |          |
3+40      0.4652      1.98  Q  V       |          |          |          |
3+45      0.4790      2.01  Q  V       |          |          |          |
3+50      0.4930      2.03  Q  V       |          |          |          |
3+55      0.5072      2.05  Q  V       |          |          |          |
4+ 0      0.5215      2.08  Q  V       |          |          |          |
4+ 5      0.5361      2.12  Q  V       |          |          |          |
4+10      0.5512      2.20  Q  V       |          |          |          |
4+15      0.5675      2.37  Q  V       |          |          |          |
4+20      0.5848      2.51  Q  V       |          |          |          |
4+25      0.6026      2.58  Q   V      |          |          |          |
4+30      0.6208      2.65  Q   V      |          |          |          |
4+35      0.6394      2.70  Q   V      |          |          |          |
4+40      0.6584      2.75  Q   V      |          |          |          |
4+45      0.6777      2.80  Q   V      |          |          |          |
4+50      0.6973      2.84  Q   V      |          |          |          |
4+55      0.7172      2.89  Q   V      |          |          |          |
5+ 0      0.7373      2.93  Q   V      |          |          |          |
5+ 5      0.7578      2.97  Q    V     |          |          |          |
5+10      0.7785      3.01  Q    V     |          |          |          |
5+15      0.7996      3.06  Q    V     |          |          |          |
5+20      0.8210      3.11  Q    V     |          |          |          |
5+25      0.8428      3.16  Q    V     |          |          |          |
5+30      0.8648      3.21  Q    V     |          |          |          |
5+35      0.8873      3.26  Q    V     |          |          |          |
5+40      0.9101      3.31  Q     V    |          |          |          |
5+45      0.9333      3.37  Q     V    |          |          |          |
5+50      0.9570      3.43  Q     V    |          |          |          |
5+55      0.9811      3.50  Q     V    |          |          |          |
6+ 0      1.0056      3.56  Q     V    |          |          |          |
6+ 5      1.0307      3.64  Q     V    |          |          |          |
6+10      1.0564      3.74  Q      V   |          |          |          |
6+15      1.0831      3.87  Q      V   |          |          |          |
6+20      1.1106      4.00  Q      V   |          |          |          |
6+25      1.1389      4.11  Q      V   |          |          |          |
6+30      1.1680      4.22  Q      V   |          |          |          |
6+35      1.1978      4.33  Q       V  |          |          |          |
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 6+40      1.2285      4.45  Q       V |         |         |         |
 6+45      1.2600      4.58  Q       V |         |         |         |
 6+50      1.2924      4.71  Q       V |         |         |         |
 6+55      1.3259      4.86  Q       V |         |         |         |
 7+ 0      1.3605      5.02  |Q       V|         |         |         |
 7+ 5      1.3963      5.20  |Q       V|         |         |         |
 7+10      1.4334      5.39  |Q       V|         |         |         |
 7+15      1.4720      5.61  |Q       V|         |         |         |
 7+20      1.5123      5.85  |Q        V         |         |         |
 7+25      1.5544      6.11  |Q        V         |         |         |
 7+30      1.5979      6.31  |Q        V         |         |         |
 7+35      1.6421      6.43  |Q        |V        |         |         |
 7+40      1.6895      6.87  |Q        |V        |         |         |
 7+45      1.7462      8.24  |Q        |V        |         |         |
 7+50      1.8198     10.68  | Q       | V       |         |         |
 7+55      1.9238     15.11  |  Q      | V       |         |         |
 8+ 0      2.0752     21.97  |   Q     |  V      |         |         |
 8+ 5      2.3409     38.59  |      Q  |    V    |         |         |
 8+10      2.7939     65.78  |         |  Q    V |         |         |
 8+15      3.5109    104.11  |         |         Q  V      |         |
 8+20      4.0885     83.86  |         |     Q   |      V  |         |
 8+25      4.4158     47.53  |         Q|        |         V|        |
 8+30      4.6451     33.28  |     Q   |        |          |V        |
 8+35      4.8169     24.95  |   Q     |        |          | V       |
 8+40      4.9515     19.55  |  Q      |        |          |  V      |
 8+45      5.0569     15.30  |  Q      |        |          |  V      |
 8+50      5.1390     11.92  | Q       |        |          |   V     |
 8+55      5.2021      9.17  |Q        |        |          |   V     |
 9+ 0      5.2517      7.20  |Q        |        |          |    V    |
 9+ 5      5.2960      6.43  |Q        |        |          |    V    |
 9+10      5.3357      5.77  |Q        |        |          |    V    |
 9+15      5.3725      5.34  |Q        |        |          |     V   |
 9+20      5.4070      5.01  |Q        |        |          |     V   |
 9+25      5.4376      4.45  Q         |        |          |     V   |
 9+30      5.4658      4.09  Q         |        |          |     V   |
 9+35      5.4905      3.60  Q         |        |          |     V   |
 9+40      5.5141      3.43  Q         |        |          |      V  |
 9+45      5.5368      3.29  Q         |        |          |      V  |
 9+50      5.5587      3.18  Q         |        |          |      V  |
 9+55      5.5799      3.08  Q         |        |          |      V  |
10+ 0      5.6005      2.99  Q         |        |          |      V  |
10+ 5      5.6205      2.89  Q         |        |          |      V  |
10+10      5.6395      2.76  Q         |        |          |      V  |
10+15      5.6571      2.55  Q         |        |          |      V  |
10+20      5.6734      2.38  Q         |        |          |       V |
10+25      5.6891      2.27  Q         |        |          |       V |
10+30      5.7041      2.18  Q         |        |          |       V |
10+35      5.7186      2.11  Q         |        |          |       V |
10+40      5.7327      2.04  Q         |        |          |       V |
10+45      5.7464      1.99  Q         |        |          |       V |
10+50      5.7597      1.94  Q         |        |          |       V |
10+55      5.7728      1.89  Q         |        |          |       V |
11+ 0      5.7855      1.85  Q         |        |          |       V |
11+ 5      5.7980      1.81  Q         |        |          |       V |
11+10      5.8103      1.78  Q         |        |          |        V|
11+15      5.8223      1.75  Q         |        |          |        V|
11+20      5.8341      1.71  Q         |        |          |        V|
11+25      5.8457      1.68  Q         |        |          |        V|
11+30      5.8571      1.65  Q         |        |          |        V|
11+35      5.8683      1.63  Q         |        |          |        V|
11+40      5.8793      1.60  Q         |        |          |        V|
11+45      5.8901      1.58  Q         |        |          |        V|
11+50      5.9008      1.55  Q         |        |          |        V|
11+55      5.9114      1.53  Q         |        |          |        V|
12+ 0      5.9217      1.51  Q         |        |          |        V|
12+ 5      5.9317      1.44  Q         |        |          |        V|
12+10      5.9404      1.26  Q         |        |          |        V|
12+15      5.9461      0.83  Q         |        |          |        V|
12+20      5.9494      0.48  Q         |        |          |        V|
12+25      5.9516      0.33  Q         |        |          |        V|
12+30      5.9532      0.23  Q         |        |          |        V|
```

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  12+35       5.9543      0.16  Q         |         |         |        V|
  12+40       5.9551      0.11  Q         |         |         |        V|
  12+45       5.9555      0.07  Q         |         |         |        V|
  12+50       5.9558      0.04  Q         |         |         |        V|
  12+55       5.9560      0.03  Q         |         |         |        V|
  13+ 0       5.9562      0.02  Q         |         |         |        V|
  13+ 5       5.9563      0.02  Q         |         |         |        V|
  13+10       5.9564      0.01  Q         |         |         |        V|
  13+15       5.9565      0.01  Q         |         |         |        V|
  13+20       5.9565      0.00  Q         |         |         |        V|
  13+25       5.9565      0.00  Q         |         |         |         V
-------------------------------------------------------------------------
```

- 2 Year 24 Hour Post-Development Unit Hydrograph – Area 'C'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/13/16   File Name PRC00224.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

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RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'C' - 2 YEAR 24 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 2

       Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 74.6       0.5          0.00     B     0.300     0.748    0.224
 74.6     120.5          1.00     C     0.250     0.748    0.187

Area-averaged adjusted loss rate Fm (In/Hr) =  0.187

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
     0.39   0.003         74.6      56.5       7.69     0.016
     0.13   0.001         98.0      98.0       0.20     0.890

    90.13   0.745         74.6      56.5       7.69     0.016
    30.37   0.251         98.0      98.0       0.20     0.890

Area-averaged catchment yield fraction, Y =  0.236
Area-averaged low loss fraction, Yb =  0.764
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.267 (hours)
Watershed area =     121.02(Ac.)
Catchment Lag time =   0.214 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 39.0137
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.187(In/Hr)
Average low loss rate fraction (Yb) = 0.764 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.190(In)
Computed peak 30-minute rainfall =  0.400(In)
Specified peak 1-hour rainfall =  0.530(In)
Computed peak 3-hour rainfall =  0.890(In)
Specified peak 6-hour rainfall =  1.220(In)
Specified peak 24-hour rainfall =  2.050(In)
```

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Rainfall depth area reduction factors:
Using a total area of     121.02(Ac.) (Ref: fig. E-4)

5-minute factor = 0.994     Adjusted rainfall =  0.189(In)
30-minute factor = 0.994    Adjusted rainfall =  0.398(In)
1-hour factor = 0.994       Adjusted rainfall =  0.527(In)
3-hour factor = 0.999       Adjusted rainfall =  0.889(In)
6-hour factor = 1.000       Adjusted rainfall =  1.220(In)
24-hour factor = 1.000 Adjusted rainfall =  2.050(In)
```

U n i t H y d r o g r a p h

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 1463.59 (CFS))	
1	3.028	44.320
2	14.204	163.567
3	43.985	435.866
4	67.499	344.149
5	77.664	148.780
6	84.461	99.478
7	89.267	70.334
8	92.777	51.383
9	95.283	36.677
10	96.990	24.977
11	97.996	14.721
12	98.475	7.020
13	98.874	5.834
14	99.160	4.186
15	99.426	3.891
16	99.708	4.122
17	99.870	2.383
18	100.000	1.897

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.1889	0.1889
2	0.2520	0.0631
3	0.2982	0.0462
4	0.3361	0.0379
5	0.3687	0.0326
6	0.3977	0.0290
7	0.4234	0.0257
8	0.4470	0.0236
9	0.4689	0.0219
10	0.4894	0.0205
11	0.5087	0.0193
12	0.5270	0.0183
13	0.5475	0.0205
14	0.5671	0.0197
15	0.5861	0.0189
16	0.6044	0.0183
17	0.6221	0.0177
18	0.6393	0.0172
19	0.6559	0.0167
20	0.6722	0.0162
21	0.6880	0.0158
22	0.7034	0.0154
23	0.7184	0.0151
24	0.7332	0.0147
25	0.7476	0.0144
26	0.7617	0.0141
27	0.7755	0.0138
28	0.7890	0.0136
29	0.8023	0.0133
30	0.8154	0.0131
31	0.8282	0.0128
32	0.8408	0.0126

33	0.8533	0.0124
34	0.8655	0.0122
35	0.8775	0.0120
36	0.8894	0.0119
37	0.9005	0.0112
38	0.9115	0.0110
39	0.9224	0.0108
40	0.9331	0.0107
41	0.9436	0.0106
42	0.9541	0.0104
43	0.9643	0.0103
44	0.9745	0.0102
45	0.9845	0.0100
46	0.9944	0.0099
47	1.0042	0.0098
48	1.0139	0.0097
49	1.0234	0.0096
50	1.0329	0.0095
51	1.0423	0.0094
52	1.0515	0.0093
53	1.0607	0.0092
54	1.0698	0.0091
55	1.0787	0.0090
56	1.0876	0.0089
57	1.0964	0.0088
58	1.1052	0.0087
59	1.1138	0.0086
60	1.1224	0.0086
61	1.1308	0.0085
62	1.1392	0.0084
63	1.1476	0.0083
64	1.1558	0.0083
65	1.1640	0.0082
66	1.1721	0.0081
67	1.1802	0.0081
68	1.1882	0.0080
69	1.1961	0.0079
70	1.2040	0.0079
71	1.2118	0.0078
72	1.2195	0.0077
73	1.2259	0.0063
74	1.2321	0.0063
75	1.2383	0.0062
76	1.2445	0.0062
77	1.2506	0.0061
78	1.2567	0.0061
79	1.2627	0.0060
80	1.2686	0.0060
81	1.2745	0.0059
82	1.2804	0.0059
83	1.2862	0.0058
84	1.2920	0.0058
85	1.2978	0.0057
86	1.3035	0.0057
87	1.3091	0.0057
88	1.3147	0.0056
89	1.3203	0.0056
90	1.3258	0.0055
91	1.3313	0.0055
92	1.3368	0.0055
93	1.3422	0.0054
94	1.3476	0.0054
95	1.3530	0.0054
96	1.3583	0.0053
97	1.3636	0.0053
98	1.3688	0.0052
99	1.3740	0.0052
100	1.3792	0.0052
101	1.3844	0.0051
102	1.3895	0.0051
103	1.3946	0.0051

104	1.3996	0.0051
105	1.4046	0.0050
106	1.4096	0.0050
107	1.4146	0.0050
108	1.4195	0.0049
109	1.4244	0.0049
110	1.4293	0.0049
111	1.4342	0.0049
112	1.4390	0.0048
113	1.4438	0.0048
114	1.4486	0.0048
115	1.4533	0.0047
116	1.4580	0.0047
117	1.4627	0.0047
118	1.4674	0.0047
119	1.4721	0.0046
120	1.4767	0.0046
121	1.4813	0.0046
122	1.4858	0.0046
123	1.4904	0.0045
124	1.4949	0.0045
125	1.4994	0.0045
126	1.5039	0.0045
127	1.5084	0.0045
128	1.5128	0.0044
129	1.5172	0.0044
130	1.5216	0.0044
131	1.5260	0.0044
132	1.5303	0.0044
133	1.5347	0.0043
134	1.5390	0.0043
135	1.5433	0.0043
136	1.5475	0.0043
137	1.5518	0.0043
138	1.5560	0.0042
139	1.5602	0.0042
140	1.5644	0.0042
141	1.5686	0.0042
142	1.5728	0.0042
143	1.5769	0.0041
144	1.5810	0.0041
145	1.5851	0.0041
146	1.5892	0.0041
147	1.5933	0.0041
148	1.5973	0.0041
149	1.6014	0.0040
150	1.6054	0.0040
151	1.6094	0.0040
152	1.6134	0.0040
153	1.6173	0.0040
154	1.6213	0.0040
155	1.6252	0.0039
156	1.6292	0.0039
157	1.6331	0.0039
158	1.6369	0.0039
159	1.6408	0.0039
160	1.6447	0.0039
161	1.6485	0.0038
162	1.6523	0.0038
163	1.6562	0.0038
164	1.6600	0.0038
165	1.6637	0.0038
166	1.6675	0.0038
167	1.6713	0.0038
168	1.6750	0.0037
169	1.6787	0.0037
170	1.6824	0.0037
171	1.6861	0.0037
172	1.6898	0.0037
173	1.6935	0.0037
174	1.6972	0.0037

175	1.7008	0.0036
176	1.7044	0.0036
177	1.7081	0.0036
178	1.7117	0.0036
179	1.7153	0.0036
180	1.7189	0.0036
181	1.7224	0.0036
182	1.7260	0.0036
183	1.7295	0.0035
184	1.7331	0.0035
185	1.7366	0.0035
186	1.7401	0.0035
187	1.7436	0.0035
188	1.7471	0.0035
189	1.7505	0.0035
190	1.7540	0.0035
191	1.7575	0.0035
192	1.7609	0.0034
193	1.7643	0.0034
194	1.7678	0.0034
195	1.7712	0.0034
196	1.7746	0.0034
197	1.7779	0.0034
198	1.7813	0.0034
199	1.7847	0.0034
200	1.7880	0.0034
201	1.7914	0.0033
202	1.7947	0.0033
203	1.7980	0.0033
204	1.8013	0.0033
205	1.8046	0.0033
206	1.8079	0.0033
207	1.8112	0.0033
208	1.8145	0.0033
209	1.8178	0.0033
210	1.8210	0.0033
211	1.8243	0.0032
212	1.8275	0.0032
213	1.8307	0.0032
214	1.8339	0.0032
215	1.8371	0.0032
216	1.8403	0.0032
217	1.8435	0.0032
218	1.8467	0.0032
219	1.8499	0.0032
220	1.8530	0.0032
221	1.8562	0.0032
222	1.8593	0.0031
223	1.8624	0.0031
224	1.8656	0.0031
225	1.8687	0.0031
226	1.8718	0.0031
227	1.8749	0.0031
228	1.8780	0.0031
229	1.8811	0.0031
230	1.8841	0.0031
231	1.8872	0.0031
232	1.8902	0.0031
233	1.8933	0.0030
234	1.8963	0.0030
235	1.8994	0.0030
236	1.9024	0.0030
237	1.9054	0.0030
238	1.9084	0.0030
239	1.9114	0.0030
240	1.9144	0.0030
241	1.9174	0.0030
242	1.9204	0.0030
243	1.9233	0.0030
244	1.9263	0.0030
245	1.9292	0.0030

246	1.9322	0.0029
247	1.9351	0.0029
248	1.9381	0.0029
249	1.9410	0.0029
250	1.9439	0.0029
251	1.9468	0.0029
252	1.9497	0.0029
253	1.9526	0.0029
254	1.9555	0.0029
255	1.9584	0.0029
256	1.9612	0.0029
257	1.9641	0.0029
258	1.9670	0.0029
259	1.9698	0.0029
260	1.9727	0.0028
261	1.9755	0.0028
262	1.9783	0.0028
263	1.9812	0.0028
264	1.9840	0.0028
265	1.9868	0.0028
266	1.9896	0.0028
267	1.9924	0.0028
268	1.9952	0.0028
269	1.9980	0.0028
270	2.0007	0.0028
271	2.0035	0.0028
272	2.0063	0.0028
273	2.0090	0.0028
274	2.0118	0.0028
275	2.0145	0.0027
276	2.0173	0.0027
277	2.0200	0.0027
278	2.0227	0.0027
279	2.0255	0.0027
280	2.0282	0.0027
281	2.0309	0.0027
282	2.0336	0.0027
283	2.0363	0.0027
284	2.0390	0.0027
285	2.0417	0.0027
286	2.0443	0.0027
287	2.0470	0.0027
288	2.0497	0.0027

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0027	0.0020	0.0006
2	0.0027	0.0020	0.0006
3	0.0027	0.0021	0.0006
4	0.0027	0.0021	0.0006
5	0.0027	0.0021	0.0006
6	0.0027	0.0021	0.0006
7	0.0027	0.0021	0.0006
8	0.0027	0.0021	0.0006
9	0.0027	0.0021	0.0006
10	0.0027	0.0021	0.0006
11	0.0028	0.0021	0.0007
12	0.0028	0.0021	0.0007
13	0.0028	0.0021	0.0007
14	0.0028	0.0021	0.0007
15	0.0028	0.0021	0.0007
16	0.0028	0.0021	0.0007
17	0.0028	0.0022	0.0007
18	0.0028	0.0022	0.0007
19	0.0028	0.0022	0.0007
20	0.0028	0.0022	0.0007
21	0.0029	0.0022	0.0007
22	0.0029	0.0022	0.0007
23	0.0029	0.0022	0.0007

24	0.0029	0.0022	0.0007
25	0.0029	0.0022	0.0007
26	0.0029	0.0022	0.0007
27	0.0029	0.0022	0.0007
28	0.0029	0.0022	0.0007
29	0.0029	0.0023	0.0007
30	0.0030	0.0023	0.0007
31	0.0030	0.0023	0.0007
32	0.0030	0.0023	0.0007
33	0.0030	0.0023	0.0007
34	0.0030	0.0023	0.0007
35	0.0030	0.0023	0.0007
36	0.0030	0.0023	0.0007
37	0.0030	0.0023	0.0007
38	0.0030	0.0023	0.0007
39	0.0031	0.0023	0.0007
40	0.0031	0.0023	0.0007
41	0.0031	0.0024	0.0007
42	0.0031	0.0024	0.0007
43	0.0031	0.0024	0.0007
44	0.0031	0.0024	0.0007
45	0.0031	0.0024	0.0007
46	0.0032	0.0024	0.0007
47	0.0032	0.0024	0.0007
48	0.0032	0.0024	0.0007
49	0.0032	0.0024	0.0008
50	0.0032	0.0024	0.0008
51	0.0032	0.0025	0.0008
52	0.0032	0.0025	0.0008
53	0.0033	0.0025	0.0008
54	0.0033	0.0025	0.0008
55	0.0033	0.0025	0.0008
56	0.0033	0.0025	0.0008
57	0.0033	0.0025	0.0008
58	0.0033	0.0025	0.0008
59	0.0033	0.0026	0.0008
60	0.0034	0.0026	0.0008
61	0.0034	0.0026	0.0008
62	0.0034	0.0026	0.0008
63	0.0034	0.0026	0.0008
64	0.0034	0.0026	0.0008
65	0.0034	0.0026	0.0008
66	0.0035	0.0026	0.0008
67	0.0035	0.0027	0.0008
68	0.0035	0.0027	0.0008
69	0.0035	0.0027	0.0008
70	0.0035	0.0027	0.0008
71	0.0035	0.0027	0.0008
72	0.0036	0.0027	0.0008
73	0.0036	0.0027	0.0008
74	0.0036	0.0027	0.0008
75	0.0036	0.0028	0.0009
76	0.0036	0.0028	0.0009
77	0.0037	0.0028	0.0009
78	0.0037	0.0028	0.0009
79	0.0037	0.0028	0.0009
80	0.0037	0.0028	0.0009
81	0.0037	0.0029	0.0009
82	0.0038	0.0029	0.0009
83	0.0038	0.0029	0.0009
84	0.0038	0.0029	0.0009
85	0.0038	0.0029	0.0009
86	0.0038	0.0029	0.0009
87	0.0039	0.0030	0.0009
88	0.0039	0.0030	0.0009
89	0.0039	0.0030	0.0009
90	0.0039	0.0030	0.0009
91	0.0040	0.0030	0.0009
92	0.0040	0.0030	0.0009
93	0.0040	0.0031	0.0009
94	0.0040	0.0031	0.0010

95	0.0041	0.0031	0.0010
96	0.0041	0.0031	0.0010
97	0.0041	0.0031	0.0010
98	0.0041	0.0032	0.0010
99	0.0042	0.0032	0.0010
100	0.0042	0.0032	0.0010
101	0.0042	0.0032	0.0010
102	0.0043	0.0032	0.0010
103	0.0043	0.0033	0.0010
104	0.0043	0.0033	0.0010
105	0.0044	0.0033	0.0010
106	0.0044	0.0033	0.0010
107	0.0044	0.0034	0.0010
108	0.0044	0.0034	0.0010
109	0.0045	0.0034	0.0011
110	0.0045	0.0034	0.0011
111	0.0045	0.0035	0.0011
112	0.0046	0.0035	0.0011
113	0.0046	0.0035	0.0011
114	0.0046	0.0035	0.0011
115	0.0047	0.0036	0.0011
116	0.0047	0.0036	0.0011
117	0.0048	0.0036	0.0011
118	0.0048	0.0037	0.0011
119	0.0049	0.0037	0.0011
120	0.0049	0.0037	0.0012
121	0.0049	0.0038	0.0012
122	0.0050	0.0038	0.0012
123	0.0050	0.0038	0.0012
124	0.0051	0.0039	0.0012
125	0.0051	0.0039	0.0012
126	0.0051	0.0039	0.0012
127	0.0052	0.0040	0.0012
128	0.0052	0.0040	0.0012
129	0.0053	0.0041	0.0013
130	0.0054	0.0041	0.0013
131	0.0054	0.0041	0.0013
132	0.0055	0.0042	0.0013
133	0.0055	0.0042	0.0013
134	0.0056	0.0043	0.0013
135	0.0057	0.0043	0.0013
136	0.0057	0.0044	0.0013
137	0.0058	0.0044	0.0014
138	0.0058	0.0045	0.0014
139	0.0059	0.0045	0.0014
140	0.0060	0.0046	0.0014
141	0.0061	0.0046	0.0014
142	0.0061	0.0047	0.0014
143	0.0062	0.0047	0.0015
144	0.0063	0.0048	0.0015
145	0.0077	0.0059	0.0018
146	0.0078	0.0060	0.0018
147	0.0079	0.0061	0.0019
148	0.0080	0.0061	0.0019
149	0.0081	0.0062	0.0019
150	0.0082	0.0063	0.0019
151	0.0083	0.0064	0.0020
152	0.0084	0.0064	0.0020
153	0.0086	0.0065	0.0020
154	0.0086	0.0066	0.0020
155	0.0088	0.0067	0.0021
156	0.0089	0.0068	0.0021
157	0.0091	0.0069	0.0021
158	0.0092	0.0070	0.0022
159	0.0094	0.0072	0.0022
160	0.0095	0.0072	0.0022
161	0.0097	0.0074	0.0023
162	0.0098	0.0075	0.0023
163	0.0100	0.0077	0.0024
164	0.0102	0.0078	0.0024
165	0.0104	0.0080	0.0025

166	0.0106	0.0081	0.0025
167	0.0108	0.0083	0.0026
168	0.0110	0.0084	0.0026
169	0.0119	0.0091	0.0028
170	0.0120	0.0092	0.0028
171	0.0124	0.0095	0.0029
172	0.0126	0.0096	0.0030
173	0.0131	0.0100	0.0031
174	0.0133	0.0102	0.0031
175	0.0138	0.0106	0.0033
176	0.0141	0.0108	0.0033
177	0.0147	0.0112	0.0035
178	0.0151	0.0115	0.0036
179	0.0158	0.0121	0.0037
180	0.0162	0.0124	0.0038
181	0.0172	0.0131	0.0040
182	0.0177	0.0135	0.0042
183	0.0189	0.0145	0.0045
184	0.0197	0.0150	0.0046
185	0.0183	0.0140	0.0043
186	0.0193	0.0148	0.0046
187	0.0219	0.0156	0.0063
188	0.0236	0.0156	0.0080
189	0.0290	0.0156	0.0134
190	0.0326	0.0156	0.0171
191	0.0462	0.0156	0.0306
192	0.0631	0.0156	0.0475
193	0.1889	0.0156	0.1733
194	0.0379	0.0156	0.0223
195	0.0257	0.0156	0.0101
196	0.0205	0.0156	0.0049
197	0.0205	0.0156	0.0049
198	0.0183	0.0140	0.0043
199	0.0167	0.0127	0.0039
200	0.0154	0.0118	0.0036
201	0.0144	0.0110	0.0034
202	0.0136	0.0104	0.0032
203	0.0128	0.0098	0.0030
204	0.0122	0.0093	0.0029
205	0.0112	0.0085	0.0026
206	0.0107	0.0082	0.0025
207	0.0103	0.0079	0.0024
208	0.0099	0.0076	0.0023
209	0.0096	0.0073	0.0023
210	0.0093	0.0071	0.0022
211	0.0090	0.0069	0.0021
212	0.0087	0.0067	0.0021
213	0.0085	0.0065	0.0020
214	0.0083	0.0063	0.0019
215	0.0081	0.0062	0.0019
216	0.0079	0.0060	0.0019
217	0.0063	0.0048	0.0015
218	0.0062	0.0047	0.0015
219	0.0060	0.0046	0.0014
220	0.0059	0.0045	0.0014
221	0.0057	0.0044	0.0014
222	0.0056	0.0043	0.0013
223	0.0055	0.0042	0.0013
224	0.0054	0.0041	0.0013
225	0.0053	0.0040	0.0012
226	0.0052	0.0040	0.0012
227	0.0051	0.0039	0.0012
228	0.0050	0.0038	0.0012
229	0.0049	0.0038	0.0012
230	0.0048	0.0037	0.0011
231	0.0047	0.0036	0.0011
232	0.0047	0.0036	0.0011
233	0.0046	0.0035	0.0011
234	0.0045	0.0035	0.0011
235	0.0045	0.0034	0.0011
236	0.0044	0.0034	0.0010

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      237              0.0043           0.0033              0.0010
      238              0.0043           0.0033              0.0010
      239              0.0042           0.0032              0.0010
      240              0.0042           0.0032              0.0010
      241              0.0041           0.0031              0.0010
      242              0.0041           0.0031              0.0010
      243              0.0040           0.0031              0.0009
      244              0.0040           0.0030              0.0009
      245              0.0039           0.0030              0.0009
      246              0.0039           0.0029              0.0009
      247              0.0038           0.0029              0.0009
      248              0.0038           0.0029              0.0009
      249              0.0037           0.0028              0.0009
      250              0.0037           0.0028              0.0009
      251              0.0036           0.0028              0.0009
      252              0.0036           0.0028              0.0009
      253              0.0036           0.0027              0.0008
      254              0.0035           0.0027              0.0008
      255              0.0035           0.0027              0.0008
      256              0.0035           0.0026              0.0008
      257              0.0034           0.0026              0.0008
      258              0.0034           0.0026              0.0008
      259              0.0034           0.0026              0.0008
      260              0.0033           0.0025              0.0008
      261              0.0033           0.0025              0.0008
      262              0.0033           0.0025              0.0008
      263              0.0032           0.0025              0.0008
      264              0.0032           0.0025              0.0008
      265              0.0032           0.0024              0.0008
      266              0.0032           0.0024              0.0007
      267              0.0031           0.0024              0.0007
      268              0.0031           0.0024              0.0007
      269              0.0031           0.0024              0.0007
      270              0.0031           0.0023              0.0007
      271              0.0030           0.0023              0.0007
      272              0.0030           0.0023              0.0007
      273              0.0030           0.0023              0.0007
      274              0.0030           0.0023              0.0007
      275              0.0029           0.0022              0.0007
      276              0.0029           0.0022              0.0007
      277              0.0029           0.0022              0.0007
      278              0.0029           0.0022              0.0007
      279              0.0029           0.0022              0.0007
      280              0.0028           0.0022              0.0007
      281              0.0028           0.0021              0.0007
      282              0.0028           0.0021              0.0007
      283              0.0028           0.0021              0.0007
      284              0.0028           0.0021              0.0006
      285              0.0027           0.0021              0.0006
      286              0.0027           0.0021              0.0006
      287              0.0027           0.0021              0.0006
      288              0.0027           0.0020              0.0006
      ---------------------------------------------------------------------
      ---------------------------------------------------------------------
      Total soil rain loss =      1.35(In)
      Total effective rainfall =      0.70(In)
      Peak flow rate in flood hydrograph =    104.11(CFS)
      ---------------------------------------------------------------------
      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                        24 - H O U R    S T O R M
                   R u n o f f      H y d r o g r a p h
      ---------------------------------------------------------------------
                Hydrograph in   5   Minute intervals ((CFS))

      ---------------------------------------------------------------------
 Time(h+m) Volume Ac.Ft   Q(CFS)  0       50.0     100.0     150.0     200.0
 ---------------------------------------------------------------------
   0+ 5       0.0002      0.03  Q         |         |         |         |
   0+10       0.0011      0.13  Q         |         |         |         |
   0+15       0.0039      0.41  Q         |         |         |         |
   0+20       0.0082      0.62  Q         |         |         |         |
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0+25       0.0131      0.72  Q          |          |          |          |
0+30       0.0185      0.78  Q          |          |          |          |
0+35       0.0242      0.83  Q          |          |          |          |
0+40       0.0302      0.87  Q          |          |          |          |
0+45       0.0364      0.89  Q          |          |          |          |
0+50       0.0426      0.91  Q          |          |          |          |
0+55       0.0490      0.92  Q          |          |          |          |
1+ 0       0.0554      0.93  Q          |          |          |          |
1+ 5       0.0618      0.94  Q          |          |          |          |
1+10       0.0683      0.94  Q          |          |          |          |
1+15       0.0749      0.95  Q          |          |          |          |
1+20       0.0814      0.95  Q          |          |          |          |
1+25       0.0880      0.96  Q          |          |          |          |
1+30       0.0947      0.96  Q          |          |          |          |
1+35       0.1013      0.97  Q          |          |          |          |
1+40       0.1080      0.97  Q          |          |          |          |
1+45       0.1147      0.97  Q          |          |          |          |
1+50       0.1215      0.98  Q          |          |          |          |
1+55       0.1282      0.98  Q          |          |          |          |
2+ 0       0.1350      0.98  Q          |          |          |          |
2+ 5       0.1418      0.99  Q          |          |          |          |
2+10       0.1487      0.99  Q          |          |          |          |
2+15       0.1555      1.00  Q          |          |          |          |
2+20       0.1624      1.00  Q          |          |          |          |
2+25       0.1693      1.00  Q          |          |          |          |
2+30       0.1762      1.01  Q          |          |          |          |
2+35       0.1832      1.01  QV         |          |          |          |
2+40       0.1902      1.01  QV         |          |          |          |
2+45       0.1972      1.02  QV         |          |          |          |
2+50       0.2042      1.02  QV         |          |          |          |
2+55       0.2113      1.03  QV         |          |          |          |
3+ 0       0.2184      1.03  QV         |          |          |          |
3+ 5       0.2255      1.03  QV         |          |          |          |
3+10       0.2327      1.04  QV         |          |          |          |
3+15       0.2399      1.04  QV         |          |          |          |
3+20       0.2471      1.05  QV         |          |          |          |
3+25       0.2543      1.05  QV         |          |          |          |
3+30       0.2616      1.06  QV         |          |          |          |
3+35       0.2689      1.06  QV         |          |          |          |
3+40       0.2762      1.06  QV         |          |          |          |
3+45       0.2836      1.07  QV         |          |          |          |
3+50       0.2910      1.07  QV         |          |          |          |
3+55       0.2984      1.08  QV         |          |          |          |
4+ 0       0.3058      1.08  QV         |          |          |          |
4+ 5       0.3133      1.09  QV         |          |          |          |
4+10       0.3208      1.09  QV         |          |          |          |
4+15       0.3284      1.10  QV         |          |          |          |
4+20       0.3359      1.10  QV         |          |          |          |
4+25       0.3436      1.11  QV         |          |          |          |
4+30       0.3512      1.11  QV         |          |          |          |
4+35       0.3589      1.12  Q V        |          |          |          |
4+40       0.3666      1.12  Q V        |          |          |          |
4+45       0.3743      1.13  Q V        |          |          |          |
4+50       0.3821      1.13  Q V        |          |          |          |
4+55       0.3899      1.14  Q V        |          |          |          |
5+ 0       0.3978      1.14  Q V        |          |          |          |
5+ 5       0.4057      1.15  Q V        |          |          |          |
5+10       0.4136      1.15  Q V        |          |          |          |
5+15       0.4216      1.16  Q V        |          |          |          |
5+20       0.4296      1.16  Q V        |          |          |          |
5+25       0.4376      1.17  Q V        |          |          |          |
5+30       0.4457      1.17  Q V        |          |          |          |
5+35       0.4538      1.18  Q V        |          |          |          |
5+40       0.4620      1.18  Q V        |          |          |          |
5+45       0.4702      1.19  Q V        |          |          |          |
5+50       0.4784      1.20  Q V        |          |          |          |
5+55       0.4867      1.20  Q V        |          |          |          |
6+ 0       0.4950      1.21  Q V        |          |          |          |
6+ 5       0.5034      1.21  Q V        |          |          |          |
6+10       0.5118      1.22  Q V        |          |          |          |
6+15       0.5202      1.23  Q V        |          |          |          |
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6+20	0.5287	1.23	Q V	|	|	|	|
6+25	0.5373	1.24	Q V	|	|	|	|
6+30	0.5458	1.25	Q V	|	|	|	|
6+35	0.5545	1.25	Q V	|	|	|	|
6+40	0.5631	1.26	Q V	|	|	|	|
6+45	0.5719	1.27	Q V	|	|	|	|
6+50	0.5806	1.27	Q V	|	|	|	|
6+55	0.5895	1.28	Q V	|	|	|	|
7+ 0	0.5983	1.29	Q V	|	|	|	|
7+ 5	0.6072	1.29	Q V	|	|	|	|
7+10	0.6162	1.30	Q V	|	|	|	|
7+15	0.6252	1.31	Q V	|	|	|	|
7+20	0.6343	1.32	Q V	|	|	|	|
7+25	0.6434	1.32	Q V	|	|	|	|
7+30	0.6526	1.33	Q V	|	|	|	|
7+35	0.6618	1.34	Q V	|	|	|	|
7+40	0.6711	1.35	Q V	|	|	|	|
7+45	0.6805	1.36	Q V	|	|	|	|
7+50	0.6899	1.36	Q V	|	|	|	|
7+55	0.6993	1.37	Q V	|	|	|	|
8+ 0	0.7088	1.38	Q V	|	|	|	|
8+ 5	0.7184	1.39	Q V	|	|	|	|
8+10	0.7281	1.40	Q V	|	|	|	|
8+15	0.7378	1.41	Q V	|	|	|	|
8+20	0.7475	1.42	Q V	|	|	|	|
8+25	0.7573	1.43	Q V	|	|	|	|
8+30	0.7672	1.44	Q V	|	|	|	|
8+35	0.7772	1.45	Q V	|	|	|	|
8+40	0.7872	1.46	Q V	|	|	|	|
8+45	0.7973	1.47	Q V	|	|	|	|
8+50	0.8075	1.48	Q V	|	|	|	|
8+55	0.8177	1.49	Q V	|	|	|	|
9+ 0	0.8280	1.50	Q V	|	|	|	|
9+ 5	0.8384	1.51	Q V	|	|	|	|
9+10	0.8489	1.52	Q V	|	|	|	|
9+15	0.8594	1.53	Q V	|	|	|	|
9+20	0.8700	1.54	Q V	|	|	|	|
9+25	0.8807	1.55	Q V	|	|	|	|
9+30	0.8915	1.56	Q V	|	|	|	|
9+35	0.9023	1.58	Q V	|	|	|	|
9+40	0.9133	1.59	Q V	|	|	|	|
9+45	0.9243	1.60	Q V	|	|	|	|
9+50	0.9354	1.61	Q V	|	|	|	|
9+55	0.9466	1.63	Q V	|	|	|	|
10+ 0	0.9579	1.64	Q V	|	|	|	|
10+ 5	0.9693	1.65	Q V	|	|	|	|
10+10	0.9808	1.67	Q V	|	|	|	|
10+15	0.9924	1.68	Q V	|	|	|	|
10+20	1.0041	1.70	Q V	|	|	|	|
10+25	1.0158	1.71	Q V	|	|	|	|
10+30	1.0277	1.73	Q V	|	|	|	|
10+35	1.0397	1.74	Q V	|	|	|	|
10+40	1.0518	1.76	Q V	|	|	|	|
10+45	1.0641	1.77	Q V	|	|	|	|
10+50	1.0764	1.79	Q V	|	|	|	|
10+55	1.0889	1.81	Q V	|	|	|	|
11+ 0	1.1014	1.83	Q V	|	|	|	|
11+ 5	1.1141	1.84	Q V	|	|	|	|
11+10	1.1270	1.86	Q V	|	|	|	|
11+15	1.1399	1.88	Q V	|	|	|	|
11+20	1.1530	1.90	Q V	|	|	|	|
11+25	1.1662	1.92	Q V	|	|	|	|
11+30	1.1796	1.94	Q V	|	|	|	|
11+35	1.1931	1.96	Q V	|	|	|	|
11+40	1.2068	1.98	Q V	|	|	|	|
11+45	1.2206	2.01	Q V	|	|	|	|
11+50	1.2346	2.03	Q V	|	|	|	|
11+55	1.2488	2.05	Q V	|	|	|	|
12+ 0	1.2631	2.08	Q V	|	|	|	|
12+ 5	1.2777	2.12	Q V	|	|	|	|
12+10	1.2928	2.20	Q V	|	|	|	|

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12+15      1.3091      2.37  Q      V  |          |          |          |
12+20      1.3264      2.51  Q      V  |          |          |          |
12+25      1.3442      2.58  Q      V  |          |          |          |
12+30      1.3624      2.65  Q      V  |          |          |          |
12+35      1.3810      2.70  Q      V  |          |          |          |
12+40      1.4000      2.75  Q      V  |          |          |          |
12+45      1.4193      2.80  Q       V |          |          |          |
12+50      1.4389      2.84  Q       V |          |          |          |
12+55      1.4587      2.89  Q       V |          |          |          |
13+ 0      1.4789      2.93  Q       V |          |          |          |
13+ 5      1.4994      2.97  Q       V |          |          |          |
13+10      1.5201      3.01  Q       V |          |          |          |
13+15      1.5412      3.06  Q       V |          |          |          |
13+20      1.5626      3.11  Q       V |          |          |          |
13+25      1.5843      3.16  Q       V |          |          |          |
13+30      1.6064      3.21  Q        V|          |          |          |
13+35      1.6289      3.26  Q        V|          |          |          |
13+40      1.6517      3.31  Q        V|          |          |          |
13+45      1.6749      3.37  Q        V|          |          |          |
13+50      1.6986      3.43  Q        V|          |          |          |
13+55      1.7227      3.50  Q        V|          |          |          |
14+ 0      1.7472      3.56  Q        V|          |          |          |
14+ 5      1.7723      3.64  Q         V          |          |          |
14+10      1.7980      3.74  Q         V          |          |          |
14+15      1.8247      3.87  Q         V          |          |          |
14+20      1.8522      4.00  Q         V          |          |          |
14+25      1.8805      4.11  Q         V          |          |          |
14+30      1.9096      4.22  Q         V          |          |          |
14+35      1.9394      4.33  Q         V          |          |          |
14+40      1.9700      4.45  Q          |V         |          |          |
14+45      2.0016      4.58  Q          |V         |          |          |
14+50      2.0340      4.71  Q          |V         |          |          |
14+55      2.0675      4.86  Q          |V         |          |          |
15+ 0      2.1021      5.02  |Q         |V         |          |          |
15+ 5      2.1379      5.20  |Q         | V        |          |          |
15+10      2.1750      5.39  |Q         | V        |          |          |
15+15      2.2136      5.61  |Q         | V        |          |          |
15+20      2.2539      5.85  |Q         | V        |          |          |
15+25      2.2960      6.11  |Q         | V        |          |          |
15+30      2.3394      6.31  |Q         |  V       |          |          |
15+35      2.3837      6.43  |Q         |  V       |          |          |
15+40      2.4310      6.87  |Q         |  V       |          |          |
15+45      2.4878      8.24  |Q         |   V      |          |          |
15+50      2.5613     10.68  | Q        |   V      |          |          |
15+55      2.6654     15.11  |  Q       |    V     |          |          |
16+ 0      2.8167     21.97  |   Q      |    V     |          |          |
16+ 5      3.0825     38.59  |      Q   |      V   |          |          |
16+10      3.5355     65.78  |          |  Q       V          |          |
16+15      4.2525    104.11  |          |          Q   V      |          |
16+20      4.8301     83.86  |          |     Q    |       V  |          |
16+25      5.1574     47.53  |         Q|          |         V|          |
16+30      5.3866     33.28  |      Q   |          |          V          |
16+35      5.5585     24.95  |    Q     |          |          |V         |
16+40      5.6931     19.55  |  Q       |          |          | V        |
16+45      5.7985     15.30  |  Q       |          |          | V        |
16+50      5.8806     11.92  | Q        |          |          |  V       |
16+55      5.9437      9.17  |Q         |          |          |  V       |
17+ 0      5.9933      7.20  |Q         |          |          |  V       |
17+ 5      6.0376      6.43  |Q         |          |          |   V      |
17+10      6.0773      5.77  |Q         |          |          |   V      |
17+15      6.1141      5.34  |Q         |          |          |   V      |
17+20      6.1486      5.01  |Q         |          |          |   V      |
17+25      6.1792      4.45  Q          |          |          |   V      |
17+30      6.2073      4.09  Q          |          |          |    V     |
17+35      6.2321      3.60  Q          |          |          |    V     |
17+40      6.2557      3.43  Q          |          |          |    V     |
17+45      6.2784      3.29  Q          |          |          |    V     |
17+50      6.3003      3.18  Q          |          |          |    V     |
17+55      6.3215      3.08  Q          |          |          |    V     |
18+ 0      6.3421      2.99  Q          |          |          |    V     |
18+ 5      6.3620      2.89  Q          |          |          |    V     |
```

18+10	6.3811	2.76	Q	|	|	|	V |
18+15	6.3987	2.55	Q	|	|	|	V |
18+20	6.4150	2.38	Q	|	|	|	V |
18+25	6.4307	2.27	Q	|	|	|	V |
18+30	6.4457	2.18	Q	|	|	|	V |
18+35	6.4602	2.11	Q	|	|	|	V |
18+40	6.4743	2.04	Q	|	|	|	V |
18+45	6.4880	1.99	Q	|	|	|	V |
18+50	6.5013	1.94	Q	|	|	|	V |
18+55	6.5144	1.89	Q	|	|	|	V |
19+ 0	6.5271	1.85	Q	|	|	|	V |
19+ 5	6.5396	1.81	Q	|	|	|	V |
19+10	6.5519	1.78	Q	|	|	|	V |
19+15	6.5639	1.75	Q	|	|	|	V |
19+20	6.5757	1.71	Q	|	|	|	V |
19+25	6.5873	1.68	Q	|	|	|	V |
19+30	6.5986	1.65	Q	|	|	|	V |
19+35	6.6098	1.63	Q	|	|	|	V |
19+40	6.6209	1.60	Q	|	|	|	V |
19+45	6.6317	1.58	Q	|	|	|	V |
19+50	6.6424	1.55	Q	|	|	|	V |
19+55	6.6529	1.53	Q	|	|	|	V |
20+ 0	6.6633	1.51	Q	|	|	|	V |
20+ 5	6.6735	1.49	Q	|	|	|	V |
20+10	6.6836	1.47	Q	|	|	|	V |
20+15	6.6936	1.45	Q	|	|	|	V |
20+20	6.7034	1.43	Q	|	|	|	V |
20+25	6.7131	1.41	Q	|	|	|	V |
20+30	6.7227	1.39	Q	|	|	|	V |
20+35	6.7321	1.37	Q	|	|	|	V |
20+40	6.7415	1.36	Q	|	|	|	V |
20+45	6.7507	1.34	Q	|	|	|	V |
20+50	6.7598	1.32	Q	|	|	|	V |
20+55	6.7688	1.31	Q	|	|	|	V |
21+ 0	6.7777	1.29	Q	|	|	|	V |
21+ 5	6.7866	1.28	Q	|	|	|	V |
21+10	6.7953	1.27	Q	|	|	|	V |
21+15	6.8039	1.25	Q	|	|	|	V |
21+20	6.8124	1.24	Q	|	|	|	V |
21+25	6.8209	1.23	Q	|	|	|	V |
21+30	6.8292	1.21	Q	|	|	|	V |
21+35	6.8375	1.20	Q	|	|	|	V |
21+40	6.8457	1.19	Q	|	|	|	V |
21+45	6.8538	1.18	Q	|	|	|	V |
21+50	6.8618	1.17	Q	|	|	|	V |
21+55	6.8698	1.16	Q	|	|	|	V |
22+ 0	6.8777	1.14	Q	|	|	|	V |
22+ 5	6.8855	1.13	Q	|	|	|	V |
22+10	6.8932	1.12	Q	|	|	|	V |
22+15	6.9009	1.11	Q	|	|	|	V|
22+20	6.9085	1.10	Q	|	|	|	V|
22+25	6.9161	1.10	Q	|	|	|	V|
22+30	6.9235	1.09	Q	|	|	|	V|
22+35	6.9310	1.08	Q	|	|	|	V|
22+40	6.9383	1.07	Q	|	|	|	V|
22+45	6.9456	1.06	Q	|	|	|	V|
22+50	6.9528	1.05	Q	|	|	|	V|
22+55	6.9600	1.04	Q	|	|	|	V|
23+ 0	6.9671	1.03	Q	|	|	|	V|
23+ 5	6.9742	1.03	Q	|	|	|	V|
23+10	6.9812	1.02	Q	|	|	|	V|
23+15	6.9882	1.01	Q	|	|	|	V|
23+20	6.9951	1.00	Q	|	|	|	V|
23+25	7.0019	1.00	Q	|	|	|	V|
23+30	7.0087	0.99	Q	|	|	|	V|
23+35	7.0155	0.98	Q	|	|	|	V|
23+40	7.0222	0.97	Q	|	|	|	V|
23+45	7.0288	0.97	Q	|	|	|	V|
23+50	7.0354	0.96	Q	|	|	|	V|
23+55	7.0420	0.95	Q	|	|	|	V|
24+ 0	7.0485	0.95	Q	|	|	|	V|

```
   24+ 5       7.0548      0.91  Q         |         |         |         V|
   24+10       7.0604      0.80  Q         |         |         |         V|
   24+15       7.0640      0.52  Q         |         |         |         V|
   24+20       7.0661      0.31  Q         |         |         |         V|
   24+25       7.0675      0.21  Q         |         |         |         V|
   24+30       7.0685      0.15  Q         |         |         |         V|
   24+35       7.0692      0.10  Q         |         |         |         V|
   24+40       7.0697      0.07  Q         |         |         |         V|
   24+45       7.0700      0.04  Q         |         |         |         V|
   24+50       7.0702      0.03  Q         |         |         |         V|
   24+55       7.0703      0.02  Q         |         |         |         V|
   25+ 0       7.0704      0.01  Q         |         |         |         V|
   25+ 5       7.0705      0.01  Q         |         |         |         V|
   25+10       7.0705      0.01  Q         |         |         |         V|
   25+15       7.0706      0.01  Q         |         |         |         V|
   25+20       7.0706      0.00  Q         |         |         |         V|
   25+25       7.0706      0.00  Q         |         |         |         V|
-------------------------------------------------------------------------
```

- 5 Year 3 Hour Post-Development Unit Hydrograph – Area 'C'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/13/16   File Name PRC00503.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

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RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'C' - 5 YEAR 3 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 5

       Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 74.6       0.5          0.00     B     0.300     0.748    0.224
 74.6     120.5          1.00     C     0.250     0.748    0.187

Area-averaged adjusted loss rate Fm (In/Hr) =  0.187

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
     0.39   0.003         74.6      56.5       7.69     0.080
     0.13   0.001         98.0      98.0       0.20     0.923

    90.13   0.745         74.6      56.5       7.69     0.080
    30.37   0.251         98.0      98.0       0.20     0.923

Area-averaged catchment yield fraction, Y =  0.293
Area-averaged low loss fraction, Yb =  0.707
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.255 (hours)
Watershed area =     121.02(Ac.)
Catchment Lag time =   0.204 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 40.8230
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.187(In/Hr)
Average low loss rate fraction (Yb) = 0.707 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.260(In)
Computed peak 30-minute rainfall =  0.590(In)
Specified peak 1-hour rainfall =  0.780(In)
Computed peak 3-hour rainfall =  1.310(In)
Specified peak 6-hour rainfall =  1.810(In)
Specified peak 24-hour rainfall =  3.030(In)
```

```
Rainfall depth area reduction factors:
Using a total area of     121.02(Ac.) (Ref: fig. E-4)

5-minute factor = 0.994     Adjusted rainfall =  0.259(In)
30-minute factor = 0.994    Adjusted rainfall =  0.587(In)
1-hour factor = 0.994       Adjusted rainfall =  0.776(In)
3-hour factor = 0.999       Adjusted rainfall =  1.309(In)
6-hour factor = 1.000       Adjusted rainfall =  1.809(In)
24-hour factor = 1.000 Adjusted rainfall =  3.030(In)
```

U n i t H y d r o g r a p h

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 1463.59 (CFS))	
1	3.222	47.163
2	15.482	179.437
3	47.961	475.348
4	69.496	315.190
5	79.306	143.571
6	85.815	95.267
7	90.443	67.740
8	93.755	48.466
9	96.026	33.242
10	97.537	22.116
11	98.244	10.341
12	98.695	6.600
13	99.057	5.299
14	99.318	3.824
15	99.628	4.537
16	99.831	2.968
17	99.947	1.703
18	100.000	0.773

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.2585	0.2585
2	0.3550	0.0964
3	0.4273	0.0723
4	0.4874	0.0601
5	0.5397	0.0524
6	0.5867	0.0469
7	0.6242	0.0376
8	0.6587	0.0345
9	0.6907	0.0320
10	0.7207	0.0299
11	0.7489	0.0282
12	0.7756	0.0267
13	0.8057	0.0302
14	0.8347	0.0290
15	0.8626	0.0279
16	0.8895	0.0269
17	0.9156	0.0261
18	0.9409	0.0253
19	0.9654	0.0246
20	0.9893	0.0239
21	1.0126	0.0233
22	1.0353	0.0227
23	1.0574	0.0222
24	1.0791	0.0217
25	1.1003	0.0212
26	1.1210	0.0208
27	1.1414	0.0203
28	1.1613	0.0200
29	1.1809	0.0196
30	1.2001	0.0192
31	1.2190	0.0189
32	1.2376	0.0186

```
 33              1.2559              0.0183
 34              1.2739              0.0180
 35              1.2916              0.0177
 36              1.3091              0.0175
--------------------------------------------------------------------
Unit              Unit            Unit              Effective
Period            Rainfall        Soil-Loss         Rainfall
(number)            (In)          (In)                (In)
--------------------------------------------------------------------
  1              0.0175           0.0123              0.0051
  2              0.0177           0.0125              0.0052
  3              0.0183           0.0129              0.0053
  4              0.0186           0.0131              0.0054
  5              0.0192           0.0136              0.0056
  6              0.0196           0.0139              0.0057
  7              0.0203           0.0144              0.0059
  8              0.0208           0.0147              0.0061
  9              0.0217           0.0153              0.0063
 10              0.0222           0.0156              0.0066
 11              0.0233           0.0156              0.0077
 12              0.0239           0.0156              0.0083
 13              0.0253           0.0156              0.0097
 14              0.0261           0.0156              0.0105
 15              0.0279           0.0156              0.0123
 16              0.0290           0.0156              0.0134
 17              0.0267           0.0156              0.0111
 18              0.0282           0.0156              0.0126
 19              0.0320           0.0156              0.0164
 20              0.0345           0.0156              0.0189
 21              0.0469           0.0156              0.0313
 22              0.0524           0.0156              0.0368
 23              0.0723           0.0156              0.0567
 24              0.0964           0.0156              0.0808
 25              0.2585           0.0156              0.2429
 26              0.0601           0.0156              0.0445
 27              0.0376           0.0156              0.0220
 28              0.0299           0.0156              0.0143
 29              0.0302           0.0156              0.0146
 30              0.0269           0.0156              0.0113
 31              0.0246           0.0156              0.0090
 32              0.0227           0.0156              0.0071
 33              0.0212           0.0150              0.0062
 34              0.0200           0.0141              0.0058
 35              0.0189           0.0134              0.0055
 36              0.0180           0.0127              0.0053
--------------------------------------------------------------------
--------------------------------------------------------------------
Total soil rain loss =      0.54(In)
Total effective rainfall =      0.77(In)
Peak flow rate in flood hydrograph =    165.88(CFS)
--------------------------------------------------------------------
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                    3 - H O U R    S T O R M
                R u n o f f      H y d r o g r a p h
--------------------------------------------------------------------
            Hydrograph in   5   Minute intervals ((CFS))

--------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0       50.0     100.0     150.0     200.0
--------------------------------------------------------------------
  0+ 5       0.0017      0.24  Q         |         |         |         |
  0+10       0.0097      1.16  Q         |         |         |         |
  0+15       0.0345      3.61  Q         |         |         |         |
  0+20       0.0709      5.29  VQ        |         |         |         |
  0+25       0.1133      6.15  VQ        |         |         |         |
  0+30       0.1600      6.78  VQ        |         |         |         |
  0+35       0.2102      7.30  |Q        |         |         |         |
  0+40       0.2635      7.74  |Q        |         |         |         |
  0+45       0.3195      8.13  |Q        |         |         |         |
  0+50       0.3779      8.48  |Q        |         |         |         |
  0+55       0.4389      8.85  |QV       |         |         |         |
```

```
   1+ 0       0.5034      9.37  |QV       |         |         |         |
   1+ 5       0.5740     10.25  | Q       |         |         |         |
   1+10       0.6518     11.29  | QV      |         |         |         |
   1+15       0.7386     12.61  | QV      |         |         |         |
   1+20       0.8355     14.06  | Q V     |         |         |         |
   1+25       0.9431     15.63  |  QV     |         |         |         |
   1+30       1.0584     16.74  |  Q V    |         |         |         |
   1+35       1.1752     16.96  |  Q  V   |         |         |         |
   1+40       1.3010     18.26  |  Q  V   |         |         |         |
   1+45       1.4497     21.59  |   Q  V  |         |         |         |
   1+50       1.6336     26.70  |    Q  V |         |         |         |
   1+55       1.8815     36.00  |      Q V|         |         |         |
   2+ 0       2.2123     48.04  |        Q|V        |         |         |
   2+ 5       2.7189     73.55  |         |  VQ     |         |         |
   2+10       3.4997    113.38  |         |      V  | Q       |         |
   2+15       4.6421    165.88  |         |         |  V      |  Q      |
   2+20       5.5014    124.76  |         |         |   Q   V |         |
   2+25       6.0376     77.86  |         |    Q    |         |V        |
   2+30       6.4309     57.10  |         |Q        |         |  V      |
   2+35       6.7413     45.07  |        Q|         |         |   V     |
   2+40       6.9869     35.67  |      Q  |         |         |    V    |
   2+45       7.1768     27.57  |    Q    |         |         |     V   |
   2+50       7.3227     21.18  |   Q     |         |         |      V  |
   2+55       7.4327     15.98  |  Q      |         |         |       V |
   3+ 0       7.5242     13.29  | Q       |         |         |       V |
   3+ 5       7.6033     11.49  | Q       |         |         |        V|
   3+10       7.6678      9.37  |Q        |         |         |        V|
   3+15       7.7114      6.32  |Q        |         |         |        V|
   3+20       7.7382      3.89  Q         |         |         |        V|
   3+25       7.7556      2.53  Q         |         |         |        V|
   3+30       7.7666      1.60  Q         |         |         |        V|
   3+35       7.7731      0.95  Q         |         |         |        V|
   3+40       7.7773      0.61  Q         |         |         |        V|
   3+45       7.7799      0.38  Q         |         |         |        V|
   3+50       7.7816      0.23  Q         |         |         |        V|
   3+55       7.7826      0.16  Q         |         |         |        V|
   4+ 0       7.7834      0.11  Q         |         |         |        V|
   4+ 5       7.7840      0.08  Q         |         |         |        V|
   4+10       7.7843      0.06  Q         |         |         |        V|
   4+15       7.7846      0.03  Q         |         |         |        V|
   4+20       7.7846      0.01  Q         |         |         |        V|
   4+25       7.7847      0.00  Q         |         |         |         V
-------------------------------------------------------------------------
```

- 5 Year 6 Hour Post-Development Unit Hydrograph – Area 'C'

```
        U n i t   H y d r o g r a p h   A n a l y s i s

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        Study date  10/13/16   File Name PRC00506.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

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RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'C' - 5 YEAR 6 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

        Storm Event Year = 5

        Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 74.6       0.5          0.00     B     0.300     0.748    0.224
 74.6     120.5          1.00     C     0.250     0.748    0.187

Area-averaged adjusted loss rate Fm (In/Hr) =  0.187

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
     0.39   0.003         74.6      56.5       7.69     0.080
     0.13   0.001         98.0      98.0       0.20     0.923

    90.13   0.745         74.6      56.5       7.69     0.080
    30.37   0.251         98.0      98.0       0.20     0.923

Area-averaged catchment yield fraction, Y =  0.293
Area-averaged low loss fraction, Yb =  0.707
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.255 (hours)
Watershed area =     121.02(Ac.)
Catchment Lag time =   0.204 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 40.8230
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.187(In/Hr)
Average low loss rate fraction (Yb) = 0.707 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.260(In)
Computed peak 30-minute rainfall =  0.590(In)
Specified peak 1-hour rainfall =  0.780(In)
Computed peak 3-hour rainfall =  1.310(In)
Specified peak 6-hour rainfall =  1.810(In)
Specified peak 24-hour rainfall =  3.030(In)
```

```
Rainfall depth area reduction factors:
Using a total area of     121.02(Ac.) (Ref: fig. E-4)

5-minute factor = 0.994     Adjusted rainfall =  0.259(In)
30-minute factor = 0.994    Adjusted rainfall =  0.587(In)
1-hour factor = 0.994       Adjusted rainfall =  0.776(In)
3-hour factor = 0.999       Adjusted rainfall =  1.309(In)
6-hour factor = 1.000       Adjusted rainfall =  1.809(In)
24-hour factor = 1.000 Adjusted rainfall =  3.030(In)
```

U n i t H y d r o g r a p h

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 1463.59 (CFS))	
1	3.222	47.163
2	15.482	179.437
3	47.961	475.348
4	69.496	315.190
5	79.306	143.571
6	85.815	95.267
7	90.443	67.740
8	93.755	48.466
9	96.026	33.242
10	97.537	22.116
11	98.244	10.341
12	98.695	6.600
13	99.057	5.299
14	99.318	3.824
15	99.628	4.537
16	99.831	2.968
17	99.947	1.703
18	100.000	0.773

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.2585	0.2585
2	0.3550	0.0964
3	0.4273	0.0723
4	0.4874	0.0601
5	0.5397	0.0524
6	0.5867	0.0469
7	0.6242	0.0376
8	0.6587	0.0345
9	0.6907	0.0320
10	0.7207	0.0299
11	0.7489	0.0282
12	0.7756	0.0267
13	0.8057	0.0302
14	0.8347	0.0290
15	0.8626	0.0279
16	0.8895	0.0269
17	0.9156	0.0261
18	0.9409	0.0253
19	0.9654	0.0246
20	0.9893	0.0239
21	1.0126	0.0233
22	1.0353	0.0227
23	1.0574	0.0222
24	1.0791	0.0217
25	1.1003	0.0212
26	1.1210	0.0208
27	1.1414	0.0203
28	1.1613	0.0200
29	1.1809	0.0196
30	1.2001	0.0192
31	1.2190	0.0189
32	1.2376	0.0186

33	1.2559	0.0183
34	1.2739	0.0180
35	1.2916	0.0177
36	1.3091	0.0175
37	1.3259	0.0169
38	1.3425	0.0166
39	1.3589	0.0164
40	1.3751	0.0162
41	1.3910	0.0159
42	1.4068	0.0157
43	1.4223	0.0155
44	1.4376	0.0153
45	1.4528	0.0152
46	1.4678	0.0150
47	1.4826	0.0148
48	1.4973	0.0146
49	1.5117	0.0145
50	1.5261	0.0143
51	1.5402	0.0142
52	1.5543	0.0140
53	1.5682	0.0139
54	1.5819	0.0137
55	1.5955	0.0136
56	1.6090	0.0135
57	1.6223	0.0134
58	1.6356	0.0132
59	1.6487	0.0131
60	1.6617	0.0130
61	1.6745	0.0129
62	1.6873	0.0128
63	1.7000	0.0127
64	1.7125	0.0125
65	1.7249	0.0124
66	1.7373	0.0123
67	1.7495	0.0122
68	1.7617	0.0121
69	1.7737	0.0120
70	1.7857	0.0120
71	1.7975	0.0119
72	1.8093	0.0118

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0118	0.0083	0.0034
2	0.0119	0.0084	0.0035
3	0.0120	0.0085	0.0035
4	0.0121	0.0086	0.0036
5	0.0123	0.0087	0.0036
6	0.0124	0.0088	0.0036
7	0.0127	0.0090	0.0037
8	0.0128	0.0090	0.0037
9	0.0130	0.0092	0.0038
10	0.0131	0.0093	0.0038
11	0.0134	0.0094	0.0039
12	0.0135	0.0095	0.0039
13	0.0137	0.0097	0.0040
14	0.0139	0.0098	0.0041
15	0.0142	0.0100	0.0041
16	0.0143	0.0101	0.0042
17	0.0146	0.0104	0.0043
18	0.0148	0.0105	0.0043
19	0.0152	0.0107	0.0044
20	0.0153	0.0109	0.0045
21	0.0157	0.0111	0.0046
22	0.0159	0.0113	0.0047
23	0.0164	0.0116	0.0048
24	0.0166	0.0118	0.0049
25	0.0175	0.0123	0.0051
26	0.0177	0.0125	0.0052

```
 27              0.0183          0.0129              0.0053
 28              0.0186          0.0131              0.0054
 29              0.0192          0.0136              0.0056
 30              0.0196          0.0139              0.0057
 31              0.0203          0.0144              0.0059
 32              0.0208          0.0147              0.0061
 33              0.0217          0.0153              0.0063
 34              0.0222          0.0156              0.0066
 35              0.0233          0.0156              0.0077
 36              0.0239          0.0156              0.0083
 37              0.0253          0.0156              0.0097
 38              0.0261          0.0156              0.0105
 39              0.0279          0.0156              0.0123
 40              0.0290          0.0156              0.0134
 41              0.0267          0.0156              0.0111
 42              0.0282          0.0156              0.0126
 43              0.0320          0.0156              0.0164
 44              0.0345          0.0156              0.0189
 45              0.0469          0.0156              0.0313
 46              0.0524          0.0156              0.0368
 47              0.0723          0.0156              0.0567
 48              0.0964          0.0156              0.0808
 49              0.2585          0.0156              0.2429
 50              0.0601          0.0156              0.0445
 51              0.0376          0.0156              0.0220
 52              0.0299          0.0156              0.0143
 53              0.0302          0.0156              0.0146
 54              0.0269          0.0156              0.0113
 55              0.0246          0.0156              0.0090
 56              0.0227          0.0156              0.0071
 57              0.0212          0.0150              0.0062
 58              0.0200          0.0141              0.0058
 59              0.0189          0.0134              0.0055
 60              0.0180          0.0127              0.0053
 61              0.0169          0.0119              0.0049
 62              0.0162          0.0114              0.0047
 63              0.0155          0.0110              0.0045
 64              0.0150          0.0106              0.0044
 65              0.0145          0.0102              0.0042
 66              0.0140          0.0099              0.0041
 67              0.0136          0.0096              0.0040
 68              0.0132          0.0094              0.0039
 69              0.0129          0.0091              0.0038
 70              0.0125          0.0089              0.0037
 71              0.0122          0.0087              0.0036
 72              0.0120          0.0085              0.0035
-------------------------------------------------------------------
-------------------------------------------------------------------
Total soil rain loss =      0.89(In)
Total effective rainfall =      0.92(In)
Peak flow rate in flood hydrograph =    165.88(CFS)
-------------------------------------------------------------------
+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                    6 - H O U R    S T O R M
                R u n o f f      H y d r o g r a p h
-------------------------------------------------------------------
            Hydrograph in   5   Minute intervals ((CFS))

-------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0       50.0     100.0     150.0     200.0
-------------------------------------------------------------------
  0+ 5       0.0011      0.16  Q         |         |         |         |
  0+10       0.0065      0.78  Q         |         |         |         |
  0+15       0.0232      2.43  Q         |         |         |         |
  0+20       0.0476      3.54  Q         |         |         |         |
  0+25       0.0756      4.07  Q         |         |         |         |
  0+30       0.1062      4.45  Q         |         |         |         |
  0+35       0.1388      4.73  Q         |         |         |         |
  0+40       0.1729      4.96  Q         |         |         |         |
  0+45       0.2083      5.13  VQ        |         |         |         |
  0+50       0.2446      5.27  |Q        |         |         |         |
```

```
0+55      0.2817      5.38  |Q        |         |         |         |
1+ 0      0.3193      5.47  |Q        |         |         |         |
1+ 5      0.3577      5.57  |Q        |         |         |         |
1+10      0.3966      5.66  |Q        |         |         |         |
1+15      0.4363      5.75  |Q        |         |         |         |
1+20      0.4765      5.85  |QV       |         |         |         |
1+25      0.5175      5.94  |QV       |         |         |         |
1+30      0.5590      6.04  |QV       |         |         |         |
1+35      0.6013      6.14  |QV       |         |         |         |
1+40      0.6443      6.24  |QV       |         |         |         |
1+45      0.6880      6.35  |QV       |         |         |         |
1+50      0.7324      6.46  |Q V      |         |         |         |
1+55      0.7777      6.58  |Q V      |         |         |         |
2+ 0      0.8239      6.70  |Q V      |         |         |         |
2+ 5      0.8710      6.84  |Q V      |         |         |         |
2+10      0.9191      6.99  |Q V      |         |         |         |
2+15      0.9687      7.19  |Q  V     |         |         |         |
2+20      1.0195      7.38  |Q  V     |         |         |         |
2+25      1.0716      7.57  |Q  V     |         |         |         |
2+30      1.1250      7.75  |Q  V     |         |         |         |
2+35      1.1799      7.96  |Q   V    |         |         |         |
2+40      1.2361      8.17  |Q   V    |         |         |         |
2+45      1.2940      8.40  |Q   V    |         |         |         |
2+50      1.3535      8.65  |Q   V    |         |         |         |
2+55      1.4153      8.97  |Q    V   |         |         |         |
3+ 0      1.4805      9.46  |Q    V   |         |         |         |
3+ 5      1.5515     10.32  | Q   V   |         |         |         |
3+10      1.6296     11.34  | Q    V  |         |         |         |
3+15      1.7167     12.64  | Q    V  |         |         |         |
3+20      1.8136     14.07  | Q    V  |         |         |         |
3+25      1.9212     15.63  |  Q    V |         |         |         |
3+30      2.0365     16.74  |  Q    V |         |         |         |
3+35      2.1533     16.96  |  Q     V|         |         |         |
3+40      2.2791     18.26  |  Q     V|         |         |         |
3+45      2.4278     21.59  |   Q     V         |         |         |
3+50      2.6117     26.70  |    Q    |V        |         |         |
3+55      2.8596     36.00  |      Q  | V       |         |         |
4+ 0      3.1905     48.04  |        Q|  V      |         |         |
4+ 5      3.6970     73.55  |         |   QV    |         |         |
4+10      4.4779    113.38  |         |        V| Q       |         |
4+15      5.6203    165.88  |         |         |  V      |  Q      |
4+20      6.4795    124.76  |         |         |  Q  V   |         |
4+25      7.0158     77.86  |         |    Q    |         V         |
4+30      7.4090     57.10  |         |Q        |         | V       |
4+35      7.7194     45.07  |         Q|        |         |  V      |
4+40      7.9651     35.67  |       Q  |        |         |   V     |
4+45      8.1549     27.57  |    Q     |        |         |    V    |
4+50      8.3008     21.18  |   Q      |        |         |    V    |
4+55      8.4108     15.98  |  Q       |        |         |     V   |
5+ 0      8.5024     13.29  | Q        |        |         |     V   |
5+ 5      8.5831     11.72  | Q        |        |         |      V  |
5+10      8.6552     10.47  | Q        |        |         |      V  |
5+15      8.7222      9.73  |Q         |        |         |      V  |
5+20      8.7822      8.71  |Q         |        |         |      V  |
5+25      8.8364      7.87  |Q         |        |         |       V |
5+30      8.8861      7.22  |Q         |        |         |       V |
5+35      8.9323      6.71  |Q         |        |         |       V |
5+40      8.9765      6.41  |Q         |        |         |       V |
5+45      9.0189      6.17  |Q         |        |         |       V |
5+50      9.0599      5.95  |Q         |        |         |        V|
5+55      9.0996      5.77  |Q         |        |         |        V|
6+ 0      9.1382      5.60  |Q         |        |         |        V|
6+ 5      9.1746      5.28  |Q         |        |         |        V|
6+10      9.2058      4.54  Q         |        |         |        V|
6+15      9.2251      2.80  Q         |        |         |        V|
6+20      9.2365      1.65  Q         |        |         |        V|
6+25      9.2442      1.12  Q         |        |         |        V|
6+30      9.2494      0.77  Q         |        |         |        V|
6+35      9.2530      0.51  Q         |        |         |        V|
6+40      9.2553      0.34  Q         |        |         |        V|
6+45      9.2568      0.21  Q         |        |         |        V|
```

```
    6+50       9.2577      0.13  Q         |         |         |        V|
    6+55       9.2583      0.09  Q         |         |         |        V|
    7+ 0       9.2588      0.07  Q         |         |         |        V|
    7+ 5       9.2592      0.05  Q         |         |         |        V|
    7+10       9.2594      0.04  Q         |         |         |        V|
    7+15       9.2595      0.02  Q         |         |         |        V|
    7+20       9.2596      0.01  Q         |         |         |        V|
    7+25       9.2596      0.00  Q         |         |         |         V
--------------------------------------------------------------------------
```

- 5 Year 12 Hour Post-Development Unit Hydrograph – Area 'C'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/13/16   File Name PRC00512.out


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'C' - 5 YEAR 12 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 5

       Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
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 74.6     120.5          1.00     C     0.250     0.748    0.187

Area-averaged adjusted loss rate Fm (In/Hr) =  0.187

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
     0.39   0.003         74.6      56.5       7.69     0.080
     0.13   0.001         98.0      98.0       0.20     0.923

    90.13   0.745         74.6      56.5       7.69     0.080
    30.37   0.251         98.0      98.0       0.20     0.923

Area-averaged catchment yield fraction, Y =  0.293
Area-averaged low loss fraction, Yb =  0.707
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
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Watershed area =     121.02(Ac.)
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Unit interval =   5.000 minutes
Unit interval percentage of lag time = 40.8230
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.187(In/Hr)
Average low loss rate fraction (Yb) = 0.707 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.260(In)
Computed peak 30-minute rainfall =  0.590(In)
Specified peak 1-hour rainfall =  0.780(In)
Computed peak 3-hour rainfall =  1.310(In)
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Specified peak 24-hour rainfall =  3.030(In)
```

```
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Using a total area of     121.02(Ac.) (Ref: fig. E-4)

5-minute factor = 0.994     Adjusted rainfall =  0.259(In)
30-minute factor = 0.994    Adjusted rainfall =  0.587(In)
1-hour factor = 0.994       Adjusted rainfall =  0.776(In)
3-hour factor = 0.999       Adjusted rainfall =  1.309(In)
6-hour factor = 1.000       Adjusted rainfall =  1.809(In)
24-hour factor = 1.000 Adjusted rainfall =  3.030(In)
```

U n i t H y d r o g r a p h

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6	85.815	95.267
7	90.443	67.740
8	93.755	48.466
9	96.026	33.242
10	97.537	22.116
11	98.244	10.341
12	98.695	6.600
13	99.057	5.299
14	99.318	3.824
15	99.628	4.537
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6	0.5867	0.0469
7	0.6242	0.0376
8	0.6587	0.0345
9	0.6907	0.0320
10	0.7207	0.0299
11	0.7489	0.0282
12	0.7756	0.0267
13	0.8057	0.0302
14	0.8347	0.0290
15	0.8626	0.0279
16	0.8895	0.0269
17	0.9156	0.0261
18	0.9409	0.0253
19	0.9654	0.0246
20	0.9893	0.0239
21	1.0126	0.0233
22	1.0353	0.0227
23	1.0574	0.0222
24	1.0791	0.0217
25	1.1003	0.0212
26	1.1210	0.0208
27	1.1414	0.0203
28	1.1613	0.0200
29	1.1809	0.0196
30	1.2001	0.0192
31	1.2190	0.0189
32	1.2376	0.0186

33	1.2559	0.0183
34	1.2739	0.0180
35	1.2916	0.0177
36	1.3091	0.0175
37	1.3259	0.0169
38	1.3425	0.0166
39	1.3589	0.0164
40	1.3751	0.0162
41	1.3910	0.0159
42	1.4068	0.0157
43	1.4223	0.0155
44	1.4376	0.0153
45	1.4528	0.0152
46	1.4678	0.0150
47	1.4826	0.0148
48	1.4973	0.0146
49	1.5117	0.0145
50	1.5261	0.0143
51	1.5402	0.0142
52	1.5543	0.0140
53	1.5682	0.0139
54	1.5819	0.0137
55	1.5955	0.0136
56	1.6090	0.0135
57	1.6223	0.0134
58	1.6356	0.0132
59	1.6487	0.0131
60	1.6617	0.0130
61	1.6745	0.0129
62	1.6873	0.0128
63	1.7000	0.0127
64	1.7125	0.0125
65	1.7249	0.0124
66	1.7373	0.0123
67	1.7495	0.0122
68	1.7617	0.0121
69	1.7737	0.0120
70	1.7857	0.0120
71	1.7975	0.0119
72	1.8093	0.0118
73	1.8186	0.0093
74	1.8278	0.0092
75	1.8370	0.0091
76	1.8461	0.0091
77	1.8551	0.0090
78	1.8640	0.0089
79	1.8728	0.0089
80	1.8816	0.0088
81	1.8903	0.0087
82	1.8990	0.0086
83	1.9075	0.0086
84	1.9161	0.0085
85	1.9245	0.0084
86	1.9329	0.0084
87	1.9412	0.0083
88	1.9495	0.0083
89	1.9577	0.0082
90	1.9658	0.0082
91	1.9739	0.0081
92	1.9820	0.0080
93	1.9900	0.0080
94	1.9979	0.0079
95	2.0058	0.0079
96	2.0136	0.0078
97	2.0214	0.0078
98	2.0291	0.0077
99	2.0368	0.0077
100	2.0444	0.0076
101	2.0520	0.0076
102	2.0595	0.0075
103	2.0670	0.0075

104	2.0744	0.0074
105	2.0818	0.0074
106	2.0892	0.0074
107	2.0965	0.0073
108	2.1037	0.0073
109	2.1110	0.0072
110	2.1181	0.0072
111	2.1253	0.0071
112	2.1324	0.0071
113	2.1394	0.0071
114	2.1465	0.0070
115	2.1534	0.0070
116	2.1604	0.0069
117	2.1673	0.0069
118	2.1742	0.0069
119	2.1810	0.0068
120	2.1878	0.0068
121	2.1945	0.0068
122	2.2013	0.0067
123	2.2080	0.0067
124	2.2146	0.0067
125	2.2212	0.0066
126	2.2278	0.0066
127	2.2344	0.0066
128	2.2409	0.0065
129	2.2474	0.0065
130	2.2539	0.0065
131	2.2603	0.0064
132	2.2667	0.0064
133	2.2731	0.0064
134	2.2794	0.0063
135	2.2857	0.0063
136	2.2920	0.0063
137	2.2983	0.0063
138	2.3045	0.0062
139	2.3107	0.0062
140	2.3168	0.0062
141	2.3230	0.0061
142	2.3291	0.0061
143	2.3352	0.0061
144	2.3412	0.0061

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0061	0.0043	0.0018
2	0.0061	0.0043	0.0018
3	0.0061	0.0043	0.0018
4	0.0062	0.0044	0.0018
5	0.0062	0.0044	0.0018
6	0.0063	0.0044	0.0018
7	0.0063	0.0045	0.0018
8	0.0063	0.0045	0.0019
9	0.0064	0.0045	0.0019
10	0.0064	0.0045	0.0019
11	0.0065	0.0046	0.0019
12	0.0065	0.0046	0.0019
13	0.0066	0.0047	0.0019
14	0.0066	0.0047	0.0019
15	0.0067	0.0047	0.0020
16	0.0067	0.0048	0.0020
17	0.0068	0.0048	0.0020
18	0.0068	0.0048	0.0020
19	0.0069	0.0049	0.0020
20	0.0069	0.0049	0.0020
21	0.0070	0.0050	0.0021
22	0.0071	0.0050	0.0021
23	0.0071	0.0051	0.0021
24	0.0072	0.0051	0.0021
25	0.0073	0.0051	0.0021

26	0.0073	0.0052	0.0021
27	0.0074	0.0052	0.0022
28	0.0074	0.0053	0.0022
29	0.0075	0.0053	0.0022
30	0.0076	0.0054	0.0022
31	0.0077	0.0054	0.0022
32	0.0077	0.0055	0.0023
33	0.0078	0.0055	0.0023
34	0.0079	0.0056	0.0023
35	0.0080	0.0056	0.0023
36	0.0080	0.0057	0.0024
37	0.0082	0.0058	0.0024
38	0.0082	0.0058	0.0024
39	0.0083	0.0059	0.0024
40	0.0084	0.0059	0.0025
41	0.0085	0.0060	0.0025
42	0.0086	0.0061	0.0025
43	0.0087	0.0062	0.0025
44	0.0088	0.0062	0.0026
45	0.0089	0.0063	0.0026
46	0.0090	0.0064	0.0026
47	0.0091	0.0065	0.0027
48	0.0092	0.0065	0.0027
49	0.0118	0.0083	0.0034
50	0.0119	0.0084	0.0035
51	0.0120	0.0085	0.0035
52	0.0121	0.0086	0.0036
53	0.0123	0.0087	0.0036
54	0.0124	0.0088	0.0036
55	0.0127	0.0090	0.0037
56	0.0128	0.0090	0.0037
57	0.0130	0.0092	0.0038
58	0.0131	0.0093	0.0038
59	0.0134	0.0094	0.0039
60	0.0135	0.0095	0.0039
61	0.0137	0.0097	0.0040
62	0.0139	0.0098	0.0041
63	0.0142	0.0100	0.0041
64	0.0143	0.0101	0.0042
65	0.0146	0.0104	0.0043
66	0.0148	0.0105	0.0043
67	0.0152	0.0107	0.0044
68	0.0153	0.0109	0.0045
69	0.0157	0.0111	0.0046
70	0.0159	0.0113	0.0047
71	0.0164	0.0116	0.0048
72	0.0166	0.0118	0.0049
73	0.0175	0.0123	0.0051
74	0.0177	0.0125	0.0052
75	0.0183	0.0129	0.0053
76	0.0186	0.0131	0.0054
77	0.0192	0.0136	0.0056
78	0.0196	0.0139	0.0057
79	0.0203	0.0144	0.0059
80	0.0208	0.0147	0.0061
81	0.0217	0.0153	0.0063
82	0.0222	0.0156	0.0066
83	0.0233	0.0156	0.0077
84	0.0239	0.0156	0.0083
85	0.0253	0.0156	0.0097
86	0.0261	0.0156	0.0105
87	0.0279	0.0156	0.0123
88	0.0290	0.0156	0.0134
89	0.0267	0.0156	0.0111
90	0.0282	0.0156	0.0126
91	0.0320	0.0156	0.0164
92	0.0345	0.0156	0.0189
93	0.0469	0.0156	0.0313
94	0.0524	0.0156	0.0368
95	0.0723	0.0156	0.0567
96	0.0964	0.0156	0.0808

```
 97              0.2585          0.0156              0.2429
 98              0.0601          0.0156              0.0445
 99              0.0376          0.0156              0.0220
100              0.0299          0.0156              0.0143
101              0.0302          0.0156              0.0146
102              0.0269          0.0156              0.0113
103              0.0246          0.0156              0.0090
104              0.0227          0.0156              0.0071
105              0.0212          0.0150              0.0062
106              0.0200          0.0141              0.0058
107              0.0189          0.0134              0.0055
108              0.0180          0.0127              0.0053
109              0.0169          0.0119              0.0049
110              0.0162          0.0114              0.0047
111              0.0155          0.0110              0.0045
112              0.0150          0.0106              0.0044
113              0.0145          0.0102              0.0042
114              0.0140          0.0099              0.0041
115              0.0136          0.0096              0.0040
116              0.0132          0.0094              0.0039
117              0.0129          0.0091              0.0038
118              0.0125          0.0089              0.0037
119              0.0122          0.0087              0.0036
120              0.0120          0.0085              0.0035
121              0.0093          0.0066              0.0027
122              0.0091          0.0064              0.0027
123              0.0089          0.0063              0.0026
124              0.0086          0.0061              0.0025
125              0.0084          0.0060              0.0025
126              0.0083          0.0058              0.0024
127              0.0081          0.0057              0.0024
128              0.0079          0.0056              0.0023
129              0.0078          0.0055              0.0023
130              0.0076          0.0054              0.0022
131              0.0075          0.0053              0.0022
132              0.0074          0.0052              0.0021
133              0.0072          0.0051              0.0021
134              0.0071          0.0050              0.0021
135              0.0070          0.0049              0.0020
136              0.0069          0.0049              0.0020
137              0.0068          0.0048              0.0020
138              0.0067          0.0047              0.0019
139              0.0066          0.0046              0.0019
140              0.0065          0.0046              0.0019
141              0.0064          0.0045              0.0019
142              0.0063          0.0044              0.0018
143              0.0062          0.0044              0.0018
144              0.0061          0.0043              0.0018
-------------------------------------------------------------------
-------------------------------------------------------------------
Total soil rain loss =      1.27(In)
Total effective rainfall =      1.07(In)
Peak flow rate in flood hydrograph =    165.88(CFS)
-------------------------------------------------------------------
+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                    12 - H O U R    S T O R M
                R u n o f f      H y d r o g r a p h
-------------------------------------------------------------------
            Hydrograph in   5   Minute intervals ((CFS))

-------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0       50.0     100.0     150.0     200.0
-------------------------------------------------------------------
  0+ 5       0.0006      0.08  Q         |         |         |         |
  0+10       0.0033      0.40  Q         |         |         |         |
  0+15       0.0119      1.25  Q         |         |         |         |
  0+20       0.0244      1.81  Q         |         |         |         |
  0+25       0.0387      2.08  Q         |         |         |         |
  0+30       0.0543      2.26  Q         |         |         |         |
  0+35       0.0708      2.40  Q         |         |         |         |
  0+40       0.0880      2.50  Q         |         |         |         |
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0+45       0.1057      2.57  Q          |          |          |          |
0+50       0.1239      2.63  Q          |          |          |          |
0+55       0.1422      2.67  Q          |          |          |          |
1+ 0       0.1608      2.70  Q          |          |          |          |
1+ 5       0.1796      2.73  Q          |          |          |          |
1+10       0.1986      2.75  Q          |          |          |          |
1+15       0.2178      2.78  Q          |          |          |          |
1+20       0.2371      2.81  Q          |          |          |          |
1+25       0.2566      2.83  Q          |          |          |          |
1+30       0.2763      2.86  QV         |          |          |          |
1+35       0.2961      2.88  QV         |          |          |          |
1+40       0.3161      2.90  QV         |          |          |          |
1+45       0.3362      2.92  QV         |          |          |          |
1+50       0.3565      2.95  QV         |          |          |          |
1+55       0.3770      2.97  QV         |          |          |          |
2+ 0       0.3976      3.00  QV         |          |          |          |
2+ 5       0.4185      3.02  QV         |          |          |          |
2+10       0.4394      3.05  QV         |          |          |          |
2+15       0.4606      3.07  QV         |          |          |          |
2+20       0.4819      3.10  QV         |          |          |          |
2+25       0.5035      3.13  QV         |          |          |          |
2+30       0.5252      3.15  QV         |          |          |          |
2+35       0.5471      3.18  Q V        |          |          |          |
2+40       0.5693      3.21  Q V        |          |          |          |
2+45       0.5916      3.24  Q V        |          |          |          |
2+50       0.6142      3.27  Q V        |          |          |          |
2+55       0.6369      3.31  Q V        |          |          |          |
3+ 0       0.6599      3.34  Q V        |          |          |          |
3+ 5       0.6831      3.37  Q V        |          |          |          |
3+10       0.7066      3.40  Q V        |          |          |          |
3+15       0.7303      3.44  Q V        |          |          |          |
3+20       0.7542      3.48  Q V        |          |          |          |
3+25       0.7784      3.51  Q V        |          |          |          |
3+30       0.8029      3.55  Q V        |          |          |          |
3+35       0.8276      3.59  Q  V       |          |          |          |
3+40       0.8526      3.63  Q  V       |          |          |          |
3+45       0.8779      3.67  Q  V       |          |          |          |
3+50       0.9035      3.71  Q  V       |          |          |          |
3+55       0.9293      3.76  Q  V       |          |          |          |
4+ 0       0.9555      3.80  Q  V       |          |          |          |
4+ 5       0.9823      3.88  Q  V       |          |          |          |
4+10       1.0102      4.06  Q  V       |          |          |          |
4+15       1.0408      4.44  Q  V       |          |          |          |
4+20       1.0733      4.71  Q  V       |          |          |          |
4+25       1.1068      4.87  Q   V      |          |          |          |
4+30       1.1412      4.99  Q   V      |          |          |          |
4+35       1.1763      5.10  |Q  V      |          |          |          |
4+40       1.2121      5.20  |Q  V      |          |          |          |
4+45       1.2485      5.29  |Q  V      |          |          |          |
4+50       1.2855      5.37  |Q  V      |          |          |          |
4+55       1.3230      5.45  |Q  V      |          |          |          |
5+ 0       1.3610      5.52  |Q   V     |          |          |          |
5+ 5       1.3996      5.60  |Q   V     |          |          |          |
5+10       1.4388      5.68  |Q   V     |          |          |          |
5+15       1.4785      5.77  |Q   V     |          |          |          |
5+20       1.5188      5.85  |Q   V     |          |          |          |
5+25       1.5598      5.95  |Q   V     |          |          |          |
5+30       1.6013      6.04  |Q   V     |          |          |          |
5+35       1.6436      6.14  |Q    V    |          |          |          |
5+40       1.6866      6.24  |Q    V    |          |          |          |
5+45       1.7303      6.35  |Q    V    |          |          |          |
5+50       1.7747      6.46  |Q    V    |          |          |          |
5+55       1.8200      6.58  |Q    V    |          |          |          |
6+ 0       1.8662      6.70  |Q    V    |          |          |          |
6+ 5       1.9133      6.84  |Q     V   |          |          |          |
6+10       1.9614      6.99  |Q     V   |          |          |          |
6+15       2.0110      7.19  |Q     V   |          |          |          |
6+20       2.0618      7.38  |Q     V   |          |          |          |
6+25       2.1139      7.57  |Q     V   |          |          |          |
6+30       2.1673      7.75  |Q      V  |          |          |          |
6+35       2.2222      7.96  |Q      V  |          |          |          |
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 6+40      2.2784      8.17  |Q      V |         |         |         |
 6+45      2.3363      8.40  |Q      V |         |         |         |
 6+50      2.3958      8.65  |Q      V |         |         |         |
 6+55      2.4576      8.97  |Q       V|         |         |         |
 7+ 0      2.5228      9.46  |Q       V|         |         |         |
 7+ 5      2.5938     10.32  | Q      V|         |         |         |
 7+10      2.6719     11.34  | Q      V|         |         |         |
 7+15      2.7590     12.64  | Q       V         |         |         |
 7+20      2.8559     14.07  | Q       V         |         |         |
 7+25      2.9635     15.63  |  Q      V         |         |         |
 7+30      3.0788     16.74  |  Q      |V        |         |         |
 7+35      3.1956     16.96  |  Q      |V        |         |         |
 7+40      3.3214     18.26  |  Q      | V       |         |         |
 7+45      3.4701     21.59  |   Q     | V       |         |         |
 7+50      3.6540     26.70  |    Q    |  V      |         |         |
 7+55      3.9019     36.00  |      Q  |   V     |         |         |
 8+ 0      4.2328     48.04  |         Q|    V    |         |         |
 8+ 5      4.7393     73.55  |          |   Q  V  |         |         |
 8+10      5.5202    113.38  |          |         V Q       |         |
 8+15      6.6626    165.88  |          |          |   V    |  Q      |
 8+20      7.5218    124.76  |          |          |   Q  V |         |
 8+25      8.0581     77.86  |          |    Q     |        V|         |
 8+30      8.4513     57.10  |          |Q         |         |V        |
 8+35      8.7617     45.07  |          Q|         |         | V       |
 8+40      9.0074     35.67  |       Q  |         |         |  V      |
 8+45      9.1972     27.57  |    Q     |         |         |  V      |
 8+50      9.3431     21.18  |   Q      |         |         |   V     |
 8+55      9.4531     15.98  |  Q       |         |         |   V     |
 9+ 0      9.5447     13.29  | Q        |         |         |    V    |
 9+ 5      9.6254     11.72  | Q        |         |         |    V    |
 9+10      9.6975     10.47  | Q        |         |         |    V    |
 9+15      9.7645      9.73  |Q         |         |         |     V   |
 9+20      9.8245      8.71  |Q         |         |         |     V   |
 9+25      9.8787      7.87  |Q         |         |         |     V   |
 9+30      9.9284      7.22  |Q         |         |         |     V   |
 9+35      9.9746      6.71  |Q         |         |         |     V   |
 9+40     10.0187      6.41  |Q         |         |         |      V  |
 9+45     10.0612      6.17  |Q         |         |         |      V  |
 9+50     10.1022      5.95  |Q         |         |         |      V  |
 9+55     10.1419      5.77  |Q         |         |         |      V  |
10+ 0     10.1805      5.60  |Q         |         |         |      V  |
10+ 5     10.2178      5.41  |Q         |         |         |      V  |
10+10     10.2532      5.15  |Q         |         |         |      V  |
10+15     10.2855      4.69  Q          |         |         |      V  |
10+20     10.3155      4.35  Q          |         |         |       V |
10+25     10.3441      4.15  Q          |         |         |       V |
10+30     10.3715      3.98  Q          |         |         |       V |
10+35     10.3979      3.84  Q          |         |         |       V |
10+40     10.4236      3.72  Q          |         |         |       V |
10+45     10.4485      3.62  Q          |         |         |       V |
10+50     10.4727      3.52  Q          |         |         |       V |
10+55     10.4964      3.44  Q          |         |         |       V |
11+ 0     10.5196      3.37  Q          |         |         |       V |
11+ 5     10.5424      3.30  Q          |         |         |       V |
11+10     10.5647      3.24  Q          |         |         |        V|
11+15     10.5865      3.17  Q          |         |         |        V|
11+20     10.6080      3.12  Q          |         |         |        V|
11+25     10.6290      3.06  Q          |         |         |        V|
11+30     10.6498      3.01  Q          |         |         |        V|
11+35     10.6702      2.96  Q          |         |         |        V|
11+40     10.6902      2.91  Q          |         |         |        V|
11+45     10.7100      2.87  Q          |         |         |        V|
11+50     10.7294      2.82  Q          |         |         |        V|
11+55     10.7486      2.78  Q          |         |         |        V|
12+ 0     10.7674      2.74  Q          |         |         |        V|
12+ 5     10.7855      2.62  Q          |         |         |        V|
12+10     10.8011      2.27  Q          |         |         |        V|
12+15     10.8107      1.40  Q          |         |         |        V|
12+20     10.8164      0.82  Q          |         |         |        V|
12+25     10.8202      0.56  Q          |         |         |        V|
12+30     10.8229      0.38  Q          |         |         |        V|
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   12+35      10.8246      0.26  Q         |         |         |        V|
   12+40      10.8258      0.17  Q         |         |         |        V|
   12+45      10.8265      0.11  Q         |         |         |        V|
   12+50      10.8270      0.07  Q         |         |         |        V|
   12+55      10.8273      0.05  Q         |         |         |        V|
   13+ 0      10.8275      0.03  Q         |         |         |        V|
   13+ 5      10.8277      0.03  Q         |         |         |        V|
   13+10      10.8278      0.02  Q         |         |         |        V|
   13+15      10.8279      0.01  Q         |         |         |        V|
   13+20      10.8279      0.00  Q         |         |         |        V|
   13+25      10.8279      0.00  Q         |         |         |         V
-------------------------------------------------------------------------
```

- 5 Year 24 Hour Post-Development Unit Hydrograph – Area 'C'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/13/16   File Name PRC00524.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'C' - 5 YEAR 24 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 5

       Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 74.6       0.5          0.00     B     0.300     0.748    0.224
 74.6     120.5          1.00     C     0.250     0.748    0.187

Area-averaged adjusted loss rate Fm (In/Hr) =  0.187

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
     0.39   0.003         74.6      56.5       7.69     0.080
     0.13   0.001         98.0      98.0       0.20     0.923

    90.13   0.745         74.6      56.5       7.69     0.080
    30.37   0.251         98.0      98.0       0.20     0.923

Area-averaged catchment yield fraction, Y =  0.293
Area-averaged low loss fraction, Yb =  0.707
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.255 (hours)
Watershed area =     121.02(Ac.)
Catchment Lag time =   0.204 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 40.8230
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.187(In/Hr)
Average low loss rate fraction (Yb) = 0.707 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.260(In)
Computed peak 30-minute rainfall =  0.590(In)
Specified peak 1-hour rainfall =  0.780(In)
Computed peak 3-hour rainfall =  1.310(In)
Specified peak 6-hour rainfall =  1.810(In)
Specified peak 24-hour rainfall =  3.030(In)
```

```
Rainfall depth area reduction factors:
Using a total area of     121.02(Ac.) (Ref: fig. E-4)

5-minute factor = 0.994     Adjusted rainfall =  0.259(In)
30-minute factor = 0.994    Adjusted rainfall =  0.587(In)
1-hour factor = 0.994       Adjusted rainfall =  0.776(In)
3-hour factor = 0.999       Adjusted rainfall =  1.309(In)
6-hour factor = 1.000       Adjusted rainfall =  1.809(In)
24-hour factor = 1.000 Adjusted rainfall =  3.030(In)
```

U n i t H y d r o g r a p h

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 1463.59 (CFS))	
1	3.222	47.163
2	15.482	179.437
3	47.961	475.348
4	69.496	315.190
5	79.306	143.571
6	85.815	95.267
7	90.443	67.740
8	93.755	48.466
9	96.026	33.242
10	97.537	22.116
11	98.244	10.341
12	98.695	6.600
13	99.057	5.299
14	99.318	3.824
15	99.628	4.537
16	99.831	2.968
17	99.947	1.703
18	100.000	0.773

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.2585	0.2585
2	0.3550	0.0964
3	0.4273	0.0723
4	0.4874	0.0601
5	0.5397	0.0524
6	0.5867	0.0469
7	0.6242	0.0376
8	0.6587	0.0345
9	0.6907	0.0320
10	0.7207	0.0299
11	0.7489	0.0282
12	0.7756	0.0267
13	0.8057	0.0302
14	0.8347	0.0290
15	0.8626	0.0279
16	0.8895	0.0269
17	0.9156	0.0261
18	0.9409	0.0253
19	0.9654	0.0246
20	0.9893	0.0239
21	1.0126	0.0233
22	1.0353	0.0227
23	1.0574	0.0222
24	1.0791	0.0217
25	1.1003	0.0212
26	1.1210	0.0208
27	1.1414	0.0203
28	1.1613	0.0200
29	1.1809	0.0196
30	1.2001	0.0192
31	1.2190	0.0189
32	1.2376	0.0186

33	1.2559	0.0183
34	1.2739	0.0180
35	1.2916	0.0177
36	1.3091	0.0175
37	1.3259	0.0169
38	1.3425	0.0166
39	1.3589	0.0164
40	1.3751	0.0162
41	1.3910	0.0159
42	1.4068	0.0157
43	1.4223	0.0155
44	1.4376	0.0153
45	1.4528	0.0152
46	1.4678	0.0150
47	1.4826	0.0148
48	1.4973	0.0146
49	1.5117	0.0145
50	1.5261	0.0143
51	1.5402	0.0142
52	1.5543	0.0140
53	1.5682	0.0139
54	1.5819	0.0137
55	1.5955	0.0136
56	1.6090	0.0135
57	1.6223	0.0134
58	1.6356	0.0132
59	1.6487	0.0131
60	1.6617	0.0130
61	1.6745	0.0129
62	1.6873	0.0128
63	1.7000	0.0127
64	1.7125	0.0125
65	1.7249	0.0124
66	1.7373	0.0123
67	1.7495	0.0122
68	1.7617	0.0121
69	1.7737	0.0120
70	1.7857	0.0120
71	1.7975	0.0119
72	1.8093	0.0118
73	1.8186	0.0093
74	1.8278	0.0092
75	1.8370	0.0091
76	1.8461	0.0091
77	1.8551	0.0090
78	1.8640	0.0089
79	1.8728	0.0089
80	1.8816	0.0088
81	1.8903	0.0087
82	1.8990	0.0086
83	1.9075	0.0086
84	1.9161	0.0085
85	1.9245	0.0084
86	1.9329	0.0084
87	1.9412	0.0083
88	1.9495	0.0083
89	1.9577	0.0082
90	1.9658	0.0082
91	1.9739	0.0081
92	1.9820	0.0080
93	1.9900	0.0080
94	1.9979	0.0079
95	2.0058	0.0079
96	2.0136	0.0078
97	2.0214	0.0078
98	2.0291	0.0077
99	2.0368	0.0077
100	2.0444	0.0076
101	2.0520	0.0076
102	2.0595	0.0075
103	2.0670	0.0075

104	2.0744	0.0074
105	2.0818	0.0074
106	2.0892	0.0074
107	2.0965	0.0073
108	2.1037	0.0073
109	2.1110	0.0072
110	2.1181	0.0072
111	2.1253	0.0071
112	2.1324	0.0071
113	2.1394	0.0071
114	2.1465	0.0070
115	2.1534	0.0070
116	2.1604	0.0069
117	2.1673	0.0069
118	2.1742	0.0069
119	2.1810	0.0068
120	2.1878	0.0068
121	2.1945	0.0068
122	2.2013	0.0067
123	2.2080	0.0067
124	2.2146	0.0067
125	2.2212	0.0066
126	2.2278	0.0066
127	2.2344	0.0066
128	2.2409	0.0065
129	2.2474	0.0065
130	2.2539	0.0065
131	2.2603	0.0064
132	2.2667	0.0064
133	2.2731	0.0064
134	2.2794	0.0063
135	2.2857	0.0063
136	2.2920	0.0063
137	2.2983	0.0063
138	2.3045	0.0062
139	2.3107	0.0062
140	2.3168	0.0062
141	2.3230	0.0061
142	2.3291	0.0061
143	2.3352	0.0061
144	2.3412	0.0061
145	2.3473	0.0060
146	2.3533	0.0060
147	2.3593	0.0060
148	2.3652	0.0060
149	2.3711	0.0059
150	2.3770	0.0059
151	2.3829	0.0059
152	2.3888	0.0059
153	2.3946	0.0058
154	2.4004	0.0058
155	2.4062	0.0058
156	2.4120	0.0058
157	2.4177	0.0057
158	2.4234	0.0057
159	2.4291	0.0057
160	2.4348	0.0057
161	2.4404	0.0056
162	2.4461	0.0056
163	2.4517	0.0056
164	2.4572	0.0056
165	2.4628	0.0056
166	2.4683	0.0055
167	2.4739	0.0055
168	2.4794	0.0055
169	2.4848	0.0055
170	2.4903	0.0055
171	2.4957	0.0054
172	2.5011	0.0054
173	2.5065	0.0054
174	2.5119	0.0054

175	2.5173	0.0054
176	2.5226	0.0053
177	2.5279	0.0053
178	2.5332	0.0053
179	2.5385	0.0053
180	2.5438	0.0053
181	2.5490	0.0052
182	2.5543	0.0052
183	2.5595	0.0052
184	2.5647	0.0052
185	2.5698	0.0052
186	2.5750	0.0052
187	2.5801	0.0051
188	2.5852	0.0051
189	2.5903	0.0051
190	2.5954	0.0051
191	2.6005	0.0051
192	2.6056	0.0051
193	2.6106	0.0050
194	2.6156	0.0050
195	2.6206	0.0050
196	2.6256	0.0050
197	2.6306	0.0050
198	2.6355	0.0050
199	2.6405	0.0049
200	2.6454	0.0049
201	2.6503	0.0049
202	2.6552	0.0049
203	2.6601	0.0049
204	2.6650	0.0049
205	2.6698	0.0048
206	2.6746	0.0048
207	2.6795	0.0048
208	2.6843	0.0048
209	2.6891	0.0048
210	2.6938	0.0048
211	2.6986	0.0048
212	2.7034	0.0047
213	2.7081	0.0047
214	2.7128	0.0047
215	2.7175	0.0047
216	2.7222	0.0047
217	2.7269	0.0047
218	2.7316	0.0047
219	2.7362	0.0047
220	2.7408	0.0046
221	2.7455	0.0046
222	2.7501	0.0046
223	2.7547	0.0046
224	2.7593	0.0046
225	2.7638	0.0046
226	2.7684	0.0046
227	2.7730	0.0045
228	2.7775	0.0045
229	2.7820	0.0045
230	2.7865	0.0045
231	2.7910	0.0045
232	2.7955	0.0045
233	2.8000	0.0045
234	2.8044	0.0045
235	2.8089	0.0045
236	2.8133	0.0044
237	2.8178	0.0044
238	2.8222	0.0044
239	2.8266	0.0044
240	2.8310	0.0044
241	2.8353	0.0044
242	2.8397	0.0044
243	2.8441	0.0044
244	2.8484	0.0043
245	2.8528	0.0043

246	2.8571	0.0043
247	2.8614	0.0043
248	2.8657	0.0043
249	2.8700	0.0043
250	2.8743	0.0043
251	2.8785	0.0043
252	2.8828	0.0043
253	2.8870	0.0042
254	2.8913	0.0042
255	2.8955	0.0042
256	2.8997	0.0042
257	2.9039	0.0042
258	2.9081	0.0042
259	2.9123	0.0042
260	2.9165	0.0042
261	2.9207	0.0042
262	2.9248	0.0042
263	2.9290	0.0041
264	2.9331	0.0041
265	2.9372	0.0041
266	2.9413	0.0041
267	2.9454	0.0041
268	2.9495	0.0041
269	2.9536	0.0041
270	2.9577	0.0041
271	2.9618	0.0041
272	2.9658	0.0041
273	2.9699	0.0040
274	2.9739	0.0040
275	2.9780	0.0040
276	2.9820	0.0040
277	2.9860	0.0040
278	2.9900	0.0040
279	2.9940	0.0040
280	2.9980	0.0040
281	3.0020	0.0040
282	3.0059	0.0040
283	3.0099	0.0040
284	3.0138	0.0040
285	3.0178	0.0039
286	3.0217	0.0039
287	3.0256	0.0039
288	3.0295	0.0039

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0039	0.0028	0.0011
2	0.0039	0.0028	0.0011
3	0.0039	0.0028	0.0012
4	0.0040	0.0028	0.0012
5	0.0040	0.0028	0.0012
6	0.0040	0.0028	0.0012
7	0.0040	0.0028	0.0012
8	0.0040	0.0028	0.0012
9	0.0040	0.0028	0.0012
10	0.0040	0.0029	0.0012
11	0.0040	0.0029	0.0012
12	0.0041	0.0029	0.0012
13	0.0041	0.0029	0.0012
14	0.0041	0.0029	0.0012
15	0.0041	0.0029	0.0012
16	0.0041	0.0029	0.0012
17	0.0041	0.0029	0.0012
18	0.0041	0.0029	0.0012
19	0.0042	0.0029	0.0012
20	0.0042	0.0030	0.0012
21	0.0042	0.0030	0.0012
22	0.0042	0.0030	0.0012
23	0.0042	0.0030	0.0012

24	0.0042	0.0030	0.0012
25	0.0043	0.0030	0.0012
26	0.0043	0.0030	0.0012
27	0.0043	0.0030	0.0013
28	0.0043	0.0030	0.0013
29	0.0043	0.0031	0.0013
30	0.0043	0.0031	0.0013
31	0.0044	0.0031	0.0013
32	0.0044	0.0031	0.0013
33	0.0044	0.0031	0.0013
34	0.0044	0.0031	0.0013
35	0.0044	0.0031	0.0013
36	0.0044	0.0031	0.0013
37	0.0045	0.0032	0.0013
38	0.0045	0.0032	0.0013
39	0.0045	0.0032	0.0013
40	0.0045	0.0032	0.0013
41	0.0045	0.0032	0.0013
42	0.0045	0.0032	0.0013
43	0.0046	0.0032	0.0013
44	0.0046	0.0032	0.0013
45	0.0046	0.0033	0.0013
46	0.0046	0.0033	0.0014
47	0.0047	0.0033	0.0014
48	0.0047	0.0033	0.0014
49	0.0047	0.0033	0.0014
50	0.0047	0.0033	0.0014
51	0.0047	0.0033	0.0014
52	0.0047	0.0034	0.0014
53	0.0048	0.0034	0.0014
54	0.0048	0.0034	0.0014
55	0.0048	0.0034	0.0014
56	0.0048	0.0034	0.0014
57	0.0049	0.0034	0.0014
58	0.0049	0.0035	0.0014
59	0.0049	0.0035	0.0014
60	0.0049	0.0035	0.0014
61	0.0050	0.0035	0.0015
62	0.0050	0.0035	0.0015
63	0.0050	0.0035	0.0015
64	0.0050	0.0036	0.0015
65	0.0051	0.0036	0.0015
66	0.0051	0.0036	0.0015
67	0.0051	0.0036	0.0015
68	0.0051	0.0036	0.0015
69	0.0052	0.0036	0.0015
70	0.0052	0.0037	0.0015
71	0.0052	0.0037	0.0015
72	0.0052	0.0037	0.0015
73	0.0053	0.0037	0.0015
74	0.0053	0.0037	0.0015
75	0.0053	0.0038	0.0016
76	0.0053	0.0038	0.0016
77	0.0054	0.0038	0.0016
78	0.0054	0.0038	0.0016
79	0.0054	0.0038	0.0016
80	0.0055	0.0039	0.0016
81	0.0055	0.0039	0.0016
82	0.0055	0.0039	0.0016
83	0.0056	0.0039	0.0016
84	0.0056	0.0039	0.0016
85	0.0056	0.0040	0.0016
86	0.0056	0.0040	0.0017
87	0.0057	0.0040	0.0017
88	0.0057	0.0040	0.0017
89	0.0058	0.0041	0.0017
90	0.0058	0.0041	0.0017
91	0.0058	0.0041	0.0017
92	0.0059	0.0041	0.0017
93	0.0059	0.0042	0.0017
94	0.0059	0.0042	0.0017

95	0.0060	0.0042	0.0017
96	0.0060	0.0042	0.0018
97	0.0061	0.0043	0.0018
98	0.0061	0.0043	0.0018
99	0.0061	0.0043	0.0018
100	0.0062	0.0044	0.0018
101	0.0062	0.0044	0.0018
102	0.0063	0.0044	0.0018
103	0.0063	0.0045	0.0018
104	0.0063	0.0045	0.0019
105	0.0064	0.0045	0.0019
106	0.0064	0.0045	0.0019
107	0.0065	0.0046	0.0019
108	0.0065	0.0046	0.0019
109	0.0066	0.0047	0.0019
110	0.0066	0.0047	0.0019
111	0.0067	0.0047	0.0020
112	0.0067	0.0048	0.0020
113	0.0068	0.0048	0.0020
114	0.0068	0.0048	0.0020
115	0.0069	0.0049	0.0020
116	0.0069	0.0049	0.0020
117	0.0070	0.0050	0.0021
118	0.0071	0.0050	0.0021
119	0.0071	0.0051	0.0021
120	0.0072	0.0051	0.0021
121	0.0073	0.0051	0.0021
122	0.0073	0.0052	0.0021
123	0.0074	0.0052	0.0022
124	0.0074	0.0053	0.0022
125	0.0075	0.0053	0.0022
126	0.0076	0.0054	0.0022
127	0.0077	0.0054	0.0022
128	0.0077	0.0055	0.0023
129	0.0078	0.0055	0.0023
130	0.0079	0.0056	0.0023
131	0.0080	0.0056	0.0023
132	0.0080	0.0057	0.0024
133	0.0082	0.0058	0.0024
134	0.0082	0.0058	0.0024
135	0.0083	0.0059	0.0024
136	0.0084	0.0059	0.0025
137	0.0085	0.0060	0.0025
138	0.0086	0.0061	0.0025
139	0.0087	0.0062	0.0025
140	0.0088	0.0062	0.0026
141	0.0089	0.0063	0.0026
142	0.0090	0.0064	0.0026
143	0.0091	0.0065	0.0027
144	0.0092	0.0065	0.0027
145	0.0118	0.0083	0.0034
146	0.0119	0.0084	0.0035
147	0.0120	0.0085	0.0035
148	0.0121	0.0086	0.0036
149	0.0123	0.0087	0.0036
150	0.0124	0.0088	0.0036
151	0.0127	0.0090	0.0037
152	0.0128	0.0090	0.0037
153	0.0130	0.0092	0.0038
154	0.0131	0.0093	0.0038
155	0.0134	0.0094	0.0039
156	0.0135	0.0095	0.0039
157	0.0137	0.0097	0.0040
158	0.0139	0.0098	0.0041
159	0.0142	0.0100	0.0041
160	0.0143	0.0101	0.0042
161	0.0146	0.0104	0.0043
162	0.0148	0.0105	0.0043
163	0.0152	0.0107	0.0044
164	0.0153	0.0109	0.0045
165	0.0157	0.0111	0.0046

166	0.0159	0.0113	0.0047
167	0.0164	0.0116	0.0048
168	0.0166	0.0118	0.0049
169	0.0175	0.0123	0.0051
170	0.0177	0.0125	0.0052
171	0.0183	0.0129	0.0053
172	0.0186	0.0131	0.0054
173	0.0192	0.0136	0.0056
174	0.0196	0.0139	0.0057
175	0.0203	0.0144	0.0059
176	0.0208	0.0147	0.0061
177	0.0217	0.0153	0.0063
178	0.0222	0.0156	0.0066
179	0.0233	0.0156	0.0077
180	0.0239	0.0156	0.0083
181	0.0253	0.0156	0.0097
182	0.0261	0.0156	0.0105
183	0.0279	0.0156	0.0123
184	0.0290	0.0156	0.0134
185	0.0267	0.0156	0.0111
186	0.0282	0.0156	0.0126
187	0.0320	0.0156	0.0164
188	0.0345	0.0156	0.0189
189	0.0469	0.0156	0.0313
190	0.0524	0.0156	0.0368
191	0.0723	0.0156	0.0567
192	0.0964	0.0156	0.0808
193	0.2585	0.0156	0.2429
194	0.0601	0.0156	0.0445
195	0.0376	0.0156	0.0220
196	0.0299	0.0156	0.0143
197	0.0302	0.0156	0.0146
198	0.0269	0.0156	0.0113
199	0.0246	0.0156	0.0090
200	0.0227	0.0156	0.0071
201	0.0212	0.0150	0.0062
202	0.0200	0.0141	0.0058
203	0.0189	0.0134	0.0055
204	0.0180	0.0127	0.0053
205	0.0169	0.0119	0.0049
206	0.0162	0.0114	0.0047
207	0.0155	0.0110	0.0045
208	0.0150	0.0106	0.0044
209	0.0145	0.0102	0.0042
210	0.0140	0.0099	0.0041
211	0.0136	0.0096	0.0040
212	0.0132	0.0094	0.0039
213	0.0129	0.0091	0.0038
214	0.0125	0.0089	0.0037
215	0.0122	0.0087	0.0036
216	0.0120	0.0085	0.0035
217	0.0093	0.0066	0.0027
218	0.0091	0.0064	0.0027
219	0.0089	0.0063	0.0026
220	0.0086	0.0061	0.0025
221	0.0084	0.0060	0.0025
222	0.0083	0.0058	0.0024
223	0.0081	0.0057	0.0024
224	0.0079	0.0056	0.0023
225	0.0078	0.0055	0.0023
226	0.0076	0.0054	0.0022
227	0.0075	0.0053	0.0022
228	0.0074	0.0052	0.0021
229	0.0072	0.0051	0.0021
230	0.0071	0.0050	0.0021
231	0.0070	0.0049	0.0020
232	0.0069	0.0049	0.0020
233	0.0068	0.0048	0.0020
234	0.0067	0.0047	0.0019
235	0.0066	0.0046	0.0019
236	0.0065	0.0046	0.0019

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      237              0.0064          0.0045              0.0019
      238              0.0063          0.0044              0.0018
      239              0.0062          0.0044              0.0018
      240              0.0061          0.0043              0.0018
      241              0.0060          0.0043              0.0018
      242              0.0060          0.0042              0.0017
      243              0.0059          0.0042              0.0017
      244              0.0058          0.0041              0.0017
      245              0.0057          0.0041              0.0017
      246              0.0057          0.0040              0.0017
      247              0.0056          0.0040              0.0016
      248              0.0055          0.0039              0.0016
      249              0.0055          0.0039              0.0016
      250              0.0054          0.0038              0.0016
      251              0.0054          0.0038              0.0016
      252              0.0053          0.0038              0.0016
      253              0.0052          0.0037              0.0015
      254              0.0052          0.0037              0.0015
      255              0.0051          0.0036              0.0015
      256              0.0051          0.0036              0.0015
      257              0.0050          0.0036              0.0015
      258              0.0050          0.0035              0.0015
      259              0.0049          0.0035              0.0014
      260              0.0049          0.0035              0.0014
      261              0.0048          0.0034              0.0014
      262              0.0048          0.0034              0.0014
      263              0.0048          0.0034              0.0014
      264              0.0047          0.0033              0.0014
      265              0.0047          0.0033              0.0014
      266              0.0046          0.0033              0.0014
      267              0.0046          0.0033              0.0013
      268              0.0046          0.0032              0.0013
      269              0.0045          0.0032              0.0013
      270              0.0045          0.0032              0.0013
      271              0.0045          0.0031              0.0013
      272              0.0044          0.0031              0.0013
      273              0.0044          0.0031              0.0013
      274              0.0043          0.0031              0.0013
      275              0.0043          0.0031              0.0013
      276              0.0043          0.0030              0.0013
      277              0.0042          0.0030              0.0012
      278              0.0042          0.0030              0.0012
      279              0.0042          0.0030              0.0012
      280              0.0042          0.0029              0.0012
      281              0.0041          0.0029              0.0012
      282              0.0041          0.0029              0.0012
      283              0.0041          0.0029              0.0012
      284              0.0040          0.0029              0.0012
      285              0.0040          0.0028              0.0012
      286              0.0040          0.0028              0.0012
      287              0.0040          0.0028              0.0012
      288              0.0039          0.0028              0.0012
      ------------------------------------------------------------------------
      ------------------------------------------------------------------------
      Total soil rain loss =      1.75(In)
      Total effective rainfall =      1.28(In)
      Peak flow rate in flood hydrograph =    165.88(CFS)
      ------------------------------------------------------------------------
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                        24 - H O U R    S T O R M
                   R u n o f f      H y d r o g r a p h
      ------------------------------------------------------------------------
                Hydrograph in   5   Minute intervals ((CFS))

      ------------------------------------------------------------------------
 Time(h+m) Volume Ac.Ft   Q(CFS)  0       50.0     100.0     150.0     200.0
 ------------------------------------------------------------------------
   0+ 5       0.0004      0.05  Q         |         |         |         |
   0+10       0.0022      0.26  Q         |         |         |         |
   0+15       0.0077      0.80  Q         |         |         |         |
   0+20       0.0157      1.17  Q         |         |         |         |
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0+25	0.0250	1.34	Q	|	|	|	|
0+30	0.0349	1.45	Q	|	|	|	|
0+35	0.0455	1.53	Q	|	|	|	|
0+40	0.0565	1.59	Q	|	|	|	|
0+45	0.0677	1.64	Q	|	|	|	|
0+50	0.0792	1.67	Q	|	|	|	|
0+55	0.0908	1.68	Q	|	|	|	|
1+ 0	0.1025	1.70	Q	|	|	|	|
1+ 5	0.1143	1.71	Q	|	|	|	|
1+10	0.1261	1.72	Q	|	|	|	|
1+15	0.1380	1.73	Q	|	|	|	|
1+20	0.1500	1.74	Q	|	|	|	|
1+25	0.1621	1.75	Q	|	|	|	|
1+30	0.1742	1.76	Q	|	|	|	|
1+35	0.1863	1.76	Q	|	|	|	|
1+40	0.1985	1.77	Q	|	|	|	|
1+45	0.2107	1.77	Q	|	|	|	|
1+50	0.2230	1.78	Q	|	|	|	|
1+55	0.2353	1.79	Q	|	|	|	|
2+ 0	0.2476	1.79	Q	|	|	|	|
2+ 5	0.2600	1.80	Q	|	|	|	|
2+10	0.2725	1.81	Q	|	|	|	|
2+15	0.2850	1.81	Q	|	|	|	|
2+20	0.2975	1.82	Q	|	|	|	|
2+25	0.3101	1.83	Q	|	|	|	|
2+30	0.3227	1.83	QV	|	|	|	|
2+35	0.3354	1.84	QV	|	|	|	|
2+40	0.3481	1.85	QV	|	|	|	|
2+45	0.3609	1.86	QV	|	|	|	|
2+50	0.3737	1.86	QV	|	|	|	|
2+55	0.3866	1.87	QV	|	|	|	|
3+ 0	0.3995	1.88	QV	|	|	|	|
3+ 5	0.4125	1.88	QV	|	|	|	|
3+10	0.4255	1.89	QV	|	|	|	|
3+15	0.4386	1.90	QV	|	|	|	|
3+20	0.4518	1.91	QV	|	|	|	|
3+25	0.4649	1.92	QV	|	|	|	|
3+30	0.4782	1.92	QV	|	|	|	|
3+35	0.4915	1.93	QV	|	|	|	|
3+40	0.5048	1.94	QV	|	|	|	|
3+45	0.5182	1.95	QV	|	|	|	|
3+50	0.5317	1.95	QV	|	|	|	|
3+55	0.5452	1.96	QV	|	|	|	|
4+ 0	0.5588	1.97	QV	|	|	|	|
4+ 5	0.5724	1.98	QV	|	|	|	|
4+10	0.5861	1.99	QV	|	|	|	|
4+15	0.5999	2.00	QV	|	|	|	|
4+20	0.6137	2.01	QV	|	|	|	|
4+25	0.6276	2.01	QV	|	|	|	|
4+30	0.6415	2.02	QV	|	|	|	|
4+35	0.6555	2.03	Q V	|	|	|	|
4+40	0.6696	2.04	Q V	|	|	|	|
4+45	0.6837	2.05	Q V	|	|	|	|
4+50	0.6979	2.06	Q V	|	|	|	|
4+55	0.7121	2.07	Q V	|	|	|	|
5+ 0	0.7264	2.08	Q V	|	|	|	|
5+ 5	0.7408	2.09	Q V	|	|	|	|
5+10	0.7553	2.10	Q V	|	|	|	|
5+15	0.7698	2.11	Q V	|	|	|	|
5+20	0.7844	2.12	Q V	|	|	|	|
5+25	0.7990	2.13	Q V	|	|	|	|
5+30	0.8138	2.14	Q V	|	|	|	|
5+35	0.8286	2.15	Q V	|	|	|	|
5+40	0.8434	2.16	Q V	|	|	|	|
5+45	0.8584	2.17	Q V	|	|	|	|
5+50	0.8734	2.18	Q V	|	|	|	|
5+55	0.8885	2.19	Q V	|	|	|	|
6+ 0	0.9037	2.20	Q V	|	|	|	|
6+ 5	0.9189	2.21	Q V	|	|	|	|
6+10	0.9343	2.23	Q V	|	|	|	|
6+15	0.9497	2.24	Q V	|	|	|	|

6+20	0.9652	2.25	Q	V				
6+25	0.9807	2.26	Q	V				
6+30	0.9964	2.27	Q	V				
6+35	1.0121	2.29	Q	V				
6+40	1.0279	2.30	Q	V				
6+45	1.0438	2.31	Q	V				
6+50	1.0598	2.32	Q	V				
6+55	1.0759	2.34	Q	V				
7+ 0	1.0921	2.35	Q	V				
7+ 5	1.1084	2.36	Q	V				
7+10	1.1247	2.38	Q	V				
7+15	1.1412	2.39	Q	V				
7+20	1.1577	2.40	Q	V				
7+25	1.1744	2.42	Q	V				
7+30	1.1911	2.43	Q	V				
7+35	1.2080	2.45	Q	V				
7+40	1.2249	2.46	Q	V				
7+45	1.2419	2.48	Q	V				
7+50	1.2591	2.49	Q	V				
7+55	1.2764	2.51	Q	V				
8+ 0	1.2937	2.52	Q	V				
8+ 5	1.3112	2.54	Q	V				
8+10	1.3288	2.55	Q	V				
8+15	1.3465	2.57	Q	V				
8+20	1.3643	2.59	Q	V				
8+25	1.3822	2.60	Q	V				
8+30	1.4003	2.62	Q	V				
8+35	1.4185	2.64	Q	V				
8+40	1.4368	2.66	Q	V				
8+45	1.4552	2.68	Q	V				
8+50	1.4738	2.69	Q	V				
8+55	1.4924	2.71	Q	V				
9+ 0	1.5113	2.73	Q	V				
9+ 5	1.5302	2.75	Q	V				
9+10	1.5493	2.77	Q	V				
9+15	1.5686	2.79	Q	V				
9+20	1.5879	2.81	Q	V				
9+25	1.6075	2.84	Q	V				
9+30	1.6271	2.86	Q	V				
9+35	1.6470	2.88	Q	V				
9+40	1.6669	2.90	Q	V				
9+45	1.6871	2.92	Q	V				
9+50	1.7074	2.95	Q	V				
9+55	1.7278	2.97	Q	V				
10+ 0	1.7485	3.00	Q	V				
10+ 5	1.7693	3.02	Q	V				
10+10	1.7903	3.05	Q	V				
10+15	1.8114	3.07	Q	V				
10+20	1.8328	3.10	Q	V				
10+25	1.8543	3.13	Q	V				
10+30	1.8760	3.15	Q	V				
10+35	1.8980	3.18	Q	V				
10+40	1.9201	3.21	Q	V				
10+45	1.9424	3.24	Q	V				
10+50	1.9650	3.27	Q	V				
10+55	1.9878	3.31	Q	V				
11+ 0	2.0107	3.34	Q	V				
11+ 5	2.0340	3.37	Q	V				
11+10	2.0574	3.40	Q	V				
11+15	2.0811	3.44	Q	V				
11+20	2.1050	3.48	Q	V				
11+25	2.1292	3.51	Q	V				
11+30	2.1537	3.55	Q	V				
11+35	2.1784	3.59	Q	V				
11+40	2.2034	3.63	Q	V				
11+45	2.2287	3.67	Q	V				
11+50	2.2543	3.71	Q	V				
11+55	2.2802	3.76	Q	V				
12+ 0	2.3064	3.80	Q	V				
12+ 5	2.3331	3.88	Q	V				
12+10	2.3610	4.06	Q	V				

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12+15      2.3916      4.44  Q      V  |          |          |          |
12+20      2.4241      4.71  Q      V  |          |          |          |
12+25      2.4576      4.87  Q      V  |          |          |          |
12+30      2.4920      4.99  Q      V  |          |          |          |
12+35      2.5272      5.10  |Q     V  |          |          |          |
12+40      2.5629      5.20  |Q     V  |          |          |          |
12+45      2.5994      5.29  |Q      V |          |          |          |
12+50      2.6363      5.37  |Q      V |          |          |          |
12+55      2.6738      5.45  |Q      V |          |          |          |
13+ 0      2.7119      5.52  |Q      V |          |          |          |
13+ 5      2.7505      5.60  |Q      V |          |          |          |
13+10      2.7896      5.68  |Q      V |          |          |          |
13+15      2.8293      5.77  |Q      V |          |          |          |
13+20      2.8696      5.85  |Q      V |          |          |          |
13+25      2.9106      5.95  |Q       V|          |          |          |
13+30      2.9522      6.04  |Q       V|          |          |          |
13+35      2.9944      6.14  |Q       V|          |          |          |
13+40      3.0374      6.24  |Q       V|          |          |          |
13+45      3.0811      6.35  |Q       V|          |          |          |
13+50      3.1256      6.46  |Q       V|          |          |          |
13+55      3.1709      6.58  |Q       V|          |          |          |
14+ 0      3.2170      6.70  |Q        V          |          |          |
14+ 5      3.2641      6.84  |Q        V          |          |          |
14+10      3.3123      6.99  |Q        V          |          |          |
14+15      3.3618      7.19  |Q        V          |          |          |
14+20      3.4126      7.38  |Q        V          |          |          |
14+25      3.4648      7.57  |Q        V          |          |          |
14+30      3.5182      7.75  |Q        V          |          |          |
14+35      3.5730      7.96  |Q        |V         |          |          |
14+40      3.6292      8.17  |Q        |V         |          |          |
14+45      3.6871      8.40  |Q        |V         |          |          |
14+50      3.7466      8.65  |Q        |V         |          |          |
14+55      3.8085      8.97  |Q        |V         |          |          |
15+ 0      3.8736      9.46  |Q        | V        |          |          |
15+ 5      3.9447     10.32  | Q       | V        |          |          |
15+10      4.0227     11.34  | Q       | V        |          |          |
15+15      4.1098     12.64  | Q       | V        |          |          |
15+20      4.2067     14.07  | Q       |  V       |          |          |
15+25      4.3143     15.63  |  Q      |  V       |          |          |
15+30      4.4296     16.74  |  Q      |  V       |          |          |
15+35      4.5465     16.96  |  Q      |   V      |          |          |
15+40      4.6723     18.26  |  Q      |   V      |          |          |
15+45      4.8209     21.59  |   Q     |   V      |          |          |
15+50      5.0048     26.70  |    Q    |    V     |          |          |
15+55      5.2527     36.00  |      Q  |     V    |          |          |
16+ 0      5.5836     48.04  |         Q|      V   |          |          |
16+ 5      6.0901     73.55  |          |   Q   V  |          |          |
16+10      6.8710    113.38  |          |          |VQ        |          |
16+15      8.0134    165.88  |          |          |   V      |  Q       |
16+20      8.8726    124.76  |          |          |   Q  V   |          |
16+25      9.4089     77.86  |          |    Q     |         V|          |
16+30      9.8021     57.10  |          |Q         |          V          |
16+35     10.1125     45.07  |         Q|          |          |V         |
16+40     10.3582     35.67  |       Q  |          |          | V        |
16+45     10.5481     27.57  |     Q    |          |          | V        |
16+50     10.6939     21.18  |    Q     |          |          |  V       |
16+55     10.8039     15.98  |  Q       |          |          |  V       |
17+ 0     10.8955     13.29  | Q        |          |          |  V       |
17+ 5     10.9762     11.72  | Q        |          |          |   V      |
17+10     11.0483     10.47  | Q        |          |          |   V      |
17+15     11.1153      9.73  |Q         |          |          |   V      |
17+20     11.1753      8.71  |Q         |          |          |   V      |
17+25     11.2295      7.87  |Q         |          |          |   V      |
17+30     11.2792      7.22  |Q         |          |          |    V     |
17+35     11.3254      6.71  |Q         |          |          |    V     |
17+40     11.3696      6.41  |Q         |          |          |    V     |
17+45     11.4120      6.17  |Q         |          |          |    V     |
17+50     11.4531      5.95  |Q         |          |          |    V     |
17+55     11.4928      5.77  |Q         |          |          |    V     |
18+ 0     11.5313      5.60  |Q         |          |          |    V     |
18+ 5     11.5686      5.41  |Q         |          |          |    V     |
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18+10	11.6040	5.15	|Q	|	|	|	V |
18+15	11.6364	4.69	Q	|	|	|	V |
18+20	11.6663	4.35	Q	|	|	|	V |
18+25	11.6949	4.15	Q	|	|	|	V |
18+30	11.7223	3.98	Q	|	|	|	V |
18+35	11.7488	3.84	Q	|	|	|	V |
18+40	11.7744	3.72	Q	|	|	|	V |
18+45	11.7993	3.62	Q	|	|	|	V |
18+50	11.8235	3.52	Q	|	|	|	V |
18+55	11.8473	3.44	Q	|	|	|	V |
19+ 0	11.8705	3.37	Q	|	|	|	V |
19+ 5	11.8932	3.30	Q	|	|	|	V |
19+10	11.9155	3.24	Q	|	|	|	V |
19+15	11.9373	3.17	Q	|	|	|	V |
19+20	11.9588	3.12	Q	|	|	|	V |
19+25	11.9799	3.06	Q	|	|	|	V |
19+30	12.0006	3.01	Q	|	|	|	V |
19+35	12.0210	2.96	Q	|	|	|	V |
19+40	12.0410	2.91	Q	|	|	|	V |
19+45	12.0608	2.87	Q	|	|	|	V |
19+50	12.0802	2.82	Q	|	|	|	V |
19+55	12.0994	2.78	Q	|	|	|	V |
20+ 0	12.1183	2.74	Q	|	|	|	V |
20+ 5	12.1369	2.70	Q	|	|	|	V |
20+10	12.1552	2.67	Q	|	|	|	V |
20+15	12.1734	2.63	Q	|	|	|	V |
20+20	12.1912	2.59	Q	|	|	|	V |
20+25	12.2089	2.56	Q	|	|	|	V |
20+30	12.2263	2.53	Q	|	|	|	V |
20+35	12.2435	2.50	Q	|	|	|	V |
20+40	12.2605	2.47	Q	|	|	|	V |
20+45	12.2773	2.44	Q	|	|	|	V |
20+50	12.2939	2.41	Q	|	|	|	V |
20+55	12.3102	2.38	Q	|	|	|	V |
21+ 0	12.3265	2.35	Q	|	|	|	V |
21+ 5	12.3425	2.33	Q	|	|	|	V |
21+10	12.3584	2.30	Q	|	|	|	V |
21+15	12.3740	2.28	Q	|	|	|	V |
21+20	12.3896	2.25	Q	|	|	|	V |
21+25	12.4049	2.23	Q	|	|	|	V |
21+30	12.4201	2.21	Q	|	|	|	V |
21+35	12.4352	2.19	Q	|	|	|	V |
21+40	12.4501	2.16	Q	|	|	|	V |
21+45	12.4648	2.14	Q	|	|	|	V |
21+50	12.4795	2.12	Q	|	|	|	V |
21+55	12.4939	2.10	Q	|	|	|	V |
22+ 0	12.5083	2.08	Q	|	|	|	V |
22+ 5	12.5225	2.06	Q	|	|	|	V |
22+10	12.5366	2.04	Q	|	|	|	V|
22+15	12.5505	2.03	Q	|	|	|	V|
22+20	12.5644	2.01	Q	|	|	|	V|
22+25	12.5781	1.99	Q	|	|	|	V|
22+30	12.5917	1.97	Q	|	|	|	V|
22+35	12.6052	1.96	Q	|	|	|	V|
22+40	12.6185	1.94	Q	|	|	|	V|
22+45	12.6318	1.93	Q	|	|	|	V|
22+50	12.6450	1.91	Q	|	|	|	V|
22+55	12.6580	1.89	Q	|	|	|	V|
23+ 0	12.6710	1.88	Q	|	|	|	V|
23+ 5	12.6838	1.87	Q	|	|	|	V|
23+10	12.6966	1.85	Q	|	|	|	V|
23+15	12.7092	1.84	Q	|	|	|	V|
23+20	12.7218	1.82	Q	|	|	|	V|
23+25	12.7342	1.81	Q	|	|	|	V|
23+30	12.7466	1.80	Q	|	|	|	V|
23+35	12.7589	1.78	Q	|	|	|	V|
23+40	12.7711	1.77	Q	|	|	|	V|
23+45	12.7832	1.76	Q	|	|	|	V|
23+50	12.7952	1.75	Q	|	|	|	V|
23+55	12.8071	1.73	Q	|	|	|	V|
24+ 0	12.8190	1.72	Q	|	|	|	V|

```
   24+ 5      12.8304      1.66  Q         |         |         |        V|
   24+10      12.8403      1.44  Q         |         |         |        V|
   24+15      12.8464      0.89  Q         |         |         |        V|
   24+20      12.8500      0.52  Q         |         |         |        V|
   24+25      12.8524      0.35  Q         |         |         |        V|
   24+30      12.8541      0.24  Q         |         |         |        V|
   24+35      12.8552      0.16  Q         |         |         |        V|
   24+40      12.8560      0.11  Q         |         |         |        V|
   24+45      12.8564      0.07  Q         |         |         |        V|
   24+50      12.8567      0.04  Q         |         |         |        V|
   24+55      12.8569      0.03  Q         |         |         |        V|
   25+ 0      12.8571      0.02  Q         |         |         |        V|
   25+ 5      12.8572      0.02  Q         |         |         |        V|
   25+10      12.8573      0.01  Q         |         |         |        V|
   25+15      12.8573      0.01  Q         |         |         |        V|
   25+20      12.8573      0.00  Q         |         |         |        V|
   25+25      12.8573      0.00  Q         |         |         |         V
-------------------------------------------------------------------------
```

- 25 Year 3 Hour Post-Development Unit Hydrograph – Area 'C'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/13/16   File Name PRC02503.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'C' - 25 YEAR 3 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 25

       Antecedent Moisture Condition = 2

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 74.6       0.5          0.00     B     0.300     0.748    0.224
 74.6     120.5          1.00     C     0.250     0.748    0.187

Area-averaged adjusted loss rate Fm (In/Hr) =  0.187

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC2)          Yield Fr
     0.39   0.003         74.6      74.6       3.40     0.448
     0.13   0.001         98.0      98.0       0.20     0.947

    90.13   0.745         74.6      74.6       3.40     0.448
    30.37   0.251         98.0      98.0       0.20     0.947

Area-averaged catchment yield fraction, Y =  0.574
Area-averaged low loss fraction, Yb =  0.426
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.244 (hours)
Watershed area =     121.02(Ac.)
Catchment Lag time =   0.195 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 42.7204
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.187(In/Hr)
Average low loss rate fraction (Yb) = 0.426 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.400(In)
Computed peak 30-minute rainfall =  0.870(In)
Specified peak 1-hour rainfall =  1.150(In)
Computed peak 3-hour rainfall =  1.940(In)
Specified peak 6-hour rainfall =  2.710(In)
Specified peak 24-hour rainfall =  4.490(In)
```

```
Rainfall depth area reduction factors:
Using a total area of     121.02(Ac.) (Ref: fig. E-4)

5-minute factor = 0.994     Adjusted rainfall =  0.398(In)
30-minute factor = 0.994    Adjusted rainfall =  0.865(In)
1-hour factor = 0.994       Adjusted rainfall =  1.143(In)
3-hour factor = 0.999       Adjusted rainfall =  1.939(In)
6-hour factor = 1.000       Adjusted rainfall =  2.709(In)
24-hour factor = 1.000 Adjusted rainfall =  4.489(In)
```

U n i t H y d r o g r a p h

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
(K = 1463.59 (CFS))		
1	3.432	50.230
2	16.924	197.474
3	51.855	511.245
4	71.393	285.944
5	80.876	138.790
6	87.148	91.799
7	91.549	64.420
8	94.653	45.425
9	96.706	30.047
10	97.925	17.842
11	98.473	8.027
12	98.905	6.321
13	99.205	4.381
14	99.514	4.524
15	99.778	3.861
16	99.922	2.118
17	100.000	1.136

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.3977	0.3977
2	0.5372	0.1395
3	0.6405	0.1033
4	0.7256	0.0851
5	0.7993	0.0737
6	0.8651	0.0658
7	0.9204	0.0554
8	0.9713	0.0508
9	1.0184	0.0472
10	1.0626	0.0441
11	1.1041	0.0416
12	1.1435	0.0394
13	1.1883	0.0448
14	1.2314	0.0431
15	1.2729	0.0415
16	1.3130	0.0401
17	1.3518	0.0388
18	1.3894	0.0376
19	1.4260	0.0366
20	1.4616	0.0356
21	1.4963	0.0347
22	1.5301	0.0338
23	1.5631	0.0330
24	1.5954	0.0323
25	1.6270	0.0316
26	1.6580	0.0310
27	1.6883	0.0303
28	1.7181	0.0298
29	1.7473	0.0292
30	1.7760	0.0287
31	1.8042	0.0282
32	1.8319	0.0277
33	1.8592	0.0273

```
 34              1.8861              0.0269
 35              1.9125              0.0265
 36              1.9386              0.0261
---------------------------------------------------------------------
Unit              Unit            Unit              Effective
Period            Rainfall        Soil-Loss         Rainfall
(number)            (In)          (In)                (In)
---------------------------------------------------------------------
  1              0.0261           0.0111              0.0150
  2              0.0265           0.0113              0.0152
  3              0.0273           0.0116              0.0157
  4              0.0277           0.0118              0.0159
  5              0.0287           0.0122              0.0165
  6              0.0292           0.0125              0.0168
  7              0.0303           0.0129              0.0174
  8              0.0310           0.0132              0.0178
  9              0.0323           0.0138              0.0185
 10              0.0330           0.0141              0.0190
 11              0.0347           0.0148              0.0199
 12              0.0356           0.0152              0.0204
 13              0.0376           0.0156              0.0220
 14              0.0388           0.0156              0.0232
 15              0.0415           0.0156              0.0259
 16              0.0431           0.0156              0.0275
 17              0.0394           0.0156              0.0238
 18              0.0416           0.0156              0.0260
 19              0.0472           0.0156              0.0316
 20              0.0508           0.0156              0.0352
 21              0.0658           0.0156              0.0502
 22              0.0737           0.0156              0.0581
 23              0.1033           0.0156              0.0877
 24              0.1395           0.0156              0.1239
 25              0.3977           0.0156              0.3821
 26              0.0851           0.0156              0.0695
 27              0.0554           0.0156              0.0398
 28              0.0441           0.0156              0.0285
 29              0.0448           0.0156              0.0292
 30              0.0401           0.0156              0.0245
 31              0.0366           0.0156              0.0210
 32              0.0338           0.0144              0.0194
 33              0.0316           0.0135              0.0181
 34              0.0298           0.0127              0.0171
 35              0.0282           0.0120              0.0162
 36              0.0269           0.0114              0.0154
---------------------------------------------------------------------
---------------------------------------------------------------------
Total soil rain loss =      0.51(In)
Total effective rainfall =      1.42(In)
Peak flow rate in flood hydrograph =    270.99(CFS)
---------------------------------------------------------------------
+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                    3 - H O U R    S T O R M
                R u n o f f      H y d r o g r a p h
---------------------------------------------------------------------
            Hydrograph in   5   Minute intervals ((CFS))

---------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0       75.0     150.0     225.0     300.0
---------------------------------------------------------------------
  0+ 5       0.0052      0.75  Q         |         |         |         |
  0+10       0.0308      3.72  Q         |         |         |         |
  0+15       0.1095     11.43  VQ        |         |         |         |
  0+20       0.2192     15.93  V Q       |         |         |         |
  0+25       0.3459     18.39  V Q       |         |         |         |
  0+30       0.4849     20.19  |VQ       |         |         |         |
  0+35       0.6342     21.68  |VQ       |         |         |         |
  0+40       0.7920     22.91  | VQ      |         |         |         |
  0+45       0.9575     24.03  | VQ      |         |         |         |
  0+50       1.1295     24.97  |  Q      |         |         |         |
  0+55       1.3078     25.90  |  Q      |         |         |         |
  1+ 0       1.4925     26.81  |  QV     |         |         |         |
```

```
   1+ 5       1.6845     27.88  |  QV     |         |         |         |
   1+10       1.8847     29.07  |  Q V    |         |         |         |
   1+15       2.0965     30.75  |   QV    |         |         |         |
   1+20       2.3217     32.71  |   Q V   |         |         |         |
   1+25       2.5624     34.95  |   Q  V  |         |         |         |
   1+30       2.8127     36.33  |   Q  V  |         |         |         |
   1+35       3.0624     36.26  |   Q   V |         |         |         |
   1+40       3.3260     38.27  |    Q   V|         |         |         |
   1+45       3.6233     43.17  |    Q    V         |         |         |
   1+50       3.9695     50.27  |     Q   |V        |         |         |
   1+55       4.4030     62.95  |       Q | V       |         |         |
   2+ 0       4.9544     80.06  |         Q  V      |         |         |
   2+ 5       5.7836    120.40  |         |     Q   |         |         |
   2+10       7.0623    185.66  |         |        V|   Q     |         |
   2+15       8.9286    270.99  |         |         |   V     |     Q   |
   2+20      10.2215    187.73  |         |         |    Q  V |         |
   2+25      11.0684    122.97  |         |     Q   |         V         |
   2+30      11.7102     93.19  |         | Q       |         | V       |
   2+35      12.2328     75.88  |         Q         |         |   V     |
   2+40      12.6598     62.00  |       Q |         |         |    V    |
   2+45      13.0056     50.22  |     Q   |         |         |     V   |
   2+50      13.2898     41.26  |    Q    |         |         |      V  |
   2+55      13.5280     34.58  |   Q     |         |         |      V  |
   3+ 0      13.7433     31.26  |   Q     |         |         |       V |
   3+ 5      13.9352     27.86  |  Q      |         |         |       V |
   3+10      14.0953     23.25  |  Q      |         |         |        V|
   3+15      14.1923     14.08  |Q        |         |         |        V|
   3+20      14.2502      8.41  |Q        |         |         |        V|
   3+25      14.2877      5.44  Q         |         |         |        V|
   3+30      14.3108      3.37  Q         |         |         |        V|
   3+35      14.3259      2.18  Q         |         |         |        V|
   3+40      14.3353      1.37  Q         |         |         |        V|
   3+45      14.3411      0.85  Q         |         |         |        V|
   3+50      14.3448      0.53  Q         |         |         |        V|
   3+55      14.3474      0.38  Q         |         |         |        V|
   4+ 0      14.3492      0.27  Q         |         |         |        V|
   4+ 5      14.3506      0.19  Q         |         |         |        V|
   4+10      14.3513      0.11  Q         |         |         |        V|
   4+15      14.3517      0.05  Q         |         |         |        V|
   4+20      14.3518      0.02  Q         |         |         |         V
-------------------------------------------------------------------------
```

- 25 Year 6 Hour Post-Development Unit Hydrograph – Area 'C'

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       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/13/16   File Name PRC02506.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

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RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'C' - 25 YEAR 6 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 25

       Antecedent Moisture Condition = 2

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 74.6       0.5          0.00     B     0.300     0.748    0.224
 74.6     120.5          1.00     C     0.250     0.748    0.187

Area-averaged adjusted loss rate Fm (In/Hr) =  0.187

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC2)          Yield Fr
     0.39   0.003         74.6      74.6       3.40     0.448
     0.13   0.001         98.0      98.0       0.20     0.947

    90.13   0.745         74.6      74.6       3.40     0.448
    30.37   0.251         98.0      98.0       0.20     0.947

Area-averaged catchment yield fraction, Y =  0.574
Area-averaged low loss fraction, Yb =  0.426
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.244 (hours)
Watershed area =     121.02(Ac.)
Catchment Lag time =   0.195 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 42.7204
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.187(In/Hr)
Average low loss rate fraction (Yb) = 0.426 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.400(In)
Computed peak 30-minute rainfall =  0.870(In)
Specified peak 1-hour rainfall =  1.150(In)
Computed peak 3-hour rainfall =  1.940(In)
Specified peak 6-hour rainfall =  2.710(In)
Specified peak 24-hour rainfall =  4.490(In)
```

```
Rainfall depth area reduction factors:
Using a total area of     121.02(Ac.) (Ref: fig. E-4)

5-minute factor = 0.994     Adjusted rainfall =  0.398(In)
30-minute factor = 0.994    Adjusted rainfall =  0.865(In)
1-hour factor = 0.994       Adjusted rainfall =  1.143(In)
3-hour factor = 0.999       Adjusted rainfall =  1.939(In)
6-hour factor = 1.000       Adjusted rainfall =  2.709(In)
24-hour factor = 1.000 Adjusted rainfall =  4.489(In)
```

U n i t H y d r o g r a p h

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
(K = 1463.59 (CFS))		
1	3.432	50.230
2	16.924	197.474
3	51.855	511.245
4	71.393	285.944
5	80.876	138.790
6	87.148	91.799
7	91.549	64.420
8	94.653	45.425
9	96.706	30.047
10	97.925	17.842
11	98.473	8.027
12	98.905	6.321
13	99.205	4.381
14	99.514	4.524
15	99.778	3.861
16	99.922	2.118
17	100.000	1.136

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.3977	0.3977
2	0.5372	0.1395
3	0.6405	0.1033
4	0.7256	0.0851
5	0.7993	0.0737
6	0.8651	0.0658
7	0.9204	0.0554
8	0.9713	0.0508
9	1.0184	0.0472
10	1.0626	0.0441
11	1.1041	0.0416
12	1.1435	0.0394
13	1.1883	0.0448
14	1.2314	0.0431
15	1.2729	0.0415
16	1.3130	0.0401
17	1.3518	0.0388
18	1.3894	0.0376
19	1.4260	0.0366
20	1.4616	0.0356
21	1.4963	0.0347
22	1.5301	0.0338
23	1.5631	0.0330
24	1.5954	0.0323
25	1.6270	0.0316
26	1.6580	0.0310
27	1.6883	0.0303
28	1.7181	0.0298
29	1.7473	0.0292
30	1.7760	0.0287
31	1.8042	0.0282
32	1.8319	0.0277
33	1.8592	0.0273

34	1.8861	0.0269
35	1.9125	0.0265
36	1.9386	0.0261
37	1.9644	0.0258
38	1.9899	0.0255
39	2.0150	0.0251
40	2.0398	0.0248
41	2.0642	0.0245
42	2.0884	0.0242
43	2.1122	0.0239
44	2.1358	0.0236
45	2.1591	0.0233
46	2.1821	0.0230
47	2.2049	0.0228
48	2.2274	0.0225
49	2.2497	0.0223
50	2.2717	0.0220
51	2.2936	0.0218
52	2.3152	0.0216
53	2.3365	0.0214
54	2.3577	0.0212
55	2.3787	0.0210
56	2.3995	0.0208
57	2.4201	0.0206
58	2.4405	0.0204
59	2.4607	0.0202
60	2.4807	0.0200
61	2.5006	0.0199
62	2.5203	0.0197
63	2.5399	0.0195
64	2.5592	0.0194
65	2.5785	0.0192
66	2.5975	0.0191
67	2.6165	0.0189
68	2.6353	0.0188
69	2.6539	0.0186
70	2.6724	0.0185
71	2.6907	0.0184
72	2.7090	0.0182

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0182	0.0078	0.0105
2	0.0184	0.0078	0.0105
3	0.0186	0.0079	0.0107
4	0.0188	0.0080	0.0108
5	0.0191	0.0081	0.0109
6	0.0192	0.0082	0.0110
7	0.0195	0.0083	0.0112
8	0.0197	0.0084	0.0113
9	0.0200	0.0085	0.0115
10	0.0202	0.0086	0.0116
11	0.0206	0.0088	0.0118
12	0.0208	0.0089	0.0119
13	0.0212	0.0090	0.0122
14	0.0214	0.0091	0.0123
15	0.0218	0.0093	0.0125
16	0.0220	0.0094	0.0127
17	0.0225	0.0096	0.0129
18	0.0228	0.0097	0.0131
19	0.0233	0.0099	0.0134
20	0.0236	0.0100	0.0135
21	0.0242	0.0103	0.0139
22	0.0245	0.0104	0.0140
23	0.0251	0.0107	0.0144
24	0.0255	0.0108	0.0146
25	0.0261	0.0111	0.0150
26	0.0265	0.0113	0.0152
27	0.0273	0.0116	0.0157

```
       28              0.0277          0.0118              0.0159
       29              0.0287          0.0122              0.0165
       30              0.0292          0.0125              0.0168
       31              0.0303          0.0129              0.0174
       32              0.0310          0.0132              0.0178
       33              0.0323          0.0138              0.0185
       34              0.0330          0.0141              0.0190
       35              0.0347          0.0148              0.0199
       36              0.0356          0.0152              0.0204
       37              0.0376          0.0156              0.0220
       38              0.0388          0.0156              0.0232
       39              0.0415          0.0156              0.0259
       40              0.0431          0.0156              0.0275
       41              0.0394          0.0156              0.0238
       42              0.0416          0.0156              0.0260
       43              0.0472          0.0156              0.0316
       44              0.0508          0.0156              0.0352
       45              0.0658          0.0156              0.0502
       46              0.0737          0.0156              0.0581
       47              0.1033          0.0156              0.0877
       48              0.1395          0.0156              0.1239
       49              0.3977          0.0156              0.3821
       50              0.0851          0.0156              0.0695
       51              0.0554          0.0156              0.0398
       52              0.0441          0.0156              0.0285
       53              0.0448          0.0156              0.0292
       54              0.0401          0.0156              0.0245
       55              0.0366          0.0156              0.0210
       56              0.0338          0.0144              0.0194
       57              0.0316          0.0135              0.0181
       58              0.0298          0.0127              0.0171
       59              0.0282          0.0120              0.0162
       60              0.0269          0.0114              0.0154
       61              0.0258          0.0110              0.0148
       62              0.0248          0.0106              0.0142
       63              0.0239          0.0102              0.0137
       64              0.0230          0.0098              0.0132
       65              0.0223          0.0095              0.0128
       66              0.0216          0.0092              0.0124
       67              0.0210          0.0089              0.0120
       68              0.0204          0.0087              0.0117
       69              0.0199          0.0085              0.0114
       70              0.0194          0.0083              0.0111
       71              0.0189          0.0081              0.0109
       72              0.0185          0.0079              0.0106
      ------------------------------------------------------------------------
      ------------------------------------------------------------------------
      Total soil rain loss =      0.84(In)
      Total effective rainfall =      1.87(In)
      Peak flow rate in flood hydrograph =    270.99(CFS)
      ------------------------------------------------------------------------
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          6 - H O U R    S T O R M
                     R u n o f f      H y d r o g r a p h
      ------------------------------------------------------------------------
                  Hydrograph in   5   Minute intervals ((CFS))

      ------------------------------------------------------------------------
 Time(h+m) Volume Ac.Ft   Q(CFS)  0       75.0     150.0     225.0     300.0
 ------------------------------------------------------------------------
   0+ 5       0.0036      0.53  Q         |         |         |         |
   0+10       0.0215      2.59  Q         |         |         |         |
   0+15       0.0763      7.97  VQ        |         |         |         |
   0+20       0.1523     11.03  VQ        |         |         |         |
   0+25       0.2392     12.61  VQ        |         |         |         |
   0+30       0.3335     13.70  VQ        |         |         |         |
   0+35       0.4337     14.54  VQ        |         |         |         |
   0+40       0.5383     15.18  |VQ       |         |         |         |
   0+45       0.6463     15.69  |VQ       |         |         |         |
   0+50       0.7569     16.06  |VQ       |         |         |         |
   0+55       0.8696     16.36  |VQ       |         |         |         |
```

```
1+ 0       0.9841     16.63  | Q       |         |         |         |
1+ 5       1.1005     16.90  | Q       |         |         |         |
1+10       1.2187     17.17  | Q       |         |         |         |
1+15       1.3389     17.46  | Q       |         |         |         |
1+20       1.4610     17.72  | QV      |         |         |         |
1+25       1.5850     18.01  | QV      |         |         |         |
1+30       1.7108     18.27  | QV      |         |         |         |
1+35       1.8387     18.57  | QV      |         |         |         |
1+40       1.9686     18.86  | Q V     |         |         |         |
1+45       2.1007     19.18  | Q V     |         |         |         |
1+50       2.2350     19.50  | Q V     |         |         |         |
1+55       2.3718     19.86  | Q  V    |         |         |         |
2+ 0       2.5110     20.22  | Q  V    |         |         |         |
2+ 5       2.6530     20.62  | Q  V    |         |         |         |
2+10       2.7976     21.00  | Q  V    |         |         |         |
2+15       2.9451     21.42  | Q   V   |         |         |         |
2+20       3.0956     21.84  | Q   V   |         |         |         |
2+25       3.2495     22.35  | Q   V   |         |         |         |
2+30       3.4068     22.85  |  Q   V  |         |         |         |
2+35       3.5682     23.44  |  Q   V  |         |         |         |
2+40       3.7337     24.02  |  Q   V  |         |         |         |
2+45       3.9038     24.71  |  Q    V |         |         |         |
2+50       4.0787     25.40  |  Q    V |         |         |         |
2+55       4.2593     26.21  |  Q     V|         |         |         |
3+ 0       4.4455     27.04  |  Q     V|         |         |         |
3+ 5       4.6387     28.05  |  Q     V|         |         |         |
3+10       4.8396     29.18  |  Q      V         |         |         |
3+15       5.0517     30.79  |   Q     V         |         |         |
3+20       5.2770     32.72  |   Q     |V        |         |         |
3+25       5.5178     34.95  |   Q     |V        |         |         |
3+30       5.7680     36.33  |   Q     | V       |         |         |
3+35       6.0177     36.26  |   Q     | V       |         |         |
3+40       6.2813     38.27  |    Q    |  V      |         |         |
3+45       6.5786     43.17  |    Q    |  V      |         |         |
3+50       6.9248     50.27  |     Q   |   V     |         |         |
3+55       7.3583     62.95  |       Q |    V    |         |         |
4+ 0       7.9097     80.06  |         Q     V   |         |         |
4+ 5       8.7389    120.40  |               Q V |         |         |
4+10      10.0176    185.66  |                   |V  Q     |         |
4+15      11.8839    270.99  |                   |    V    |     Q   |
4+20      13.1769    187.73  |                   |    Q  V |         |
4+25      14.0237    122.97  |                   |     Q   |       V |
4+30      14.6655     93.19  |                   | Q       |         |V
4+35      15.1881     75.88  |                   Q         |         | V
4+40      15.6151     62.00  |                 Q |         |         |  V
4+45      15.9609     50.22  |               Q   |         |         |  V
4+50      16.2451     41.26  |             Q     |         |         |   V
4+55      16.4833     34.58  |           Q       |         |         |    V
5+ 0       16.6986    31.26  |           Q       |         |         |    V
5+ 5       16.8956    28.61  |         Q         |         |         |    V
5+10       17.0808    26.89  |         Q         |         |         |     V
5+15       17.2540    25.15  |         Q         |         |         |     V
5+20       17.4143    23.28  |         Q         |         |         |      V
5+25       17.5646    21.81  |       Q           |         |         |      V
5+30       17.7059    20.52  |       Q           |         |         |      V
5+35       17.8416    19.71  |       Q           |         |         |      V
5+40       17.9725    19.01  |       Q           |         |         |       V
5+45       18.0991    18.39  |       Q           |         |         |       V
5+50       18.2219    17.83  |       Q           |         |         |       V
5+55       18.3412    17.32  |       Q           |         |         |        V|
6+ 0       18.4572    16.85  |       Q           |         |         |        V|
6+ 5       18.5667    15.90  |       Q           |         |         |        V|
6+10       18.6594    13.46  |Q                  |         |         |        V|
6+15       18.7133     7.83  |Q                  |         |         |        V|
6+20       18.7455     4.67  Q                   |         |         |        V|
6+25       18.7670     3.12  Q                   |         |         |        V|
6+30       18.7814     2.09  Q                   |         |         |        V|
6+35       18.7909     1.37  Q                   |         |         |        V|
6+40       18.7969     0.87  Q                   |         |         |        V|
6+45       18.8006     0.54  Q                   |         |         |        V|
6+50       18.8029     0.34  Q                   |         |         |        V|
```

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    6+55      18.8046      0.25  Q         |         |         |        V|
    7+ 0      18.8058      0.18  Q         |         |         |        V|
    7+ 5      18.8067      0.13  Q         |         |         |        V|
    7+10      18.8072      0.08  Q         |         |         |        V|
    7+15      18.8075      0.03  Q         |         |         |        V|
    7+20      18.8076      0.01  Q         |         |         |        V|
--------------------------------------------------------------------------
```

- 25 Year 12 Hour Post-Development Unit Hydrograph – Area 'C'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/13/16   File Name PRC02512.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'C' - 25 YEAR 12 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 25

       Antecedent Moisture Condition = 2

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 74.6       0.5          0.00     B     0.300     0.748    0.224
 74.6     120.5          1.00     C     0.250     0.748    0.187

Area-averaged adjusted loss rate Fm (In/Hr) =  0.187

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC2)          Yield Fr
     0.39   0.003         74.6      74.6       3.40     0.448
     0.13   0.001         98.0      98.0       0.20     0.947

    90.13   0.745         74.6      74.6       3.40     0.448
    30.37   0.251         98.0      98.0       0.20     0.947

Area-averaged catchment yield fraction, Y =  0.574
Area-averaged low loss fraction, Yb =  0.426
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.244 (hours)
Watershed area =     121.02(Ac.)
Catchment Lag time =   0.195 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 42.7204
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.187(In/Hr)
Average low loss rate fraction (Yb) = 0.426 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.400(In)
Computed peak 30-minute rainfall =  0.870(In)
Specified peak 1-hour rainfall =  1.150(In)
Computed peak 3-hour rainfall =  1.940(In)
Specified peak 6-hour rainfall =  2.710(In)
Specified peak 24-hour rainfall =  4.490(In)
```

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Rainfall depth area reduction factors:
Using a total area of     121.02(Ac.) (Ref: fig. E-4)

5-minute factor = 0.994     Adjusted rainfall =  0.398(In)
30-minute factor = 0.994    Adjusted rainfall =  0.865(In)
1-hour factor = 0.994       Adjusted rainfall =  1.143(In)
3-hour factor = 0.999       Adjusted rainfall =  1.939(In)
6-hour factor = 1.000       Adjusted rainfall =  2.709(In)
24-hour factor = 1.000 Adjusted rainfall =  4.489(In)
```

U n i t H y d r o g r a p h

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
(K = 1463.59 (CFS))		
1	3.432	50.230
2	16.924	197.474
3	51.855	511.245
4	71.393	285.944
5	80.876	138.790
6	87.148	91.799
7	91.549	64.420
8	94.653	45.425
9	96.706	30.047
10	97.925	17.842
11	98.473	8.027
12	98.905	6.321
13	99.205	4.381
14	99.514	4.524
15	99.778	3.861
16	99.922	2.118
17	100.000	1.136

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.3977	0.3977
2	0.5372	0.1395
3	0.6405	0.1033
4	0.7256	0.0851
5	0.7993	0.0737
6	0.8651	0.0658
7	0.9204	0.0554
8	0.9713	0.0508
9	1.0184	0.0472
10	1.0626	0.0441
11	1.1041	0.0416
12	1.1435	0.0394
13	1.1883	0.0448
14	1.2314	0.0431
15	1.2729	0.0415
16	1.3130	0.0401
17	1.3518	0.0388
18	1.3894	0.0376
19	1.4260	0.0366
20	1.4616	0.0356
21	1.4963	0.0347
22	1.5301	0.0338
23	1.5631	0.0330
24	1.5954	0.0323
25	1.6270	0.0316
26	1.6580	0.0310
27	1.6883	0.0303
28	1.7181	0.0298
29	1.7473	0.0292
30	1.7760	0.0287
31	1.8042	0.0282
32	1.8319	0.0277
33	1.8592	0.0273

34	1.8861	0.0269
35	1.9125	0.0265
36	1.9386	0.0261
37	1.9644	0.0258
38	1.9899	0.0255
39	2.0150	0.0251
40	2.0398	0.0248
41	2.0642	0.0245
42	2.0884	0.0242
43	2.1122	0.0239
44	2.1358	0.0236
45	2.1591	0.0233
46	2.1821	0.0230
47	2.2049	0.0228
48	2.2274	0.0225
49	2.2497	0.0223
50	2.2717	0.0220
51	2.2936	0.0218
52	2.3152	0.0216
53	2.3365	0.0214
54	2.3577	0.0212
55	2.3787	0.0210
56	2.3995	0.0208
57	2.4201	0.0206
58	2.4405	0.0204
59	2.4607	0.0202
60	2.4807	0.0200
61	2.5006	0.0199
62	2.5203	0.0197
63	2.5399	0.0195
64	2.5592	0.0194
65	2.5785	0.0192
66	2.5975	0.0191
67	2.6165	0.0189
68	2.6353	0.0188
69	2.6539	0.0186
70	2.6724	0.0185
71	2.6907	0.0184
72	2.7090	0.0182
73	2.7226	0.0136
74	2.7362	0.0135
75	2.7496	0.0134
76	2.7629	0.0133
77	2.7761	0.0132
78	2.7891	0.0131
79	2.8021	0.0130
80	2.8150	0.0129
81	2.8278	0.0128
82	2.8404	0.0127
83	2.8530	0.0126
84	2.8655	0.0125
85	2.8779	0.0124
86	2.8902	0.0123
87	2.9024	0.0122
88	2.9145	0.0121
89	2.9265	0.0120
90	2.9384	0.0119
91	2.9503	0.0119
92	2.9621	0.0118
93	2.9738	0.0117
94	2.9854	0.0116
95	2.9969	0.0115
96	3.0084	0.0115
97	3.0197	0.0114
98	3.0310	0.0113
99	3.0423	0.0112
100	3.0534	0.0112
101	3.0645	0.0111
102	3.0756	0.0110
103	3.0865	0.0110
104	3.0974	0.0109

105	3.1082	0.0108
106	3.1190	0.0108
107	3.1297	0.0107
108	3.1403	0.0106
109	3.1508	0.0106
110	3.1613	0.0105
111	3.1718	0.0104
112	3.1822	0.0104
113	3.1925	0.0103
114	3.2028	0.0103
115	3.2130	0.0102
116	3.2231	0.0102
117	3.2332	0.0101
118	3.2433	0.0100
119	3.2532	0.0100
120	3.2632	0.0099
121	3.2731	0.0099
122	3.2829	0.0098
123	3.2927	0.0098
124	3.3024	0.0097
125	3.3121	0.0097
126	3.3217	0.0096
127	3.3313	0.0096
128	3.3408	0.0095
129	3.3503	0.0095
130	3.3598	0.0094
131	3.3691	0.0094
132	3.3785	0.0093
133	3.3878	0.0093
134	3.3971	0.0093
135	3.4063	0.0092
136	3.4154	0.0092
137	3.4246	0.0091
138	3.4337	0.0091
139	3.4427	0.0090
140	3.4517	0.0090
141	3.4607	0.0090
142	3.4696	0.0089
143	3.4785	0.0089
144	3.4873	0.0088

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0088	0.0038	0.0051
2	0.0089	0.0038	0.0051
3	0.0090	0.0038	0.0051
4	0.0090	0.0038	0.0052
5	0.0091	0.0039	0.0052
6	0.0091	0.0039	0.0052
7	0.0092	0.0039	0.0053
8	0.0093	0.0039	0.0053
9	0.0093	0.0040	0.0054
10	0.0094	0.0040	0.0054
11	0.0095	0.0040	0.0054
12	0.0095	0.0041	0.0055
13	0.0096	0.0041	0.0055
14	0.0097	0.0041	0.0056
15	0.0098	0.0042	0.0056
16	0.0098	0.0042	0.0056
17	0.0099	0.0042	0.0057
18	0.0100	0.0043	0.0057
19	0.0101	0.0043	0.0058
20	0.0102	0.0043	0.0058
21	0.0103	0.0044	0.0059
22	0.0103	0.0044	0.0059
23	0.0104	0.0045	0.0060
24	0.0105	0.0045	0.0060
25	0.0106	0.0045	0.0061
26	0.0107	0.0046	0.0061

27	0.0108	0.0046	0.0062
28	0.0109	0.0046	0.0062
29	0.0110	0.0047	0.0063
30	0.0111	0.0047	0.0064
31	0.0112	0.0048	0.0064
32	0.0113	0.0048	0.0065
33	0.0115	0.0049	0.0066
34	0.0115	0.0049	0.0066
35	0.0117	0.0050	0.0067
36	0.0118	0.0050	0.0068
37	0.0119	0.0051	0.0069
38	0.0120	0.0051	0.0069
39	0.0122	0.0052	0.0070
40	0.0123	0.0052	0.0071
41	0.0125	0.0053	0.0072
42	0.0126	0.0054	0.0072
43	0.0128	0.0054	0.0073
44	0.0129	0.0055	0.0074
45	0.0131	0.0056	0.0075
46	0.0132	0.0056	0.0076
47	0.0134	0.0057	0.0077
48	0.0135	0.0058	0.0078
49	0.0182	0.0078	0.0105
50	0.0184	0.0078	0.0105
51	0.0186	0.0079	0.0107
52	0.0188	0.0080	0.0108
53	0.0191	0.0081	0.0109
54	0.0192	0.0082	0.0110
55	0.0195	0.0083	0.0112
56	0.0197	0.0084	0.0113
57	0.0200	0.0085	0.0115
58	0.0202	0.0086	0.0116
59	0.0206	0.0088	0.0118
60	0.0208	0.0089	0.0119
61	0.0212	0.0090	0.0122
62	0.0214	0.0091	0.0123
63	0.0218	0.0093	0.0125
64	0.0220	0.0094	0.0127
65	0.0225	0.0096	0.0129
66	0.0228	0.0097	0.0131
67	0.0233	0.0099	0.0134
68	0.0236	0.0100	0.0135
69	0.0242	0.0103	0.0139
70	0.0245	0.0104	0.0140
71	0.0251	0.0107	0.0144
72	0.0255	0.0108	0.0146
73	0.0261	0.0111	0.0150
74	0.0265	0.0113	0.0152
75	0.0273	0.0116	0.0157
76	0.0277	0.0118	0.0159
77	0.0287	0.0122	0.0165
78	0.0292	0.0125	0.0168
79	0.0303	0.0129	0.0174
80	0.0310	0.0132	0.0178
81	0.0323	0.0138	0.0185
82	0.0330	0.0141	0.0190
83	0.0347	0.0148	0.0199
84	0.0356	0.0152	0.0204
85	0.0376	0.0156	0.0220
86	0.0388	0.0156	0.0232
87	0.0415	0.0156	0.0259
88	0.0431	0.0156	0.0275
89	0.0394	0.0156	0.0238
90	0.0416	0.0156	0.0260
91	0.0472	0.0156	0.0316
92	0.0508	0.0156	0.0352
93	0.0658	0.0156	0.0502
94	0.0737	0.0156	0.0581
95	0.1033	0.0156	0.0877
96	0.1395	0.0156	0.1239
97	0.3977	0.0156	0.3821

```
        98              0.0851          0.0156              0.0695
        99              0.0554          0.0156              0.0398
       100              0.0441          0.0156              0.0285
       101              0.0448          0.0156              0.0292
       102              0.0401          0.0156              0.0245
       103              0.0366          0.0156              0.0210
       104              0.0338          0.0144              0.0194
       105              0.0316          0.0135              0.0181
       106              0.0298          0.0127              0.0171
       107              0.0282          0.0120              0.0162
       108              0.0269          0.0114              0.0154
       109              0.0258          0.0110              0.0148
       110              0.0248          0.0106              0.0142
       111              0.0239          0.0102              0.0137
       112              0.0230          0.0098              0.0132
       113              0.0223          0.0095              0.0128
       114              0.0216          0.0092              0.0124
       115              0.0210          0.0089              0.0120
       116              0.0204          0.0087              0.0117
       117              0.0199          0.0085              0.0114
       118              0.0194          0.0083              0.0111
       119              0.0189          0.0081              0.0109
       120              0.0185          0.0079              0.0106
       121              0.0136          0.0058              0.0078
       122              0.0133          0.0057              0.0076
       123              0.0130          0.0055              0.0074
       124              0.0127          0.0054              0.0073
       125              0.0124          0.0053              0.0071
       126              0.0121          0.0052              0.0069
       127              0.0119          0.0051              0.0068
       128              0.0116          0.0049              0.0067
       129              0.0114          0.0049              0.0065
       130              0.0112          0.0048              0.0064
       131              0.0110          0.0047              0.0063
       132              0.0108          0.0046              0.0062
       133              0.0106          0.0045              0.0061
       134              0.0104          0.0044              0.0060
       135              0.0102          0.0044              0.0059
       136              0.0100          0.0043              0.0058
       137              0.0099          0.0042              0.0057
       138              0.0097          0.0041              0.0056
       139              0.0096          0.0041              0.0055
       140              0.0094          0.0040              0.0054
       141              0.0093          0.0040              0.0053
       142              0.0092          0.0039              0.0053
       143              0.0090          0.0039              0.0052
       144              0.0089          0.0038              0.0051
      ---------------------------------------------------------------------
      ---------------------------------------------------------------------
      Total soil rain loss =      1.17(In)
      Total effective rainfall =      2.31(In)
      Peak flow rate in flood hydrograph =    270.99(CFS)
      ---------------------------------------------------------------------
      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          12 - H O U R    S T O R M
                     R u n o f f      H y d r o g r a p h
      ---------------------------------------------------------------------
                  Hydrograph in   5   Minute intervals ((CFS))

      ---------------------------------------------------------------------
 Time(h+m) Volume Ac.Ft   Q(CFS)  0       75.0     150.0     225.0     300.0
 ---------------------------------------------------------------------------
   0+ 5       0.0018      0.25  Q         |         |         |         |
   0+10       0.0104      1.26  Q         |         |         |         |
   0+15       0.0370      3.86  Q         |         |         |         |
   0+20       0.0737      5.33  Q         |         |         |         |
   0+25       0.1156      6.07  Q         |         |         |         |
   0+30       0.1609      6.58  Q         |         |         |         |
   0+35       0.2087      6.95  Q         |         |         |         |
   0+40       0.2585      7.23  Q         |         |         |         |
   0+45       0.3097      7.43  Q         |         |         |         |
```

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0+50       0.3619      7.57  VQ        |         |         |         |
0+55       0.4147      7.67  VQ        |         |         |         |
1+ 0       0.4681      7.76  VQ        |         |         |         |
1+ 5       0.5221      7.84  VQ        |         |         |         |
1+10       0.5766      7.92  VQ        |         |         |         |
1+15       0.6317      8.00  |Q        |         |         |         |
1+20       0.6873      8.07  |Q        |         |         |         |
1+25       0.7433      8.14  |Q        |         |         |         |
1+30       0.7998      8.20  |Q        |         |         |         |
1+35       0.8567      8.26  |Q        |         |         |         |
1+40       0.9140      8.33  |Q        |         |         |         |
1+45       0.9718      8.40  |Q        |         |         |         |
1+50       1.0301      8.46  |Q        |         |         |         |
1+55       1.0889      8.53  |Q        |         |         |         |
2+ 0       1.1481      8.60  |Q        |         |         |         |
2+ 5       1.2079      8.68  |QV       |         |         |         |
2+10       1.2682      8.75  |QV       |         |         |         |
2+15       1.3290      8.83  |QV       |         |         |         |
2+20       1.3903      8.90  |QV       |         |         |         |
2+25       1.4522      8.99  |QV       |         |         |         |
2+30       1.5147      9.07  |QV       |         |         |         |
2+35       1.5777      9.15  |QV       |         |         |         |
2+40       1.6413      9.23  |QV       |         |         |         |
2+45       1.7055      9.33  |QV       |         |         |         |
2+50       1.7703      9.41  |Q V      |         |         |         |
2+55       1.8358      9.51  |Q V      |         |         |         |
3+ 0       1.9019      9.60  |Q V      |         |         |         |
3+ 5       1.9687      9.70  |Q V      |         |         |         |
3+10       2.0362      9.79  |Q V      |         |         |         |
3+15       2.1044      9.90  |Q V      |         |         |         |
3+20       2.1732     10.00  |Q V      |         |         |         |
3+25       2.2429     10.11  |Q V      |         |         |         |
3+30       2.3133     10.22  |Q V      |         |         |         |
3+35       2.3845     10.34  |Q  V     |         |         |         |
3+40       2.4564     10.45  |Q  V     |         |         |         |
3+45       2.5293     10.58  |Q  V     |         |         |         |
3+50       2.6030     10.70  |Q  V     |         |         |         |
3+55       2.6775     10.83  |Q  V     |         |         |         |
4+ 0       2.7530     10.96  |Q  V     |         |         |         |
4+ 5       2.8303     11.23  |Q  V     |         |         |         |
4+10       2.9121     11.87  |Q  V     |         |         |         |
4+15       3.0039     13.33  |Q   V    |         |         |         |
4+20       3.1017     14.21  |Q   V    |         |         |         |
4+25       3.2032     14.74  |Q   V    |         |         |         |
4+30       3.3075     15.14  | Q  V    |         |         |         |
4+35       3.4141     15.49  | Q  V    |         |         |         |
4+40       3.5228     15.78  | Q   V   |         |         |         |
4+45       3.6333     16.05  | Q   V   |         |         |         |
4+50       3.7455     16.29  | Q   V   |         |         |         |
4+55       3.8593     16.53  | Q   V   |         |         |         |
5+ 0       3.9747     16.75  | Q   V   |         |         |         |
5+ 5       4.0917     16.99  | Q    V  |         |         |         |
5+10       4.2103     17.22  | Q    V  |         |         |         |
5+15       4.3307     17.48  | Q    V  |         |         |         |
5+20       4.4528     17.73  | Q    V  |         |         |         |
5+25       4.5769     18.01  | Q    V  |         |         |         |
5+30       4.7027     18.27  | Q     V |         |         |         |
5+35       4.8306     18.57  | Q     V |         |         |         |
5+40       4.9604     18.86  | Q     V |         |         |         |
5+45       5.0925     19.18  | Q     V |         |         |         |
5+50       5.2268     19.50  | Q     V |         |         |         |
5+55       5.3636     19.86  | Q      V|         |         |         |
6+ 0       5.5029     20.22  | Q      V|         |         |         |
6+ 5       5.6449     20.62  | Q      V|         |         |         |
6+10       5.7895     21.00  | Q      V|         |         |         |
6+15       5.9370     21.42  | Q       V         |         |         |
6+20       6.0874     21.84  | Q       V         |         |         |
6+25       6.2413     22.35  | Q       V         |         |         |
6+30       6.3987     22.85  |  Q      V         |         |         |
6+35       6.5601     23.44  |  Q      |V        |         |         |
6+40       6.7255     24.02  |  Q      |V        |         |         |
```

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 6+45      6.8957     24.71  |  Q      |V        |         |         |
 6+50      7.0706     25.40  |  Q      | V       |         |         |
 6+55      7.2511     26.21  |  Q      | V       |         |         |
 7+ 0      7.4373     27.04  |  Q      | V       |         |         |
 7+ 5      7.6305     28.05  |  Q      |  V      |         |         |
 7+10      7.8314     29.18  |  Q      |  V      |         |         |
 7+15      8.0435     30.79  |   Q     |  V      |         |         |
 7+20      8.2689     32.72  |   Q     |   V     |         |         |
 7+25      8.5096     34.95  |   Q     |   V     |         |         |
 7+30      8.7598     36.33  |   Q     |    V    |         |         |
 7+35      9.0095     36.26  |   Q     |    V    |         |         |
 7+40      9.2731     38.27  |    Q    |    V    |         |         |
 7+45      9.5704     43.17  |    Q    |     V   |         |         |
 7+50      9.9167     50.27  |     Q   |      V  |         |         |
 7+55     10.3502     62.95  |       Q |      V  |         |         |
 8+ 0     10.9016     80.06  |         Q       V |         |         |
 8+ 5     11.7308    120.40  |          |     Q   V        |         |
 8+10     13.0094    185.66  |          |         | V Q    |         |
 8+15     14.8758    270.99  |          |         |   V    |     Q   |
 8+20     16.1687    187.73  |          |         |   Q V  |         |
 8+25     17.0156    122.97  |          |     Q   |        V|         |
 8+30     17.6574     93.19  |          | Q       |         V         |
 8+35     18.1799     75.88  |          Q         |         |V        |
 8+40     18.6069     62.00  |        Q |         |         |V        |
 8+45     18.9528     50.22  |     Q    |         |         | V       |
 8+50     19.2370     41.26  |    Q     |         |         |  V      |
 8+55     19.4751     34.58  |   Q      |         |         |  V      |
 9+ 0     19.6904     31.26  |   Q      |         |         |  V      |
 9+ 5     19.8875     28.61  |  Q       |         |         |   V     |
 9+10     20.0726     26.89  |  Q       |         |         |   V     |
 9+15     20.2458     25.15  |  Q       |         |         |   V     |
 9+20     20.4062     23.28  |  Q       |         |         |    V    |
 9+25     20.5564     21.81  | Q        |         |         |    V    |
 9+30     20.6977     20.52  | Q        |         |         |    V    |
 9+35     20.8334     19.71  | Q        |         |         |    V    |
 9+40     20.9643     19.01  | Q        |         |         |    V    |
 9+45     21.0910     18.39  | Q        |         |         |     V   |
 9+50     21.2138     17.83  | Q        |         |         |     V   |
 9+55     21.3330     17.32  | Q        |         |         |     V   |
10+ 0     21.4491     16.85  | Q        |         |         |     V   |
10+ 5     21.5613     16.29  | Q        |         |         |     V   |
10+10     21.6672     15.39  | Q        |         |         |      V  |
10+15     21.7617     13.72  |Q         |         |         |      V  |
10+20     21.8488     12.65  |Q         |         |         |      V  |
10+25     21.9314     11.99  |Q         |         |         |      V  |
10+30     22.0104     11.47  |Q         |         |         |      V  |
10+35     22.0864     11.04  |Q         |         |         |      V  |
10+40     22.1599     10.67  |Q         |         |         |       V |
10+45     22.2313     10.36  |Q         |         |         |       V |
10+50     22.3008     10.09  |Q         |         |         |       V |
10+55     22.3688      9.86  |Q         |         |         |       V |
11+ 0     22.4352      9.65  |Q         |         |         |       V |
11+ 5     22.5003      9.45  |Q         |         |         |       V |
11+10     22.5641      9.26  |Q         |         |         |       V |
11+15     22.6266      9.08  |Q         |         |         |       V |
11+20     22.6880      8.91  |Q         |         |         |       V |
11+25     22.7483      8.76  |Q         |         |         |        V|
11+30     22.8076      8.61  |Q         |         |         |        V|
11+35     22.8659      8.47  |Q         |         |         |        V|
11+40     22.9233      8.33  |Q         |         |         |        V|
11+45     22.9798      8.20  |Q         |         |         |        V|
11+50     23.0354      8.07  |Q         |         |         |        V|
11+55     23.0902      7.95  |Q         |         |         |        V|
12+ 0     23.1442      7.84  |Q         |         |         |        V|
12+ 5     23.1956      7.47  Q         |         |         |        V|
12+10     23.2395      6.37  Q         |         |         |        V|
12+15     23.2650      3.70  Q         |         |         |        V|
12+20     23.2802      2.20  Q         |         |         |        V|
12+25     23.2903      1.47  Q         |         |         |        V|
12+30     23.2971      0.99  Q         |         |         |        V|
12+35     23.3016      0.65  Q         |         |         |        V|
```

```
   12+40      23.3044      0.41  Q         |         |         |        V|
   12+45      23.3062      0.25  Q         |         |         |        V|
   12+50      23.3073      0.16  Q         |         |         |        V|
   12+55      23.3081      0.12  Q         |         |         |        V|
   13+ 0      23.3087      0.08  Q         |         |         |        V|
   13+ 5      23.3091      0.06  Q         |         |         |        V|
   13+10      23.3093      0.04  Q         |         |         |        V|
   13+15      23.3094      0.02  Q         |         |         |        V|
   13+20      23.3095      0.01  Q         |         |         |         V
-------------------------------------------------------------------------
```

- 25 Year 24 Hour Post-Development Unit Hydrograph – Area 'C'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/13/16   File Name PRC02524.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'C' - 25 YEAR 24 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 25

       Antecedent Moisture Condition = 2

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 74.6       0.5          0.00     B     0.300     0.748    0.224
 74.6     120.5          1.00     C     0.250     0.748    0.187

Area-averaged adjusted loss rate Fm (In/Hr) =  0.187

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC2)          Yield Fr
     0.39   0.003         74.6      74.6       3.40     0.448
     0.13   0.001         98.0      98.0       0.20     0.947

    90.13   0.745         74.6      74.6       3.40     0.448
    30.37   0.251         98.0      98.0       0.20     0.947

Area-averaged catchment yield fraction, Y =  0.574
Area-averaged low loss fraction, Yb =  0.426
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.244 (hours)
Watershed area =     121.02(Ac.)
Catchment Lag time =   0.195 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 42.7204
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.187(In/Hr)
Average low loss rate fraction (Yb) = 0.426 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.400(In)
Computed peak 30-minute rainfall =  0.870(In)
Specified peak 1-hour rainfall =  1.150(In)
Computed peak 3-hour rainfall =  1.940(In)
Specified peak 6-hour rainfall =  2.710(In)
Specified peak 24-hour rainfall =  4.490(In)
```

```
Rainfall depth area reduction factors:
Using a total area of     121.02(Ac.) (Ref: fig. E-4)

5-minute factor = 0.994     Adjusted rainfall =  0.398(In)
30-minute factor = 0.994    Adjusted rainfall =  0.865(In)
1-hour factor = 0.994       Adjusted rainfall =  1.143(In)
3-hour factor = 0.999       Adjusted rainfall =  1.939(In)
6-hour factor = 1.000       Adjusted rainfall =  2.709(In)
24-hour factor = 1.000 Adjusted rainfall =  4.489(In)
```

U n i t H y d r o g r a p h

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 1463.59 (CFS))	
1	3.432	50.230
2	16.924	197.474
3	51.855	511.245
4	71.393	285.944
5	80.876	138.790
6	87.148	91.799
7	91.549	64.420
8	94.653	45.425
9	96.706	30.047
10	97.925	17.842
11	98.473	8.027
12	98.905	6.321
13	99.205	4.381
14	99.514	4.524
15	99.778	3.861
16	99.922	2.118
17	100.000	1.136

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.3977	0.3977
2	0.5372	0.1395
3	0.6405	0.1033
4	0.7256	0.0851
5	0.7993	0.0737
6	0.8651	0.0658
7	0.9204	0.0554
8	0.9713	0.0508
9	1.0184	0.0472
10	1.0626	0.0441
11	1.1041	0.0416
12	1.1435	0.0394
13	1.1883	0.0448
14	1.2314	0.0431
15	1.2729	0.0415
16	1.3130	0.0401
17	1.3518	0.0388
18	1.3894	0.0376
19	1.4260	0.0366
20	1.4616	0.0356
21	1.4963	0.0347
22	1.5301	0.0338
23	1.5631	0.0330
24	1.5954	0.0323
25	1.6270	0.0316
26	1.6580	0.0310
27	1.6883	0.0303
28	1.7181	0.0298
29	1.7473	0.0292
30	1.7760	0.0287
31	1.8042	0.0282
32	1.8319	0.0277
33	1.8592	0.0273

34	1.8861	0.0269
35	1.9125	0.0265
36	1.9386	0.0261
37	1.9644	0.0258
38	1.9899	0.0255
39	2.0150	0.0251
40	2.0398	0.0248
41	2.0642	0.0245
42	2.0884	0.0242
43	2.1122	0.0239
44	2.1358	0.0236
45	2.1591	0.0233
46	2.1821	0.0230
47	2.2049	0.0228
48	2.2274	0.0225
49	2.2497	0.0223
50	2.2717	0.0220
51	2.2936	0.0218
52	2.3152	0.0216
53	2.3365	0.0214
54	2.3577	0.0212
55	2.3787	0.0210
56	2.3995	0.0208
57	2.4201	0.0206
58	2.4405	0.0204
59	2.4607	0.0202
60	2.4807	0.0200
61	2.5006	0.0199
62	2.5203	0.0197
63	2.5399	0.0195
64	2.5592	0.0194
65	2.5785	0.0192
66	2.5975	0.0191
67	2.6165	0.0189
68	2.6353	0.0188
69	2.6539	0.0186
70	2.6724	0.0185
71	2.6907	0.0184
72	2.7090	0.0182
73	2.7226	0.0136
74	2.7362	0.0135
75	2.7496	0.0134
76	2.7629	0.0133
77	2.7761	0.0132
78	2.7891	0.0131
79	2.8021	0.0130
80	2.8150	0.0129
81	2.8278	0.0128
82	2.8404	0.0127
83	2.8530	0.0126
84	2.8655	0.0125
85	2.8779	0.0124
86	2.8902	0.0123
87	2.9024	0.0122
88	2.9145	0.0121
89	2.9265	0.0120
90	2.9384	0.0119
91	2.9503	0.0119
92	2.9621	0.0118
93	2.9738	0.0117
94	2.9854	0.0116
95	2.9969	0.0115
96	3.0084	0.0115
97	3.0197	0.0114
98	3.0310	0.0113
99	3.0423	0.0112
100	3.0534	0.0112
101	3.0645	0.0111
102	3.0756	0.0110
103	3.0865	0.0110
104	3.0974	0.0109

105	3.1082	0.0108
106	3.1190	0.0108
107	3.1297	0.0107
108	3.1403	0.0106
109	3.1508	0.0106
110	3.1613	0.0105
111	3.1718	0.0104
112	3.1822	0.0104
113	3.1925	0.0103
114	3.2028	0.0103
115	3.2130	0.0102
116	3.2231	0.0102
117	3.2332	0.0101
118	3.2433	0.0100
119	3.2532	0.0100
120	3.2632	0.0099
121	3.2731	0.0099
122	3.2829	0.0098
123	3.2927	0.0098
124	3.3024	0.0097
125	3.3121	0.0097
126	3.3217	0.0096
127	3.3313	0.0096
128	3.3408	0.0095
129	3.3503	0.0095
130	3.3598	0.0094
131	3.3691	0.0094
132	3.3785	0.0093
133	3.3878	0.0093
134	3.3971	0.0093
135	3.4063	0.0092
136	3.4154	0.0092
137	3.4246	0.0091
138	3.4337	0.0091
139	3.4427	0.0090
140	3.4517	0.0090
141	3.4607	0.0090
142	3.4696	0.0089
143	3.4785	0.0089
144	3.4873	0.0088
145	3.4961	0.0088
146	3.5049	0.0088
147	3.5136	0.0087
148	3.5223	0.0087
149	3.5310	0.0087
150	3.5396	0.0086
151	3.5482	0.0086
152	3.5567	0.0085
153	3.5652	0.0085
154	3.5737	0.0085
155	3.5821	0.0084
156	3.5905	0.0084
157	3.5989	0.0084
158	3.6072	0.0083
159	3.6155	0.0083
160	3.6238	0.0083
161	3.6320	0.0082
162	3.6403	0.0082
163	3.6484	0.0082
164	3.6566	0.0081
165	3.6647	0.0081
166	3.6728	0.0081
167	3.6808	0.0080
168	3.6888	0.0080
169	3.6968	0.0080
170	3.7048	0.0080
171	3.7127	0.0079
172	3.7206	0.0079
173	3.7284	0.0079
174	3.7363	0.0078
175	3.7441	0.0078

176	3.7519	0.0078
177	3.7596	0.0078
178	3.7674	0.0077
179	3.7751	0.0077
180	3.7827	0.0077
181	3.7904	0.0076
182	3.7980	0.0076
183	3.8056	0.0076
184	3.8131	0.0076
185	3.8207	0.0075
186	3.8282	0.0075
187	3.8357	0.0075
188	3.8431	0.0075
189	3.8506	0.0074
190	3.8580	0.0074
191	3.8654	0.0074
192	3.8727	0.0074
193	3.8801	0.0073
194	3.8874	0.0073
195	3.8947	0.0073
196	3.9019	0.0073
197	3.9092	0.0072
198	3.9164	0.0072
199	3.9236	0.0072
200	3.9308	0.0072
201	3.9379	0.0072
202	3.9450	0.0071
203	3.9521	0.0071
204	3.9592	0.0071
205	3.9663	0.0071
206	3.9733	0.0070
207	3.9803	0.0070
208	3.9873	0.0070
209	3.9943	0.0070
210	4.0013	0.0070
211	4.0082	0.0069
212	4.0151	0.0069
213	4.0220	0.0069
214	4.0289	0.0069
215	4.0357	0.0068
216	4.0426	0.0068
217	4.0494	0.0068
218	4.0562	0.0068
219	4.0629	0.0068
220	4.0697	0.0068
221	4.0764	0.0067
222	4.0831	0.0067
223	4.0898	0.0067
224	4.0965	0.0067
225	4.1031	0.0067
226	4.1098	0.0066
227	4.1164	0.0066
228	4.1230	0.0066
229	4.1296	0.0066
230	4.1361	0.0066
231	4.1427	0.0065
232	4.1492	0.0065
233	4.1557	0.0065
234	4.1622	0.0065
235	4.1687	0.0065
236	4.1751	0.0065
237	4.1816	0.0064
238	4.1880	0.0064
239	4.1944	0.0064
240	4.2008	0.0064
241	4.2071	0.0064
242	4.2135	0.0064
243	4.2198	0.0063
244	4.2261	0.0063
245	4.2325	0.0063
246	4.2387	0.0063

247	4.2450	0.0063
248	4.2513	0.0063
249	4.2575	0.0062
250	4.2637	0.0062
251	4.2699	0.0062
252	4.2761	0.0062
253	4.2823	0.0062
254	4.2885	0.0062
255	4.2946	0.0061
256	4.3007	0.0061
257	4.3068	0.0061
258	4.3129	0.0061
259	4.3190	0.0061
260	4.3251	0.0061
261	4.3311	0.0061
262	4.3372	0.0060
263	4.3432	0.0060
264	4.3492	0.0060
265	4.3552	0.0060
266	4.3612	0.0060
267	4.3672	0.0060
268	4.3731	0.0060
269	4.3791	0.0059
270	4.3850	0.0059
271	4.3909	0.0059
272	4.3968	0.0059
273	4.4027	0.0059
274	4.4085	0.0059
275	4.4144	0.0059
276	4.4202	0.0058
277	4.4261	0.0058
278	4.4319	0.0058
279	4.4377	0.0058
280	4.4435	0.0058
281	4.4493	0.0058
282	4.4550	0.0058
283	4.4608	0.0057
284	4.4665	0.0057
285	4.4722	0.0057
286	4.4779	0.0057
287	4.4836	0.0057
288	4.4893	0.0057

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0057	0.0024	0.0033
2	0.0057	0.0024	0.0033
3	0.0057	0.0024	0.0033
4	0.0057	0.0024	0.0033
5	0.0058	0.0025	0.0033
6	0.0058	0.0025	0.0033
7	0.0058	0.0025	0.0033
8	0.0058	0.0025	0.0033
9	0.0058	0.0025	0.0034
10	0.0059	0.0025	0.0034
11	0.0059	0.0025	0.0034
12	0.0059	0.0025	0.0034
13	0.0059	0.0025	0.0034
14	0.0059	0.0025	0.0034
15	0.0060	0.0025	0.0034
16	0.0060	0.0025	0.0034
17	0.0060	0.0026	0.0034
18	0.0060	0.0026	0.0035
19	0.0061	0.0026	0.0035
20	0.0061	0.0026	0.0035
21	0.0061	0.0026	0.0035
22	0.0061	0.0026	0.0035
23	0.0061	0.0026	0.0035
24	0.0062	0.0026	0.0035

25	0.0062	0.0026	0.0036
26	0.0062	0.0026	0.0036
27	0.0062	0.0027	0.0036
28	0.0063	0.0027	0.0036
29	0.0063	0.0027	0.0036
30	0.0063	0.0027	0.0036
31	0.0063	0.0027	0.0036
32	0.0064	0.0027	0.0036
33	0.0064	0.0027	0.0037
34	0.0064	0.0027	0.0037
35	0.0064	0.0027	0.0037
36	0.0065	0.0028	0.0037
37	0.0065	0.0028	0.0037
38	0.0065	0.0028	0.0037
39	0.0065	0.0028	0.0038
40	0.0066	0.0028	0.0038
41	0.0066	0.0028	0.0038
42	0.0066	0.0028	0.0038
43	0.0067	0.0028	0.0038
44	0.0067	0.0028	0.0038
45	0.0067	0.0029	0.0039
46	0.0067	0.0029	0.0039
47	0.0068	0.0029	0.0039
48	0.0068	0.0029	0.0039
49	0.0068	0.0029	0.0039
50	0.0068	0.0029	0.0039
51	0.0069	0.0029	0.0040
52	0.0069	0.0029	0.0040
53	0.0070	0.0030	0.0040
54	0.0070	0.0030	0.0040
55	0.0070	0.0030	0.0040
56	0.0070	0.0030	0.0040
57	0.0071	0.0030	0.0041
58	0.0071	0.0030	0.0041
59	0.0072	0.0030	0.0041
60	0.0072	0.0031	0.0041
61	0.0072	0.0031	0.0041
62	0.0072	0.0031	0.0042
63	0.0073	0.0031	0.0042
64	0.0073	0.0031	0.0042
65	0.0074	0.0031	0.0042
66	0.0074	0.0031	0.0042
67	0.0074	0.0032	0.0043
68	0.0075	0.0032	0.0043
69	0.0075	0.0032	0.0043
70	0.0075	0.0032	0.0043
71	0.0076	0.0032	0.0044
72	0.0076	0.0032	0.0044
73	0.0077	0.0033	0.0044
74	0.0077	0.0033	0.0044
75	0.0078	0.0033	0.0044
76	0.0078	0.0033	0.0045
77	0.0078	0.0033	0.0045
78	0.0079	0.0034	0.0045
79	0.0079	0.0034	0.0045
80	0.0080	0.0034	0.0046
81	0.0080	0.0034	0.0046
82	0.0080	0.0034	0.0046
83	0.0081	0.0035	0.0047
84	0.0081	0.0035	0.0047
85	0.0082	0.0035	0.0047
86	0.0082	0.0035	0.0047
87	0.0083	0.0035	0.0048
88	0.0083	0.0036	0.0048
89	0.0084	0.0036	0.0048
90	0.0084	0.0036	0.0048
91	0.0085	0.0036	0.0049
92	0.0085	0.0036	0.0049
93	0.0086	0.0037	0.0049
94	0.0087	0.0037	0.0050
95	0.0087	0.0037	0.0050

96	0.0088	0.0037	0.0050
97	0.0088	0.0038	0.0051
98	0.0089	0.0038	0.0051
99	0.0090	0.0038	0.0051
100	0.0090	0.0038	0.0052
101	0.0091	0.0039	0.0052
102	0.0091	0.0039	0.0052
103	0.0092	0.0039	0.0053
104	0.0093	0.0039	0.0053
105	0.0093	0.0040	0.0054
106	0.0094	0.0040	0.0054
107	0.0095	0.0040	0.0054
108	0.0095	0.0041	0.0055
109	0.0096	0.0041	0.0055
110	0.0097	0.0041	0.0056
111	0.0098	0.0042	0.0056
112	0.0098	0.0042	0.0056
113	0.0099	0.0042	0.0057
114	0.0100	0.0043	0.0057
115	0.0101	0.0043	0.0058
116	0.0102	0.0043	0.0058
117	0.0103	0.0044	0.0059
118	0.0103	0.0044	0.0059
119	0.0104	0.0045	0.0060
120	0.0105	0.0045	0.0060
121	0.0106	0.0045	0.0061
122	0.0107	0.0046	0.0061
123	0.0108	0.0046	0.0062
124	0.0109	0.0046	0.0062
125	0.0110	0.0047	0.0063
126	0.0111	0.0047	0.0064
127	0.0112	0.0048	0.0064
128	0.0113	0.0048	0.0065
129	0.0115	0.0049	0.0066
130	0.0115	0.0049	0.0066
131	0.0117	0.0050	0.0067
132	0.0118	0.0050	0.0068
133	0.0119	0.0051	0.0069
134	0.0120	0.0051	0.0069
135	0.0122	0.0052	0.0070
136	0.0123	0.0052	0.0071
137	0.0125	0.0053	0.0072
138	0.0126	0.0054	0.0072
139	0.0128	0.0054	0.0073
140	0.0129	0.0055	0.0074
141	0.0131	0.0056	0.0075
142	0.0132	0.0056	0.0076
143	0.0134	0.0057	0.0077
144	0.0135	0.0058	0.0078
145	0.0182	0.0078	0.0105
146	0.0184	0.0078	0.0105
147	0.0186	0.0079	0.0107
148	0.0188	0.0080	0.0108
149	0.0191	0.0081	0.0109
150	0.0192	0.0082	0.0110
151	0.0195	0.0083	0.0112
152	0.0197	0.0084	0.0113
153	0.0200	0.0085	0.0115
154	0.0202	0.0086	0.0116
155	0.0206	0.0088	0.0118
156	0.0208	0.0089	0.0119
157	0.0212	0.0090	0.0122
158	0.0214	0.0091	0.0123
159	0.0218	0.0093	0.0125
160	0.0220	0.0094	0.0127
161	0.0225	0.0096	0.0129
162	0.0228	0.0097	0.0131
163	0.0233	0.0099	0.0134
164	0.0236	0.0100	0.0135
165	0.0242	0.0103	0.0139
166	0.0245	0.0104	0.0140

167	0.0251	0.0107	0.0144
168	0.0255	0.0108	0.0146
169	0.0261	0.0111	0.0150
170	0.0265	0.0113	0.0152
171	0.0273	0.0116	0.0157
172	0.0277	0.0118	0.0159
173	0.0287	0.0122	0.0165
174	0.0292	0.0125	0.0168
175	0.0303	0.0129	0.0174
176	0.0310	0.0132	0.0178
177	0.0323	0.0138	0.0185
178	0.0330	0.0141	0.0190
179	0.0347	0.0148	0.0199
180	0.0356	0.0152	0.0204
181	0.0376	0.0156	0.0220
182	0.0388	0.0156	0.0232
183	0.0415	0.0156	0.0259
184	0.0431	0.0156	0.0275
185	0.0394	0.0156	0.0238
186	0.0416	0.0156	0.0260
187	0.0472	0.0156	0.0316
188	0.0508	0.0156	0.0352
189	0.0658	0.0156	0.0502
190	0.0737	0.0156	0.0581
191	0.1033	0.0156	0.0877
192	0.1395	0.0156	0.1239
193	0.3977	0.0156	0.3821
194	0.0851	0.0156	0.0695
195	0.0554	0.0156	0.0398
196	0.0441	0.0156	0.0285
197	0.0448	0.0156	0.0292
198	0.0401	0.0156	0.0245
199	0.0366	0.0156	0.0210
200	0.0338	0.0144	0.0194
201	0.0316	0.0135	0.0181
202	0.0298	0.0127	0.0171
203	0.0282	0.0120	0.0162
204	0.0269	0.0114	0.0154
205	0.0258	0.0110	0.0148
206	0.0248	0.0106	0.0142
207	0.0239	0.0102	0.0137
208	0.0230	0.0098	0.0132
209	0.0223	0.0095	0.0128
210	0.0216	0.0092	0.0124
211	0.0210	0.0089	0.0120
212	0.0204	0.0087	0.0117
213	0.0199	0.0085	0.0114
214	0.0194	0.0083	0.0111
215	0.0189	0.0081	0.0109
216	0.0185	0.0079	0.0106
217	0.0136	0.0058	0.0078
218	0.0133	0.0057	0.0076
219	0.0130	0.0055	0.0074
220	0.0127	0.0054	0.0073
221	0.0124	0.0053	0.0071
222	0.0121	0.0052	0.0069
223	0.0119	0.0051	0.0068
224	0.0116	0.0049	0.0067
225	0.0114	0.0049	0.0065
226	0.0112	0.0048	0.0064
227	0.0110	0.0047	0.0063
228	0.0108	0.0046	0.0062
229	0.0106	0.0045	0.0061
230	0.0104	0.0044	0.0060
231	0.0102	0.0044	0.0059
232	0.0100	0.0043	0.0058
233	0.0099	0.0042	0.0057
234	0.0097	0.0041	0.0056
235	0.0096	0.0041	0.0055
236	0.0094	0.0040	0.0054
237	0.0093	0.0040	0.0053

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      238              0.0092          0.0039              0.0053
      239              0.0090          0.0039              0.0052
      240              0.0089          0.0038              0.0051
      241              0.0088          0.0038              0.0051
      242              0.0087          0.0037              0.0050
      243              0.0086          0.0037              0.0049
      244              0.0085          0.0036              0.0049
      245              0.0084          0.0036              0.0048
      246              0.0083          0.0035              0.0047
      247              0.0082          0.0035              0.0047
      248              0.0081          0.0034              0.0046
      249              0.0080          0.0034              0.0046
      250              0.0079          0.0034              0.0045
      251              0.0078          0.0033              0.0045
      252              0.0077          0.0033              0.0044
      253              0.0076          0.0033              0.0044
      254              0.0076          0.0032              0.0043
      255              0.0075          0.0032              0.0043
      256              0.0074          0.0032              0.0043
      257              0.0073          0.0031              0.0042
      258              0.0073          0.0031              0.0042
      259              0.0072          0.0031              0.0041
      260              0.0071          0.0030              0.0041
      261              0.0071          0.0030              0.0041
      262              0.0070          0.0030              0.0040
      263              0.0069          0.0030              0.0040
      264              0.0069          0.0029              0.0039
      265              0.0068          0.0029              0.0039
      266              0.0068          0.0029              0.0039
      267              0.0067          0.0029              0.0038
      268              0.0066          0.0028              0.0038
      269              0.0066          0.0028              0.0038
      270              0.0065          0.0028              0.0037
      271              0.0065          0.0028              0.0037
      272              0.0064          0.0027              0.0037
      273              0.0064          0.0027              0.0037
      274              0.0063          0.0027              0.0036
      275              0.0063          0.0027              0.0036
      276              0.0062          0.0027              0.0036
      277              0.0062          0.0026              0.0035
      278              0.0061          0.0026              0.0035
      279              0.0061          0.0026              0.0035
      280              0.0060          0.0026              0.0035
      281              0.0060          0.0026              0.0034
      282              0.0060          0.0025              0.0034
      283              0.0059          0.0025              0.0034
      284              0.0059          0.0025              0.0034
      285              0.0058          0.0025              0.0033
      286              0.0058          0.0025              0.0033
      287              0.0057          0.0025              0.0033
      288              0.0057          0.0024              0.0033
      ------------------------------------------------------------------------
      ------------------------------------------------------------------------
      Total soil rain loss =      1.60(In)
      Total effective rainfall =      2.89(In)
      Peak flow rate in flood hydrograph =    270.99(CFS)
      ------------------------------------------------------------------------
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                        24 - H O U R    S T O R M
                   R u n o f f      H y d r o g r a p h
      ------------------------------------------------------------------------
                Hydrograph in   5   Minute intervals ((CFS))

      ------------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0       75.0     150.0     225.0     300.0
----------------------------------------------------------------------------
  0+ 5       0.0011      0.16  Q         |         |         |         |
  0+10       0.0067      0.81  Q         |         |         |         |
  0+15       0.0238      2.48  Q         |         |         |         |
  0+20       0.0473      3.42  Q         |         |         |         |
  0+25       0.0741      3.88  Q         |         |         |         |
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0+30	0.1030	4.20	Q	|	|	|	|
0+35	0.1334	4.42	Q	|	|	|	|
0+40	0.1649	4.58	Q	|	|	|	|
0+45	0.1973	4.70	Q	|	|	|	|
0+50	0.2301	4.77	Q	|	|	|	|
0+55	0.2633	4.81	Q	|	|	|	|
1+ 0	0.2967	4.85	Q	|	|	|	|
1+ 5	0.3303	4.88	Q	|	|	|	|
1+10	0.3642	4.91	Q	|	|	|	|
1+15	0.3982	4.94	Q	|	|	|	|
1+20	0.4324	4.97	Q	|	|	|	|
1+25	0.4668	4.99	Q	|	|	|	|
1+30	0.5012	5.01	Q	|	|	|	|
1+35	0.5359	5.02	Q	|	|	|	|
1+40	0.5706	5.04	Q	|	|	|	|
1+45	0.6054	5.06	Q	|	|	|	|
1+50	0.6404	5.08	Q	|	|	|	|
1+55	0.6755	5.10	Q	|	|	|	|
2+ 0	0.7108	5.12	Q	|	|	|	|
2+ 5	0.7461	5.14	QV	|	|	|	|
2+10	0.7816	5.15	QV	|	|	|	|
2+15	0.8173	5.17	QV	|	|	|	|
2+20	0.8531	5.19	QV	|	|	|	|
2+25	0.8890	5.21	QV	|	|	|	|
2+30	0.9250	5.23	QV	|	|	|	|
2+35	0.9612	5.25	QV	|	|	|	|
2+40	0.9975	5.27	QV	|	|	|	|
2+45	1.0340	5.30	QV	|	|	|	|
2+50	1.0706	5.32	QV	|	|	|	|
2+55	1.1073	5.34	QV	|	|	|	|
3+ 0	1.1442	5.36	QV	|	|	|	|
3+ 5	1.1813	5.38	QV	|	|	|	|
3+10	1.2185	5.40	QV	|	|	|	|
3+15	1.2558	5.42	QV	|	|	|	|
3+20	1.2933	5.44	QV	|	|	|	|
3+25	1.3310	5.47	QV	|	|	|	|
3+30	1.3688	5.49	QV	|	|	|	|
3+35	1.4068	5.51	QV	|	|	|	|
3+40	1.4449	5.54	QV	|	|	|	|
3+45	1.4832	5.56	Q V	|	|	|	|
3+50	1.5216	5.58	Q V	|	|	|	|
3+55	1.5602	5.61	Q V	|	|	|	|
4+ 0	1.5990	5.63	Q V	|	|	|	|
4+ 5	1.6379	5.65	Q V	|	|	|	|
4+10	1.6770	5.68	Q V	|	|	|	|
4+15	1.7163	5.70	Q V	|	|	|	|
4+20	1.7558	5.73	Q V	|	|	|	|
4+25	1.7954	5.76	Q V	|	|	|	|
4+30	1.8352	5.78	Q V	|	|	|	|
4+35	1.8752	5.81	Q V	|	|	|	|
4+40	1.9154	5.83	Q V	|	|	|	|
4+45	1.9557	5.86	Q V	|	|	|	|
4+50	1.9963	5.89	Q V	|	|	|	|
4+55	2.0370	5.91	Q V	|	|	|	|
5+ 0	2.0779	5.94	Q V	|	|	|	|
5+ 5	2.1190	5.97	Q V	|	|	|	|
5+10	2.1603	6.00	Q V	|	|	|	|
5+15	2.2018	6.03	Q V	|	|	|	|
5+20	2.2435	6.05	Q V	|	|	|	|
5+25	2.2855	6.09	Q V	|	|	|	|
5+30	2.3276	6.11	Q V	|	|	|	|
5+35	2.3699	6.14	Q V	|	|	|	|
5+40	2.4124	6.17	Q V	|	|	|	|
5+45	2.4551	6.21	Q V	|	|	|	|
5+50	2.4981	6.24	Q V	|	|	|	|
5+55	2.5413	6.27	Q V	|	|	|	|
6+ 0	2.5847	6.30	Q V	|	|	|	|
6+ 5	2.6283	6.33	Q V	|	|	|	|
6+10	2.6721	6.37	Q V	|	|	|	|
6+15	2.7162	6.40	Q V	|	|	|	|
6+20	2.7605	6.43	Q V	|	|	|	|

```
 6+25      2.8051     6.47  Q  V      |         |         |         |
 6+30      2.8498     6.50  Q  V      |         |         |         |
 6+35      2.8949     6.54  Q  V      |         |         |         |
 6+40      2.9402     6.57  Q   V     |         |         |         |
 6+45      2.9857     6.61  Q   V     |         |         |         |
 6+50      3.0315     6.65  Q   V     |         |         |         |
 6+55      3.0775     6.69  Q   V     |         |         |         |
 7+ 0      3.1238     6.72  Q   V     |         |         |         |
 7+ 5      3.1704     6.76  Q   V     |         |         |         |
 7+10      3.2172     6.80  Q   V     |         |         |         |
 7+15      3.2643     6.84  Q   V     |         |         |         |
 7+20      3.3117     6.88  Q   V     |         |         |         |
 7+25      3.3593     6.92  Q   V     |         |         |         |
 7+30      3.4073     6.96  Q   V     |         |         |         |
 7+35      3.4555     7.01  Q   V     |         |         |         |
 7+40      3.5041     7.05  Q   V     |         |         |         |
 7+45      3.5529     7.09  Q   V     |         |         |         |
 7+50      3.6020     7.13  Q   V     |         |         |         |
 7+55      3.6515     7.18  Q    V    |         |         |         |
 8+ 0      3.7012     7.22  Q    V    |         |         |         |
 8+ 5      3.7513     7.27  Q    V    |         |         |         |
 8+10      3.8017     7.32  Q    V    |         |         |         |
 8+15      3.8525     7.37  Q    V    |         |         |         |
 8+20      3.9035     7.41  Q    V    |         |         |         |
 8+25      3.9549     7.47  Q    V    |         |         |         |
 8+30      4.0067     7.51  |Q   V    |         |         |         |
 8+35      4.0588     7.57  |Q   V    |         |         |         |
 8+40      4.1113     7.62  |Q   V    |         |         |         |
 8+45      4.1641     7.67  |Q   V    |         |         |         |
 8+50      4.2173     7.73  |Q   V    |         |         |         |
 8+55      4.2709     7.78  |Q   V    |         |         |         |
 9+ 0      4.3249     7.84  |Q   V    |         |         |         |
 9+ 5      4.3793     7.90  |Q    V   |         |         |         |
 9+10      4.4340     7.95  |Q    V   |         |         |         |
 9+15      4.4892     8.01  |Q    V   |         |         |         |
 9+20      4.5448     8.07  |Q    V   |         |         |         |
 9+25      4.6009     8.14  |Q    V   |         |         |         |
 9+30      4.6573     8.20  |Q    V   |         |         |         |
 9+35      4.7142     8.26  |Q    V   |         |         |         |
 9+40      4.7716     8.33  |Q    V   |         |         |         |
 9+45      4.8294     8.40  |Q    V   |         |         |         |
 9+50      4.8877     8.46  |Q    V   |         |         |         |
 9+55      4.9465     8.53  |Q    V   |         |         |         |
10+ 0      5.0057     8.60  |Q    V   |         |         |         |
10+ 5      5.0655     8.68  |Q    V   |         |         |         |
10+10      5.1257     8.75  |Q     V  |         |         |         |
10+15      5.1866     8.83  |Q     V  |         |         |         |
10+20      5.2479     8.90  |Q     V  |         |         |         |
10+25      5.3098     8.99  |Q     V  |         |         |         |
10+30      5.3722     9.07  |Q     V  |         |         |         |
10+35      5.4352     9.15  |Q     V  |         |         |         |
10+40      5.4988     9.23  |Q     V  |         |         |         |
10+45      5.5631     9.33  |Q     V  |         |         |         |
10+50      5.6279     9.41  |Q     V  |         |         |         |
10+55      5.6934     9.51  |Q     V  |         |         |         |
11+ 0      5.7595     9.60  |Q     V  |         |         |         |
11+ 5      5.8263     9.70  |Q      V |         |         |         |
11+10      5.8937     9.79  |Q      V |         |         |         |
11+15      5.9619     9.90  |Q      V |         |         |         |
11+20      6.0308    10.00  |Q      V |         |         |         |
11+25      6.1004    10.11  |Q      V |         |         |         |
11+30      6.1708    10.22  |Q      V |         |         |         |
11+35      6.2420    10.34  |Q      V |         |         |         |
11+40      6.3140    10.45  |Q      V |         |         |         |
11+45      6.3868    10.58  |Q      V |         |         |         |
11+50      6.4605    10.70  |Q      V |         |         |         |
11+55      6.5351    10.83  |Q      V |         |         |         |
12+ 0      6.6106    10.96  |Q       V|         |         |         |
12+ 5      6.6879    11.23  |Q       V|         |         |         |
12+10      6.7696    11.87  |Q       V|         |         |         |
12+15      6.8614    13.33  |Q       V|         |         |         |
```

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12+20      6.9593     14.21  |Q       V|         |         |         |
12+25      7.0608     14.74  |Q       V|         |         |         |
12+30      7.1650     15.14  | Q      V|         |         |         |
12+35      7.2717     15.49  | Q      V|         |         |         |
12+40      7.3803     15.78  | Q       V         |         |         |
12+45      7.4909     16.05  | Q       V         |         |         |
12+50      7.6031     16.29  | Q       V         |         |         |
12+55      7.7169     16.53  | Q       V         |         |         |
13+ 0      7.8322     16.75  | Q       V         |         |         |
13+ 5      7.9492     16.99  | Q       V         |         |         |
13+10      8.0679     17.22  | Q       |V        |         |         |
13+15      8.1883     17.48  | Q       |V        |         |         |
13+20      8.3104     17.73  | Q       |V        |         |         |
13+25      8.4344     18.01  | Q       |V        |         |         |
13+30      8.5602     18.27  | Q       |V        |         |         |
13+35      8.6881     18.57  | Q       |V        |         |         |
13+40      8.8180     18.86  | Q       | V       |         |         |
13+45      8.9501     19.18  | Q       | V       |         |         |
13+50      9.0844     19.50  | Q       | V       |         |         |
13+55      9.2212     19.86  | Q       | V       |         |         |
14+ 0      9.3604     20.22  | Q       | V       |         |         |
14+ 5      9.5024     20.62  | Q       |  V      |         |         |
14+10      9.6470     21.00  | Q       |  V      |         |         |
14+15      9.7945     21.42  | Q       |  V      |         |         |
14+20      9.9450     21.84  | Q       |  V      |         |         |
14+25     10.0989     22.35  | Q       |  V      |         |         |
14+30     10.2562     22.85  |  Q      |   V     |         |         |
14+35     10.4176     23.44  |  Q      |   V     |         |         |
14+40     10.5831     24.02  |  Q      |   V     |         |         |
14+45     10.7532     24.71  |  Q      |   V     |         |         |
14+50     10.9282     25.40  |  Q      |    V    |         |         |
14+55     11.1087     26.21  |  Q      |    V    |         |         |
15+ 0     11.2949     27.04  |  Q      |    V    |         |         |
15+ 5     11.4881     28.05  |  Q      |    V    |         |         |
15+10     11.6890     29.18  |  Q      |     V   |         |         |
15+15     11.9011     30.79  |   Q     |     V   |         |         |
15+20     12.1264     32.72  |   Q     |     V   |         |         |
15+25     12.3672     34.95  |   Q     |     V   |         |         |
15+30     12.6174     36.33  |   Q     |      V  |         |         |
15+35     12.8671     36.26  |   Q     |      V  |         |         |
15+40     13.1307     38.27  |    Q    |       V |         |         |
15+45     13.4280     43.17  |    Q    |       V |         |         |
15+50     13.7742     50.27  |     Q   |       V |         |         |
15+55     14.2077     62.95  |       Q |        V|         |         |
16+ 0     14.7591     80.06  |         Q         V         |         |
16+ 5     15.5883    120.40  |          |     Q   |V        |         |
16+10     16.8670    185.66  |          |         |  VQ     |         |
16+15     18.7333    270.99  |          |         |    V    |     Q   |
16+20     20.0263    187.73  |          |         |    Q V  |         |
16+25     20.8732    122.97  |          |     Q   |       V |         |
16+30     21.5149     93.19  |          | Q       |        V|         |
16+35     22.0375     75.88  |          Q         |         V         |
16+40     22.4645     62.00  |        Q |         |         V         |
16+45     22.8104     50.22  |      Q   |         |         |V        |
16+50     23.0945     41.26  |     Q    |         |         |V        |
16+55     23.3327     34.58  |    Q     |         |         | V       |
17+ 0     23.5480     31.26  |    Q     |         |         | V       |
17+ 5     23.7450     28.61  |  Q       |         |         | V       |
17+10     23.9302     26.89  |  Q       |         |         | V       |
17+15     24.1034     25.15  |  Q       |         |         |  V      |
17+20     24.2637     23.28  |  Q       |         |         |  V      |
17+25     24.4140     21.81  | Q        |         |         |  V      |
17+30     24.5553     20.52  | Q        |         |         |  V      |
17+35     24.6910     19.71  | Q        |         |         |  V      |
17+40     24.8219     19.01  | Q        |         |         |   V     |
17+45     24.9485     18.39  | Q        |         |         |   V     |
17+50     25.0713     17.83  | Q        |         |         |   V     |
17+55     25.1906     17.32  | Q        |         |         |   V     |
18+ 0     25.3066     16.85  | Q        |         |         |   V     |
18+ 5     25.4188     16.29  | Q        |         |         |   V     |
18+10     25.5248     15.39  | Q        |         |         |    V    |
```

18+15	25.6193	13.72	|Q	|	|	|	V |
18+20	25.7064	12.65	|Q	|	|	|	V |
18+25	25.7890	11.99	|Q	|	|	|	V |
18+30	25.8680	11.47	|Q	|	|	|	V |
18+35	25.9440	11.04	|Q	|	|	|	V |
18+40	26.0175	10.67	|Q	|	|	|	V |
18+45	26.0889	10.36	|Q	|	|	|	V |
18+50	26.1584	10.09	|Q	|	|	|	V |
18+55	26.2263	9.86	|Q	|	|	|	V |
19+ 0	26.2928	9.65	|Q	|	|	|	V |
19+ 5	26.3579	9.45	|Q	|	|	|	V |
19+10	26.4217	9.26	|Q	|	|	|	V |
19+15	26.4842	9.08	|Q	|	|	|	V |
19+20	26.5456	8.91	|Q	|	|	|	V |
19+25	26.6059	8.76	|Q	|	|	|	V |
19+30	26.6652	8.61	|Q	|	|	|	V |
19+35	26.7235	8.47	|Q	|	|	|	V |
19+40	26.7809	8.33	|Q	|	|	|	V |
19+45	26.8373	8.20	|Q	|	|	|	V |
19+50	26.8929	8.07	|Q	|	|	|	V |
19+55	26.9477	7.95	|Q	|	|	|	V |
20+ 0	27.0017	7.84	|Q	|	|	|	V |
20+ 5	27.0549	7.73	|Q	|	|	|	V |
20+10	27.1074	7.62	|Q	|	|	|	V |
20+15	27.1592	7.52	|Q	|	|	|	V |
20+20	27.2102	7.42	Q	|	|	|	V |
20+25	27.2606	7.32	Q	|	|	|	V |
20+30	27.3104	7.22	Q	|	|	|	V |
20+35	27.3595	7.13	Q	|	|	|	V |
20+40	27.4081	7.05	Q	|	|	|	V |
20+45	27.4560	6.96	Q	|	|	|	V |
20+50	27.5034	6.88	Q	|	|	|	V |
20+55	27.5502	6.80	Q	|	|	|	V |
21+ 0	27.5965	6.72	Q	|	|	|	V |
21+ 5	27.6423	6.65	Q	|	|	|	V |
21+10	27.6875	6.57	Q	|	|	|	V |
21+15	27.7323	6.50	Q	|	|	|	V |
21+20	27.7766	6.43	Q	|	|	|	V |
21+25	27.8205	6.37	Q	|	|	|	V |
21+30	27.8638	6.30	Q	|	|	|	V |
21+35	27.9068	6.24	Q	|	|	|	V |
21+40	27.9493	6.17	Q	|	|	|	V |
21+45	27.9914	6.11	Q	|	|	|	V |
21+50	28.0331	6.05	Q	|	|	|	V |
21+55	28.0744	6.00	Q	|	|	|	V |
22+ 0	28.1153	5.94	Q	|	|	|	V |
22+ 5	28.1558	5.89	Q	|	|	|	V |
22+10	28.1960	5.83	Q	|	|	|	V |
22+15	28.2358	5.78	Q	|	|	|	V |
22+20	28.2753	5.73	Q	|	|	|	V |
22+25	28.3144	5.68	Q	|	|	|	V |
22+30	28.3531	5.63	Q	|	|	|	V |
22+35	28.3916	5.58	Q	|	|	|	V|
22+40	28.4297	5.53	Q	|	|	|	V|
22+45	28.4675	5.49	Q	|	|	|	V|
22+50	28.5050	5.44	Q	|	|	|	V|
22+55	28.5421	5.40	Q	|	|	|	V|
23+ 0	28.5790	5.36	Q	|	|	|	V|
23+ 5	28.6156	5.31	Q	|	|	|	V|
23+10	28.6519	5.27	Q	|	|	|	V|
23+15	28.6880	5.23	Q	|	|	|	V|
23+20	28.7237	5.19	Q	|	|	|	V|
23+25	28.7592	5.15	Q	|	|	|	V|
23+30	28.7945	5.12	Q	|	|	|	V|
23+35	28.8294	5.08	Q	|	|	|	V|
23+40	28.8642	5.04	Q	|	|	|	V|
23+45	28.8986	5.01	Q	|	|	|	V|
23+50	28.9329	4.97	Q	|	|	|	V|
23+55	28.9669	4.94	Q	|	|	|	V|
24+ 0	29.0006	4.90	Q	|	|	|	V|
24+ 5	29.0330	4.70	Q	|	|	|	V|

```
   24+10      29.0607      4.03  Q          |          |          |         V|
   24+15      29.0768      2.34  Q          |          |          |         V|
   24+20      29.0864      1.39  Q          |          |          |         V|
   24+25      29.0928      0.93  Q          |          |          |         V|
   24+30      29.0971      0.62  Q          |          |          |         V|
   24+35      29.0999      0.41  Q          |          |          |         V|
   24+40      29.1017      0.26  Q          |          |          |         V|
   24+45      29.1028      0.16  Q          |          |          |         V|
   24+50      29.1035      0.10  Q          |          |          |         V|
   24+55      29.1040      0.07  Q          |          |          |         V|
   25+ 0      29.1044      0.05  Q          |          |          |         V|
   25+ 5      29.1047      0.04  Q          |          |          |         V|
   25+10      29.1048      0.02  Q          |          |          |         V|
   25+15      29.1049      0.01  Q          |          |          |         V|
   25+20      29.1049      0.00  Q          |          |          |          V
--------------------------------------------------------------------------
```

- 100 Year 3 Hour Post-Development Unit Hydrograph – Area 'C'

```
        U n i t   H y d r o g r a p h   A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989-2012, Version 7.2

        Study date  10/13/16   File Name PRC10003.out


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------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'C' - 100 YEAR 3 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

        Storm Event Year = 100

        Antecedent Moisture Condition = 3

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 74.6       0.5          0.00     B     0.300     0.748    0.224
 74.6     120.5          1.00     C     0.250     0.748    0.187

Area-averaged adjusted loss rate Fm (In/Hr) =  0.187

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC3)          Yield Fr
     0.39   0.003         74.6      90.7       1.03     0.810
     0.13   0.001         98.0      98.0       0.20     0.958

    90.13   0.745         74.6      90.7       1.03     0.810
    30.37   0.251         98.0      98.0       0.20     0.958

Area-averaged catchment yield fraction, Y =  0.847
Area-averaged low loss fraction, Yb =  0.153
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.238 (hours)
Watershed area =     121.02(Ac.)
Catchment Lag time =   0.190 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 43.7982
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.187(In/Hr)
Average low loss rate fraction (Yb) = 0.153 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.520(In)
Computed peak 30-minute rainfall =  1.090(In)
Specified peak 1-hour rainfall =  1.450(In)
Computed peak 3-hour rainfall =  2.430(In)
Specified peak 6-hour rainfall =  3.360(In)
Specified peak 24-hour rainfall =  5.630(In)
```

```
Rainfall depth area reduction factors:
Using a total area of     121.02(Ac.) (Ref: fig. E-4)

5-minute factor = 0.994     Adjusted rainfall =  0.517(In)
30-minute factor = 0.994    Adjusted rainfall =  1.084(In)
1-hour factor = 0.994       Adjusted rainfall =  1.442(In)
3-hour factor = 0.999       Adjusted rainfall =  2.428(In)
6-hour factor = 1.000       Adjusted rainfall =  3.359(In)
24-hour factor = 1.000 Adjusted rainfall =  5.629(In)
```

U n i t H y d r o g r a p h

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 1463.59 (CFS))	
1	3.553	52.008
2	17.807	208.614
3	53.907	528.348
4	72.416	270.901
5	81.700	135.883
6	87.852	90.038
7	92.140	62.756
8	95.105	43.403
9	97.041	28.329
10	98.087	15.307
11	98.596	7.445
12	99.007	6.021
13	99.293	4.193
14	99.622	4.813
15	99.839	3.175
16	100.000	2.354

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.5171	0.5171
2	0.6885	0.1714
3	0.8140	0.1255
4	0.9167	0.1027
5	1.0052	0.0885
6	1.0838	0.0786
7	1.1548	0.0710
8	1.2201	0.0653
9	1.2807	0.0606
10	1.3375	0.0568
11	1.3910	0.0535
12	1.4418	0.0507
13	1.4976	0.0558
14	1.5512	0.0536
15	1.6028	0.0516
16	1.6527	0.0498
17	1.7009	0.0482
18	1.7476	0.0468
19	1.7931	0.0454
20	1.8372	0.0442
21	1.8803	0.0430
22	1.9222	0.0420
23	1.9632	0.0410
24	2.0033	0.0400
25	2.0424	0.0392
26	2.0808	0.0384
27	2.1184	0.0376
28	2.1553	0.0369
29	2.1915	0.0362
30	2.2270	0.0355
31	2.2619	0.0349
32	2.2963	0.0343
33	2.3300	0.0338
34	2.3633	0.0332

```
 35              2.3960              0.0327
 36              2.4283              0.0322
-------------------------------------------------------------------
Unit              Unit            Unit              Effective
Period            Rainfall        Soil-Loss         Rainfall
(number)            (In)          (In)                (In)
-------------------------------------------------------------------
  1              0.0322           0.0049              0.0273
  2              0.0327           0.0050              0.0277
  3              0.0338           0.0052              0.0286
  4              0.0343           0.0052              0.0291
  5              0.0355           0.0054              0.0301
  6              0.0362           0.0055              0.0307
  7              0.0376           0.0057              0.0319
  8              0.0384           0.0059              0.0325
  9              0.0400           0.0061              0.0339
 10              0.0410           0.0063              0.0347
 11              0.0430           0.0066              0.0365
 12              0.0442           0.0067              0.0374
 13              0.0468           0.0071              0.0396
 14              0.0482           0.0074              0.0409
 15              0.0516           0.0079              0.0437
 16              0.0536           0.0082              0.0454
 17              0.0507           0.0078              0.0430
 18              0.0535           0.0082              0.0454
 19              0.0606           0.0093              0.0514
 20              0.0653           0.0100              0.0553
 21              0.0786           0.0120              0.0666
 22              0.0885           0.0135              0.0750
 23              0.1255           0.0156              0.1099
 24              0.1714           0.0156              0.1558
 25              0.5171           0.0156              0.5015
 26              0.1027           0.0156              0.0871
 27              0.0710           0.0108              0.0602
 28              0.0568           0.0087              0.0481
 29              0.0558           0.0085              0.0473
 30              0.0498           0.0076              0.0422
 31              0.0454           0.0069              0.0385
 32              0.0420           0.0064              0.0356
 33              0.0392           0.0060              0.0332
 34              0.0369           0.0056              0.0312
 35              0.0349           0.0053              0.0296
 36              0.0332           0.0051              0.0282
-------------------------------------------------------------------
-------------------------------------------------------------------
Total soil rain loss =      0.29(In)
Total effective rainfall =      2.13(In)
Peak flow rate in flood hydrograph =    360.06(CFS)
-------------------------------------------------------------------
+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                    3 - H O U R    S T O R M
                R u n o f f      H y d r o g r a p h
-------------------------------------------------------------------
            Hydrograph in   5   Minute intervals ((CFS))

-------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0      100.0     200.0     300.0     400.0
-------------------------------------------------------------------
  0+ 5       0.0098      1.42  Q         |         |         |         |
  0+10       0.0590      7.14  Q         |         |         |         |
  0+15       0.2085     21.71  V Q       |         |         |         |
  0+20       0.4119     29.53  V Q       |         |         |         |
  0+25       0.6459     33.98  |V Q      |         |         |         |
  0+30       0.9022     37.22  |V Q      |         |         |         |
  0+35       1.1773     39.94  | VQ      |         |         |         |
  0+40       1.4676     42.15  | V Q     |         |         |         |
  0+45       1.7718     44.17  |  VQ     |         |         |         |
  0+50       2.0875     45.84  |  VQ     |         |         |         |
  0+55       2.4149     47.55  |   Q     |         |         |         |
  1+ 0       2.7540     49.24  |   QV    |         |         |         |
  1+ 5       3.1066     51.20  |    Q    |         |         |         |
```

```
   1+10       3.4730     53.20  |    QV   |         |         |         |
   1+15       3.8560     55.60  |    Q V  |         |         |         |
   1+20       4.2558     58.06  |    Q V  |         |         |         |
   1+25       4.6742     60.74  |     Q V |         |         |         |
   1+30       5.1052     62.59  |     Q  V|         |         |         |
   1+35       5.5414     63.34  |     Q   V         |         |         |
   1+40       5.9969     66.13  |     Q   |V        |         |         |
   1+45       6.4894     71.52  |      Q  | V       |         |         |
   1+50       7.0298     78.46  |      Q  |  V      |         |         |
   1+55       7.6507     90.16  |         Q|   V     |         |         |
   2+ 0       8.3985    108.57  |          Q    V   |         |         |
   2+ 5       9.4951    159.23  |          |    Q V  |         |         |
   2+10      11.1909    246.24  |          |         V   Q     |         |
   2+15      13.6707    360.06  |          |         |    V    |     Q   |
   2+20      15.3178    239.16  |          |         |  Q    V |         |
   2+25      16.4488    164.23  |          |     Q   |         V         |
   2+30      17.3429    129.82  |          | Q       |         | V       |
   2+35      18.0925    108.85  |          Q         |         |  V      |
   2+40      18.7259     91.96  |         Q|         |         |   V     |
   2+45      19.2624     77.90  |       Q  |         |         |    V    |
   2+50      19.7189     66.28  |      Q   |         |         |     V   |
   2+55      20.1197     58.19  |     Q    |         |         |      V  |
   3+ 0      20.4893     53.66  |     Q    |         |         |       V |
   3+ 5      20.8223     48.36  |    Q     |         |         |       V |
   3+10      21.0992     40.20  |    Q     |         |         |        V|
   3+15      21.2583     23.10  | Q        |         |         |        V|
   3+20      21.3549     14.04  |Q         |         |         |        V|
   3+25      21.4141      8.60  Q          |         |         |        V|
   3+30      21.4530      5.64  Q          |         |         |        V|
   3+35      21.4780      3.63  Q          |         |         |        V|
   3+40      21.4936      2.26  Q          |         |         |        V|
   3+45      21.5030      1.37  Q          |         |         |        V|
   3+50      21.5091      0.88  Q          |         |         |        V|
   3+55      21.5134      0.63  Q          |         |         |        V|
   4+ 0      21.5165      0.44  Q          |         |         |        V|
   4+ 5      21.5185      0.30  Q          |         |         |        V|
   4+10      21.5196      0.16  Q          |         |         |        V|
   4+15      21.5201      0.07  Q          |         |         |         V
-------------------------------------------------------------------------
```

- 100 Year 6 Hour Post-Development Unit Hydrograph – Area 'C'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989-2012, Version 7.2

       Study date  10/13/16   File Name PRC10006.out


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'C' - 100 YEAR 6 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 100

       Antecedent Moisture Condition = 3

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 74.6       0.5          0.00     B     0.300     0.748    0.224
 74.6     120.5          1.00     C     0.250     0.748    0.187

Area-averaged adjusted loss rate Fm (In/Hr) =  0.187

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC3)          Yield Fr
     0.39   0.003         74.6      90.7       1.03     0.810
     0.13   0.001         98.0      98.0       0.20     0.958

    90.13   0.745         74.6      90.7       1.03     0.810
    30.37   0.251         98.0      98.0       0.20     0.958

Area-averaged catchment yield fraction, Y =  0.847
Area-averaged low loss fraction, Yb =  0.153
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.238 (hours)
Watershed area =     121.02(Ac.)
Catchment Lag time =   0.190 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 43.7982
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.187(In/Hr)
Average low loss rate fraction (Yb) = 0.153 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.520(In)
Computed peak 30-minute rainfall =  1.090(In)
Specified peak 1-hour rainfall =  1.450(In)
Computed peak 3-hour rainfall =  2.430(In)
Specified peak 6-hour rainfall =  3.360(In)
Specified peak 24-hour rainfall =  5.630(In)
```

```
Rainfall depth area reduction factors:
Using a total area of     121.02(Ac.) (Ref: fig. E-4)

5-minute factor = 0.994     Adjusted rainfall =  0.517(In)
30-minute factor = 0.994    Adjusted rainfall =  1.084(In)
1-hour factor = 0.994       Adjusted rainfall =  1.442(In)
3-hour factor = 0.999       Adjusted rainfall =  2.428(In)
6-hour factor = 1.000       Adjusted rainfall =  3.359(In)
24-hour factor = 1.000 Adjusted rainfall =  5.629(In)
```

U n i t H y d r o g r a p h

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 1463.59 (CFS))	
1	3.553	52.008
2	17.807	208.614
3	53.907	528.348
4	72.416	270.901
5	81.700	135.883
6	87.852	90.038
7	92.140	62.756
8	95.105	43.403
9	97.041	28.329
10	98.087	15.307
11	98.596	7.445
12	99.007	6.021
13	99.293	4.193
14	99.622	4.813
15	99.839	3.175
16	100.000	2.354

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.5171	0.5171
2	0.6885	0.1714
3	0.8140	0.1255
4	0.9167	0.1027
5	1.0052	0.0885
6	1.0838	0.0786
7	1.1548	0.0710
8	1.2201	0.0653
9	1.2807	0.0606
10	1.3375	0.0568
11	1.3910	0.0535
12	1.4418	0.0507
13	1.4976	0.0558
14	1.5512	0.0536
15	1.6028	0.0516
16	1.6527	0.0498
17	1.7009	0.0482
18	1.7476	0.0468
19	1.7931	0.0454
20	1.8372	0.0442
21	1.8803	0.0430
22	1.9222	0.0420
23	1.9632	0.0410
24	2.0033	0.0400
25	2.0424	0.0392
26	2.0808	0.0384
27	2.1184	0.0376
28	2.1553	0.0369
29	2.1915	0.0362
30	2.2270	0.0355
31	2.2619	0.0349
32	2.2963	0.0343
33	2.3300	0.0338
34	2.3633	0.0332

35	2.3960	0.0327
36	2.4283	0.0322
37	2.4596	0.0313
38	2.4905	0.0309
39	2.5209	0.0305
40	2.5510	0.0300
41	2.5806	0.0297
42	2.6099	0.0293
43	2.6388	0.0289
44	2.6674	0.0285
45	2.6956	0.0282
46	2.7234	0.0279
47	2.7510	0.0275
48	2.7782	0.0272
49	2.8051	0.0269
50	2.8318	0.0266
51	2.8582	0.0264
52	2.8843	0.0261
53	2.9101	0.0258
54	2.9356	0.0256
55	2.9610	0.0253
56	2.9860	0.0251
57	3.0109	0.0248
58	3.0355	0.0246
59	3.0599	0.0244
60	3.0840	0.0242
61	3.1080	0.0239
62	3.1317	0.0237
63	3.1553	0.0235
64	3.1786	0.0233
65	3.2017	0.0231
66	3.2247	0.0230
67	3.2475	0.0228
68	3.2701	0.0226
69	3.2925	0.0224
70	3.3147	0.0222
71	3.3368	0.0221
72	3.3587	0.0219

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0219	0.0033	0.0186
2	0.0221	0.0034	0.0187
3	0.0224	0.0034	0.0190
4	0.0226	0.0035	0.0191
5	0.0230	0.0035	0.0195
6	0.0231	0.0035	0.0196
7	0.0235	0.0036	0.0199
8	0.0237	0.0036	0.0201
9	0.0242	0.0037	0.0205
10	0.0244	0.0037	0.0207
11	0.0248	0.0038	0.0210
12	0.0251	0.0038	0.0212
13	0.0256	0.0039	0.0217
14	0.0258	0.0039	0.0219
15	0.0264	0.0040	0.0223
16	0.0266	0.0041	0.0226
17	0.0272	0.0042	0.0231
18	0.0275	0.0042	0.0233
19	0.0282	0.0043	0.0239
20	0.0285	0.0044	0.0242
21	0.0293	0.0045	0.0248
22	0.0297	0.0045	0.0251
23	0.0305	0.0047	0.0258
24	0.0309	0.0047	0.0262
25	0.0322	0.0049	0.0273
26	0.0327	0.0050	0.0277
27	0.0338	0.0052	0.0286
28	0.0343	0.0052	0.0291

```
       29              0.0355          0.0054              0.0301
       30              0.0362          0.0055              0.0307
       31              0.0376          0.0057              0.0319
       32              0.0384          0.0059              0.0325
       33              0.0400          0.0061              0.0339
       34              0.0410          0.0063              0.0347
       35              0.0430          0.0066              0.0365
       36              0.0442          0.0067              0.0374
       37              0.0468          0.0071              0.0396
       38              0.0482          0.0074              0.0409
       39              0.0516          0.0079              0.0437
       40              0.0536          0.0082              0.0454
       41              0.0507          0.0078              0.0430
       42              0.0535          0.0082              0.0454
       43              0.0606          0.0093              0.0514
       44              0.0653          0.0100              0.0553
       45              0.0786          0.0120              0.0666
       46              0.0885          0.0135              0.0750
       47              0.1255          0.0156              0.1099
       48              0.1714          0.0156              0.1558
       49              0.5171          0.0156              0.5015
       50              0.1027          0.0156              0.0871
       51              0.0710          0.0108              0.0602
       52              0.0568          0.0087              0.0481
       53              0.0558          0.0085              0.0473
       54              0.0498          0.0076              0.0422
       55              0.0454          0.0069              0.0385
       56              0.0420          0.0064              0.0356
       57              0.0392          0.0060              0.0332
       58              0.0369          0.0056              0.0312
       59              0.0349          0.0053              0.0296
       60              0.0332          0.0051              0.0282
       61              0.0313          0.0048              0.0266
       62              0.0300          0.0046              0.0255
       63              0.0289          0.0044              0.0245
       64              0.0279          0.0043              0.0236
       65              0.0269          0.0041              0.0228
       66              0.0261          0.0040              0.0221
       67              0.0253          0.0039              0.0215
       68              0.0246          0.0038              0.0208
       69              0.0239          0.0037              0.0203
       70              0.0233          0.0036              0.0198
       71              0.0228          0.0035              0.0193
       72              0.0222          0.0034              0.0188
     ---------------------------------------------------------------------
     ---------------------------------------------------------------------
     Total soil rain loss =      0.44(In)
     Total effective rainfall =      2.92(In)
     Peak flow rate in flood hydrograph =    360.06(CFS)
     ---------------------------------------------------------------------
     +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                        6 - H O U R    S T O R M
                   R u n o f f      H y d r o g r a p h
     ---------------------------------------------------------------------
                Hydrograph in   5   Minute intervals ((CFS))

     ---------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0      100.0     200.0     300.0     400.0
---------------------------------------------------------------------------
  0+ 5       0.0066      0.97  Q         |         |         |         |
  0+10       0.0400      4.85  Q         |         |         |         |
  0+15       0.1413     14.70  VQ        |         |         |         |
  0+20       0.2781     19.87  VQ        |         |         |         |
  0+25       0.4340     22.63  V Q       |         |         |         |
  0+30       0.6030     24.55  V Q       |         |         |         |
  0+35       0.7823     26.02  |VQ       |         |         |         |
  0+40       0.9691     27.13  |VQ       |         |         |         |
  0+45       1.1620     28.01  |VQ       |         |         |         |
  0+50       1.3592     28.63  |VQ       |         |         |         |
  0+55       1.5600     29.16  | Q       |         |         |         |
  1+ 0       1.7641     29.64  | Q       |         |         |         |
```

```
1+ 5       1.9717     30.14  | VQ      |         |         |         |
1+10       2.1828     30.64  | VQ      |         |         |         |
1+15       2.3973     31.16  |  Q      |         |         |         |
1+20       2.6153     31.64  |  Q      |         |         |         |
1+25       2.8367     32.15  |  Q      |         |         |         |
1+30       3.0614     32.63  |  QV     |         |         |         |
1+35       3.2899     33.18  |  QV     |         |         |         |
1+40       3.5220     33.71  |  QV     |         |         |         |
1+45       3.7584     34.31  |  Q V    |         |         |         |
1+50       3.9987     34.90  |  Q V    |         |         |         |
1+55       4.2437     35.57  |  Q V    |         |         |         |
2+ 0       4.4931     36.22  |  Q  V   |         |         |         |
2+ 5       4.7478     36.99  |  Q  V   |         |         |         |
2+10       5.0081     37.79  |  Q  V   |         |         |         |
2+15       5.2755     38.83  |  Q   V  |         |         |         |
2+20       5.5493     39.75  |  Q   V  |         |         |         |
2+25       5.8301     40.76  |   Q  V  |         |         |         |
2+30       6.1175     41.74  |   Q   V |         |         |         |
2+35       6.4127     42.86  |   Q   V |         |         |         |
2+40       6.7155     43.96  |   Q    V|         |         |         |
2+45       7.0272     45.26  |   Q    V|         |         |         |
2+50       7.3478     46.54  |   Q    V|         |         |         |
2+55       7.6788     48.07  |   Q     V         |         |         |
3+ 0       8.0205     49.61  |   Q     V         |         |         |
3+ 5       8.3749     51.46  |    Q    |V        |         |         |
3+10       8.7423     53.35  |    Q    |V        |         |         |
3+15       9.1257     55.66  |    Q    | V       |         |         |
3+20       9.5256     58.06  |    Q    | V       |         |         |
3+25       9.9439     60.74  |     Q   |  V      |         |         |
3+30      10.3749     62.59  |     Q   |   V     |         |         |
3+35      10.8111     63.34  |     Q   |   V     |         |         |
3+40      11.2666     66.13  |     Q   |    V    |         |         |
3+45      11.7591     71.52  |      Q  |    V    |         |         |
3+50      12.2995     78.46  |      Q  |     V   |         |         |
3+55      12.9204     90.16  |        Q|      V  |         |         |
4+ 0      13.6682    108.57  |         Q       V |         |         |
4+ 5      14.7648    159.23  |         |    Q    V         |         |
4+10      16.4606    246.24  |         |          | V Q    |         |
4+15      18.9404    360.06  |         |          |    V   |     Q   |
4+20      20.5875    239.16  |         |          |  Q   V |         |
4+25      21.7185    164.23  |         |     Q    |       V|         |
4+30      22.6126    129.82  |         | Q        |        V         |
4+35      23.3623    108.85  |         Q          |         |V        |
4+40      23.9956     91.96  |        Q|          |         | V       |
4+45      24.5321     77.90  |       Q  |         |         |  V      |
4+50      24.9886     66.28  |      Q   |         |         |  V      |
4+55      25.3894     58.19  |     Q    |         |         |   V     |
5+ 0      25.7590     53.66  |     Q    |         |         |   V     |
5+ 5      26.1015     49.74  |    Q     |         |         |    V    |
5+10      26.4257     47.07  |    Q     |         |         |    V    |
5+15      26.7267     43.71  |    Q     |         |         |     V   |
5+20      27.0092     41.01  |    Q     |         |         |     V   |
5+25      27.2719     38.15  |   Q      |         |         |      V  |
5+30      27.5234     36.51  |   Q      |         |         |      V  |
5+35      27.7651     35.10  |   Q      |         |         |      V  |
5+40      27.9982     33.85  |   Q      |         |         |       V |
5+45      28.2235     32.72  |   Q      |         |         |       V |
5+50      28.4419     31.70  |   Q      |         |         |       V |
5+55      28.6538     30.77  |   Q      |         |         |       V |
6+ 0      28.8599     29.92  | Q        |         |         |        V|
6+ 5      29.0540     28.18  | Q        |         |         |        V|
6+10      29.2167     23.63  | Q        |         |         |        V|
6+15      29.3085     13.32  |Q         |         |         |        V|
6+20      29.3636      8.00  Q          |         |         |        V|
6+25      29.4001      5.30  Q          |         |         |        V|
6+30      29.4243      3.51  Q          |         |         |        V|
6+35      29.4399      2.27  Q          |         |         |        V|
6+40      29.4496      1.41  Q          |         |         |        V|
6+45      29.4555      0.86  Q          |         |         |        V|
6+50      29.4593      0.55  Q          |         |         |        V|
6+55      29.4621      0.40  Q          |         |         |        V|
```

```
    7+ 0      29.4640      0.28  Q         |         |         |        V|
    7+ 5      29.4654      0.20  Q         |         |         |        V|
    7+10      29.4661      0.11  Q         |         |         |        V|
    7+15      29.4664      0.04  Q         |         |         |         V
-------------------------------------------------------------------------
```

- 100 Year 12 Hour Post-Development Unit Hydrograph – Area 'C'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/13/16   File Name PRC10012.out


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'C' - 100 YEAR 12 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 100

       Antecedent Moisture Condition = 3

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 74.6       0.5          0.00     B     0.300     0.748    0.224
 74.6     120.5          1.00     C     0.250     0.748    0.187

Area-averaged adjusted loss rate Fm (In/Hr) =  0.187

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC3)          Yield Fr
     0.39   0.003         74.6      90.7       1.03     0.810
     0.13   0.001         98.0      98.0       0.20     0.958

    90.13   0.745         74.6      90.7       1.03     0.810
    30.37   0.251         98.0      98.0       0.20     0.958

Area-averaged catchment yield fraction, Y =  0.847
Area-averaged low loss fraction, Yb =  0.153
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.238 (hours)
Watershed area =     121.02(Ac.)
Catchment Lag time =   0.190 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 43.7982
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.187(In/Hr)
Average low loss rate fraction (Yb) = 0.153 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.520(In)
Computed peak 30-minute rainfall =  1.090(In)
Specified peak 1-hour rainfall =  1.450(In)
Computed peak 3-hour rainfall =  2.430(In)
Specified peak 6-hour rainfall =  3.360(In)
Specified peak 24-hour rainfall =  5.630(In)
```

Rainfall depth area reduction factors:
Using a total area of 121.02(Ac.) (Ref: fig. E-4)

5-minute factor = 0.994 Adjusted rainfall = 0.517(In)
30-minute factor = 0.994 Adjusted rainfall = 1.084(In)
1-hour factor = 0.994 Adjusted rainfall = 1.442(In)
3-hour factor = 0.999 Adjusted rainfall = 2.428(In)
6-hour factor = 1.000 Adjusted rainfall = 3.359(In)
24-hour factor = 1.000 Adjusted rainfall = 5.629(In)

U n i t H y d r o g r a p h

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 1463.59 (CFS))	
1	3.553	52.008
2	17.807	208.614
3	53.907	528.348
4	72.416	270.901
5	81.700	135.883
6	87.852	90.038
7	92.140	62.756
8	95.105	43.403
9	97.041	28.329
10	98.087	15.307
11	98.596	7.445
12	99.007	6.021
13	99.293	4.193
14	99.622	4.813
15	99.839	3.175
16	100.000	2.354

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.5171	0.5171
2	0.6885	0.1714
3	0.8140	0.1255
4	0.9167	0.1027
5	1.0052	0.0885
6	1.0838	0.0786
7	1.1548	0.0710
8	1.2201	0.0653
9	1.2807	0.0606
10	1.3375	0.0568
11	1.3910	0.0535
12	1.4418	0.0507
13	1.4976	0.0558
14	1.5512	0.0536
15	1.6028	0.0516
16	1.6527	0.0498
17	1.7009	0.0482
18	1.7476	0.0468
19	1.7931	0.0454
20	1.8372	0.0442
21	1.8803	0.0430
22	1.9222	0.0420
23	1.9632	0.0410
24	2.0033	0.0400
25	2.0424	0.0392
26	2.0808	0.0384
27	2.1184	0.0376
28	2.1553	0.0369
29	2.1915	0.0362
30	2.2270	0.0355
31	2.2619	0.0349
32	2.2963	0.0343
33	2.3300	0.0338
34	2.3633	0.0332

35	2.3960	0.0327
36	2.4283	0.0322
37	2.4596	0.0313
38	2.4905	0.0309
39	2.5209	0.0305
40	2.5510	0.0300
41	2.5806	0.0297
42	2.6099	0.0293
43	2.6388	0.0289
44	2.6674	0.0285
45	2.6956	0.0282
46	2.7234	0.0279
47	2.7510	0.0275
48	2.7782	0.0272
49	2.8051	0.0269
50	2.8318	0.0266
51	2.8582	0.0264
52	2.8843	0.0261
53	2.9101	0.0258
54	2.9356	0.0256
55	2.9610	0.0253
56	2.9860	0.0251
57	3.0109	0.0248
58	3.0355	0.0246
59	3.0599	0.0244
60	3.0840	0.0242
61	3.1080	0.0239
62	3.1317	0.0237
63	3.1553	0.0235
64	3.1786	0.0233
65	3.2017	0.0231
66	3.2247	0.0230
67	3.2475	0.0228
68	3.2701	0.0226
69	3.2925	0.0224
70	3.3147	0.0222
71	3.3368	0.0221
72	3.3587	0.0219
73	3.3760	0.0173
74	3.3932	0.0172
75	3.4102	0.0170
76	3.4271	0.0169
77	3.4438	0.0167
78	3.4604	0.0166
79	3.4768	0.0165
80	3.4932	0.0163
81	3.5094	0.0162
82	3.5254	0.0161
83	3.5414	0.0160
84	3.5572	0.0158
85	3.5730	0.0157
86	3.5886	0.0156
87	3.6040	0.0155
88	3.6194	0.0154
89	3.6347	0.0153
90	3.6498	0.0152
91	3.6649	0.0151
92	3.6798	0.0150
93	3.6947	0.0148
94	3.7094	0.0147
95	3.7241	0.0147
96	3.7386	0.0146
97	3.7531	0.0145
98	3.7675	0.0144
99	3.7818	0.0143
100	3.7959	0.0142
101	3.8100	0.0141
102	3.8240	0.0140
103	3.8380	0.0139
104	3.8518	0.0138
105	3.8656	0.0138

106	3.8792	0.0137
107	3.8928	0.0136
108	3.9063	0.0135
109	3.9198	0.0134
110	3.9331	0.0134
111	3.9464	0.0133
112	3.9596	0.0132
113	3.9727	0.0131
114	3.9858	0.0131
115	3.9988	0.0130
116	4.0117	0.0129
117	4.0246	0.0128
118	4.0373	0.0128
119	4.0500	0.0127
120	4.0627	0.0126
121	4.0753	0.0126
122	4.0878	0.0125
123	4.1002	0.0124
124	4.1126	0.0124
125	4.1249	0.0123
126	4.1372	0.0123
127	4.1494	0.0122
128	4.1615	0.0121
129	4.1736	0.0121
130	4.1856	0.0120
131	4.1976	0.0120
132	4.2095	0.0119
133	4.2214	0.0119
134	4.2332	0.0118
135	4.2449	0.0117
136	4.2566	0.0117
137	4.2682	0.0116
138	4.2798	0.0116
139	4.2913	0.0115
140	4.3028	0.0115
141	4.3142	0.0114
142	4.3256	0.0114
143	4.3369	0.0113
144	4.3482	0.0113

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0113	0.0017	0.0096
2	0.0113	0.0017	0.0096
3	0.0114	0.0017	0.0097
4	0.0115	0.0018	0.0097
5	0.0116	0.0018	0.0098
6	0.0116	0.0018	0.0099
7	0.0117	0.0018	0.0099
8	0.0118	0.0018	0.0100
9	0.0119	0.0018	0.0101
10	0.0120	0.0018	0.0101
11	0.0121	0.0018	0.0102
12	0.0121	0.0019	0.0103
13	0.0123	0.0019	0.0104
14	0.0123	0.0019	0.0104
15	0.0124	0.0019	0.0105
16	0.0125	0.0019	0.0106
17	0.0126	0.0019	0.0107
18	0.0127	0.0019	0.0108
19	0.0128	0.0020	0.0109
20	0.0129	0.0020	0.0109
21	0.0131	0.0020	0.0111
22	0.0131	0.0020	0.0111
23	0.0133	0.0020	0.0113
24	0.0134	0.0020	0.0113
25	0.0135	0.0021	0.0114
26	0.0136	0.0021	0.0115
27	0.0138	0.0021	0.0117

28	0.0138	0.0021	0.0117
29	0.0140	0.0021	0.0119
30	0.0141	0.0022	0.0119
31	0.0143	0.0022	0.0121
32	0.0144	0.0022	0.0122
33	0.0146	0.0022	0.0123
34	0.0147	0.0022	0.0124
35	0.0148	0.0023	0.0126
36	0.0150	0.0023	0.0127
37	0.0152	0.0023	0.0128
38	0.0153	0.0023	0.0129
39	0.0155	0.0024	0.0131
40	0.0156	0.0024	0.0132
41	0.0158	0.0024	0.0134
42	0.0160	0.0024	0.0135
43	0.0162	0.0025	0.0137
44	0.0163	0.0025	0.0138
45	0.0166	0.0025	0.0141
46	0.0167	0.0026	0.0142
47	0.0170	0.0026	0.0144
48	0.0172	0.0026	0.0145
49	0.0219	0.0033	0.0186
50	0.0221	0.0034	0.0187
51	0.0224	0.0034	0.0190
52	0.0226	0.0035	0.0191
53	0.0230	0.0035	0.0195
54	0.0231	0.0035	0.0196
55	0.0235	0.0036	0.0199
56	0.0237	0.0036	0.0201
57	0.0242	0.0037	0.0205
58	0.0244	0.0037	0.0207
59	0.0248	0.0038	0.0210
60	0.0251	0.0038	0.0212
61	0.0256	0.0039	0.0217
62	0.0258	0.0039	0.0219
63	0.0264	0.0040	0.0223
64	0.0266	0.0041	0.0226
65	0.0272	0.0042	0.0231
66	0.0275	0.0042	0.0233
67	0.0282	0.0043	0.0239
68	0.0285	0.0044	0.0242
69	0.0293	0.0045	0.0248
70	0.0297	0.0045	0.0251
71	0.0305	0.0047	0.0258
72	0.0309	0.0047	0.0262
73	0.0322	0.0049	0.0273
74	0.0327	0.0050	0.0277
75	0.0338	0.0052	0.0286
76	0.0343	0.0052	0.0291
77	0.0355	0.0054	0.0301
78	0.0362	0.0055	0.0307
79	0.0376	0.0057	0.0319
80	0.0384	0.0059	0.0325
81	0.0400	0.0061	0.0339
82	0.0410	0.0063	0.0347
83	0.0430	0.0066	0.0365
84	0.0442	0.0067	0.0374
85	0.0468	0.0071	0.0396
86	0.0482	0.0074	0.0409
87	0.0516	0.0079	0.0437
88	0.0536	0.0082	0.0454
89	0.0507	0.0078	0.0430
90	0.0535	0.0082	0.0454
91	0.0606	0.0093	0.0514
92	0.0653	0.0100	0.0553
93	0.0786	0.0120	0.0666
94	0.0885	0.0135	0.0750
95	0.1255	0.0156	0.1099
96	0.1714	0.0156	0.1558
97	0.5171	0.0156	0.5015
98	0.1027	0.0156	0.0871

```
 99              0.0710          0.0108              0.0602
100              0.0568          0.0087              0.0481
101              0.0558          0.0085              0.0473
102              0.0498          0.0076              0.0422
103              0.0454          0.0069              0.0385
104              0.0420          0.0064              0.0356
105              0.0392          0.0060              0.0332
106              0.0369          0.0056              0.0312
107              0.0349          0.0053              0.0296
108              0.0332          0.0051              0.0282
109              0.0313          0.0048              0.0266
110              0.0300          0.0046              0.0255
111              0.0289          0.0044              0.0245
112              0.0279          0.0043              0.0236
113              0.0269          0.0041              0.0228
114              0.0261          0.0040              0.0221
115              0.0253          0.0039              0.0215
116              0.0246          0.0038              0.0208
117              0.0239          0.0037              0.0203
118              0.0233          0.0036              0.0198
119              0.0228          0.0035              0.0193
120              0.0222          0.0034              0.0188
121              0.0173          0.0026              0.0147
122              0.0169          0.0026              0.0143
123              0.0165          0.0025              0.0139
124              0.0161          0.0025              0.0136
125              0.0157          0.0024              0.0133
126              0.0154          0.0023              0.0130
127              0.0151          0.0023              0.0128
128              0.0147          0.0023              0.0125
129              0.0145          0.0022              0.0123
130              0.0142          0.0022              0.0120
131              0.0139          0.0021              0.0118
132              0.0137          0.0021              0.0116
133              0.0134          0.0021              0.0114
134              0.0132          0.0020              0.0112
135              0.0130          0.0020              0.0110
136              0.0128          0.0020              0.0108
137              0.0126          0.0019              0.0107
138              0.0124          0.0019              0.0105
139              0.0122          0.0019              0.0103
140              0.0120          0.0018              0.0102
141              0.0119          0.0018              0.0100
142              0.0117          0.0018              0.0099
143              0.0115          0.0018              0.0098
144              0.0114          0.0017              0.0096
-------------------------------------------------------------------
-------------------------------------------------------------------
Total soil rain loss =      0.59(In)
Total effective rainfall =      3.76(In)
Peak flow rate in flood hydrograph =    360.06(CFS)
-------------------------------------------------------------------
+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                    12 - H O U R    S T O R M
                R u n o f f      H y d r o g r a p h
-------------------------------------------------------------------
            Hydrograph in   5   Minute intervals ((CFS))

-------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0      100.0     200.0     300.0     400.0
-------------------------------------------------------------------
  0+ 5       0.0034      0.50  Q         |         |         |         |
  0+10       0.0206      2.49  Q         |         |         |         |
  0+15       0.0726      7.55  Q         |         |         |         |
  0+20       0.1427     10.18  VQ        |         |         |         |
  0+25       0.2222     11.55  VQ        |         |         |         |
  0+30       0.3082     12.48  VQ        |         |         |         |
  0+35       0.3989     13.17  VQ        |         |         |         |
  0+40       0.4930     13.67  VQ        |         |         |         |
  0+45       0.5897     14.04  VQ        |         |         |         |
  0+50       0.6880     14.28  VQ        |         |         |         |
```

```
0+55       0.7875     14.45  VQ        |         |         |         |
1+ 0       0.8882     14.61  VQ        |         |         |         |
1+ 5       0.9898     14.76  |Q        |         |         |         |
1+10       1.0925     14.91  |Q        |         |         |         |
1+15       1.1962     15.05  |Q        |         |         |         |
1+20       1.3007     15.18  |Q        |         |         |         |
1+25       1.4061     15.30  |Q        |         |         |         |
1+30       1.5123     15.42  |Q        |         |         |         |
1+35       1.6193     15.54  |Q        |         |         |         |
1+40       1.7272     15.66  |Q        |         |         |         |
1+45       1.8359     15.79  |Q        |         |         |         |
1+50       1.9454     15.91  |QV       |         |         |         |
1+55       2.0559     16.04  |QV       |         |         |         |
2+ 0       2.1673     16.17  |QV       |         |         |         |
2+ 5       2.2796     16.31  |QV       |         |         |         |
2+10       2.3929     16.44  |QV       |         |         |         |
2+15       2.5072     16.59  |QV       |         |         |         |
2+20       2.6224     16.73  |QV       |         |         |         |
2+25       2.7387     16.88  |QV       |         |         |         |
2+30       2.8560     17.03  |Q V      |         |         |         |
2+35       2.9744     17.19  |Q V      |         |         |         |
2+40       3.0938     17.34  |Q V      |         |         |         |
2+45       3.2144     17.51  |Q V      |         |         |         |
2+50       3.3361     17.67  |Q V      |         |         |         |
2+55       3.4591     17.85  |Q V      |         |         |         |
3+ 0       3.5831     18.02  |Q V      |         |         |         |
3+ 5       3.7085     18.21  |Q V      |         |         |         |
3+10       3.8351     18.38  |Q  V     |         |         |         |
3+15       3.9631     18.58  |Q  V     |         |         |         |
3+20       4.0923     18.77  |Q  V     |         |         |         |
3+25       4.2230     18.97  |Q  V     |         |         |         |
3+30       4.3550     19.17  |Q  V     |         |         |         |
3+35       4.4886     19.39  |Q  V     |         |         |         |
3+40       4.6235     19.60  |Q  V     |         |         |         |
3+45       4.7601     19.83  |Q   V    |         |         |         |
3+50       4.8982     20.05  | Q  V    |         |         |         |
3+55       5.0380     20.30  | Q  V    |         |         |         |
4+ 0       5.1795     20.54  | Q  V    |         |         |         |
4+ 5       5.3241     21.00  | Q  V    |         |         |         |
4+10       5.4758     22.04  | Q  V    |         |         |         |
4+15       5.6433     24.32  | Q  V    |         |         |         |
4+20       5.8197     25.62  | Q   V   |         |         |         |
4+25       6.0018     26.44  | Q   V   |         |         |         |
4+30       6.1884     27.08  | Q   V   |         |         |         |
4+35       6.3789     27.66  | Q   V   |         |         |         |
4+40       6.5728     28.15  | Q   V   |         |         |         |
4+45       6.7699     28.62  | Q    V  |         |         |         |
4+50       6.9698     29.03  | Q    V  |         |         |         |
4+55       7.1727     29.45  | Q    V  |         |         |         |
5+ 0       7.3782     29.85  | Q    V  |         |         |         |
5+ 5       7.5869     30.29  |  Q    V |         |         |         |
5+10       7.7984     30.72  |  Q    V |         |         |         |
5+15       8.0133     31.19  |  Q    V |         |         |         |
5+20       8.2312     31.64  |  Q    V |         |         |         |
5+25       8.4526     32.15  |  Q    V |         |         |         |
5+30       8.6773     32.63  |  Q     V|         |         |         |
5+35       8.9058     33.18  |  Q     V|         |         |         |
5+40       9.1380     33.71  |  Q     V|         |         |         |
5+45       9.3743     34.31  |  Q     V|         |         |         |
5+50       9.6146     34.90  |  Q      V         |         |         |
5+55       9.8596     35.57  |  Q      V         |         |         |
6+ 0      10.1090     36.22  |  Q      V         |         |         |
6+ 5      10.3638     36.99  |  Q      V         |         |         |
6+10      10.6240     37.79  |  Q      |V        |         |         |
6+15      10.8915     38.83  |  Q      |V        |         |         |
6+20      11.1652     39.75  |  Q      |V        |         |         |
6+25      11.4460     40.76  |   Q     | V       |         |         |
6+30      11.7334     41.74  |   Q     | V       |         |         |
6+35      12.0286     42.86  |   Q     | V       |         |         |
6+40      12.3314     43.96  |   Q     |  V      |         |         |
6+45      12.6431     45.26  |   Q     |  V      |         |         |
```

```
 6+50      12.9637     46.54  |   Q     |  V      |         |         |
 6+55      13.2948     48.07  |   Q     |   V     |         |         |
 7+ 0      13.6364     49.61  |   Q     |   V     |         |         |
 7+ 5      13.9908     51.46  |    Q    |   V     |         |         |
 7+10      14.3583     53.35  |    Q    |    V    |         |         |
 7+15      14.7416     55.66  |    Q    |    V    |         |         |
 7+20      15.1415     58.06  |    Q    |    V    |         |         |
 7+25      15.5598     60.74  |     Q   |     V   |         |         |
 7+30      15.9908     62.59  |     Q   |     V   |         |         |
 7+35      16.4271     63.34  |     Q   |      V  |         |         |
 7+40      16.8825     66.13  |     Q   |      V  |         |         |
 7+45      17.3751     71.52  |      Q  |       V |         |         |
 7+50      17.9154     78.46  |      Q  |       V |         |         |
 7+55      18.5363     90.16  |        Q|        V|         |         |
 8+ 0      19.2841    108.57  |         Q         V         |         |
 8+ 5      20.3807    159.23  |          |    Q    |V       |         |
 8+10      22.0766    246.24  |          |         |  VQ     |         |
 8+15      24.5563    360.06  |          |         |    V    |     Q   |
 8+20      26.2034    239.16  |          |         |  Q   V  |         |
 8+25      27.3345    164.23  |          |     Q   |      V  |         |
 8+30      28.2286    129.82  |          | Q       |       V |         |
 8+35      28.9782    108.85  |          |Q        |        V|         |
 8+40      29.6115     91.96  |          |Q        |         |V        |
 8+45      30.1481     77.90  |       Q  |         |         |V        |
 8+50      30.6046     66.28  |      Q   |         |         | V       |
 8+55      31.0053     58.19  |     Q    |         |         | V       |
 9+ 0      31.3749     53.66  |     Q    |         |         |  V      |
 9+ 5      31.7174     49.74  |    Q     |         |         |  V      |
 9+10      32.0416     47.07  |    Q     |         |         |  V      |
 9+15      32.3426     43.71  |    Q     |         |         |   V     |
 9+20      32.6251     41.01  |    Q     |         |         |   V     |
 9+25      32.8879     38.15  |   Q      |         |         |   V     |
 9+30      33.1393     36.51  |   Q      |         |         |   V     |
 9+35      33.3810     35.10  |   Q      |         |         |    V    |
 9+40      33.6141     33.85  |   Q      |         |         |    V    |
 9+45      33.8395     32.72  |   Q      |         |         |    V    |
 9+50      34.0578     31.70  |   Q      |         |         |    V    |
 9+55      34.2697     30.77  |   Q      |         |         |     V   |
10+ 0      34.4758     29.92  |  Q       |         |         |     V   |
10+ 5      34.6751     28.94  |  Q       |         |         |     V   |
10+10      34.8641     27.43  |  Q       |         |         |     V   |
10+15      35.0347     24.77  |  Q       |         |         |     V   |
10+20      35.1941     23.14  |  Q       |         |         |      V  |
10+25      35.3460     22.07  |  Q       |         |         |      V  |
10+30      35.4920     21.20  |  Q       |         |         |      V  |
10+35      35.6331     20.48  |  Q       |         |         |      V  |
10+40      35.7698     19.85  |Q         |         |         |      V  |
10+45      35.9028     19.32  |Q         |         |         |      V  |
10+50      36.0326     18.85  |Q         |         |         |       V |
10+55      36.1596     18.44  |Q         |         |         |       V |
11+ 0      36.2839     18.05  |Q         |         |         |       V |
11+ 5      36.4057     17.69  |Q         |         |         |       V |
11+10      36.5252     17.34  |Q         |         |         |       V |
11+15      36.6423     17.01  |Q         |         |         |       V |
11+20      36.7574     16.71  |Q         |         |         |       V |
11+25      36.8705     16.42  |Q         |         |         |       V |
11+30      36.9817     16.15  |Q         |         |         |        V|
11+35      37.0911     15.89  |Q         |         |         |        V|
11+40      37.1988     15.63  |Q         |         |         |        V|
11+45      37.3048     15.39  |Q         |         |         |        V|
11+50      37.4092     15.16  |Q         |         |         |        V|
11+55      37.5121     14.94  |Q         |         |         |        V|
12+ 0      37.6135     14.72  |Q         |         |         |        V|
12+ 5      37.7101     14.02  |Q         |         |         |        V|
12+10      37.7917     11.85  |Q         |         |         |        V|
12+15      37.8376      6.66  Q          |         |         |        V|
12+20      37.8651      4.00  Q          |         |         |        V|
12+25      37.8833      2.65  Q          |         |         |        V|
12+30      37.8954      1.76  Q          |         |         |        V|
12+35      37.9032      1.14  Q          |         |         |        V|
12+40      37.9081      0.71  Q          |         |         |        V|
```

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   12+45      37.9111      0.43  Q         |         |         |        V|
   12+50      37.9130      0.28  Q         |         |         |        V|
   12+55      37.9144      0.20  Q         |         |         |        V|
   13+ 0      37.9153      0.14  Q         |         |         |        V|
   13+ 5      37.9160      0.10  Q         |         |         |        V|
   13+10      37.9164      0.05  Q         |         |         |        V|
   13+15      37.9166      0.02  Q         |         |         |        V|
-------------------------------------------------------------------------
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- 100 Year 24 Hour Post-Development Unit Hydrograph – Area 'C'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/13/16   File Name PRC10024.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

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RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'C' - 100 YEAR 24 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 100

       Antecedent Moisture Condition = 3

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 74.6       0.5          0.00     B     0.300     0.748    0.224
 74.6     120.5          1.00     C     0.250     0.748    0.187

Area-averaged adjusted loss rate Fm (In/Hr) =  0.187

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC3)          Yield Fr
     0.39   0.003         74.6      90.7       1.03     0.810
     0.13   0.001         98.0      98.0       0.20     0.958

    90.13   0.745         74.6      90.7       1.03     0.810
    30.37   0.251         98.0      98.0       0.20     0.958

Area-averaged catchment yield fraction, Y =  0.847
Area-averaged low loss fraction, Yb =  0.153
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.238 (hours)
Watershed area =     121.02(Ac.)
Catchment Lag time =   0.190 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 43.7982
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.187(In/Hr)
Average low loss rate fraction (Yb) = 0.153 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.520(In)
Computed peak 30-minute rainfall =  1.090(In)
Specified peak 1-hour rainfall =  1.450(In)
Computed peak 3-hour rainfall =  2.430(In)
Specified peak 6-hour rainfall =  3.360(In)
Specified peak 24-hour rainfall =  5.630(In)
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Rainfall depth area reduction factors:
Using a total area of     121.02(Ac.) (Ref: fig. E-4)

5-minute factor = 0.994     Adjusted rainfall =  0.517(In)
30-minute factor = 0.994    Adjusted rainfall =  1.084(In)
1-hour factor = 0.994       Adjusted rainfall =  1.442(In)
3-hour factor = 0.999       Adjusted rainfall =  2.428(In)
6-hour factor = 1.000       Adjusted rainfall =  3.359(In)
24-hour factor = 1.000 Adjusted rainfall =  5.629(In)
```

U n i t H y d r o g r a p h

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 1463.59 (CFS))	
1	3.553	52.008
2	17.807	208.614
3	53.907	528.348
4	72.416	270.901
5	81.700	135.883
6	87.852	90.038
7	92.140	62.756
8	95.105	43.403
9	97.041	28.329
10	98.087	15.307
11	98.596	7.445
12	99.007	6.021
13	99.293	4.193
14	99.622	4.813
15	99.839	3.175
16	100.000	2.354

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.5171	0.5171
2	0.6885	0.1714
3	0.8140	0.1255
4	0.9167	0.1027
5	1.0052	0.0885
6	1.0838	0.0786
7	1.1548	0.0710
8	1.2201	0.0653
9	1.2807	0.0606
10	1.3375	0.0568
11	1.3910	0.0535
12	1.4418	0.0507
13	1.4976	0.0558
14	1.5512	0.0536
15	1.6028	0.0516
16	1.6527	0.0498
17	1.7009	0.0482
18	1.7476	0.0468
19	1.7931	0.0454
20	1.8372	0.0442
21	1.8803	0.0430
22	1.9222	0.0420
23	1.9632	0.0410
24	2.0033	0.0400
25	2.0424	0.0392
26	2.0808	0.0384
27	2.1184	0.0376
28	2.1553	0.0369
29	2.1915	0.0362
30	2.2270	0.0355
31	2.2619	0.0349
32	2.2963	0.0343
33	2.3300	0.0338
34	2.3633	0.0332

35	2.3960	0.0327
36	2.4283	0.0322
37	2.4596	0.0313
38	2.4905	0.0309
39	2.5209	0.0305
40	2.5510	0.0300
41	2.5806	0.0297
42	2.6099	0.0293
43	2.6388	0.0289
44	2.6674	0.0285
45	2.6956	0.0282
46	2.7234	0.0279
47	2.7510	0.0275
48	2.7782	0.0272
49	2.8051	0.0269
50	2.8318	0.0266
51	2.8582	0.0264
52	2.8843	0.0261
53	2.9101	0.0258
54	2.9356	0.0256
55	2.9610	0.0253
56	2.9860	0.0251
57	3.0109	0.0248
58	3.0355	0.0246
59	3.0599	0.0244
60	3.0840	0.0242
61	3.1080	0.0239
62	3.1317	0.0237
63	3.1553	0.0235
64	3.1786	0.0233
65	3.2017	0.0231
66	3.2247	0.0230
67	3.2475	0.0228
68	3.2701	0.0226
69	3.2925	0.0224
70	3.3147	0.0222
71	3.3368	0.0221
72	3.3587	0.0219
73	3.3760	0.0173
74	3.3932	0.0172
75	3.4102	0.0170
76	3.4271	0.0169
77	3.4438	0.0167
78	3.4604	0.0166
79	3.4768	0.0165
80	3.4932	0.0163
81	3.5094	0.0162
82	3.5254	0.0161
83	3.5414	0.0160
84	3.5572	0.0158
85	3.5730	0.0157
86	3.5886	0.0156
87	3.6040	0.0155
88	3.6194	0.0154
89	3.6347	0.0153
90	3.6498	0.0152
91	3.6649	0.0151
92	3.6798	0.0150
93	3.6947	0.0148
94	3.7094	0.0147
95	3.7241	0.0147
96	3.7386	0.0146
97	3.7531	0.0145
98	3.7675	0.0144
99	3.7818	0.0143
100	3.7959	0.0142
101	3.8100	0.0141
102	3.8240	0.0140
103	3.8380	0.0139
104	3.8518	0.0138
105	3.8656	0.0138

106	3.8792	0.0137
107	3.8928	0.0136
108	3.9063	0.0135
109	3.9198	0.0134
110	3.9331	0.0134
111	3.9464	0.0133
112	3.9596	0.0132
113	3.9727	0.0131
114	3.9858	0.0131
115	3.9988	0.0130
116	4.0117	0.0129
117	4.0246	0.0128
118	4.0373	0.0128
119	4.0500	0.0127
120	4.0627	0.0126
121	4.0753	0.0126
122	4.0878	0.0125
123	4.1002	0.0124
124	4.1126	0.0124
125	4.1249	0.0123
126	4.1372	0.0123
127	4.1494	0.0122
128	4.1615	0.0121
129	4.1736	0.0121
130	4.1856	0.0120
131	4.1976	0.0120
132	4.2095	0.0119
133	4.2214	0.0119
134	4.2332	0.0118
135	4.2449	0.0117
136	4.2566	0.0117
137	4.2682	0.0116
138	4.2798	0.0116
139	4.2913	0.0115
140	4.3028	0.0115
141	4.3142	0.0114
142	4.3256	0.0114
143	4.3369	0.0113
144	4.3482	0.0113
145	4.3594	0.0112
146	4.3706	0.0112
147	4.3817	0.0111
148	4.3928	0.0111
149	4.4038	0.0110
150	4.4148	0.0110
151	4.4258	0.0109
152	4.4367	0.0109
153	4.4475	0.0109
154	4.4583	0.0108
155	4.4691	0.0108
156	4.4798	0.0107
157	4.4905	0.0107
158	4.5011	0.0106
159	4.5117	0.0106
160	4.5222	0.0105
161	4.5327	0.0105
162	4.5432	0.0105
163	4.5536	0.0104
164	4.5640	0.0104
165	4.5744	0.0103
166	4.5847	0.0103
167	4.5949	0.0103
168	4.6052	0.0102
169	4.6154	0.0102
170	4.6255	0.0102
171	4.6356	0.0101
172	4.6457	0.0101
173	4.6558	0.0100
174	4.6658	0.0100
175	4.6757	0.0100
176	4.6857	0.0099

177	4.6956	0.0099
178	4.7054	0.0099
179	4.7153	0.0098
180	4.7251	0.0098
181	4.7348	0.0098
182	4.7446	0.0097
183	4.7542	0.0097
184	4.7639	0.0097
185	4.7735	0.0096
186	4.7831	0.0096
187	4.7927	0.0096
188	4.8022	0.0095
189	4.8117	0.0095
190	4.8212	0.0095
191	4.8306	0.0094
192	4.8400	0.0094
193	4.8494	0.0094
194	4.8588	0.0093
195	4.8681	0.0093
196	4.8774	0.0093
197	4.8866	0.0093
198	4.8958	0.0092
199	4.9050	0.0092
200	4.9142	0.0092
201	4.9233	0.0091
202	4.9324	0.0091
203	4.9415	0.0091
204	4.9506	0.0091
205	4.9596	0.0090
206	4.9686	0.0090
207	4.9776	0.0090
208	4.9865	0.0089
209	4.9954	0.0089
210	5.0043	0.0089
211	5.0132	0.0089
212	5.0220	0.0088
213	5.0308	0.0088
214	5.0396	0.0088
215	5.0484	0.0088
216	5.0571	0.0087
217	5.0658	0.0087
218	5.0745	0.0087
219	5.0832	0.0087
220	5.0918	0.0086
221	5.1004	0.0086
222	5.1090	0.0086
223	5.1176	0.0086
224	5.1261	0.0085
225	5.1346	0.0085
226	5.1431	0.0085
227	5.1516	0.0085
228	5.1600	0.0084
229	5.1684	0.0084
230	5.1768	0.0084
231	5.1852	0.0084
232	5.1935	0.0084
233	5.2019	0.0083
234	5.2102	0.0083
235	5.2185	0.0083
236	5.2267	0.0083
237	5.2350	0.0082
238	5.2432	0.0082
239	5.2514	0.0082
240	5.2595	0.0082
241	5.2677	0.0082
242	5.2758	0.0081
243	5.2839	0.0081
244	5.2920	0.0081
245	5.3001	0.0081
246	5.3081	0.0080
247	5.3162	0.0080

248	5.3242	0.0080
249	5.3322	0.0080
250	5.3401	0.0080
251	5.3481	0.0079
252	5.3560	0.0079
253	5.3639	0.0079
254	5.3718	0.0079
255	5.3797	0.0079
256	5.3875	0.0078
257	5.3953	0.0078
258	5.4032	0.0078
259	5.4109	0.0078
260	5.4187	0.0078
261	5.4265	0.0078
262	5.4342	0.0077
263	5.4419	0.0077
264	5.4496	0.0077
265	5.4573	0.0077
266	5.4650	0.0077
267	5.4726	0.0076
268	5.4802	0.0076
269	5.4878	0.0076
270	5.4954	0.0076
271	5.5030	0.0076
272	5.5106	0.0076
273	5.5181	0.0075
274	5.5256	0.0075
275	5.5331	0.0075
276	5.5406	0.0075
277	5.5481	0.0075
278	5.5555	0.0075
279	5.5630	0.0074
280	5.5704	0.0074
281	5.5778	0.0074
282	5.5852	0.0074
283	5.5925	0.0074
284	5.5999	0.0074
285	5.6072	0.0073
286	5.6146	0.0073
287	5.6219	0.0073
288	5.6291	0.0073

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0073	0.0011	0.0062
2	0.0073	0.0011	0.0062
3	0.0073	0.0011	0.0062
4	0.0074	0.0011	0.0062
5	0.0074	0.0011	0.0063
6	0.0074	0.0011	0.0063
7	0.0074	0.0011	0.0063
8	0.0075	0.0011	0.0063
9	0.0075	0.0011	0.0063
10	0.0075	0.0011	0.0064
11	0.0075	0.0012	0.0064
12	0.0076	0.0012	0.0064
13	0.0076	0.0012	0.0064
14	0.0076	0.0012	0.0064
15	0.0076	0.0012	0.0065
16	0.0077	0.0012	0.0065
17	0.0077	0.0012	0.0065
18	0.0077	0.0012	0.0065
19	0.0078	0.0012	0.0066
20	0.0078	0.0012	0.0066
21	0.0078	0.0012	0.0066
22	0.0078	0.0012	0.0066
23	0.0079	0.0012	0.0067
24	0.0079	0.0012	0.0067
25	0.0079	0.0012	0.0067

26	0.0079	0.0012	0.0067
27	0.0080	0.0012	0.0068
28	0.0080	0.0012	0.0068
29	0.0080	0.0012	0.0068
30	0.0081	0.0012	0.0068
31	0.0081	0.0012	0.0069
32	0.0081	0.0012	0.0069
33	0.0082	0.0012	0.0069
34	0.0082	0.0013	0.0069
35	0.0082	0.0013	0.0070
36	0.0083	0.0013	0.0070
37	0.0083	0.0013	0.0070
38	0.0083	0.0013	0.0071
39	0.0084	0.0013	0.0071
40	0.0084	0.0013	0.0071
41	0.0084	0.0013	0.0072
42	0.0085	0.0013	0.0072
43	0.0085	0.0013	0.0072
44	0.0085	0.0013	0.0072
45	0.0086	0.0013	0.0073
46	0.0086	0.0013	0.0073
47	0.0087	0.0013	0.0073
48	0.0087	0.0013	0.0074
49	0.0087	0.0013	0.0074
50	0.0088	0.0013	0.0074
51	0.0088	0.0013	0.0075
52	0.0088	0.0013	0.0075
53	0.0089	0.0014	0.0075
54	0.0089	0.0014	0.0076
55	0.0090	0.0014	0.0076
56	0.0090	0.0014	0.0076
57	0.0091	0.0014	0.0077
58	0.0091	0.0014	0.0077
59	0.0091	0.0014	0.0077
60	0.0092	0.0014	0.0078
61	0.0092	0.0014	0.0078
62	0.0093	0.0014	0.0078
63	0.0093	0.0014	0.0079
64	0.0093	0.0014	0.0079
65	0.0094	0.0014	0.0080
66	0.0094	0.0014	0.0080
67	0.0095	0.0015	0.0080
68	0.0095	0.0015	0.0081
69	0.0096	0.0015	0.0081
70	0.0096	0.0015	0.0082
71	0.0097	0.0015	0.0082
72	0.0097	0.0015	0.0082
73	0.0098	0.0015	0.0083
74	0.0098	0.0015	0.0083
75	0.0099	0.0015	0.0084
76	0.0099	0.0015	0.0084
77	0.0100	0.0015	0.0085
78	0.0100	0.0015	0.0085
79	0.0101	0.0015	0.0086
80	0.0102	0.0016	0.0086
81	0.0102	0.0016	0.0087
82	0.0103	0.0016	0.0087
83	0.0103	0.0016	0.0088
84	0.0104	0.0016	0.0088
85	0.0105	0.0016	0.0089
86	0.0105	0.0016	0.0089
87	0.0106	0.0016	0.0090
88	0.0106	0.0016	0.0090
89	0.0107	0.0016	0.0091
90	0.0108	0.0016	0.0091
91	0.0109	0.0017	0.0092
92	0.0109	0.0017	0.0092
93	0.0110	0.0017	0.0093
94	0.0110	0.0017	0.0093
95	0.0111	0.0017	0.0094
96	0.0112	0.0017	0.0095

97	0.0113	0.0017	0.0096
98	0.0113	0.0017	0.0096
99	0.0114	0.0017	0.0097
100	0.0115	0.0018	0.0097
101	0.0116	0.0018	0.0098
102	0.0116	0.0018	0.0099
103	0.0117	0.0018	0.0099
104	0.0118	0.0018	0.0100
105	0.0119	0.0018	0.0101
106	0.0120	0.0018	0.0101
107	0.0121	0.0018	0.0102
108	0.0121	0.0019	0.0103
109	0.0123	0.0019	0.0104
110	0.0123	0.0019	0.0104
111	0.0124	0.0019	0.0105
112	0.0125	0.0019	0.0106
113	0.0126	0.0019	0.0107
114	0.0127	0.0019	0.0108
115	0.0128	0.0020	0.0109
116	0.0129	0.0020	0.0109
117	0.0131	0.0020	0.0111
118	0.0131	0.0020	0.0111
119	0.0133	0.0020	0.0113
120	0.0134	0.0020	0.0113
121	0.0135	0.0021	0.0114
122	0.0136	0.0021	0.0115
123	0.0138	0.0021	0.0117
124	0.0138	0.0021	0.0117
125	0.0140	0.0021	0.0119
126	0.0141	0.0022	0.0119
127	0.0143	0.0022	0.0121
128	0.0144	0.0022	0.0122
129	0.0146	0.0022	0.0123
130	0.0147	0.0022	0.0124
131	0.0148	0.0023	0.0126
132	0.0150	0.0023	0.0127
133	0.0152	0.0023	0.0128
134	0.0153	0.0023	0.0129
135	0.0155	0.0024	0.0131
136	0.0156	0.0024	0.0132
137	0.0158	0.0024	0.0134
138	0.0160	0.0024	0.0135
139	0.0162	0.0025	0.0137
140	0.0163	0.0025	0.0138
141	0.0166	0.0025	0.0141
142	0.0167	0.0026	0.0142
143	0.0170	0.0026	0.0144
144	0.0172	0.0026	0.0145
145	0.0219	0.0033	0.0186
146	0.0221	0.0034	0.0187
147	0.0224	0.0034	0.0190
148	0.0226	0.0035	0.0191
149	0.0230	0.0035	0.0195
150	0.0231	0.0035	0.0196
151	0.0235	0.0036	0.0199
152	0.0237	0.0036	0.0201
153	0.0242	0.0037	0.0205
154	0.0244	0.0037	0.0207
155	0.0248	0.0038	0.0210
156	0.0251	0.0038	0.0212
157	0.0256	0.0039	0.0217
158	0.0258	0.0039	0.0219
159	0.0264	0.0040	0.0223
160	0.0266	0.0041	0.0226
161	0.0272	0.0042	0.0231
162	0.0275	0.0042	0.0233
163	0.0282	0.0043	0.0239
164	0.0285	0.0044	0.0242
165	0.0293	0.0045	0.0248
166	0.0297	0.0045	0.0251
167	0.0305	0.0047	0.0258

168	0.0309	0.0047	0.0262
169	0.0322	0.0049	0.0273
170	0.0327	0.0050	0.0277
171	0.0338	0.0052	0.0286
172	0.0343	0.0052	0.0291
173	0.0355	0.0054	0.0301
174	0.0362	0.0055	0.0307
175	0.0376	0.0057	0.0319
176	0.0384	0.0059	0.0325
177	0.0400	0.0061	0.0339
178	0.0410	0.0063	0.0347
179	0.0430	0.0066	0.0365
180	0.0442	0.0067	0.0374
181	0.0468	0.0071	0.0396
182	0.0482	0.0074	0.0409
183	0.0516	0.0079	0.0437
184	0.0536	0.0082	0.0454
185	0.0507	0.0078	0.0430
186	0.0535	0.0082	0.0454
187	0.0606	0.0093	0.0514
188	0.0653	0.0100	0.0553
189	0.0786	0.0120	0.0666
190	0.0885	0.0135	0.0750
191	0.1255	0.0156	0.1099
192	0.1714	0.0156	0.1558
193	0.5171	0.0156	0.5015
194	0.1027	0.0156	0.0871
195	0.0710	0.0108	0.0602
196	0.0568	0.0087	0.0481
197	0.0558	0.0085	0.0473
198	0.0498	0.0076	0.0422
199	0.0454	0.0069	0.0385
200	0.0420	0.0064	0.0356
201	0.0392	0.0060	0.0332
202	0.0369	0.0056	0.0312
203	0.0349	0.0053	0.0296
204	0.0332	0.0051	0.0282
205	0.0313	0.0048	0.0266
206	0.0300	0.0046	0.0255
207	0.0289	0.0044	0.0245
208	0.0279	0.0043	0.0236
209	0.0269	0.0041	0.0228
210	0.0261	0.0040	0.0221
211	0.0253	0.0039	0.0215
212	0.0246	0.0038	0.0208
213	0.0239	0.0037	0.0203
214	0.0233	0.0036	0.0198
215	0.0228	0.0035	0.0193
216	0.0222	0.0034	0.0188
217	0.0173	0.0026	0.0147
218	0.0169	0.0026	0.0143
219	0.0165	0.0025	0.0139
220	0.0161	0.0025	0.0136
221	0.0157	0.0024	0.0133
222	0.0154	0.0023	0.0130
223	0.0151	0.0023	0.0128
224	0.0147	0.0023	0.0125
225	0.0145	0.0022	0.0123
226	0.0142	0.0022	0.0120
227	0.0139	0.0021	0.0118
228	0.0137	0.0021	0.0116
229	0.0134	0.0021	0.0114
230	0.0132	0.0020	0.0112
231	0.0130	0.0020	0.0110
232	0.0128	0.0020	0.0108
233	0.0126	0.0019	0.0107
234	0.0124	0.0019	0.0105
235	0.0122	0.0019	0.0103
236	0.0120	0.0018	0.0102
237	0.0119	0.0018	0.0100
238	0.0117	0.0018	0.0099

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      239              0.0115          0.0018              0.0098
      240              0.0114          0.0017              0.0096
      241              0.0112          0.0017              0.0095
      242              0.0111          0.0017              0.0094
      243              0.0109          0.0017              0.0093
      244              0.0108          0.0017              0.0092
      245              0.0107          0.0016              0.0090
      246              0.0105          0.0016              0.0089
      247              0.0104          0.0016              0.0088
      248              0.0103          0.0016              0.0087
      249              0.0102          0.0016              0.0086
      250              0.0101          0.0015              0.0085
      251              0.0100          0.0015              0.0084
      252              0.0099          0.0015              0.0084
      253              0.0098          0.0015              0.0083
      254              0.0097          0.0015              0.0082
      255              0.0096          0.0015              0.0081
      256              0.0095          0.0014              0.0080
      257              0.0094          0.0014              0.0079
      258              0.0093          0.0014              0.0079
      259              0.0092          0.0014              0.0078
      260              0.0091          0.0014              0.0077
      261              0.0090          0.0014              0.0076
      262              0.0089          0.0014              0.0076
      263              0.0089          0.0014              0.0075
      264              0.0088          0.0013              0.0074
      265              0.0087          0.0013              0.0074
      266              0.0086          0.0013              0.0073
      267              0.0086          0.0013              0.0073
      268              0.0085          0.0013              0.0072
      269              0.0084          0.0013              0.0071
      270              0.0084          0.0013              0.0071
      271              0.0083          0.0013              0.0070
      272              0.0082          0.0013              0.0070
      273              0.0082          0.0012              0.0069
      274              0.0081          0.0012              0.0069
      275              0.0080          0.0012              0.0068
      276              0.0080          0.0012              0.0067
      277              0.0079          0.0012              0.0067
      278              0.0078          0.0012              0.0066
      279              0.0078          0.0012              0.0066
      280              0.0077          0.0012              0.0066
      281              0.0077          0.0012              0.0065
      282              0.0076          0.0012              0.0065
      283              0.0076          0.0012              0.0064
      284              0.0075          0.0011              0.0064
      285              0.0075          0.0011              0.0063
      286              0.0074          0.0011              0.0063
      287              0.0074          0.0011              0.0062
      288              0.0073          0.0011              0.0062
      ------------------------------------------------------------------------
      ------------------------------------------------------------------------
      Total soil rain loss =      0.78(In)
      Total effective rainfall =      4.85(In)
      Peak flow rate in flood hydrograph =    360.06(CFS)
      ------------------------------------------------------------------------
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          24 - H O U R    S T O R M
                     R u n o f f      H y d r o g r a p h
      ------------------------------------------------------------------------
                  Hydrograph in   5   Minute intervals ((CFS))

      ------------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0      100.0     200.0     300.0     400.0
----------------------------------------------------------------------
  0+ 5       0.0022      0.32  Q         |         |         |         |
  0+10       0.0133      1.61  Q         |         |         |         |
  0+15       0.0469      4.88  Q         |         |         |         |
  0+20       0.0921      6.56  Q         |         |         |         |
  0+25       0.1432      7.43  Q         |         |         |         |
  0+30       0.1984      8.00  Q         |         |         |         |
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0+35      0.2563     8.42  Q          |          |          |          |
0+40      0.3164     8.71  Q          |          |          |          |
0+45      0.3778     8.92  Q          |          |          |          |
0+50      0.4401     9.04  Q          |          |          |          |
0+55      0.5029     9.12  Q          |          |          |          |
1+ 0      0.5661     9.19  Q          |          |          |          |
1+ 5      0.6298     9.25  Q          |          |          |          |
1+10      0.6939     9.31  Q          |          |          |          |
1+15      0.7584     9.36  Q          |          |          |          |
1+20      0.8232     9.41  Q          |          |          |          |
1+25      0.8882     9.44  Q          |          |          |          |
1+30      0.9534     9.47  Q          |          |          |          |
1+35      1.0189     9.51  Q          |          |          |          |
1+40      1.0846     9.54  Q          |          |          |          |
1+45      1.1505     9.57  Q          |          |          |          |
1+50      1.2167     9.61  Q          |          |          |          |
1+55      1.2831     9.64  QV         |          |          |          |
2+ 0      1.3498     9.68  QV         |          |          |          |
2+ 5      1.4167     9.72  QV         |          |          |          |
2+10      1.4838     9.75  QV         |          |          |          |
2+15      1.5512     9.79  QV         |          |          |          |
2+20      1.6189     9.82  QV         |          |          |          |
2+25      1.6868     9.86  QV         |          |          |          |
2+30      1.7549     9.90  QV         |          |          |          |
2+35      1.8234     9.94  QV         |          |          |          |
2+40      1.8920     9.97  QV         |          |          |          |
2+45      1.9610    10.01  |Q         |          |          |          |
2+50      2.0302    10.05  |Q         |          |          |          |
2+55      2.0997    10.09  |Q         |          |          |          |
3+ 0      2.1694    10.13  |Q         |          |          |          |
3+ 5      2.2395    10.17  |Q         |          |          |          |
3+10      2.3098    10.21  |Q         |          |          |          |
3+15      2.3804    10.25  |Q         |          |          |          |
3+20      2.4513    10.29  |QV        |          |          |          |
3+25      2.5224    10.33  |QV        |          |          |          |
3+30      2.5939    10.37  |QV        |          |          |          |
3+35      2.6656    10.42  |QV        |          |          |          |
3+40      2.7376    10.46  |QV        |          |          |          |
3+45      2.8100    10.50  |QV        |          |          |          |
3+50      2.8826    10.55  |QV        |          |          |          |
3+55      2.9556    10.59  |QV        |          |          |          |
4+ 0      3.0288    10.64  |QV        |          |          |          |
4+ 5      3.1024    10.68  |QV        |          |          |          |
4+10      3.1763    10.73  |QV        |          |          |          |
4+15      3.2505    10.78  |QV        |          |          |          |
4+20      3.3250    10.82  |QV        |          |          |          |
4+25      3.3999    10.87  |QV        |          |          |          |
4+30      3.4751    10.92  |QV        |          |          |          |
4+35      3.5506    10.97  |QV        |          |          |          |
4+40      3.6265    11.01  |QV        |          |          |          |
4+45      3.7027    11.07  |Q V       |          |          |          |
4+50      3.7792    11.11  |Q V       |          |          |          |
4+55      3.8561    11.17  |Q V       |          |          |          |
5+ 0      3.9334    11.22  |Q V       |          |          |          |
5+ 5      4.0110    11.27  |Q V       |          |          |          |
5+10      4.0890    11.32  |Q V       |          |          |          |
5+15      4.1673    11.38  |Q V       |          |          |          |
5+20      4.2460    11.43  |Q V       |          |          |          |
5+25      4.3251    11.49  |Q V       |          |          |          |
5+30      4.4046    11.54  |Q V       |          |          |          |
5+35      4.4845    11.60  |Q V       |          |          |          |
5+40      4.5647    11.65  |Q V       |          |          |          |
5+45      4.6454    11.71  |Q V       |          |          |          |
5+50      4.7264    11.77  |Q V       |          |          |          |
5+55      4.8079    11.83  |Q V       |          |          |          |
6+ 0      4.8897    11.89  |Q  V      |          |          |          |
6+ 5      4.9720    11.95  |Q  V      |          |          |          |
6+10      5.0548    12.01  |Q  V      |          |          |          |
6+15      5.1379    12.07  |Q  V      |          |          |          |
6+20      5.2215    12.13  |Q  V      |          |          |          |
6+25      5.3055    12.20  |Q  V      |          |          |          |
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 6+30      5.3900     12.26  |Q  V     |         |         |         |
 6+35      5.4749     12.33  |Q  V     |         |         |         |
 6+40      5.5602     12.40  |Q  V     |         |         |         |
 6+45      5.6461     12.47  |Q  V     |         |         |         |
 6+50      5.7324     12.53  |Q  V     |         |         |         |
 6+55      5.8192     12.60  |Q  V     |         |         |         |
 7+ 0      5.9065     12.67  |Q  V     |         |         |         |
 7+ 5      5.9943     12.75  |Q  V     |         |         |         |
 7+10      6.0825     12.82  |Q  V     |         |         |         |
 7+15      6.1713     12.89  |Q   V    |         |         |         |
 7+20      6.2606     12.96  |Q   V    |         |         |         |
 7+25      6.3504     13.04  |Q   V    |         |         |         |
 7+30      6.4408     13.12  |Q   V    |         |         |         |
 7+35      6.5317     13.20  |Q   V    |         |         |         |
 7+40      6.6231     13.28  |Q   V    |         |         |         |
 7+45      6.7151     13.36  |Q   V    |         |         |         |
 7+50      6.8077     13.44  |Q   V    |         |         |         |
 7+55      6.9008     13.53  |Q   V    |         |         |         |
 8+ 0      6.9946     13.61  |Q   V    |         |         |         |
 8+ 5      7.0889     13.70  |Q   V    |         |         |         |
 8+10      7.1838     13.78  |Q   V    |         |         |         |
 8+15      7.2794     13.87  |Q   V    |         |         |         |
 8+20      7.3755     13.96  |Q    V   |         |         |         |
 8+25      7.4723     14.06  |Q    V   |         |         |         |
 8+30      7.5698     14.15  |Q    V   |         |         |         |
 8+35      7.6679     14.25  |Q    V   |         |         |         |
 8+40      7.7666     14.34  |Q    V   |         |         |         |
 8+45      7.8661     14.44  |Q    V   |         |         |         |
 8+50      7.9662     14.54  |Q    V   |         |         |         |
 8+55      8.0671     14.65  |Q    V   |         |         |         |
 9+ 0      8.1687     14.75  |Q    V   |         |         |         |
 9+ 5      8.2710     14.86  |Q    V   |         |         |         |
 9+10      8.3740     14.96  |Q    V   |         |         |         |
 9+15      8.4778     15.08  |Q    V   |         |         |         |
 9+20      8.5824     15.18  |Q     V  |         |         |         |
 9+25      8.6878     15.30  |Q     V  |         |         |         |
 9+30      8.7940     15.42  |Q     V  |         |         |         |
 9+35      8.9010     15.54  |Q     V  |         |         |         |
 9+40      9.0088     15.66  |Q     V  |         |         |         |
 9+45      9.1176     15.79  |Q     V  |         |         |         |
 9+50      9.2271     15.91  |Q     V  |         |         |         |
 9+55      9.3376     16.04  |Q     V  |         |         |         |
10+ 0      9.4490     16.17  |Q     V  |         |         |         |
10+ 5      9.5613     16.31  |Q     V  |         |         |         |
10+10      9.6746     16.44  |Q     V  |         |         |         |
10+15      9.7888     16.59  |Q      V |         |         |         |
10+20      9.9041     16.73  |Q      V |         |         |         |
10+25     10.0204     16.88  |Q      V |         |         |         |
10+30     10.1376     17.03  |Q      V |         |         |         |
10+35     10.2560     17.19  |Q      V |         |         |         |
10+40     10.3755     17.34  |Q      V |         |         |         |
10+45     10.4961     17.51  |Q      V |         |         |         |
10+50     10.6178     17.67  |Q      V |         |         |         |
10+55     10.7407     17.85  |Q      V |         |         |         |
11+ 0     10.8648     18.02  |Q      V |         |         |         |
11+ 5     10.9902     18.21  |Q      V |         |         |         |
11+10     11.1168     18.38  |Q       V|         |         |         |
11+15     11.2447     18.58  |Q       V|         |         |         |
11+20     11.3740     18.77  |Q       V|         |         |         |
11+25     11.5047     18.97  |Q       V|         |         |         |
11+30     11.6367     19.17  |Q       V|         |         |         |
11+35     11.7702     19.39  |Q       V|         |         |         |
11+40     11.9052     19.60  |Q       V|         |         |         |
11+45     12.0418     19.83  |Q       V|         |         |         |
11+50     12.1799     20.05  | Q      V|         |         |         |
11+55     12.3197     20.30  | Q       V         |         |         |
12+ 0     12.4612     20.54  | Q       V         |         |         |
12+ 5     12.6058     21.00  | Q       V         |         |         |
12+10     12.7575     22.04  | Q       V         |         |         |
12+15     12.9250     24.32  | Q       V         |         |         |
12+20     13.1014     25.62  | Q       V         |         |         |
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12+25      13.2835     26.44  | Q       V         |         |         |
12+30      13.4701     27.08  | Q       |V        |         |         |
12+35      13.6606     27.66  | Q       |V        |         |         |
12+40      13.8544     28.15  | Q       |V        |         |         |
12+45      14.0516     28.62  | Q       |V        |         |         |
12+50      14.2515     29.03  | Q       |V        |         |         |
12+55      14.4543     29.45  | Q       |V        |         |         |
13+ 0      14.6599     29.85  | Q       | V       |         |         |
13+ 5      14.8686     30.29  |  Q      | V       |         |         |
13+10      15.0801     30.72  |  Q      | V       |         |         |
13+15      15.2949     31.19  |  Q      | V       |         |         |
13+20      15.5129     31.64  |  Q      | V       |         |         |
13+25      15.7343     32.15  |  Q      | V       |         |         |
13+30      15.9590     32.63  |  Q      |  V      |         |         |
13+35      16.1875     33.18  |  Q      |  V      |         |         |
13+40      16.4196     33.71  |  Q      |  V      |         |         |
13+45      16.6560     34.31  |  Q      |  V      |         |         |
13+50      16.8963     34.90  |  Q      |  V      |         |         |
13+55      17.1413     35.57  |  Q      |   V     |         |         |
14+ 0      17.3907     36.22  |  Q      |   V     |         |         |
14+ 5      17.6454     36.99  |  Q      |   V     |         |         |
14+10      17.9057     37.79  |  Q      |   V     |         |         |
14+15      18.1731     38.83  |  Q      |   V     |         |         |
14+20      18.4469     39.75  |  Q      |    V    |         |         |
14+25      18.7277     40.76  |   Q     |    V    |         |         |
14+30      19.0151     41.74  |   Q     |    V    |         |         |
14+35      19.3103     42.86  |   Q     |    V    |         |         |
14+40      19.6131     43.96  |   Q     |     V   |         |         |
14+45      19.9248     45.26  |   Q     |     V   |         |         |
14+50      20.2454     46.54  |   Q     |     V   |         |         |
14+55      20.5764     48.07  |   Q     |     V   |         |         |
15+ 0      20.9181     49.61  |   Q     |      V  |         |         |
15+ 5      21.2725     51.46  |    Q    |      V  |         |         |
15+10      21.6399     53.35  |    Q    |      V  |         |         |
15+15      22.0233     55.66  |    Q    |       V |         |         |
15+20      22.4232     58.06  |    Q    |       V |         |         |
15+25      22.8415     60.74  |     Q   |       V |         |         |
15+30      23.2725     62.59  |     Q   |        V|         |         |
15+35      23.7087     63.34  |     Q   |        V|         |         |
15+40      24.1642     66.13  |     Q   |        V|         |         |
15+45      24.6567     71.52  |      Q  |         V         |         |
15+50      25.1971     78.46  |      Q  |         V         |         |
15+55      25.8180     90.16  |        Q|         |V        |         |
16+ 0      26.5658    108.57  |         Q         |V        |         |
16+ 5      27.6624    159.23  |          |    Q   | V       |         |
16+10      29.3582    246.24  |          |        |   Q     |         |
16+15      31.8380    360.06  |          |        |     V   |     Q   |
16+20      33.4851    239.16  |          |        |  Q   V  |         |
16+25      34.6161    164.23  |          |     Q  |       V |         |
16+30      35.5102    129.82  |          | Q      |         V|         |
16+35      36.2599    108.85  |         Q         |         V|         |
16+40      36.8932     91.96  |        Q|         |          V         |
16+45      37.4297     77.90  |       Q |         |          V         |
16+50      37.8862     66.28  |     Q   |         |          |V        |
16+55      38.2870     58.19  |    Q    |         |          |V        |
17+ 0      38.6566     53.66  |    Q    |         |          |V        |
17+ 5      38.9991     49.74  |   Q     |         |          |V        |
17+10      39.3233     47.07  |   Q     |         |          | V       |
17+15      39.6243     43.71  |   Q     |         |          | V       |
17+20      39.9068     41.01  |   Q     |         |          | V       |
17+25      40.1695     38.15  |  Q      |         |          | V       |
17+30      40.4210     36.51  |  Q      |         |          |  V      |
17+35      40.6627     35.10  |  Q      |         |          |  V      |
17+40      40.8958     33.85  |  Q      |         |          |  V      |
17+45      41.1211     32.72  |  Q      |         |          |  V      |
17+50      41.3395     31.70  |  Q      |         |          |  V      |
17+55      41.5514     30.77  |  Q      |         |          |   V     |
18+ 0      41.7575     29.92  | Q       |         |          |   V     |
18+ 5      41.9568     28.94  | Q       |         |          |   V     |
18+10      42.1458     27.43  | Q       |         |          |   V     |
18+15      42.3164     24.77  | Q       |         |          |   V     |
```

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18+20      42.4757     23.14  | Q       |         |         |   V     |
18+25      42.6277     22.07  | Q       |         |         |   V     |
18+30      42.7737     21.20  | Q       |         |         |    V    |
18+35      42.9147     20.48  | Q       |         |         |    V    |
18+40      43.0515     19.85  |Q        |         |         |    V    |
18+45      43.1845     19.32  |Q        |         |         |    V    |
18+50      43.3143     18.85  |Q        |         |         |    V    |
18+55      43.4413     18.44  |Q        |         |         |    V    |
19+ 0      43.5656     18.05  |Q        |         |         |    V    |
19+ 5      43.6874     17.69  |Q        |         |         |    V    |
19+10      43.8068     17.34  |Q        |         |         |    V    |
19+15      43.9240     17.01  |Q        |         |         |    V    |
19+20      44.0391     16.71  |Q        |         |         |     V   |
19+25      44.1522     16.42  |Q        |         |         |     V   |
19+30      44.2634     16.15  |Q        |         |         |     V   |
19+35      44.3728     15.89  |Q        |         |         |     V   |
19+40      44.4805     15.63  |Q        |         |         |     V   |
19+45      44.5865     15.39  |Q        |         |         |     V   |
19+50      44.6909     15.16  |Q        |         |         |     V   |
19+55      44.7938     14.94  |Q        |         |         |     V   |
20+ 0      44.8952     14.72  |Q        |         |         |     V   |
20+ 5      44.9952     14.52  |Q        |         |         |     V   |
20+10      45.0938     14.32  |Q        |         |         |     V   |
20+15      45.1911     14.13  |Q        |         |         |     V   |
20+20      45.2871     13.94  |Q        |         |         |      V  |
20+25      45.3819     13.76  |Q        |         |         |      V  |
20+30      45.4755     13.59  |Q        |         |         |      V  |
20+35      45.5679     13.42  |Q        |         |         |      V  |
20+40      45.6592     13.26  |Q        |         |         |      V  |
20+45      45.7494     13.10  |Q        |         |         |      V  |
20+50      45.8386     12.95  |Q        |         |         |      V  |
20+55      45.9267     12.80  |Q        |         |         |      V  |
21+ 0      46.0139     12.65  |Q        |         |         |      V  |
21+ 5      46.1001     12.51  |Q        |         |         |      V  |
21+10      46.1853     12.38  |Q        |         |         |      V  |
21+15      46.2697     12.25  |Q        |         |         |      V  |
21+20      46.3531     12.12  |Q        |         |         |      V  |
21+25      46.4357     11.99  |Q        |         |         |       V |
21+30      46.5175     11.87  |Q        |         |         |       V |
21+35      46.5984     11.75  |Q        |         |         |       V |
21+40      46.6786     11.64  |Q        |         |         |       V |
21+45      46.7579     11.52  |Q        |         |         |       V |
21+50      46.8365     11.41  |Q        |         |         |       V |
21+55      46.9144     11.31  |Q        |         |         |       V |
22+ 0      46.9916     11.20  |Q        |         |         |       V |
22+ 5      47.0680     11.10  |Q        |         |         |       V |
22+10      47.1438     11.00  |Q        |         |         |       V |
22+15      47.2189     10.90  |Q        |         |         |       V |
22+20      47.2933     10.81  |Q        |         |         |       V |
22+25      47.3671     10.71  |Q        |         |         |       V |
22+30      47.4403     10.62  |Q        |         |         |       V |
22+35      47.5128     10.53  |Q        |         |         |       V |
22+40      47.5848     10.45  |Q        |         |         |       V |
22+45      47.6561     10.36  |Q        |         |         |        V|
22+50      47.7269     10.28  |Q        |         |         |        V|
22+55      47.7972     10.20  |Q        |         |         |        V|
23+ 0      47.8668     10.12  |Q        |         |         |        V|
23+ 5      47.9360     10.04  |Q        |         |         |        V|
23+10      48.0046      9.96  Q        |         |         |        V|
23+15      48.0727      9.89  Q        |         |         |        V|
23+20      48.1402      9.81  Q        |         |         |        V|
23+25      48.2073      9.74  Q        |         |         |        V|
23+30      48.2739      9.67  Q        |         |         |        V|
23+35      48.3400      9.60  Q        |         |         |        V|
23+40      48.4056      9.53  Q        |         |         |        V|
23+45      48.4708      9.46  Q        |         |         |        V|
23+50      48.5355      9.40  Q        |         |         |        V|
23+55      48.5998      9.33  Q        |         |         |        V|
24+ 0      48.6636      9.27  Q        |         |         |        V|
24+ 5      48.7248      8.88  Q        |         |         |        V|
24+10      48.7767      7.54  Q        |         |         |        V|
```

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   24+15      48.8059      4.23  Q          |          |          |         V|
   24+20      48.8233      2.54  Q          |          |          |         V|
   24+25      48.8349      1.68  Q          |          |          |         V|
   24+30      48.8426      1.12  Q          |          |          |         V|
   24+35      48.8476      0.72  Q          |          |          |         V|
   24+40      48.8507      0.45  Q          |          |          |         V|
   24+45      48.8525      0.27  Q          |          |          |         V|
   24+50      48.8537      0.18  Q          |          |          |         V|
   24+55      48.8546      0.13  Q          |          |          |         V|
   25+ 0      48.8553      0.09  Q          |          |          |         V|
   25+ 5      48.8557      0.06  Q          |          |          |         V|
   25+10      48.8559      0.03  Q          |          |          |         V|
   25+15      48.8560      0.01  Q          |          |          |          V
-------------------------------------------------------------------------------
```

Area 'D' Calculations

- 2 Year Pre-Development Rational Method – Area 'D'

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                    Orange County Rational Hydrology Program

                (Hydrology Manual Date(s) October 1986 & November 1996)

 CIVILCADD/CIVILDESIGN  Engineering Software, (c) 1989-2012 Version 8.2
       Rational Hydrology Study, Date: 10/10/16  File Name: EXD002.roc
------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION RATIONAL METHOD - AREA 'D' - 2 YEAR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------


Program License Serial Number 4094

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 *********   Hydrology Study Control Information **********

------------------------------------------------------------------------

Rational hydrology study storm event year is     2.0

Decimal fraction of study above 2000 ft., 600M  =     0.0000
English Units Used for input data


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      400.000 to Point/Station      401.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Initial subarea data:
Initial area flow distance =   293.000(Ft.)
Top (of initial area) elevation =   481.000(Ft.)
Bottom (of initial area) elevation =   437.000(Ft.)
Difference in elevation =    44.000(Ft.)
Slope =    0.15017  s(%)=      15.02
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   10.005 min.
Rainfall intensity =      1.520(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.752
Subarea runoff =      0.400(CFS)
Total initial stream area =        0.350(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      401.000 to Point/Station      402.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =      3.849(CFS)
Depth of flow =   0.153(Ft.), Average velocity =   3.305(Ft/s)
       ******* Irregular Channel Data **********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2             50.00              0.00
       3            100.00              1.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =      3.849(CFS)
  '     '       flow top width =     15.262(Ft.)
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  '     '    velocity=    3.305(Ft/s)
  '     '       area =      1.165(Sq.Ft)
  '     '       Froude number =     2.108

Upstream point elevation =   437.000(Ft.)
Downstream point elevation =   355.000(Ft.)
Flow length =   596.000(Ft.)
Travel time  =    3.01 min.
Time of concentration =   13.01 min.
Depth of flow =   0.153(Ft.)
Average velocity =   3.305(Ft/s)
Total irregular channel flow =     3.849(CFS)
Irregular channel normal depth above invert elev. =   0.153(Ft.)
Average velocity of channel(s) =   3.305(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.500
SCS curve number for soil(AMC 2)  = 81.50
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.225(In/Hr)
Max Catchment Loss (Fm) =     0.225(In/Hr)
Rainfall intensity =      1.307(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.744
Subarea runoff =      6.811(CFS) for    7.060(Ac.)
Total runoff =      7.211(CFS)       Total area =        7.41(Ac.)
Area averaged Fm value =    0.226(In/Hr)
Depth of flow =   0.193(Ft.), Average velocity =   3.867(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      402.000 to Point/Station      403.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =     11.989(CFS)
Depth of flow =   0.265(Ft.), Average velocity =   3.422(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2             50.00              0.00
       3            100.00              1.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =     11.989(CFS)
  '     '       flow top width =     26.471(Ft.)
  '     '    velocity=    3.422(Ft/s)
  '     '       area =      3.504(Sq.Ft)
  '     '       Froude number =     1.658

Upstream point elevation =   355.000(Ft.)
Downstream point elevation =   301.000(Ft.)
Flow length =   763.000(Ft.)
Travel time  =    3.72 min.
Time of concentration =   16.73 min.
Depth of flow =   0.265(Ft.)
Average velocity =   3.422(Ft/s)
Total irregular channel flow =    11.989(CFS)
Irregular channel normal depth above invert elev. =   0.265(Ft.)
Average velocity of channel(s) =   3.422(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.250
Decimal fraction soil group D = 0.750
SCS curve number for soil(AMC 2)  = 82.75
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.213(In/Hr)
```

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Max Catchment Loss (Fm) =     0.213(In/Hr)
Rainfall intensity =      1.132(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.727
Subarea runoff =      9.502(CFS) for   12.900(Ac.)
Total runoff =     16.713(CFS)        Total area =       20.31(Ac.)
Area averaged Fm value =    0.217(In/Hr)
Depth of flow =   0.300(Ft.), Average velocity =   3.718(Ft/s)
End of computations, total study area =           20.31 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged SCS curve number (AMC 2) =  82.3
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- 5 Year Pre-Development Rational Method – Area 'D'

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                    Orange County Rational Hydrology Program

                (Hydrology Manual Date(s) October 1986 & November 1996)

 CIVILCADD/CIVILDESIGN  Engineering Software, (c) 1989-2012 Version 8.2
       Rational Hydrology Study, Date: 10/10/16  File Name: EXD005.roc
---------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION RATIONAL METHOD - AREA 'D' - 5 YEAR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
---------------------------------------------------------------------------


Program License Serial Number 4094

---------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

---------------------------------------------------------------------------

Rational hydrology study storm event year is     5.0

Decimal fraction of study above 2000 ft., 600M  =     0.0000
English Units Used for input data


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      400.000 to Point/Station      401.000
**** INITIAL AREA EVALUATION ****
___________________________________________________________________________
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Initial subarea data:
Initial area flow distance =   293.000(Ft.)
Top (of initial area) elevation =   481.000(Ft.)
Bottom (of initial area) elevation =   437.000(Ft.)
Difference in elevation =    44.000(Ft.)
Slope =    0.15017  s(%)=      15.02
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   10.005 min.
Rainfall intensity =      2.157(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.796
Subarea runoff =      0.601(CFS)
Total initial stream area =        0.350(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      401.000 to Point/Station      402.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
___________________________________________________________________________
Estimated mean flow rate at midpoint of channel =      5.863(CFS)
Depth of flow =   0.179(Ft.), Average velocity =   3.672(Ft/s)
       ******* Irregular Channel Data ***********
---------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2             50.00              0.00
       3            100.00              1.00
Manning's 'N' friction factor =   0.030
---------------------------------------------------------------
Sub-Channel flow  =      5.863(CFS)
  '     '       flow top width =     17.870(Ft.)
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  '     '    velocity=    3.672(Ft/s)
  '     '       area =      1.597(Sq.Ft)
  '     '       Froude number =     2.165

Upstream point elevation =   437.000(Ft.)
Downstream point elevation =   355.000(Ft.)
Flow length =   596.000(Ft.)
Travel time  =    2.71 min.
Time of concentration =   12.71 min.
Depth of flow =   0.179(Ft.)
Average velocity =   3.672(Ft/s)
Total irregular channel flow =     5.863(CFS)
Irregular channel normal depth above invert elev. =   0.179(Ft.)
Average velocity of channel(s) =   3.672(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.500
SCS curve number for soil(AMC 2)  = 81.50
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.225(In/Hr)
Max Catchment Loss (Fm) =     0.225(In/Hr)
Rainfall intensity =      1.886(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.792
Subarea runoff =     10.465(CFS) for    7.060(Ac.)
Total runoff =     11.066(CFS)       Total area =        7.41(Ac.)
Area averaged Fm value =    0.226(In/Hr)
Depth of flow =   0.227(Ft.), Average velocity =   4.304(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      402.000 to Point/Station      403.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =     18.704(CFS)
Depth of flow =   0.313(Ft.), Average velocity =   3.824(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2             50.00              0.00
       3            100.00              1.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =     18.704(CFS)
  '     '       flow top width =     31.275(Ft.)
  '     '    velocity=    3.824(Ft/s)
  '     '       area =      4.891(Sq.Ft)
  '     '       Froude number =     1.704

Upstream point elevation =   355.000(Ft.)
Downstream point elevation =   301.000(Ft.)
Flow length =   763.000(Ft.)
Travel time  =    3.33 min.
Time of concentration =   16.04 min.
Depth of flow =   0.313(Ft.)
Average velocity =   3.824(Ft/s)
Total irregular channel flow =    18.704(CFS)
Irregular channel normal depth above invert elev. =   0.313(Ft.)
Average velocity of channel(s) =   3.824(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.250
Decimal fraction soil group D = 0.750
SCS curve number for soil(AMC 2)  = 82.75
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.213(In/Hr)
```

```
Max Catchment Loss (Fm) =     0.213(In/Hr)
Rainfall intensity =      1.655(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.782
Subarea runoff =     15.204(CFS) for   12.900(Ac.)
Total runoff =     26.270(CFS)       Total area =       20.31(Ac.)
Area averaged Fm value =    0.217(In/Hr)
Depth of flow =   0.355(Ft.), Average velocity =   4.163(Ft/s)
End of computations, total study area =           20.31 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged SCS curve number (AMC 2) =  82.3
```

- 25 Year Pre-Development Rational Method – Area 'D'

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                  Orange County Rational Hydrology Program

               (Hydrology Manual Date(s) October 1986 & November 1996)

 CIVILCADD/CIVILDESIGN  Engineering Software, (c) 1989-2012 Version 8.2
       Rational Hydrology Study, Date: 10/10/16  File Name: EXD025.roc
------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION RATIONAL METHOD - AREA 'D' - 25 YEAR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
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Program License Serial Number 4094

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 *********   Hydrology Study Control Information **********

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Rational hydrology study storm event year is    25.0

Decimal fraction of study above 2000 ft., 600M  =     0.0000
English Units Used for input data


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      400.000 to Point/Station      401.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Initial subarea data:
Initial area flow distance =   293.000(Ft.)
Top (of initial area) elevation =   481.000(Ft.)
Bottom (of initial area) elevation =   437.000(Ft.)
Difference in elevation =    44.000(Ft.)
Slope =    0.15017  s(%)=      15.02
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   10.005 min.
Rainfall intensity =      3.257(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.831
Subarea runoff =      0.947(CFS)
Total initial stream area =        0.350(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      401.000 to Point/Station      402.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =      9.375(CFS)
Depth of flow =   0.213(Ft.), Average velocity =   4.129(Ft/s)
       ******* Irregular Channel Data **********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2             50.00              0.00
       3            100.00              1.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =      9.375(CFS)
  '     '       flow top width =     21.310(Ft.)
```

```
  '     '    velocity=    4.129(Ft/s)
  '     '       area =      2.271(Sq.Ft)
  '     '       Froude number =     2.229

Upstream point elevation =   437.000(Ft.)
Downstream point elevation =   355.000(Ft.)
Flow length =   596.000(Ft.)
Travel time  =    2.41 min.
Time of concentration =   12.41 min.
Depth of flow =   0.213(Ft.)
Average velocity =   4.129(Ft/s)
Total irregular channel flow =     9.375(CFS)
Irregular channel normal depth above invert elev. =   0.213(Ft.)
Average velocity of channel(s) =   4.129(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.500
SCS curve number for soil(AMC 2)  = 81.50
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.225(In/Hr)
Max Catchment Loss (Fm) =     0.225(In/Hr)
Rainfall intensity =      2.883(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.829
Subarea runoff =     16.773(CFS) for    7.060(Ac.)
Total runoff =     17.721(CFS)       Total area =        7.41(Ac.)
Area averaged Fm value =    0.226(In/Hr)
Depth of flow =   0.271(Ft.), Average velocity =   4.841(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      402.000 to Point/Station      403.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =     30.256(CFS)
Depth of flow =   0.375(Ft.), Average velocity =   4.313(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2             50.00              0.00
       3            100.00              1.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =     30.256(CFS)
  '     '       flow top width =     37.457(Ft.)
  '     '    velocity=    4.313(Ft/s)
  '     '       area =      7.015(Sq.Ft)
  '     '       Froude number =     1.756

Upstream point elevation =   355.000(Ft.)
Downstream point elevation =   301.000(Ft.)
Flow length =   763.000(Ft.)
Travel time  =    2.95 min.
Time of concentration =   15.36 min.
Depth of flow =   0.375(Ft.)
Average velocity =   4.313(Ft/s)
Total irregular channel flow =    30.256(CFS)
Irregular channel normal depth above invert elev. =   0.375(Ft.)
Average velocity of channel(s) =   4.313(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.250
Decimal fraction soil group D = 0.750
SCS curve number for soil(AMC 2)  = 82.75
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.213(In/Hr)
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```
Max Catchment Loss (Fm) =     0.213(In/Hr)
Rainfall intensity =      2.556(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.823
Subarea runoff =     25.019(CFS) for   12.900(Ac.)
Total runoff =     42.740(CFS)       Total area =       20.31(Ac.)
Area averaged Fm value =    0.217(In/Hr)
Depth of flow =   0.426(Ft.), Average velocity =   4.702(Ft/s)
End of computations, total study area =           20.31 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged SCS curve number (AMC 2) =  82.3
```

- 100 Year Pre-Development Rational Method – Area 'D'

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                    Orange County Rational Hydrology Program

                (Hydrology Manual Date(s) October 1986 & November 1996)

 CIVILCADD/CIVILDESIGN  Engineering Software, (c) 1989-2012 Version 8.2
       Rational Hydrology Study, Date: 10/10/16  File Name: EXD100.roc
---------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION RATIONAL METHOD - AREA 'D' - 100 YEAR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
---------------------------------------------------------------------------


Program License Serial Number 4094

---------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

---------------------------------------------------------------------------

Rational hydrology study storm event year is   100.0

Decimal fraction of study above 2000 ft., 600M  =     0.0000
English Units Used for input data


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      400.000 to Point/Station      401.000
**** INITIAL AREA EVALUATION ****
___________________________________________________________________________
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Initial subarea data:
Initial area flow distance =   293.000(Ft.)
Top (of initial area) elevation =   481.000(Ft.)
Bottom (of initial area) elevation =   437.000(Ft.)
Difference in elevation =    44.000(Ft.)
Slope =    0.15017  s(%)=      15.02
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   10.005 min.
Rainfall intensity =      4.158(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.846
Subarea runoff =      1.231(CFS)
Total initial stream area =        0.350(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      401.000 to Point/Station      402.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
___________________________________________________________________________
Estimated mean flow rate at midpoint of channel =     12.254(CFS)
Depth of flow =   0.236(Ft.), Average velocity =   4.415(Ft/s)
       ******* Irregular Channel Data ***********
---------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2             50.00              0.00
       3            100.00              1.00
Manning's 'N' friction factor =   0.030
---------------------------------------------------------------
Sub-Channel flow  =     12.255(CFS)
  '     '       flow top width =     23.562(Ft.)
```

```
  '     '    velocity=    4.415(Ft/s)
  '     '       area =      2.776(Sq.Ft)
  '     '       Froude number =     2.267

Upstream point elevation =   437.000(Ft.)
Downstream point elevation =   355.000(Ft.)
Flow length =   596.000(Ft.)
Travel time  =    2.25 min.
Time of concentration =   12.26 min.
Depth of flow =   0.236(Ft.)
Average velocity =   4.415(Ft/s)
Total irregular channel flow =    12.254(CFS)
Irregular channel normal depth above invert elev. =   0.236(Ft.)
Average velocity of channel(s) =   4.415(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.500
SCS curve number for soil(AMC 2)  = 81.50
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.225(In/Hr)
Max Catchment Loss (Fm) =     0.225(In/Hr)
Rainfall intensity =      3.702(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.845
Subarea runoff =     21.947(CFS) for    7.060(Ac.)
Total runoff =     23.178(CFS)       Total area =        7.41(Ac.)
Area averaged Fm value =    0.226(In/Hr)
Depth of flow =   0.299(Ft.), Average velocity =   5.177(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      402.000 to Point/Station      403.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =     39.755(CFS)
Depth of flow =   0.415(Ft.), Average velocity =   4.618(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2             50.00              0.00
       3            100.00              1.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =     39.755(CFS)
  '     '       flow top width =     41.495(Ft.)
  '     '    velocity=    4.618(Ft/s)
  '     '       area =      8.609(Sq.Ft)
  '     '       Froude number =     1.787

Upstream point elevation =   355.000(Ft.)
Downstream point elevation =   301.000(Ft.)
Flow length =   763.000(Ft.)
Travel time  =    2.75 min.
Time of concentration =   15.01 min.
Depth of flow =   0.415(Ft.)
Average velocity =   4.618(Ft/s)
Total irregular channel flow =    39.755(CFS)
Irregular channel normal depth above invert elev. =   0.415(Ft.)
Average velocity of channel(s) =   4.618(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.250
Decimal fraction soil group D = 0.750
SCS curve number for soil(AMC 2)  = 82.75
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.213(In/Hr)
```

```
Max Catchment Loss (Fm) =     0.213(In/Hr)
Rainfall intensity =      3.296(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.841
Subarea runoff =     33.089(CFS) for   12.900(Ac.)
Total runoff =     56.267(CFS)       Total area =       20.31(Ac.)
Area averaged Fm value =    0.217(In/Hr)
Depth of flow =   0.473(Ft.), Average velocity =   5.037(Ft/s)
End of computations, total study area =           20.31 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged SCS curve number (AMC 2) =  82.3
```

- 2 Year Post-Development Rational Method – Area 'D'

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                    Orange County Rational Hydrology Program

                (Hydrology Manual Date(s) October 1986 & November 1996)

 CIVILCADD/CIVILDESIGN  Engineering Software, (c) 1989-2012 Version 8.2
       Rational Hydrology Study, Date: 10/10/16  File Name: PRD002.roc
---------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION RATIONAL METHOD - AREA 'D' - 2 YEAR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
---------------------------------------------------------------------------


Program License Serial Number 4094

---------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

---------------------------------------------------------------------------

Rational hydrology study storm event year is     2.0

Decimal fraction of study above 2000 ft., 600M  =     0.0000
English Units Used for input data


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      400.000 to Point/Station      401.000
**** INITIAL AREA EVALUATION ****
___________________________________________________________________________
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Initial subarea data:
Initial area flow distance =   293.000(Ft.)
Top (of initial area) elevation =   481.000(Ft.)
Bottom (of initial area) elevation =   437.000(Ft.)
Difference in elevation =    44.000(Ft.)
Slope =    0.15017  s(%)=      15.02
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   10.005 min.
Rainfall intensity =      1.520(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.752
Subarea runoff =      0.400(CFS)
Total initial stream area =        0.350(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      401.000 to Point/Station      402.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
___________________________________________________________________________
Estimated mean flow rate at midpoint of channel =      4.023(CFS)
Depth of flow =   0.155(Ft.), Average velocity =   3.342(Ft/s)
       ******* Irregular Channel Data ***********
---------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2             50.00              0.00
       3            100.00              1.00
Manning's 'N' friction factor =   0.030
---------------------------------------------------------------
Sub-Channel flow  =      4.023(CFS)
  '     '       flow top width =     15.517(Ft.)
```

```
  '     '    velocity=    3.342(Ft/s)
  '     '       area =      1.204(Sq.Ft)
  '     '       Froude number =     2.114

Upstream point elevation =   437.000(Ft.)
Downstream point elevation =   355.000(Ft.)
Flow length =   596.000(Ft.)
Travel time  =    2.97 min.
Time of concentration =   12.98 min.
Depth of flow =   0.155(Ft.)
Average velocity =   3.342(Ft/s)
Total irregular channel flow =     4.023(CFS)
Irregular channel normal depth above invert elev. =   0.155(Ft.)
Average velocity of channel(s) =   3.342(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.500
SCS curve number for soil(AMC 2)  = 81.50
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.225(In/Hr)
Max Catchment Loss (Fm) =     0.225(In/Hr)
Rainfall intensity =      1.309(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.745
Subarea runoff =      7.155(CFS) for    7.400(Ac.)
Total runoff =      7.555(CFS)       Total area =        7.75(Ac.)
Area averaged Fm value =    0.226(In/Hr)
Depth of flow =   0.197(Ft.), Average velocity =   3.912(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      402.000 to Point/Station      403.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =     12.275(CFS)
Depth of flow =   0.267(Ft.), Average velocity =   3.442(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2             50.00              0.00
       3            100.00              1.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =     12.275(CFS)
  '     '       flow top width =     26.706(Ft.)
  '     '    velocity=    3.442(Ft/s)
  '     '       area =      3.566(Sq.Ft)
  '     '       Froude number =     1.660

Upstream point elevation =   355.000(Ft.)
Downstream point elevation =   301.000(Ft.)
Flow length =   763.000(Ft.)
Travel time  =    3.69 min.
Time of concentration =   16.67 min.
Depth of flow =   0.267(Ft.)
Average velocity =   3.442(Ft/s)
Total irregular channel flow =    12.275(CFS)
Irregular channel normal depth above invert elev. =   0.267(Ft.)
Average velocity of channel(s) =   3.442(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.250
Decimal fraction soil group D = 0.750
SCS curve number for soil(AMC 2)  = 82.75
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.213(In/Hr)
```

```
Max Catchment Loss (Fm) =     0.213(In/Hr)
Rainfall intensity =      1.134(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.727
Subarea runoff =      9.384(CFS) for   12.790(Ac.)
Total runoff =     16.939(CFS)       Total area =       20.54(Ac.)
Area averaged Fm value =    0.218(In/Hr)
Depth of flow =   0.301(Ft.), Average velocity =   3.731(Ft/s)
End of computations, total study area =           20.54 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged SCS curve number (AMC 2) =  82.2
```

- 5 Year Post-Development Rational Method – Area 'D'

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                    Orange County Rational Hydrology Program

                (Hydrology Manual Date(s) October 1986 & November 1996)

 CIVILCADD/CIVILDESIGN  Engineering Software, (c) 1989-2012 Version 8.2
       Rational Hydrology Study, Date: 10/10/16  File Name: PRD005.roc
------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION RATIONAL METHOD - AREA 'D' - 5 YEAR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------


Program License Serial Number 4094

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 *********   Hydrology Study Control Information **********

------------------------------------------------------------------------

Rational hydrology study storm event year is     5.0

Decimal fraction of study above 2000 ft., 600M  =     0.0000
English Units Used for input data


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      400.000 to Point/Station      401.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Initial subarea data:
Initial area flow distance =   293.000(Ft.)
Top (of initial area) elevation =   481.000(Ft.)
Bottom (of initial area) elevation =   437.000(Ft.)
Difference in elevation =    44.000(Ft.)
Slope =    0.15017  s(%)=      15.02
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   10.005 min.
Rainfall intensity =      2.157(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.796
Subarea runoff =      0.601(CFS)
Total initial stream area =        0.350(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      401.000 to Point/Station      402.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =      6.126(CFS)
Depth of flow =   0.182(Ft.), Average velocity =   3.712(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2             50.00              0.00
       3            100.00              1.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =      6.126(CFS)
  '     '       flow top width =     18.167(Ft.)
```

```
  '     '    velocity=    3.712(Ft/s)
  '     '       area =      1.650(Sq.Ft)
  '     '       Froude number =     2.171

Upstream point elevation =   437.000(Ft.)
Downstream point elevation =   355.000(Ft.)
Flow length =   596.000(Ft.)
Travel time  =    2.68 min.
Time of concentration =   12.68 min.
Depth of flow =   0.182(Ft.)
Average velocity =   3.712(Ft/s)
Total irregular channel flow =     6.126(CFS)
Irregular channel normal depth above invert elev. =   0.182(Ft.)
Average velocity of channel(s) =   3.712(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.500
SCS curve number for soil(AMC 2)  = 81.50
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.225(In/Hr)
Max Catchment Loss (Fm) =     0.225(In/Hr)
Rainfall intensity =      1.888(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.792
Subarea runoff =     10.991(CFS) for    7.400(Ac.)
Total runoff =     11.591(CFS)       Total area =        7.75(Ac.)
Area averaged Fm value =    0.226(In/Hr)
Depth of flow =   0.231(Ft.), Average velocity =   4.354(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      402.000 to Point/Station      403.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =     19.140(CFS)
Depth of flow =   0.315(Ft.), Average velocity =   3.846(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2             50.00              0.00
       3            100.00              1.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =     19.140(CFS)
  '     '       flow top width =     31.547(Ft.)
  '     '    velocity=    3.846(Ft/s)
  '     '       area =      4.976(Sq.Ft)
  '     '       Froude number =     1.707

Upstream point elevation =   355.000(Ft.)
Downstream point elevation =   301.000(Ft.)
Flow length =   763.000(Ft.)
Travel time  =    3.31 min.
Time of concentration =   15.99 min.
Depth of flow =   0.315(Ft.)
Average velocity =   3.846(Ft/s)
Total irregular channel flow =    19.140(CFS)
Irregular channel normal depth above invert elev. =   0.315(Ft.)
Average velocity of channel(s) =   3.846(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.250
Decimal fraction soil group D = 0.750
SCS curve number for soil(AMC 2)  = 82.75
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.213(In/Hr)
```

```
Max Catchment Loss (Fm) =     0.213(In/Hr)
Rainfall intensity =      1.657(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.782
Subarea runoff =     15.026(CFS) for   12.790(Ac.)
Total runoff =     26.617(CFS)       Total area =       20.54(Ac.)
Area averaged Fm value =    0.218(In/Hr)
Depth of flow =   0.357(Ft.), Average velocity =   4.177(Ft/s)
End of computations, total study area =           20.54 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged SCS curve number (AMC 2) =  82.2
```

- 25 Year Post-Development Rational Method – Area 'D'

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                  Orange County Rational Hydrology Program

               (Hydrology Manual Date(s) October 1986 & November 1996)

 CIVILCADD/CIVILDESIGN  Engineering Software, (c) 1989-2012 Version 8.2
       Rational Hydrology Study, Date: 10/10/16  File Name: PRD025.roc
------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION RATIONAL METHOD - AREA 'D' - 25 YEAR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------


Program License Serial Number 4094

------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

------------------------------------------------------------------------

Rational hydrology study storm event year is    25.0

Decimal fraction of study above 2000 ft., 600M  =     0.0000
English Units Used for input data


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      400.000 to Point/Station      401.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Initial subarea data:
Initial area flow distance =   293.000(Ft.)
Top (of initial area) elevation =   481.000(Ft.)
Bottom (of initial area) elevation =   437.000(Ft.)
Difference in elevation =    44.000(Ft.)
Slope =    0.15017  s(%)=      15.02
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   10.005 min.
Rainfall intensity =      3.257(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.831
Subarea runoff =      0.947(CFS)
Total initial stream area =        0.350(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      401.000 to Point/Station      402.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =      9.795(CFS)
Depth of flow =   0.217(Ft.), Average velocity =   4.174(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2             50.00              0.00
       3            100.00              1.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =      9.795(CFS)
  '     '       flow top width =     21.663(Ft.)
```

```
  '     '    velocity=    4.174(Ft/s)
  '     '       area =      2.346(Sq.Ft)
  '     '       Froude number =     2.235

Upstream point elevation =   437.000(Ft.)
Downstream point elevation =   355.000(Ft.)
Flow length =   596.000(Ft.)
Travel time  =    2.38 min.
Time of concentration =   12.39 min.
Depth of flow =   0.217(Ft.)
Average velocity =   4.174(Ft/s)
Total irregular channel flow =     9.795(CFS)
Irregular channel normal depth above invert elev. =   0.217(Ft.)
Average velocity of channel(s) =   4.174(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.500
SCS curve number for soil(AMC 2)  = 81.50
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.225(In/Hr)
Max Catchment Loss (Fm) =     0.225(In/Hr)
Rainfall intensity =      2.887(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.830
Subarea runoff =     17.611(CFS) for    7.400(Ac.)
Total runoff =     18.558(CFS)       Total area =        7.75(Ac.)
Area averaged Fm value =    0.226(In/Hr)
Depth of flow =   0.275(Ft.), Average velocity =   4.897(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      402.000 to Point/Station      403.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =     30.953(CFS)
Depth of flow =   0.378(Ft.), Average velocity =   4.338(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2             50.00              0.00
       3            100.00              1.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =     30.953(CFS)
  '     '       flow top width =     37.778(Ft.)
  '     '    velocity=    4.338(Ft/s)
  '     '       area =      7.136(Sq.Ft)
  '     '       Froude number =     1.759

Upstream point elevation =   355.000(Ft.)
Downstream point elevation =   301.000(Ft.)
Flow length =   763.000(Ft.)
Travel time  =    2.93 min.
Time of concentration =   15.32 min.
Depth of flow =   0.378(Ft.)
Average velocity =   4.338(Ft/s)
Total irregular channel flow =    30.953(CFS)
Irregular channel normal depth above invert elev. =   0.378(Ft.)
Average velocity of channel(s) =   4.338(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.250
Decimal fraction soil group D = 0.750
SCS curve number for soil(AMC 2)  = 82.75
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.213(In/Hr)
```

```
Max Catchment Loss (Fm) =     0.213(In/Hr)
Rainfall intensity =      2.560(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.823
Subarea runoff =     24.738(CFS) for   12.790(Ac.)
Total runoff =     43.296(CFS)       Total area =       20.54(Ac.)
Area averaged Fm value =    0.218(In/Hr)
Depth of flow =   0.428(Ft.), Average velocity =   4.717(Ft/s)
End of computations, total study area =           20.54 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged SCS curve number (AMC 2) =  82.2
```

- 100 Year Post-Development Rational Method – Area 'D'

```
                  Orange County Rational Hydrology Program

               (Hydrology Manual Date(s) October 1986 & November 1996)

 CIVILCADD/CIVILDESIGN  Engineering Software, (c) 1989-2012 Version 8.2
       Rational Hydrology Study, Date: 10/10/16  File Name: PRD100.roc
---------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION RATIONAL METHOD - AREA 'D' - 100 YEAR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
---------------------------------------------------------------------------


Program License Serial Number 4094

---------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

---------------------------------------------------------------------------

Rational hydrology study storm event year is   100.0

Decimal fraction of study above 2000 ft., 600M  =     0.0000
English Units Used for input data


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      400.000 to Point/Station      401.000
**** INITIAL AREA EVALUATION ****
___________________________________________________________________________
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.250(In/Hr)
Initial subarea data:
Initial area flow distance =   293.000(Ft.)
Top (of initial area) elevation =   481.000(Ft.)
Bottom (of initial area) elevation =   437.000(Ft.)
Difference in elevation =    44.000(Ft.)
Slope =    0.15017  s(%)=      15.02
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   10.005 min.
Rainfall intensity =      4.158(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.846
Subarea runoff =      1.231(CFS)
Total initial stream area =        0.350(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      401.000 to Point/Station      402.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
___________________________________________________________________________
Estimated mean flow rate at midpoint of channel =     12.777(CFS)
Depth of flow =   0.239(Ft.), Average velocity =   4.461(Ft/s)
       ******* Irregular Channel Data ***********
---------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2             50.00              0.00
       3            100.00              1.00
Manning's 'N' friction factor =   0.030
---------------------------------------------------------------
Sub-Channel flow  =     12.777(CFS)
  '     '       flow top width =     23.934(Ft.)
```

```
  '     '    velocity=    4.461(Ft/s)
  '     '       area =      2.864(Sq.Ft)
  '     '       Froude number =     2.273

Upstream point elevation =   437.000(Ft.)
Downstream point elevation =   355.000(Ft.)
Flow length =   596.000(Ft.)
Travel time  =    2.23 min.
Time of concentration =   12.23 min.
Depth of flow =   0.239(Ft.)
Average velocity =   4.461(Ft/s)
Total irregular channel flow =    12.777(CFS)
Irregular channel normal depth above invert elev. =   0.239(Ft.)
Average velocity of channel(s) =   4.461(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.500
SCS curve number for soil(AMC 2)  = 81.50
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.225(In/Hr)
Max Catchment Loss (Fm) =     0.225(In/Hr)
Rainfall intensity =      3.706(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.845
Subarea runoff =     23.039(CFS) for    7.400(Ac.)
Total runoff =     24.270(CFS)       Total area =        7.75(Ac.)
Area averaged Fm value =    0.226(In/Hr)
Depth of flow =   0.304(Ft.), Average velocity =   5.237(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      402.000 to Point/Station      403.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =     40.663(CFS)
Depth of flow =   0.418(Ft.), Average velocity =   4.644(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2             50.00              0.00
       3            100.00              1.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =     40.664(CFS)
  '     '       flow top width =     41.849(Ft.)
  '     '    velocity=    4.644(Ft/s)
  '     '       area =      8.757(Sq.Ft)
  '     '       Froude number =     1.789

Upstream point elevation =   355.000(Ft.)
Downstream point elevation =   301.000(Ft.)
Flow length =   763.000(Ft.)
Travel time  =    2.74 min.
Time of concentration =   14.97 min.
Depth of flow =   0.418(Ft.)
Average velocity =   4.644(Ft/s)
Total irregular channel flow =    40.663(CFS)
Irregular channel normal depth above invert elev. =   0.418(Ft.)
Average velocity of channel(s) =   4.644(Ft/s)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.250
Decimal fraction soil group D = 0.750
SCS curve number for soil(AMC 2)  = 82.75
Pervious ratio(Ap) = 1.0000  Max loss rate(Fp)=     0.213(In/Hr)
```

```
Max Catchment Loss (Fm) =     0.213(In/Hr)
Rainfall intensity =      3.301(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.841
Subarea runoff =     32.722(CFS) for   12.790(Ac.)
Total runoff =     56.992(CFS)       Total area =       20.54(Ac.)
Area averaged Fm value =    0.218(In/Hr)
Depth of flow =   0.475(Ft.), Average velocity =   5.053(Ft/s)
End of computations, total study area =           20.54 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged SCS curve number (AMC 2) =  82.2
```

- 2 Year 3 Hour Pre-Development Unit Hydrograph – Area 'D'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989-2012, Version 7.2

       Study date  10/10/16   File Name EXD00203.out


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------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'D' - 2 YEAR 3 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 2

       Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 82.3       6.8          0.33     C     0.250     1.000    0.250
 82.3      13.5          0.67     D     0.200     1.000    0.200

Area-averaged adjusted loss rate Fm (In/Hr) =  0.217

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
     6.77   0.333         82.3      66.2       5.10     0.084

    13.54   0.667         82.3      66.2       5.10     0.084

Area-averaged catchment yield fraction, Y =  0.084
Area-averaged low loss fraction, Yb =  0.916
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.279 (hours)
Watershed area =      20.31(Ac.)
Catchment Lag time =   0.223 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 37.3580
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.217(In/Hr)
Average low loss rate fraction (Yb) = 0.916 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.190(In)
Computed peak 30-minute rainfall =  0.400(In)
Specified peak 1-hour rainfall =  0.530(In)
Computed peak 3-hour rainfall =  0.890(In)
Specified peak 6-hour rainfall =  1.220(In)
Specified peak 24-hour rainfall =  2.050(In)


Rainfall depth area reduction factors:
Using a total area of      20.31(Ac.) (Ref: fig. E-4)
```

```
5-minute factor = 0.999     Adjusted rainfall =  0.190(In)
30-minute factor = 0.999    Adjusted rainfall =  0.400(In)
1-hour factor = 0.999       Adjusted rainfall =  0.529(In)
3-hour factor = 1.000       Adjusted rainfall =  0.890(In)
6-hour factor = 1.000       Adjusted rainfall =  1.220(In)
24-hour factor = 1.000 Adjusted rainfall =  2.050(In)
--------------------------------------------------------------------

                    U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------
               (K =       245.62 (CFS))

  1               2.856                   7.015
  2              13.127                  25.229
  3              40.102                  66.257
  4              65.474                  62.318
  5              76.077                  26.045
  6              83.094                  17.235
  7              88.097                  12.287
  8              91.776                   9.037
  9              94.496                   6.680
 10              96.376                   4.618
 11              97.657                   3.148
 12              98.255                   1.469
 13              98.670                   1.018
 14              99.015                   0.848
 15              99.253                   0.585
 16              99.532                   0.686
 17              99.765                   0.572
 18              99.902                   0.335
 19             100.000                   0.242
--------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.1898              0.1898
  2              0.2532              0.0634
  3              0.2996              0.0465
  4              0.3377              0.0380
  5              0.3705              0.0328
  6              0.3996              0.0292
  7              0.4254              0.0258
  8              0.4491              0.0237
  9              0.4711              0.0220
 10              0.4917              0.0206
 11              0.5111              0.0194
 12              0.5295              0.0184
 13              0.5499              0.0204
 14              0.5695              0.0196
 15              0.5884              0.0189
 16              0.6066              0.0182
 17              0.6242              0.0176
 18              0.6413              0.0171
 19              0.6579              0.0166
 20              0.6741              0.0161
 21              0.6898              0.0157
 22              0.7051              0.0153
 23              0.7201              0.0150
 24              0.7347              0.0146
 25              0.7490              0.0143
 26              0.7630              0.0140
 27              0.7768              0.0137
 28              0.7902              0.0135
 29              0.8035              0.0132
 30              0.8164              0.0130
 31              0.8292              0.0127
 32              0.8417              0.0125
 33              0.8540              0.0123
```

```
 34              0.8662              0.0121
 35              0.8781              0.0119
 36              0.8899              0.0118
---------------------------------------------------------------------
Unit              Unit            Unit              Effective
Period            Rainfall        Soil-Loss         Rainfall
(number)            (In)          (In)                 (In)
---------------------------------------------------------------------
  1              0.0118           0.0108              0.0010
  2              0.0119           0.0109              0.0010
  3              0.0123           0.0113              0.0010
  4              0.0125           0.0115              0.0011
  5              0.0130           0.0119              0.0011
  6              0.0132           0.0121              0.0011
  7              0.0137           0.0126              0.0012
  8              0.0140           0.0128              0.0012
  9              0.0146           0.0134              0.0012
 10              0.0150           0.0137              0.0013
 11              0.0157           0.0144              0.0013
 12              0.0161           0.0148              0.0014
 13              0.0171           0.0156              0.0014
 14              0.0176           0.0161              0.0015
 15              0.0189           0.0173              0.0016
 16              0.0196           0.0179              0.0017
 17              0.0184           0.0168              0.0016
 18              0.0194           0.0178              0.0016
 19              0.0220           0.0181              0.0039
 20              0.0237           0.0181              0.0056
 21              0.0292           0.0181              0.0111
 22              0.0328           0.0181              0.0147
 23              0.0465           0.0181              0.0284
 24              0.0634           0.0181              0.0453
 25              0.1898           0.0181              0.1718
 26              0.0380           0.0181              0.0200
 27              0.0258           0.0181              0.0078
 28              0.0206           0.0181              0.0025
 29              0.0204           0.0181              0.0024
 30              0.0182           0.0167              0.0015
 31              0.0166           0.0152              0.0014
 32              0.0153           0.0140              0.0013
 33              0.0143           0.0131              0.0012
 34              0.0135           0.0123              0.0011
 35              0.0127           0.0117              0.0011
 36              0.0121           0.0111              0.0010
---------------------------------------------------------------------
---------------------------------------------------------------------
Total soil rain loss =      0.54(In)
Total effective rainfall =      0.35(In)
Peak flow rate in flood hydrograph =     15.99(CFS)
---------------------------------------------------------------------
+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                    3 - H O U R    S T O R M
                R u n o f f      H y d r o g r a p h
---------------------------------------------------------------------
            Hydrograph in   5   Minute intervals ((CFS))

---------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0        5.0      10.0      15.0      20.0
---------------------------------------------------------------------
  0+ 5       0.0000      0.01  Q         |         |         |         |
  0+10       0.0003      0.03  Q         |         |         |         |
  0+15       0.0009      0.10  Q         |         |         |         |
  0+20       0.0021      0.16  Q         |         |         |         |
  0+25       0.0034      0.19  Q         |         |         |         |
  0+30       0.0049      0.21  Q         |         |         |         |
  0+35       0.0065      0.23  Q         |         |         |         |
  0+40       0.0082      0.25  Q         |         |         |         |
  0+45       0.0099      0.26  Q         |         |         |         |
  0+50       0.0118      0.27  Q         |         |         |         |
  0+55       0.0138      0.28  Q         |         |         |         |
  1+ 0       0.0158      0.29  QV        |         |         |         |
```

```
   1+ 5       0.0179      0.31  QV        |         |         |         |
   1+10       0.0201      0.32  QV        |         |         |         |
   1+15       0.0224      0.33  QV        |         |         |         |
   1+20       0.0248      0.35  QV        |         |         |         |
   1+25       0.0273      0.36  QV        |         |         |         |
   1+30       0.0299      0.38  Q V       |         |         |         |
   1+35       0.0326      0.40  Q V       |         |         |         |
   1+40       0.0358      0.47  Q V       |         |         |         |
   1+45       0.0407      0.71  |QV       |         |         |         |
   1+50       0.0486      1.14  | QV      |         |         |         |
   1+55       0.0613      1.85  |  QV     |         |         |         |
   2+ 0       0.0819      2.98  |    Q    |         |         |         |
   2+ 5       0.1206      5.63  |       V |Q        |         |         |
   2+10       0.1892      9.96  |         | V      Q|         |         |
   2+15       0.2993     15.99  |         |         V         |Q        |
   2+20       0.3975     14.26  |         |         |      VQ |         |
   2+25       0.4506      7.70  |         |    Q    |         V         |
   2+30       0.4863      5.20  |         Q         |         |  V      |
   2+35       0.5121      3.74  |      Q  |         |         |    V    |
   2+40       0.5314      2.80  |    Q    |         |         |     V   |
   2+45       0.5458      2.10  |   Q     |         |         |      V  |
   2+50       0.5564      1.54  |  Q      |         |         |       V |
   2+55       0.5641      1.12  | Q       |         |         |       V |
   3+ 0       0.5692      0.74  |Q        |         |         |       V |
   3+ 5       0.5732      0.58  |Q        |         |         |        V|
   3+10       0.5765      0.48  Q         |         |         |        V|
   3+15       0.5789      0.35  Q         |         |         |        V|
   3+20       0.5808      0.27  Q         |         |         |        V|
   3+25       0.5822      0.20  Q         |         |         |        V|
   3+30       0.5831      0.13  Q         |         |         |        V|
   3+35       0.5837      0.09  Q         |         |         |        V|
   3+40       0.5839      0.03  Q         |         |         |        V|
   3+45       0.5840      0.02  Q         |         |         |        V|
   3+50       0.5841      0.01  Q         |         |         |        V|
   3+55       0.5842      0.01  Q         |         |         |        V|
   4+ 0       0.5842      0.01  Q         |         |         |        V|
   4+ 5       0.5842      0.00  Q         |         |         |        V|
   4+10       0.5842      0.00  Q         |         |         |        V|
   4+15       0.5843      0.00  Q         |         |         |        V|
   4+20       0.5843      0.00  Q         |         |         |        V|
   4+25       0.5843      0.00  Q         |         |         |        V|
   4+30       0.5843      0.00  Q         |         |         |         V
------------------------------------------------------------------------
```

- 2 Year 6 Hour Pre-Development Unit Hydrograph – Area 'D'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/10/16   File Name EXD00206.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'D' - 2 YEAR 6 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 2

       Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 82.3       6.8          0.33     C     0.250     1.000    0.250
 82.3      13.5          0.67     D     0.200     1.000    0.200

Area-averaged adjusted loss rate Fm (In/Hr) =  0.217

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
     6.77   0.333         82.3      66.2       5.10     0.084

    13.54   0.667         82.3      66.2       5.10     0.084

Area-averaged catchment yield fraction, Y =  0.084
Area-averaged low loss fraction, Yb =  0.916
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.279 (hours)
Watershed area =      20.31(Ac.)
Catchment Lag time =   0.223 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 37.3580
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.217(In/Hr)
Average low loss rate fraction (Yb) = 0.916 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.190(In)
Computed peak 30-minute rainfall =  0.400(In)
Specified peak 1-hour rainfall =  0.530(In)
Computed peak 3-hour rainfall =  0.890(In)
Specified peak 6-hour rainfall =  1.220(In)
Specified peak 24-hour rainfall =  2.050(In)


Rainfall depth area reduction factors:
Using a total area of      20.31(Ac.) (Ref: fig. E-4)
```

```
5-minute factor = 0.999     Adjusted rainfall =  0.190(In)
30-minute factor = 0.999    Adjusted rainfall =  0.400(In)
1-hour factor = 0.999       Adjusted rainfall =  0.529(In)
3-hour factor = 1.000       Adjusted rainfall =  0.890(In)
6-hour factor = 1.000       Adjusted rainfall =  1.220(In)
24-hour factor = 1.000 Adjusted rainfall =  2.050(In)
--------------------------------------------------------------------

                     U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------
               (K =       245.62 (CFS))

  1               2.856                   7.015
  2              13.127                  25.229
  3              40.102                  66.257
  4              65.474                  62.318
  5              76.077                  26.045
  6              83.094                  17.235
  7              88.097                  12.287
  8              91.776                   9.037
  9              94.496                   6.680
 10              96.376                   4.618
 11              97.657                   3.148
 12              98.255                   1.469
 13              98.670                   1.018
 14              99.015                   0.848
 15              99.253                   0.585
 16              99.532                   0.686
 17              99.765                   0.572
 18              99.902                   0.335
 19             100.000                   0.242
--------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.1898              0.1898
  2              0.2532              0.0634
  3              0.2996              0.0465
  4              0.3377              0.0380
  5              0.3705              0.0328
  6              0.3996              0.0292
  7              0.4254              0.0258
  8              0.4491              0.0237
  9              0.4711              0.0220
 10              0.4917              0.0206
 11              0.5111              0.0194
 12              0.5295              0.0184
 13              0.5499              0.0204
 14              0.5695              0.0196
 15              0.5884              0.0189
 16              0.6066              0.0182
 17              0.6242              0.0176
 18              0.6413              0.0171
 19              0.6579              0.0166
 20              0.6741              0.0161
 21              0.6898              0.0157
 22              0.7051              0.0153
 23              0.7201              0.0150
 24              0.7347              0.0146
 25              0.7490              0.0143
 26              0.7630              0.0140
 27              0.7768              0.0137
 28              0.7902              0.0135
 29              0.8035              0.0132
 30              0.8164              0.0130
 31              0.8292              0.0127
 32              0.8417              0.0125
 33              0.8540              0.0123
```

34	0.8662	0.0121
35	0.8781	0.0119
36	0.8899	0.0118
37	0.9011	0.0112
38	0.9121	0.0110
39	0.9229	0.0108
40	0.9336	0.0107
41	0.9442	0.0106
42	0.9546	0.0104
43	0.9648	0.0103
44	0.9750	0.0101
45	0.9850	0.0100
46	0.9949	0.0099
47	1.0047	0.0098
48	1.0144	0.0097
49	1.0239	0.0096
50	1.0334	0.0095
51	1.0427	0.0094
52	1.0520	0.0093
53	1.0612	0.0092
54	1.0702	0.0091
55	1.0792	0.0090
56	1.0881	0.0089
57	1.0969	0.0088
58	1.1056	0.0087
59	1.1142	0.0086
60	1.1228	0.0086
61	1.1313	0.0085
62	1.1397	0.0084
63	1.1480	0.0083
64	1.1563	0.0083
65	1.1644	0.0082
66	1.1726	0.0081
67	1.1806	0.0081
68	1.1886	0.0080
69	1.1965	0.0079
70	1.2044	0.0079
71	1.2122	0.0078
72	1.2199	0.0077

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0077	0.0071	0.0007
2	0.0078	0.0071	0.0007
3	0.0079	0.0073	0.0007
4	0.0080	0.0073	0.0007
5	0.0081	0.0074	0.0007
6	0.0082	0.0075	0.0007
7	0.0083	0.0076	0.0007
8	0.0084	0.0077	0.0007
9	0.0086	0.0078	0.0007
10	0.0086	0.0079	0.0007
11	0.0088	0.0081	0.0007
12	0.0089	0.0081	0.0007
13	0.0091	0.0083	0.0008
14	0.0092	0.0084	0.0008
15	0.0094	0.0086	0.0008
16	0.0095	0.0087	0.0008
17	0.0097	0.0089	0.0008
18	0.0098	0.0090	0.0008
19	0.0100	0.0092	0.0008
20	0.0101	0.0093	0.0009
21	0.0104	0.0095	0.0009
22	0.0106	0.0097	0.0009
23	0.0108	0.0099	0.0009
24	0.0110	0.0101	0.0009
25	0.0118	0.0108	0.0010
26	0.0119	0.0109	0.0010
27	0.0123	0.0113	0.0010

```
 28              0.0125          0.0115              0.0011
 29              0.0130          0.0119              0.0011
 30              0.0132          0.0121              0.0011
 31              0.0137          0.0126              0.0012
 32              0.0140          0.0128              0.0012
 33              0.0146          0.0134              0.0012
 34              0.0150          0.0137              0.0013
 35              0.0157          0.0144              0.0013
 36              0.0161          0.0148              0.0014
 37              0.0171          0.0156              0.0014
 38              0.0176          0.0161              0.0015
 39              0.0189          0.0173              0.0016
 40              0.0196          0.0179              0.0017
 41              0.0184          0.0168              0.0016
 42              0.0194          0.0178              0.0016
 43              0.0220          0.0181              0.0039
 44              0.0237          0.0181              0.0056
 45              0.0292          0.0181              0.0111
 46              0.0328          0.0181              0.0147
 47              0.0465          0.0181              0.0284
 48              0.0634          0.0181              0.0453
 49              0.1898          0.0181              0.1718
 50              0.0380          0.0181              0.0200
 51              0.0258          0.0181              0.0078
 52              0.0206          0.0181              0.0025
 53              0.0204          0.0181              0.0024
 54              0.0182          0.0167              0.0015
 55              0.0166          0.0152              0.0014
 56              0.0153          0.0140              0.0013
 57              0.0143          0.0131              0.0012
 58              0.0135          0.0123              0.0011
 59              0.0127          0.0117              0.0011
 60              0.0121          0.0111              0.0010
 61              0.0112          0.0102              0.0009
 62              0.0107          0.0098              0.0009
 63              0.0103          0.0094              0.0009
 64              0.0099          0.0091              0.0008
 65              0.0096          0.0088              0.0008
 66              0.0093          0.0085              0.0008
 67              0.0090          0.0082              0.0008
 68              0.0087          0.0080              0.0007
 69              0.0085          0.0078              0.0007
 70              0.0083          0.0076              0.0007
 71              0.0081          0.0074              0.0007
 72              0.0079          0.0072              0.0007
--------------------------------------------------------------------
--------------------------------------------------------------------
Total soil rain loss =      0.85(In)
Total effective rainfall =      0.37(In)
Peak flow rate in flood hydrograph =     15.99(CFS)
--------------------------------------------------------------------
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                  6 - H O U R    S T O R M
               R u n o f f      H y d r o g r a p h
--------------------------------------------------------------------
            Hydrograph in   5   Minute intervals ((CFS))

--------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0        5.0      10.0      15.0      20.0
--------------------------------------------------------------------
  0+ 5       0.0000      0.00  Q         |         |         |         |
  0+10       0.0002      0.02  Q         |         |         |         |
  0+15       0.0006      0.06  Q         |         |         |         |
  0+20       0.0014      0.11  Q         |         |         |         |
  0+25       0.0022      0.12  Q         |         |         |         |
  0+30       0.0031      0.14  Q         |         |         |         |
  0+35       0.0042      0.15  Q         |         |         |         |
  0+40       0.0052      0.15  Q         |         |         |         |
  0+45       0.0063      0.16  Q         |         |         |         |
  0+50       0.0075      0.17  Q         |         |         |         |
  0+55       0.0086      0.17  Q         |         |         |         |
```

```
1+ 0       0.0098      0.17  Q         |         |         |         |
1+ 5       0.0110      0.18  Q         |         |         |         |
1+10       0.0123      0.18  Q         |         |         |         |
1+15       0.0135      0.18  Q         |         |         |         |
1+20       0.0148      0.19  Q         |         |         |         |
1+25       0.0161      0.19  QV        |         |         |         |
1+30       0.0174      0.19  QV        |         |         |         |
1+35       0.0188      0.20  QV        |         |         |         |
1+40       0.0201      0.20  QV        |         |         |         |
1+45       0.0215      0.20  QV        |         |         |         |
1+50       0.0229      0.21  QV        |         |         |         |
1+55       0.0244      0.21  QV        |         |         |         |
2+ 0       0.0259      0.21  QV        |         |         |         |
2+ 5       0.0274      0.22  QV        |         |         |         |
2+10       0.0289      0.22  QV        |         |         |         |
2+15       0.0305      0.23  QV        |         |         |         |
2+20       0.0321      0.24  Q V       |         |         |         |
2+25       0.0338      0.24  Q V       |         |         |         |
2+30       0.0355      0.25  Q V       |         |         |         |
2+35       0.0373      0.26  Q V       |         |         |         |
2+40       0.0391      0.26  Q V       |         |         |         |
2+45       0.0410      0.27  Q V       |         |         |         |
2+50       0.0429      0.28  Q V       |         |         |         |
2+55       0.0449      0.29  Q V       |         |         |         |
3+ 0       0.0470      0.30  Q V       |         |         |         |
3+ 5       0.0491      0.31  Q  V      |         |         |         |
3+10       0.0513      0.32  Q  V      |         |         |         |
3+15       0.0536      0.33  Q  V      |         |         |         |
3+20       0.0560      0.35  Q  V      |         |         |         |
3+25       0.0585      0.36  Q  V      |         |         |         |
3+30       0.0611      0.38  Q  V      |         |         |         |
3+35       0.0638      0.40  Q   V     |         |         |         |
3+40       0.0671      0.47  Q   V     |         |         |         |
3+45       0.0720      0.71  |Q  V     |         |         |         |
3+50       0.0798      1.14  | Q  V    |         |         |         |
3+55       0.0925      1.85  |  Q V    |         |         |         |
4+ 0       0.1131      2.98  |    Q V  |         |         |         |
4+ 5       0.1519      5.63  |        V|Q        |         |         |
4+10       0.2204      9.96  |         |  V     Q|         |         |
4+15       0.3305     15.99  |         |         V         |Q        |
4+20       0.4288     14.26  |         |         |      VQ |         |
4+25       0.4818      7.70  |         |    Q    |         V         |
4+30       0.5176      5.20  |        Q|         |         | V       |
4+35       0.5433      3.74  |      Q  |         |         |   V     |
4+40       0.5626      2.80  |    Q    |         |         |    V    |
4+45       0.5771      2.10  |   Q     |         |         |     V   |
4+50       0.5876      1.54  |  Q      |         |         |      V  |
4+55       0.5953      1.12  | Q       |         |         |      V  |
5+ 0       0.6005      0.74  |Q        |         |         |       V |
5+ 5       0.6045      0.59  |Q        |         |         |       V |
5+10       0.6080      0.51  |Q        |         |         |       V |
5+15       0.6110      0.44  Q         |         |         |       V |
5+20       0.6139      0.42  Q         |         |         |       V |
5+25       0.6165      0.37  Q         |         |         |        V|
5+30       0.6186      0.31  Q         |         |         |        V|
5+35       0.6204      0.27  Q         |         |         |        V|
5+40       0.6219      0.21  Q         |         |         |        V|
5+45       0.6233      0.20  Q         |         |         |        V|
5+50       0.6246      0.19  Q         |         |         |        V|
5+55       0.6259      0.19  Q         |         |         |        V|
6+ 0       0.6271      0.18  Q         |         |         |        V|
6+ 5       0.6283      0.17  Q         |         |         |        V|
6+10       0.6293      0.15  Q         |         |         |        V|
6+15       0.6300      0.10  Q         |         |         |        V|
6+20       0.6304      0.06  Q         |         |         |        V|
6+25       0.6307      0.04  Q         |         |         |        V|
6+30       0.6309      0.03  Q         |         |         |        V|
6+35       0.6311      0.02  Q         |         |         |        V|
6+40       0.6312      0.01  Q         |         |         |        V|
6+45       0.6312      0.01  Q         |         |         |        V|
6+50       0.6313      0.01  Q         |         |         |        V|
```

```
    6+55       0.6313      0.00  Q         |         |         |         V|
    7+ 0       0.6313      0.00  Q         |         |         |         V|
    7+ 5       0.6313      0.00  Q         |         |         |         V|
    7+10       0.6314      0.00  Q         |         |         |         V|
    7+15       0.6314      0.00  Q         |         |         |         V|
    7+20       0.6314      0.00  Q         |         |         |         V|
    7+25       0.6314      0.00  Q         |         |         |         V|
    7+30       0.6314      0.00  Q         |         |         |         V|
-------------------------------------------------------------------------
```

- 2 Year 12 Hour Pre-Development Unit Hydrograph – Area 'D'

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       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/10/16   File Name EXD00212.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

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RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'D' - 2 YEAR 12 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 2

       Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 82.3       6.8          0.33     C     0.250     1.000    0.250
 82.3      13.5          0.67     D     0.200     1.000    0.200

Area-averaged adjusted loss rate Fm (In/Hr) =  0.217

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
     6.77   0.333         82.3      66.2       5.10     0.084

    13.54   0.667         82.3      66.2       5.10     0.084

Area-averaged catchment yield fraction, Y =  0.084
Area-averaged low loss fraction, Yb =  0.916
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.279 (hours)
Watershed area =      20.31(Ac.)
Catchment Lag time =   0.223 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 37.3580
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.217(In/Hr)
Average low loss rate fraction (Yb) = 0.916 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.190(In)
Computed peak 30-minute rainfall =  0.400(In)
Specified peak 1-hour rainfall =  0.530(In)
Computed peak 3-hour rainfall =  0.890(In)
Specified peak 6-hour rainfall =  1.220(In)
Specified peak 24-hour rainfall =  2.050(In)


Rainfall depth area reduction factors:
Using a total area of      20.31(Ac.) (Ref: fig. E-4)
```

```
5-minute factor = 0.999     Adjusted rainfall =  0.190(In)
30-minute factor = 0.999    Adjusted rainfall =  0.400(In)
1-hour factor = 0.999       Adjusted rainfall =  0.529(In)
3-hour factor = 1.000       Adjusted rainfall =  0.890(In)
6-hour factor = 1.000       Adjusted rainfall =  1.220(In)
24-hour factor = 1.000 Adjusted rainfall =  2.050(In)
--------------------------------------------------------------------------

                      U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------------
               (K =       245.62 (CFS))

  1               2.856                   7.015
  2              13.127                  25.229
  3              40.102                  66.257
  4              65.474                  62.318
  5              76.077                  26.045
  6              83.094                  17.235
  7              88.097                  12.287
  8              91.776                   9.037
  9              94.496                   6.680
 10              96.376                   4.618
 11              97.657                   3.148
 12              98.255                   1.469
 13              98.670                   1.018
 14              99.015                   0.848
 15              99.253                   0.585
 16              99.532                   0.686
 17              99.765                   0.572
 18              99.902                   0.335
 19             100.000                   0.242
--------------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.1898              0.1898
  2              0.2532              0.0634
  3              0.2996              0.0465
  4              0.3377              0.0380
  5              0.3705              0.0328
  6              0.3996              0.0292
  7              0.4254              0.0258
  8              0.4491              0.0237
  9              0.4711              0.0220
 10              0.4917              0.0206
 11              0.5111              0.0194
 12              0.5295              0.0184
 13              0.5499              0.0204
 14              0.5695              0.0196
 15              0.5884              0.0189
 16              0.6066              0.0182
 17              0.6242              0.0176
 18              0.6413              0.0171
 19              0.6579              0.0166
 20              0.6741              0.0161
 21              0.6898              0.0157
 22              0.7051              0.0153
 23              0.7201              0.0150
 24              0.7347              0.0146
 25              0.7490              0.0143
 26              0.7630              0.0140
 27              0.7768              0.0137
 28              0.7902              0.0135
 29              0.8035              0.0132
 30              0.8164              0.0130
 31              0.8292              0.0127
 32              0.8417              0.0125
 33              0.8540              0.0123
```

34	0.8662	0.0121
35	0.8781	0.0119
36	0.8899	0.0118
37	0.9011	0.0112
38	0.9121	0.0110
39	0.9229	0.0108
40	0.9336	0.0107
41	0.9442	0.0106
42	0.9546	0.0104
43	0.9648	0.0103
44	0.9750	0.0101
45	0.9850	0.0100
46	0.9949	0.0099
47	1.0047	0.0098
48	1.0144	0.0097
49	1.0239	0.0096
50	1.0334	0.0095
51	1.0427	0.0094
52	1.0520	0.0093
53	1.0612	0.0092
54	1.0702	0.0091
55	1.0792	0.0090
56	1.0881	0.0089
57	1.0969	0.0088
58	1.1056	0.0087
59	1.1142	0.0086
60	1.1228	0.0086
61	1.1313	0.0085
62	1.1397	0.0084
63	1.1480	0.0083
64	1.1563	0.0083
65	1.1644	0.0082
66	1.1726	0.0081
67	1.1806	0.0081
68	1.1886	0.0080
69	1.1965	0.0079
70	1.2044	0.0079
71	1.2122	0.0078
72	1.2199	0.0077
73	1.2262	0.0063
74	1.2325	0.0063
75	1.2387	0.0062
76	1.2449	0.0062
77	1.2510	0.0061
78	1.2570	0.0061
79	1.2630	0.0060
80	1.2690	0.0060
81	1.2749	0.0059
82	1.2808	0.0059
83	1.2866	0.0058
84	1.2924	0.0058
85	1.2981	0.0057
86	1.3038	0.0057
87	1.3095	0.0057
88	1.3151	0.0056
89	1.3207	0.0056
90	1.3262	0.0055
91	1.3317	0.0055
92	1.3372	0.0055
93	1.3426	0.0054
94	1.3480	0.0054
95	1.3533	0.0054
96	1.3587	0.0053
97	1.3639	0.0053
98	1.3692	0.0052
99	1.3744	0.0052
100	1.3796	0.0052
101	1.3847	0.0051
102	1.3898	0.0051
103	1.3949	0.0051
104	1.4000	0.0051

105	1.4050	0.0050
106	1.4100	0.0050
107	1.4150	0.0050
108	1.4199	0.0049
109	1.4248	0.0049
110	1.4297	0.0049
111	1.4345	0.0049
112	1.4394	0.0048
113	1.4442	0.0048
114	1.4489	0.0048
115	1.4537	0.0047
116	1.4584	0.0047
117	1.4631	0.0047
118	1.4678	0.0047
119	1.4724	0.0046
120	1.4770	0.0046
121	1.4816	0.0046
122	1.4862	0.0046
123	1.4908	0.0045
124	1.4953	0.0045
125	1.4998	0.0045
126	1.5043	0.0045
127	1.5087	0.0045
128	1.5132	0.0044
129	1.5176	0.0044
130	1.5220	0.0044
131	1.5263	0.0044
132	1.5307	0.0044
133	1.5350	0.0043
134	1.5393	0.0043
135	1.5436	0.0043
136	1.5479	0.0043
137	1.5522	0.0043
138	1.5564	0.0042
139	1.5606	0.0042
140	1.5648	0.0042
141	1.5690	0.0042
142	1.5731	0.0042
143	1.5773	0.0041
144	1.5814	0.0041

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0041	0.0038	0.0003
2	0.0041	0.0038	0.0003
3	0.0042	0.0038	0.0004
4	0.0042	0.0038	0.0004
5	0.0042	0.0039	0.0004
6	0.0043	0.0039	0.0004
7	0.0043	0.0039	0.0004
8	0.0043	0.0039	0.0004
9	0.0044	0.0040	0.0004
10	0.0044	0.0040	0.0004
11	0.0044	0.0040	0.0004
12	0.0044	0.0041	0.0004
13	0.0045	0.0041	0.0004
14	0.0045	0.0041	0.0004
15	0.0045	0.0042	0.0004
16	0.0046	0.0042	0.0004
17	0.0046	0.0042	0.0004
18	0.0046	0.0043	0.0004
19	0.0047	0.0043	0.0004
20	0.0047	0.0043	0.0004
21	0.0048	0.0044	0.0004
22	0.0048	0.0044	0.0004
23	0.0049	0.0044	0.0004
24	0.0049	0.0045	0.0004
25	0.0049	0.0045	0.0004
26	0.0050	0.0045	0.0004

27	0.0050	0.0046	0.0004
28	0.0051	0.0046	0.0004
29	0.0051	0.0047	0.0004
30	0.0051	0.0047	0.0004
31	0.0052	0.0048	0.0004
32	0.0052	0.0048	0.0004
33	0.0053	0.0049	0.0004
34	0.0054	0.0049	0.0005
35	0.0054	0.0050	0.0005
36	0.0055	0.0050	0.0005
37	0.0055	0.0051	0.0005
38	0.0056	0.0051	0.0005
39	0.0057	0.0052	0.0005
40	0.0057	0.0052	0.0005
41	0.0058	0.0053	0.0005
42	0.0058	0.0053	0.0005
43	0.0059	0.0054	0.0005
44	0.0060	0.0055	0.0005
45	0.0061	0.0055	0.0005
46	0.0061	0.0056	0.0005
47	0.0062	0.0057	0.0005
48	0.0063	0.0057	0.0005
49	0.0077	0.0071	0.0007
50	0.0078	0.0071	0.0007
51	0.0079	0.0073	0.0007
52	0.0080	0.0073	0.0007
53	0.0081	0.0074	0.0007
54	0.0082	0.0075	0.0007
55	0.0083	0.0076	0.0007
56	0.0084	0.0077	0.0007
57	0.0086	0.0078	0.0007
58	0.0086	0.0079	0.0007
59	0.0088	0.0081	0.0007
60	0.0089	0.0081	0.0007
61	0.0091	0.0083	0.0008
62	0.0092	0.0084	0.0008
63	0.0094	0.0086	0.0008
64	0.0095	0.0087	0.0008
65	0.0097	0.0089	0.0008
66	0.0098	0.0090	0.0008
67	0.0100	0.0092	0.0008
68	0.0101	0.0093	0.0009
69	0.0104	0.0095	0.0009
70	0.0106	0.0097	0.0009
71	0.0108	0.0099	0.0009
72	0.0110	0.0101	0.0009
73	0.0118	0.0108	0.0010
74	0.0119	0.0109	0.0010
75	0.0123	0.0113	0.0010
76	0.0125	0.0115	0.0011
77	0.0130	0.0119	0.0011
78	0.0132	0.0121	0.0011
79	0.0137	0.0126	0.0012
80	0.0140	0.0128	0.0012
81	0.0146	0.0134	0.0012
82	0.0150	0.0137	0.0013
83	0.0157	0.0144	0.0013
84	0.0161	0.0148	0.0014
85	0.0171	0.0156	0.0014
86	0.0176	0.0161	0.0015
87	0.0189	0.0173	0.0016
88	0.0196	0.0179	0.0017
89	0.0184	0.0168	0.0016
90	0.0194	0.0178	0.0016
91	0.0220	0.0181	0.0039
92	0.0237	0.0181	0.0056
93	0.0292	0.0181	0.0111
94	0.0328	0.0181	0.0147
95	0.0465	0.0181	0.0284
96	0.0634	0.0181	0.0453
97	0.1898	0.0181	0.1718

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 98              0.0380          0.0181              0.0200
 99              0.0258          0.0181              0.0078
100              0.0206          0.0181              0.0025
101              0.0204          0.0181              0.0024
102              0.0182          0.0167              0.0015
103              0.0166          0.0152              0.0014
104              0.0153          0.0140              0.0013
105              0.0143          0.0131              0.0012
106              0.0135          0.0123              0.0011
107              0.0127          0.0117              0.0011
108              0.0121          0.0111              0.0010
109              0.0112          0.0102              0.0009
110              0.0107          0.0098              0.0009
111              0.0103          0.0094              0.0009
112              0.0099          0.0091              0.0008
113              0.0096          0.0088              0.0008
114              0.0093          0.0085              0.0008
115              0.0090          0.0082              0.0008
116              0.0087          0.0080              0.0007
117              0.0085          0.0078              0.0007
118              0.0083          0.0076              0.0007
119              0.0081          0.0074              0.0007
120              0.0079          0.0072              0.0007
121              0.0063          0.0058              0.0005
122              0.0062          0.0056              0.0005
123              0.0060          0.0055              0.0005
124              0.0059          0.0054              0.0005
125              0.0057          0.0053              0.0005
126              0.0056          0.0051              0.0005
127              0.0055          0.0050              0.0005
128              0.0054          0.0049              0.0005
129              0.0053          0.0048              0.0004
130              0.0052          0.0047              0.0004
131              0.0051          0.0047              0.0004
132              0.0050          0.0046              0.0004
133              0.0049          0.0045              0.0004
134              0.0048          0.0044              0.0004
135              0.0047          0.0043              0.0004
136              0.0047          0.0043              0.0004
137              0.0046          0.0042              0.0004
138              0.0045          0.0041              0.0004
139              0.0045          0.0041              0.0004
140              0.0044          0.0040              0.0004
141              0.0043          0.0040              0.0004
142              0.0043          0.0039              0.0004
143              0.0042          0.0039              0.0004
144              0.0042          0.0038              0.0004
-------------------------------------------------------------------------
-------------------------------------------------------------------------
Total soil rain loss =      1.18(In)
Total effective rainfall =      0.40(In)
Peak flow rate in flood hydrograph =     15.99(CFS)
-------------------------------------------------------------------------
+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                    12 - H O U R    S T O R M
                R u n o f f      H y d r o g r a p h
-------------------------------------------------------------------------
            Hydrograph in   5   Minute intervals ((CFS))

-------------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0        5.0      10.0      15.0      20.0
-------------------------------------------------------------------------
  0+ 5       0.0000      0.00  Q         |         |         |         |
  0+10       0.0001      0.01  Q         |         |         |         |
  0+15       0.0003      0.03  Q         |         |         |         |
  0+20       0.0007      0.06  Q         |         |         |         |
  0+25       0.0012      0.07  Q         |         |         |         |
  0+30       0.0017      0.07  Q         |         |         |         |
  0+35       0.0022      0.08  Q         |         |         |         |
  0+40       0.0027      0.08  Q         |         |         |         |
  0+45       0.0033      0.08  Q         |         |         |         |
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0+50       0.0039      0.09  Q          |          |          |          |
0+55       0.0045      0.09  Q          |          |          |          |
1+ 0       0.0051      0.09  Q          |          |          |          |
1+ 5       0.0057      0.09  Q          |          |          |          |
1+10       0.0064      0.09  Q          |          |          |          |
1+15       0.0070      0.09  Q          |          |          |          |
1+20       0.0076      0.09  Q          |          |          |          |
1+25       0.0083      0.09  Q          |          |          |          |
1+30       0.0089      0.09  Q          |          |          |          |
1+35       0.0096      0.09  Q          |          |          |          |
1+40       0.0102      0.10  Q          |          |          |          |
1+45       0.0109      0.10  Q          |          |          |          |
1+50       0.0115      0.10  Q          |          |          |          |
1+55       0.0122      0.10  Q          |          |          |          |
2+ 0       0.0129      0.10  Q          |          |          |          |
2+ 5       0.0136      0.10  Q          |          |          |          |
2+10       0.0143      0.10  Q          |          |          |          |
2+15       0.0150      0.10  Q          |          |          |          |
2+20       0.0157      0.10  Q          |          |          |          |
2+25       0.0164      0.10  Q          |          |          |          |
2+30       0.0171      0.10  Q          |          |          |          |
2+35       0.0178      0.10  QV         |          |          |          |
2+40       0.0185      0.11  QV         |          |          |          |
2+45       0.0192      0.11  QV         |          |          |          |
2+50       0.0200      0.11  QV         |          |          |          |
2+55       0.0207      0.11  QV         |          |          |          |
3+ 0       0.0215      0.11  QV         |          |          |          |
3+ 5       0.0223      0.11  QV         |          |          |          |
3+10       0.0230      0.11  QV         |          |          |          |
3+15       0.0238      0.11  QV         |          |          |          |
3+20       0.0246      0.11  QV         |          |          |          |
3+25       0.0254      0.12  QV         |          |          |          |
3+30       0.0262      0.12  QV         |          |          |          |
3+35       0.0270      0.12  QV         |          |          |          |
3+40       0.0278      0.12  QV         |          |          |          |
3+45       0.0286      0.12  QV         |          |          |          |
3+50       0.0295      0.12  QV         |          |          |          |
3+55       0.0303      0.12  QV         |          |          |          |
4+ 0       0.0312      0.12  QV         |          |          |          |
4+ 5       0.0321      0.13  QV         |          |          |          |
4+10       0.0330      0.13  QV         |          |          |          |
4+15       0.0339      0.14  QV         |          |          |          |
4+20       0.0350      0.15  Q V        |          |          |          |
4+25       0.0360      0.15  Q V        |          |          |          |
4+30       0.0371      0.16  Q V        |          |          |          |
4+35       0.0382      0.16  Q V        |          |          |          |
4+40       0.0394      0.16  Q V        |          |          |          |
4+45       0.0405      0.17  Q V        |          |          |          |
4+50       0.0417      0.17  Q V        |          |          |          |
4+55       0.0429      0.17  Q V        |          |          |          |
5+ 0       0.0441      0.18  Q V        |          |          |          |
5+ 5       0.0453      0.18  Q V        |          |          |          |
5+10       0.0465      0.18  Q V        |          |          |          |
5+15       0.0478      0.18  Q V        |          |          |          |
5+20       0.0491      0.19  Q V        |          |          |          |
5+25       0.0504      0.19  Q V        |          |          |          |
5+30       0.0517      0.19  Q  V       |          |          |          |
5+35       0.0531      0.20  Q  V       |          |          |          |
5+40       0.0544      0.20  Q  V       |          |          |          |
5+45       0.0558      0.20  Q  V       |          |          |          |
5+50       0.0572      0.21  Q  V       |          |          |          |
5+55       0.0587      0.21  Q  V       |          |          |          |
6+ 0       0.0601      0.21  Q  V       |          |          |          |
6+ 5       0.0616      0.22  Q  V       |          |          |          |
6+10       0.0632      0.22  Q  V       |          |          |          |
6+15       0.0648      0.23  Q  V       |          |          |          |
6+20       0.0664      0.24  Q  V       |          |          |          |
6+25       0.0681      0.24  Q  V       |          |          |          |
6+30       0.0698      0.25  Q   V      |          |          |          |
6+35       0.0716      0.26  Q   V      |          |          |          |
6+40       0.0734      0.26  Q   V      |          |          |          |
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 6+45      0.0753      0.27  Q   V     |         |         |         |
 6+50      0.0772      0.28  Q   V     |         |         |         |
 6+55      0.0792      0.29  Q   V     |         |         |         |
 7+ 0      0.0813      0.30  Q   V     |         |         |         |
 7+ 5      0.0834      0.31  Q   V     |         |         |         |
 7+10      0.0856      0.32  Q    V    |         |         |         |
 7+15      0.0879      0.33  Q    V    |         |         |         |
 7+20      0.0903      0.35  Q    V    |         |         |         |
 7+25      0.0928      0.36  Q    V    |         |         |         |
 7+30      0.0954      0.38  Q    V    |         |         |         |
 7+35      0.0981      0.40  Q    V    |         |         |         |
 7+40      0.1014      0.47  Q    V    |         |         |         |
 7+45      0.1063      0.71  |Q    V    |         |         |         |
 7+50      0.1141      1.14  | Q   V    |         |         |         |
 7+55      0.1268      1.85  |  Q   V   |         |         |         |
 8+ 0      0.1474      2.98  |    Q  V  |         |         |         |
 8+ 5      0.1861      5.63  |         VQ         |         |         |
 8+10      0.2547      9.96  |          |   V    Q|         |         |
 8+15      0.3648     15.99  |          |         |V        |Q        |
 8+20      0.4631     14.26  |          |         |      VQ |         |
 8+25      0.5161      7.70  |          |    Q    |         V         |
 8+30      0.5519      5.20  |         Q|         |         | V       |
 8+35      0.5776      3.74  |       Q  |         |         |  V      |
 8+40      0.5969      2.80  |    Q     |         |         |   V     |
 8+45      0.6113      2.10  |   Q      |         |         |    V    |
 8+50      0.6219      1.54  |  Q       |         |         |     V   |
 8+55      0.6296      1.12  | Q        |         |         |     V   |
 9+ 0      0.6347      0.74  |Q         |         |         |      V  |
 9+ 5      0.6388      0.59  |Q         |         |         |      V  |
 9+10      0.6423      0.51  |Q         |         |         |      V  |
 9+15      0.6453      0.44  Q          |         |         |      V  |
 9+20      0.6482      0.42  Q          |         |         |      V  |
 9+25      0.6507      0.37  Q          |         |         |       V |
 9+30      0.6529      0.31  Q          |         |         |       V |
 9+35      0.6547      0.27  Q          |         |         |       V |
 9+40      0.6562      0.21  Q          |         |         |       V |
 9+45      0.6575      0.20  Q          |         |         |       V |
 9+50      0.6589      0.19  Q          |         |         |       V |
 9+55      0.6602      0.19  Q          |         |         |       V |
10+ 0      0.6614      0.18  Q          |         |         |       V |
10+ 5      0.6626      0.17  Q          |         |         |       V |
10+10      0.6638      0.17  Q          |         |         |       V |
10+15      0.6648      0.16  Q          |         |         |       V |
10+20      0.6658      0.14  Q          |         |         |       V |
10+25      0.6668      0.14  Q          |         |         |        V|
10+30      0.6677      0.13  Q          |         |         |        V|
10+35      0.6685      0.13  Q          |         |         |        V|
10+40      0.6694      0.12  Q          |         |         |        V|
10+45      0.6702      0.12  Q          |         |         |        V|
10+50      0.6710      0.12  Q          |         |         |        V|
10+55      0.6718      0.11  Q          |         |         |        V|
11+ 0      0.6726      0.11  Q          |         |         |        V|
11+ 5      0.6733      0.11  Q          |         |         |        V|
11+10      0.6741      0.11  Q          |         |         |        V|
11+15      0.6748      0.11  Q          |         |         |        V|
11+20      0.6755      0.10  Q          |         |         |        V|
11+25      0.6762      0.10  Q          |         |         |        V|
11+30      0.6769      0.10  Q          |         |         |        V|
11+35      0.6776      0.10  Q          |         |         |        V|
11+40      0.6782      0.10  Q          |         |         |        V|
11+45      0.6789      0.09  Q          |         |         |        V|
11+50      0.6795      0.09  Q          |         |         |        V|
11+55      0.6802      0.09  Q          |         |         |        V|
12+ 0      0.6808      0.09  Q          |         |         |        V|
12+ 5      0.6814      0.09  Q          |         |         |        V|
12+10      0.6819      0.08  Q          |         |         |        V|
12+15      0.6823      0.05  Q          |         |         |        V|
12+20      0.6825      0.03  Q          |         |         |        V|
12+25      0.6826      0.02  Q          |         |         |        V|
12+30      0.6827      0.02  Q          |         |         |        V|
12+35      0.6828      0.01  Q          |         |         |        V|
```

```
   12+40       0.6829      0.01  Q         |         |         |        V|
   12+45       0.6829      0.00  Q         |         |         |        V|
   12+50       0.6829      0.00  Q         |         |         |        V|
   12+55       0.6829      0.00  Q         |         |         |        V|
   13+ 0       0.6829      0.00  Q         |         |         |        V|
   13+ 5       0.6829      0.00  Q         |         |         |        V|
   13+10       0.6830      0.00  Q         |         |         |        V|
   13+15       0.6830      0.00  Q         |         |         |        V|
   13+20       0.6830      0.00  Q         |         |         |        V|
   13+25       0.6830      0.00  Q         |         |         |        V|
   13+30       0.6830      0.00  Q         |         |         |        V|
-------------------------------------------------------------------------
```

- 2 Year 24 Hour Pre-Development Unit Hydrograph – Area 'D'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/10/16   File Name EXD00224.out


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'D' - 2 YEAR 24 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 2

       Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 82.3       6.8          0.33     C     0.250     1.000    0.250
 82.3      13.5          0.67     D     0.200     1.000    0.200

Area-averaged adjusted loss rate Fm (In/Hr) =  0.217

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
     6.77   0.333         82.3      66.2       5.10     0.084

    13.54   0.667         82.3      66.2       5.10     0.084

Area-averaged catchment yield fraction, Y =  0.084
Area-averaged low loss fraction, Yb =  0.916
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.279 (hours)
Watershed area =      20.31(Ac.)
Catchment Lag time =   0.223 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 37.3580
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.217(In/Hr)
Average low loss rate fraction (Yb) = 0.916 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.190(In)
Computed peak 30-minute rainfall =  0.400(In)
Specified peak 1-hour rainfall =  0.530(In)
Computed peak 3-hour rainfall =  0.890(In)
Specified peak 6-hour rainfall =  1.220(In)
Specified peak 24-hour rainfall =  2.050(In)


Rainfall depth area reduction factors:
Using a total area of      20.31(Ac.) (Ref: fig. E-4)
```

```
5-minute factor = 0.999     Adjusted rainfall =  0.190(In)
30-minute factor = 0.999    Adjusted rainfall =  0.400(In)
1-hour factor = 0.999       Adjusted rainfall =  0.529(In)
3-hour factor = 1.000       Adjusted rainfall =  0.890(In)
6-hour factor = 1.000       Adjusted rainfall =  1.220(In)
24-hour factor = 1.000 Adjusted rainfall =  2.050(In)
--------------------------------------------------------------------------

                      U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------------
               (K =       245.62 (CFS))

  1               2.856                   7.015
  2              13.127                  25.229
  3              40.102                  66.257
  4              65.474                  62.318
  5              76.077                  26.045
  6              83.094                  17.235
  7              88.097                  12.287
  8              91.776                   9.037
  9              94.496                   6.680
 10              96.376                   4.618
 11              97.657                   3.148
 12              98.255                   1.469
 13              98.670                   1.018
 14              99.015                   0.848
 15              99.253                   0.585
 16              99.532                   0.686
 17              99.765                   0.572
 18              99.902                   0.335
 19             100.000                   0.242
--------------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.1898              0.1898
  2              0.2532              0.0634
  3              0.2996              0.0465
  4              0.3377              0.0380
  5              0.3705              0.0328
  6              0.3996              0.0292
  7              0.4254              0.0258
  8              0.4491              0.0237
  9              0.4711              0.0220
 10              0.4917              0.0206
 11              0.5111              0.0194
 12              0.5295              0.0184
 13              0.5499              0.0204
 14              0.5695              0.0196
 15              0.5884              0.0189
 16              0.6066              0.0182
 17              0.6242              0.0176
 18              0.6413              0.0171
 19              0.6579              0.0166
 20              0.6741              0.0161
 21              0.6898              0.0157
 22              0.7051              0.0153
 23              0.7201              0.0150
 24              0.7347              0.0146
 25              0.7490              0.0143
 26              0.7630              0.0140
 27              0.7768              0.0137
 28              0.7902              0.0135
 29              0.8035              0.0132
 30              0.8164              0.0130
 31              0.8292              0.0127
 32              0.8417              0.0125
 33              0.8540              0.0123
```

34	0.8662	0.0121
35	0.8781	0.0119
36	0.8899	0.0118
37	0.9011	0.0112
38	0.9121	0.0110
39	0.9229	0.0108
40	0.9336	0.0107
41	0.9442	0.0106
42	0.9546	0.0104
43	0.9648	0.0103
44	0.9750	0.0101
45	0.9850	0.0100
46	0.9949	0.0099
47	1.0047	0.0098
48	1.0144	0.0097
49	1.0239	0.0096
50	1.0334	0.0095
51	1.0427	0.0094
52	1.0520	0.0093
53	1.0612	0.0092
54	1.0702	0.0091
55	1.0792	0.0090
56	1.0881	0.0089
57	1.0969	0.0088
58	1.1056	0.0087
59	1.1142	0.0086
60	1.1228	0.0086
61	1.1313	0.0085
62	1.1397	0.0084
63	1.1480	0.0083
64	1.1563	0.0083
65	1.1644	0.0082
66	1.1726	0.0081
67	1.1806	0.0081
68	1.1886	0.0080
69	1.1965	0.0079
70	1.2044	0.0079
71	1.2122	0.0078
72	1.2199	0.0077
73	1.2262	0.0063
74	1.2325	0.0063
75	1.2387	0.0062
76	1.2449	0.0062
77	1.2510	0.0061
78	1.2570	0.0061
79	1.2630	0.0060
80	1.2690	0.0060
81	1.2749	0.0059
82	1.2808	0.0059
83	1.2866	0.0058
84	1.2924	0.0058
85	1.2981	0.0057
86	1.3038	0.0057
87	1.3095	0.0057
88	1.3151	0.0056
89	1.3207	0.0056
90	1.3262	0.0055
91	1.3317	0.0055
92	1.3372	0.0055
93	1.3426	0.0054
94	1.3480	0.0054
95	1.3533	0.0054
96	1.3587	0.0053
97	1.3639	0.0053
98	1.3692	0.0052
99	1.3744	0.0052
100	1.3796	0.0052
101	1.3847	0.0051
102	1.3898	0.0051
103	1.3949	0.0051
104	1.4000	0.0051

105	1.4050	0.0050
106	1.4100	0.0050
107	1.4150	0.0050
108	1.4199	0.0049
109	1.4248	0.0049
110	1.4297	0.0049
111	1.4345	0.0049
112	1.4394	0.0048
113	1.4442	0.0048
114	1.4489	0.0048
115	1.4537	0.0047
116	1.4584	0.0047
117	1.4631	0.0047
118	1.4678	0.0047
119	1.4724	0.0046
120	1.4770	0.0046
121	1.4816	0.0046
122	1.4862	0.0046
123	1.4908	0.0045
124	1.4953	0.0045
125	1.4998	0.0045
126	1.5043	0.0045
127	1.5087	0.0045
128	1.5132	0.0044
129	1.5176	0.0044
130	1.5220	0.0044
131	1.5263	0.0044
132	1.5307	0.0044
133	1.5350	0.0043
134	1.5393	0.0043
135	1.5436	0.0043
136	1.5479	0.0043
137	1.5522	0.0043
138	1.5564	0.0042
139	1.5606	0.0042
140	1.5648	0.0042
141	1.5690	0.0042
142	1.5731	0.0042
143	1.5773	0.0041
144	1.5814	0.0041
145	1.5855	0.0041
146	1.5896	0.0041
147	1.5936	0.0041
148	1.5977	0.0041
149	1.6017	0.0040
150	1.6057	0.0040
151	1.6097	0.0040
152	1.6137	0.0040
153	1.6177	0.0040
154	1.6216	0.0040
155	1.6256	0.0039
156	1.6295	0.0039
157	1.6334	0.0039
158	1.6373	0.0039
159	1.6412	0.0039
160	1.6450	0.0039
161	1.6489	0.0038
162	1.6527	0.0038
163	1.6565	0.0038
164	1.6603	0.0038
165	1.6641	0.0038
166	1.6678	0.0038
167	1.6716	0.0038
168	1.6753	0.0037
169	1.6791	0.0037
170	1.6828	0.0037
171	1.6865	0.0037
172	1.6902	0.0037
173	1.6938	0.0037
174	1.6975	0.0037
175	1.7011	0.0036

176	1.7048	0.0036
177	1.7084	0.0036
178	1.7120	0.0036
179	1.7156	0.0036
180	1.7192	0.0036
181	1.7227	0.0036
182	1.7263	0.0036
183	1.7298	0.0035
184	1.7334	0.0035
185	1.7369	0.0035
186	1.7404	0.0035
187	1.7439	0.0035
188	1.7474	0.0035
189	1.7509	0.0035
190	1.7543	0.0035
191	1.7578	0.0035
192	1.7612	0.0034
193	1.7647	0.0034
194	1.7681	0.0034
195	1.7715	0.0034
196	1.7749	0.0034
197	1.7783	0.0034
198	1.7816	0.0034
199	1.7850	0.0034
200	1.7883	0.0034
201	1.7917	0.0033
202	1.7950	0.0033
203	1.7983	0.0033
204	1.8017	0.0033
205	1.8050	0.0033
206	1.8082	0.0033
207	1.8115	0.0033
208	1.8148	0.0033
209	1.8181	0.0033
210	1.8213	0.0033
211	1.8246	0.0032
212	1.8278	0.0032
213	1.8310	0.0032
214	1.8342	0.0032
215	1.8374	0.0032
216	1.8406	0.0032
217	1.8438	0.0032
218	1.8470	0.0032
219	1.8502	0.0032
220	1.8533	0.0032
221	1.8565	0.0031
222	1.8596	0.0031
223	1.8627	0.0031
224	1.8659	0.0031
225	1.8690	0.0031
226	1.8721	0.0031
227	1.8752	0.0031
228	1.8783	0.0031
229	1.8813	0.0031
230	1.8844	0.0031
231	1.8875	0.0031
232	1.8905	0.0031
233	1.8936	0.0030
234	1.8966	0.0030
235	1.8997	0.0030
236	1.9027	0.0030
237	1.9057	0.0030
238	1.9087	0.0030
239	1.9117	0.0030
240	1.9147	0.0030
241	1.9177	0.0030
242	1.9206	0.0030
243	1.9236	0.0030
244	1.9266	0.0030
245	1.9295	0.0030
246	1.9325	0.0029

247	1.9354	0.0029
248	1.9383	0.0029
249	1.9413	0.0029
250	1.9442	0.0029
251	1.9471	0.0029
252	1.9500	0.0029
253	1.9529	0.0029
254	1.9558	0.0029
255	1.9586	0.0029
256	1.9615	0.0029
257	1.9644	0.0029
258	1.9672	0.0029
259	1.9701	0.0029
260	1.9729	0.0028
261	1.9758	0.0028
262	1.9786	0.0028
263	1.9814	0.0028
264	1.9842	0.0028
265	1.9871	0.0028
266	1.9899	0.0028
267	1.9927	0.0028
268	1.9954	0.0028
269	1.9982	0.0028
270	2.0010	0.0028
271	2.0038	0.0028
272	2.0065	0.0028
273	2.0093	0.0028
274	2.0121	0.0028
275	2.0148	0.0027
276	2.0175	0.0027
277	2.0203	0.0027
278	2.0230	0.0027
279	2.0257	0.0027
280	2.0284	0.0027
281	2.0311	0.0027
282	2.0339	0.0027
283	2.0366	0.0027
284	2.0392	0.0027
285	2.0419	0.0027
286	2.0446	0.0027
287	2.0473	0.0027
288	2.0499	0.0027

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0027	0.0024	0.0002
2	0.0027	0.0024	0.0002
3	0.0027	0.0025	0.0002
4	0.0027	0.0025	0.0002
5	0.0027	0.0025	0.0002
6	0.0027	0.0025	0.0002
7	0.0027	0.0025	0.0002
8	0.0027	0.0025	0.0002
9	0.0027	0.0025	0.0002
10	0.0027	0.0025	0.0002
11	0.0028	0.0025	0.0002
12	0.0028	0.0025	0.0002
13	0.0028	0.0025	0.0002
14	0.0028	0.0025	0.0002
15	0.0028	0.0026	0.0002
16	0.0028	0.0026	0.0002
17	0.0028	0.0026	0.0002
18	0.0028	0.0026	0.0002
19	0.0028	0.0026	0.0002
20	0.0028	0.0026	0.0002
21	0.0029	0.0026	0.0002
22	0.0029	0.0026	0.0002
23	0.0029	0.0026	0.0002
24	0.0029	0.0026	0.0002

25	0.0029	0.0027	0.0002
26	0.0029	0.0027	0.0002
27	0.0029	0.0027	0.0002
28	0.0029	0.0027	0.0002
29	0.0029	0.0027	0.0002
30	0.0030	0.0027	0.0002
31	0.0030	0.0027	0.0003
32	0.0030	0.0027	0.0003
33	0.0030	0.0027	0.0003
34	0.0030	0.0027	0.0003
35	0.0030	0.0028	0.0003
36	0.0030	0.0028	0.0003
37	0.0030	0.0028	0.0003
38	0.0030	0.0028	0.0003
39	0.0031	0.0028	0.0003
40	0.0031	0.0028	0.0003
41	0.0031	0.0028	0.0003
42	0.0031	0.0028	0.0003
43	0.0031	0.0029	0.0003
44	0.0031	0.0029	0.0003
45	0.0031	0.0029	0.0003
46	0.0031	0.0029	0.0003
47	0.0032	0.0029	0.0003
48	0.0032	0.0029	0.0003
49	0.0032	0.0029	0.0003
50	0.0032	0.0029	0.0003
51	0.0032	0.0030	0.0003
52	0.0032	0.0030	0.0003
53	0.0033	0.0030	0.0003
54	0.0033	0.0030	0.0003
55	0.0033	0.0030	0.0003
56	0.0033	0.0030	0.0003
57	0.0033	0.0030	0.0003
58	0.0033	0.0030	0.0003
59	0.0033	0.0031	0.0003
60	0.0034	0.0031	0.0003
61	0.0034	0.0031	0.0003
62	0.0034	0.0031	0.0003
63	0.0034	0.0031	0.0003
64	0.0034	0.0031	0.0003
65	0.0034	0.0031	0.0003
66	0.0035	0.0032	0.0003
67	0.0035	0.0032	0.0003
68	0.0035	0.0032	0.0003
69	0.0035	0.0032	0.0003
70	0.0035	0.0032	0.0003
71	0.0035	0.0032	0.0003
72	0.0036	0.0033	0.0003
73	0.0036	0.0033	0.0003
74	0.0036	0.0033	0.0003
75	0.0036	0.0033	0.0003
76	0.0036	0.0033	0.0003
77	0.0037	0.0034	0.0003
78	0.0037	0.0034	0.0003
79	0.0037	0.0034	0.0003
80	0.0037	0.0034	0.0003
81	0.0037	0.0034	0.0003
82	0.0038	0.0034	0.0003
83	0.0038	0.0035	0.0003
84	0.0038	0.0035	0.0003
85	0.0038	0.0035	0.0003
86	0.0038	0.0035	0.0003
87	0.0039	0.0035	0.0003
88	0.0039	0.0036	0.0003
89	0.0039	0.0036	0.0003
90	0.0039	0.0036	0.0003
91	0.0040	0.0036	0.0003
92	0.0040	0.0036	0.0003
93	0.0040	0.0037	0.0003
94	0.0040	0.0037	0.0003
95	0.0041	0.0037	0.0003

96	0.0041	0.0037	0.0003
97	0.0041	0.0038	0.0003
98	0.0041	0.0038	0.0003
99	0.0042	0.0038	0.0004
100	0.0042	0.0038	0.0004
101	0.0042	0.0039	0.0004
102	0.0043	0.0039	0.0004
103	0.0043	0.0039	0.0004
104	0.0043	0.0039	0.0004
105	0.0044	0.0040	0.0004
106	0.0044	0.0040	0.0004
107	0.0044	0.0040	0.0004
108	0.0044	0.0041	0.0004
109	0.0045	0.0041	0.0004
110	0.0045	0.0041	0.0004
111	0.0045	0.0042	0.0004
112	0.0046	0.0042	0.0004
113	0.0046	0.0042	0.0004
114	0.0046	0.0043	0.0004
115	0.0047	0.0043	0.0004
116	0.0047	0.0043	0.0004
117	0.0048	0.0044	0.0004
118	0.0048	0.0044	0.0004
119	0.0049	0.0044	0.0004
120	0.0049	0.0045	0.0004
121	0.0049	0.0045	0.0004
122	0.0050	0.0045	0.0004
123	0.0050	0.0046	0.0004
124	0.0051	0.0046	0.0004
125	0.0051	0.0047	0.0004
126	0.0051	0.0047	0.0004
127	0.0052	0.0048	0.0004
128	0.0052	0.0048	0.0004
129	0.0053	0.0049	0.0004
130	0.0054	0.0049	0.0005
131	0.0054	0.0050	0.0005
132	0.0055	0.0050	0.0005
133	0.0055	0.0051	0.0005
134	0.0056	0.0051	0.0005
135	0.0057	0.0052	0.0005
136	0.0057	0.0052	0.0005
137	0.0058	0.0053	0.0005
138	0.0058	0.0053	0.0005
139	0.0059	0.0054	0.0005
140	0.0060	0.0055	0.0005
141	0.0061	0.0055	0.0005
142	0.0061	0.0056	0.0005
143	0.0062	0.0057	0.0005
144	0.0063	0.0057	0.0005
145	0.0077	0.0071	0.0007
146	0.0078	0.0071	0.0007
147	0.0079	0.0073	0.0007
148	0.0080	0.0073	0.0007
149	0.0081	0.0074	0.0007
150	0.0082	0.0075	0.0007
151	0.0083	0.0076	0.0007
152	0.0084	0.0077	0.0007
153	0.0086	0.0078	0.0007
154	0.0086	0.0079	0.0007
155	0.0088	0.0081	0.0007
156	0.0089	0.0081	0.0007
157	0.0091	0.0083	0.0008
158	0.0092	0.0084	0.0008
159	0.0094	0.0086	0.0008
160	0.0095	0.0087	0.0008
161	0.0097	0.0089	0.0008
162	0.0098	0.0090	0.0008
163	0.0100	0.0092	0.0008
164	0.0101	0.0093	0.0009
165	0.0104	0.0095	0.0009
166	0.0106	0.0097	0.0009

167	0.0108	0.0099	0.0009
168	0.0110	0.0101	0.0009
169	0.0118	0.0108	0.0010
170	0.0119	0.0109	0.0010
171	0.0123	0.0113	0.0010
172	0.0125	0.0115	0.0011
173	0.0130	0.0119	0.0011
174	0.0132	0.0121	0.0011
175	0.0137	0.0126	0.0012
176	0.0140	0.0128	0.0012
177	0.0146	0.0134	0.0012
178	0.0150	0.0137	0.0013
179	0.0157	0.0144	0.0013
180	0.0161	0.0148	0.0014
181	0.0171	0.0156	0.0014
182	0.0176	0.0161	0.0015
183	0.0189	0.0173	0.0016
184	0.0196	0.0179	0.0017
185	0.0184	0.0168	0.0016
186	0.0194	0.0178	0.0016
187	0.0220	0.0181	0.0039
188	0.0237	0.0181	0.0056
189	0.0292	0.0181	0.0111
190	0.0328	0.0181	0.0147
191	0.0465	0.0181	0.0284
192	0.0634	0.0181	0.0453
193	0.1898	0.0181	0.1718
194	0.0380	0.0181	0.0200
195	0.0258	0.0181	0.0078
196	0.0206	0.0181	0.0025
197	0.0204	0.0181	0.0024
198	0.0182	0.0167	0.0015
199	0.0166	0.0152	0.0014
200	0.0153	0.0140	0.0013
201	0.0143	0.0131	0.0012
202	0.0135	0.0123	0.0011
203	0.0127	0.0117	0.0011
204	0.0121	0.0111	0.0010
205	0.0112	0.0102	0.0009
206	0.0107	0.0098	0.0009
207	0.0103	0.0094	0.0009
208	0.0099	0.0091	0.0008
209	0.0096	0.0088	0.0008
210	0.0093	0.0085	0.0008
211	0.0090	0.0082	0.0008
212	0.0087	0.0080	0.0007
213	0.0085	0.0078	0.0007
214	0.0083	0.0076	0.0007
215	0.0081	0.0074	0.0007
216	0.0079	0.0072	0.0007
217	0.0063	0.0058	0.0005
218	0.0062	0.0056	0.0005
219	0.0060	0.0055	0.0005
220	0.0059	0.0054	0.0005
221	0.0057	0.0053	0.0005
222	0.0056	0.0051	0.0005
223	0.0055	0.0050	0.0005
224	0.0054	0.0049	0.0005
225	0.0053	0.0048	0.0004
226	0.0052	0.0047	0.0004
227	0.0051	0.0047	0.0004
228	0.0050	0.0046	0.0004
229	0.0049	0.0045	0.0004
230	0.0048	0.0044	0.0004
231	0.0047	0.0043	0.0004
232	0.0047	0.0043	0.0004
233	0.0046	0.0042	0.0004
234	0.0045	0.0041	0.0004
235	0.0045	0.0041	0.0004
236	0.0044	0.0040	0.0004
237	0.0043	0.0040	0.0004

```
      238              0.0043          0.0039              0.0004
      239              0.0042          0.0039              0.0004
      240              0.0042          0.0038              0.0004
      241              0.0041          0.0038              0.0003
      242              0.0041          0.0037              0.0003
      243              0.0040          0.0037              0.0003
      244              0.0040          0.0036              0.0003
      245              0.0039          0.0036              0.0003
      246              0.0039          0.0035              0.0003
      247              0.0038          0.0035              0.0003
      248              0.0038          0.0035              0.0003
      249              0.0037          0.0034              0.0003
      250              0.0037          0.0034              0.0003
      251              0.0036          0.0033              0.0003
      252              0.0036          0.0033              0.0003
      253              0.0036          0.0033              0.0003
      254              0.0035          0.0032              0.0003
      255              0.0035          0.0032              0.0003
      256              0.0035          0.0032              0.0003
      257              0.0034          0.0031              0.0003
      258              0.0034          0.0031              0.0003
      259              0.0034          0.0031              0.0003
      260              0.0033          0.0031              0.0003
      261              0.0033          0.0030              0.0003
      262              0.0033          0.0030              0.0003
      263              0.0032          0.0030              0.0003
      264              0.0032          0.0029              0.0003
      265              0.0032          0.0029              0.0003
      266              0.0032          0.0029              0.0003
      267              0.0031          0.0029              0.0003
      268              0.0031          0.0028              0.0003
      269              0.0031          0.0028              0.0003
      270              0.0031          0.0028              0.0003
      271              0.0030          0.0028              0.0003
      272              0.0030          0.0028              0.0003
      273              0.0030          0.0027              0.0003
      274              0.0030          0.0027              0.0002
      275              0.0029          0.0027              0.0002
      276              0.0029          0.0027              0.0002
      277              0.0029          0.0026              0.0002
      278              0.0029          0.0026              0.0002
      279              0.0029          0.0026              0.0002
      280              0.0028          0.0026              0.0002
      281              0.0028          0.0026              0.0002
      282              0.0028          0.0026              0.0002
      283              0.0028          0.0025              0.0002
      284              0.0028          0.0025              0.0002
      285              0.0027          0.0025              0.0002
      286              0.0027          0.0025              0.0002
      287              0.0027          0.0025              0.0002
      288              0.0027          0.0025              0.0002
      ------------------------------------------------------------------------
      ------------------------------------------------------------------------
      Total soil rain loss =      1.61(In)
      Total effective rainfall =      0.44(In)
      Peak flow rate in flood hydrograph =     15.99(CFS)
      ------------------------------------------------------------------------
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                         24 - H O U R    S T O R M
                    R u n o f f      H y d r o g r a p h
      ------------------------------------------------------------------------
                Hydrograph in   5   Minute intervals ((CFS))

      ------------------------------------------------------------------------
 Time(h+m) Volume Ac.Ft   Q(CFS)  0        5.0      10.0      15.0      20.0
 ------------------------------------------------------------------------
   0+ 5       0.0000      0.00  Q         |         |         |         |
   0+10       0.0001      0.01  Q         |         |         |         |
   0+15       0.0002      0.02  Q         |         |         |         |
   0+20       0.0005      0.04  Q         |         |         |         |
   0+25       0.0008      0.04  Q         |         |         |         |
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0+30	0.0011	0.05	Q	|	|	|	|
0+35	0.0014	0.05	Q	|	|	|	|
0+40	0.0018	0.05	Q	|	|	|	|
0+45	0.0021	0.05	Q	|	|	|	|
0+50	0.0025	0.05	Q	|	|	|	|
0+55	0.0029	0.06	Q	|	|	|	|
1+ 0	0.0033	0.06	Q	|	|	|	|
1+ 5	0.0037	0.06	Q	|	|	|	|
1+10	0.0040	0.06	Q	|	|	|	|
1+15	0.0044	0.06	Q	|	|	|	|
1+20	0.0048	0.06	Q	|	|	|	|
1+25	0.0052	0.06	Q	|	|	|	|
1+30	0.0056	0.06	Q	|	|	|	|
1+35	0.0060	0.06	Q	|	|	|	|
1+40	0.0064	0.06	Q	|	|	|	|
1+45	0.0068	0.06	Q	|	|	|	|
1+50	0.0072	0.06	Q	|	|	|	|
1+55	0.0076	0.06	Q	|	|	|	|
2+ 0	0.0080	0.06	Q	|	|	|	|
2+ 5	0.0085	0.06	Q	|	|	|	|
2+10	0.0089	0.06	Q	|	|	|	|
2+15	0.0093	0.06	Q	|	|	|	|
2+20	0.0097	0.06	Q	|	|	|	|
2+25	0.0101	0.06	Q	|	|	|	|
2+30	0.0105	0.06	Q	|	|	|	|
2+35	0.0109	0.06	Q	|	|	|	|
2+40	0.0114	0.06	Q	|	|	|	|
2+45	0.0118	0.06	Q	|	|	|	|
2+50	0.0122	0.06	Q	|	|	|	|
2+55	0.0126	0.06	Q	|	|	|	|
3+ 0	0.0130	0.06	Q	|	|	|	|
3+ 5	0.0135	0.06	Q	|	|	|	|
3+10	0.0139	0.06	Q	|	|	|	|
3+15	0.0143	0.06	Q	|	|	|	|
3+20	0.0148	0.06	Q	|	|	|	|
3+25	0.0152	0.06	Q	|	|	|	|
3+30	0.0156	0.06	Q	|	|	|	|
3+35	0.0161	0.06	Q	|	|	|	|
3+40	0.0165	0.06	Q	|	|	|	|
3+45	0.0170	0.06	Q	|	|	|	|
3+50	0.0174	0.06	Q	|	|	|	|
3+55	0.0178	0.06	Q	|	|	|	|
4+ 0	0.0183	0.06	Q	|	|	|	|
4+ 5	0.0187	0.07	Q	|	|	|	|
4+10	0.0192	0.07	QV	|	|	|	|
4+15	0.0196	0.07	QV	|	|	|	|
4+20	0.0201	0.07	QV	|	|	|	|
4+25	0.0206	0.07	QV	|	|	|	|
4+30	0.0210	0.07	QV	|	|	|	|
4+35	0.0215	0.07	QV	|	|	|	|
4+40	0.0219	0.07	QV	|	|	|	|
4+45	0.0224	0.07	QV	|	|	|	|
4+50	0.0229	0.07	QV	|	|	|	|
4+55	0.0233	0.07	QV	|	|	|	|
5+ 0	0.0238	0.07	QV	|	|	|	|
5+ 5	0.0243	0.07	QV	|	|	|	|
5+10	0.0248	0.07	QV	|	|	|	|
5+15	0.0252	0.07	QV	|	|	|	|
5+20	0.0257	0.07	QV	|	|	|	|
5+25	0.0262	0.07	QV	|	|	|	|
5+30	0.0267	0.07	QV	|	|	|	|
5+35	0.0272	0.07	QV	|	|	|	|
5+40	0.0277	0.07	QV	|	|	|	|
5+45	0.0281	0.07	QV	|	|	|	|
5+50	0.0286	0.07	QV	|	|	|	|
5+55	0.0291	0.07	QV	|	|	|	|
6+ 0	0.0296	0.07	QV	|	|	|	|
6+ 5	0.0301	0.07	QV	|	|	|	|
6+10	0.0306	0.07	QV	|	|	|	|
6+15	0.0312	0.07	QV	|	|	|	|
6+20	0.0317	0.07	QV	|	|	|	|

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 6+25       0.0322      0.07  QV        |         |         |         |
 6+30       0.0327      0.07  QV        |         |         |         |
 6+35       0.0332      0.08  QV        |         |         |         |
 6+40       0.0337      0.08  QV        |         |         |         |
 6+45       0.0342      0.08  QV        |         |         |         |
 6+50       0.0348      0.08  QV        |         |         |         |
 6+55       0.0353      0.08  QV        |         |         |         |
 7+ 0       0.0358      0.08  QV        |         |         |         |
 7+ 5       0.0364      0.08  QV        |         |         |         |
 7+10       0.0369      0.08  QV        |         |         |         |
 7+15       0.0374      0.08  QV        |         |         |         |
 7+20       0.0380      0.08  Q V       |         |         |         |
 7+25       0.0385      0.08  Q V       |         |         |         |
 7+30       0.0391      0.08  Q V       |         |         |         |
 7+35       0.0396      0.08  Q V       |         |         |         |
 7+40       0.0402      0.08  Q V       |         |         |         |
 7+45       0.0408      0.08  Q V       |         |         |         |
 7+50       0.0413      0.08  Q V       |         |         |         |
 7+55       0.0419      0.08  Q V       |         |         |         |
 8+ 0       0.0425      0.08  Q V       |         |         |         |
 8+ 5       0.0430      0.08  Q V       |         |         |         |
 8+10       0.0436      0.08  Q V       |         |         |         |
 8+15       0.0442      0.08  Q V       |         |         |         |
 8+20       0.0448      0.09  Q V       |         |         |         |
 8+25       0.0454      0.09  Q V       |         |         |         |
 8+30       0.0460      0.09  Q V       |         |         |         |
 8+35       0.0466      0.09  Q V       |         |         |         |
 8+40       0.0472      0.09  Q V       |         |         |         |
 8+45       0.0478      0.09  Q V       |         |         |         |
 8+50       0.0484      0.09  Q V       |         |         |         |
 8+55       0.0490      0.09  Q V       |         |         |         |
 9+ 0       0.0496      0.09  Q V       |         |         |         |
 9+ 5       0.0502      0.09  Q V       |         |         |         |
 9+10       0.0509      0.09  Q V       |         |         |         |
 9+15       0.0515      0.09  Q V       |         |         |         |
 9+20       0.0521      0.09  Q V       |         |         |         |
 9+25       0.0528      0.09  Q V       |         |         |         |
 9+30       0.0534      0.09  Q V       |         |         |         |
 9+35       0.0541      0.09  Q V       |         |         |         |
 9+40       0.0547      0.10  Q V       |         |         |         |
 9+45       0.0554      0.10  Q V       |         |         |         |
 9+50       0.0561      0.10  Q V       |         |         |         |
 9+55       0.0567      0.10  Q  V      |         |         |         |
10+ 0       0.0574      0.10  Q  V      |         |         |         |
10+ 5       0.0581      0.10  Q  V      |         |         |         |
10+10       0.0588      0.10  Q  V      |         |         |         |
10+15       0.0595      0.10  Q  V      |         |         |         |
10+20       0.0602      0.10  Q  V      |         |         |         |
10+25       0.0609      0.10  Q  V      |         |         |         |
10+30       0.0616      0.10  Q  V      |         |         |         |
10+35       0.0623      0.10  Q  V      |         |         |         |
10+40       0.0630      0.11  Q  V      |         |         |         |
10+45       0.0638      0.11  Q  V      |         |         |         |
10+50       0.0645      0.11  Q  V      |         |         |         |
10+55       0.0653      0.11  Q  V      |         |         |         |
11+ 0       0.0660      0.11  Q  V      |         |         |         |
11+ 5       0.0668      0.11  Q  V      |         |         |         |
11+10       0.0675      0.11  Q  V      |         |         |         |
11+15       0.0683      0.11  Q  V      |         |         |         |
11+20       0.0691      0.11  Q  V      |         |         |         |
11+25       0.0699      0.12  Q  V      |         |         |         |
11+30       0.0707      0.12  Q  V      |         |         |         |
11+35       0.0715      0.12  Q  V      |         |         |         |
11+40       0.0723      0.12  Q  V      |         |         |         |
11+45       0.0731      0.12  Q  V      |         |         |         |
11+50       0.0740      0.12  Q  V      |         |         |         |
11+55       0.0748      0.12  Q  V      |         |         |         |
12+ 0       0.0757      0.12  Q   V     |         |         |         |
12+ 5       0.0766      0.13  Q   V     |         |         |         |
12+10       0.0775      0.13  Q   V     |         |         |         |
12+15       0.0784      0.14  Q   V     |         |         |         |
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12+20       0.0795      0.15  Q   V     |          |          |          |
12+25       0.0805      0.15  Q   V     |          |          |          |
12+30       0.0816      0.16  Q   V     |          |          |          |
12+35       0.0827      0.16  Q   V     |          |          |          |
12+40       0.0839      0.16  Q   V     |          |          |          |
12+45       0.0850      0.17  Q   V     |          |          |          |
12+50       0.0862      0.17  Q   V     |          |          |          |
12+55       0.0874      0.17  Q   V     |          |          |          |
13+ 0       0.0886      0.18  Q   V     |          |          |          |
13+ 5       0.0898      0.18  Q   V     |          |          |          |
13+10       0.0911      0.18  Q   V     |          |          |          |
13+15       0.0923      0.18  Q   V     |          |          |          |
13+20       0.0936      0.19  Q   V     |          |          |          |
13+25       0.0949      0.19  Q    V    |          |          |          |
13+30       0.0962      0.19  Q    V    |          |          |          |
13+35       0.0976      0.20  Q    V    |          |          |          |
13+40       0.0989      0.20  Q    V    |          |          |          |
13+45       0.1003      0.20  Q    V    |          |          |          |
13+50       0.1017      0.21  Q    V    |          |          |          |
13+55       0.1032      0.21  Q    V    |          |          |          |
14+ 0       0.1047      0.21  Q    V    |          |          |          |
14+ 5       0.1062      0.22  Q    V    |          |          |          |
14+10       0.1077      0.22  Q    V    |          |          |          |
14+15       0.1093      0.23  Q    V    |          |          |          |
14+20       0.1109      0.24  Q    V    |          |          |          |
14+25       0.1126      0.24  Q     V   |          |          |          |
14+30       0.1143      0.25  Q     V   |          |          |          |
14+35       0.1161      0.26  Q     V   |          |          |          |
14+40       0.1179      0.26  Q     V   |          |          |          |
14+45       0.1198      0.27  Q     V   |          |          |          |
14+50       0.1217      0.28  Q     V   |          |          |          |
14+55       0.1237      0.29  Q     V   |          |          |          |
15+ 0       0.1258      0.30  Q     V   |          |          |          |
15+ 5       0.1279      0.31  Q     V   |          |          |          |
15+10       0.1301      0.32  Q     V   |          |          |          |
15+15       0.1324      0.33  Q      V  |          |          |          |
15+20       0.1348      0.35  Q      V  |          |          |          |
15+25       0.1373      0.36  Q      V  |          |          |          |
15+30       0.1399      0.38  Q      V  |          |          |          |
15+35       0.1426      0.40  Q      V  |          |          |          |
15+40       0.1459      0.47  Q      V  |          |          |          |
15+45       0.1508      0.71  |Q      V  |          |          |          |
15+50       0.1586      1.14  | Q     V  |          |          |          |
15+55       0.1713      1.85  |  Q     V|          |          |          |
16+ 0       0.1919      2.98  |    Q    V          |          |          |
16+ 5       0.2307      5.63  |         |QV        |          |          |
16+10       0.2992      9.96  |         |    V   Q|          |          |
16+15       0.4094     15.99  |         |         |V         |Q         |
16+20       0.5076     14.26  |         |         |      VQ  |          |
16+25       0.5606      7.70  |         |    Q    |        V |          |
16+30       0.5964      5.20  |         Q         |          |V         |
16+35       0.6221      3.74  |       Q  |        |          |  V       |
16+40       0.6414      2.80  |    Q     |        |          |   V      |
16+45       0.6559      2.10  |   Q      |        |          |   V      |
16+50       0.6664      1.54  |  Q       |        |          |    V     |
16+55       0.6741      1.12  | Q        |        |          |    V     |
17+ 0       0.6793      0.74  |Q         |        |          |     V    |
17+ 5       0.6833      0.59  |Q         |        |          |     V    |
17+10       0.6868      0.51  |Q         |        |          |     V    |
17+15       0.6898      0.44  Q          |        |          |     V    |
17+20       0.6927      0.42  Q          |        |          |     V    |
17+25       0.6953      0.37  Q          |        |          |      V   |
17+30       0.6974      0.31  Q          |        |          |      V   |
17+35       0.6992      0.27  Q          |        |          |      V   |
17+40       0.7007      0.21  Q          |        |          |      V   |
17+45       0.7021      0.20  Q          |        |          |      V   |
17+50       0.7034      0.19  Q          |        |          |      V   |
17+55       0.7047      0.19  Q          |        |          |      V   |
18+ 0       0.7059      0.18  Q          |        |          |      V   |
18+ 5       0.7071      0.17  Q          |        |          |      V   |
18+10       0.7083      0.17  Q          |        |          |      V   |
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18+15       0.7093      0.16  Q          |          |          |       V  |
18+20       0.7103      0.14  Q          |          |          |       V  |
18+25       0.7113      0.14  Q          |          |          |       V  |
18+30       0.7122      0.13  Q          |          |          |       V  |
18+35       0.7131      0.13  Q          |          |          |        V |
18+40       0.7139      0.12  Q          |          |          |        V |
18+45       0.7147      0.12  Q          |          |          |        V |
18+50       0.7155      0.12  Q          |          |          |        V |
18+55       0.7163      0.11  Q          |          |          |        V |
19+ 0       0.7171      0.11  Q          |          |          |        V |
19+ 5       0.7178      0.11  Q          |          |          |        V |
19+10       0.7186      0.11  Q          |          |          |        V |
19+15       0.7193      0.11  Q          |          |          |        V |
19+20       0.7200      0.10  Q          |          |          |        V |
19+25       0.7207      0.10  Q          |          |          |        V |
19+30       0.7214      0.10  Q          |          |          |        V |
19+35       0.7221      0.10  Q          |          |          |        V |
19+40       0.7227      0.10  Q          |          |          |        V |
19+45       0.7234      0.09  Q          |          |          |        V |
19+50       0.7240      0.09  Q          |          |          |        V |
19+55       0.7247      0.09  Q          |          |          |        V |
20+ 0       0.7253      0.09  Q          |          |          |        V |
20+ 5       0.7259      0.09  Q          |          |          |        V |
20+10       0.7265      0.09  Q          |          |          |        V |
20+15       0.7271      0.09  Q          |          |          |        V |
20+20       0.7277      0.09  Q          |          |          |        V |
20+25       0.7283      0.08  Q          |          |          |        V |
20+30       0.7289      0.08  Q          |          |          |        V |
20+35       0.7294      0.08  Q          |          |          |        V |
20+40       0.7300      0.08  Q          |          |          |        V |
20+45       0.7306      0.08  Q          |          |          |        V |
20+50       0.7311      0.08  Q          |          |          |         V|
20+55       0.7316      0.08  Q          |          |          |         V|
21+ 0       0.7322      0.08  Q          |          |          |         V|
21+ 5       0.7327      0.08  Q          |          |          |         V|
21+10       0.7332      0.08  Q          |          |          |         V|
21+15       0.7338      0.08  Q          |          |          |         V|
21+20       0.7343      0.07  Q          |          |          |         V|
21+25       0.7348      0.07  Q          |          |          |         V|
21+30       0.7353      0.07  Q          |          |          |         V|
21+35       0.7358      0.07  Q          |          |          |         V|
21+40       0.7363      0.07  Q          |          |          |         V|
21+45       0.7368      0.07  Q          |          |          |         V|
21+50       0.7372      0.07  Q          |          |          |         V|
21+55       0.7377      0.07  Q          |          |          |         V|
22+ 0       0.7382      0.07  Q          |          |          |         V|
22+ 5       0.7387      0.07  Q          |          |          |         V|
22+10       0.7391      0.07  Q          |          |          |         V|
22+15       0.7396      0.07  Q          |          |          |         V|
22+20       0.7400      0.07  Q          |          |          |         V|
22+25       0.7405      0.07  Q          |          |          |         V|
22+30       0.7409      0.07  Q          |          |          |         V|
22+35       0.7414      0.06  Q          |          |          |         V|
22+40       0.7418      0.06  Q          |          |          |         V|
22+45       0.7423      0.06  Q          |          |          |         V|
22+50       0.7427      0.06  Q          |          |          |         V|
22+55       0.7431      0.06  Q          |          |          |         V|
23+ 0       0.7436      0.06  Q          |          |          |         V|
23+ 5       0.7440      0.06  Q          |          |          |         V|
23+10       0.7444      0.06  Q          |          |          |         V|
23+15       0.7448      0.06  Q          |          |          |         V|
23+20       0.7452      0.06  Q          |          |          |         V|
23+25       0.7457      0.06  Q          |          |          |         V|
23+30       0.7461      0.06  Q          |          |          |         V|
23+35       0.7465      0.06  Q          |          |          |         V|
23+40       0.7469      0.06  Q          |          |          |         V|
23+45       0.7473      0.06  Q          |          |          |         V|
23+50       0.7477      0.06  Q          |          |          |         V|
23+55       0.7481      0.06  Q          |          |          |         V|
24+ 0       0.7485      0.06  Q          |          |          |         V|
24+ 5       0.7488      0.05  Q          |          |          |         V|
```

```
   24+10       0.7492      0.05  Q         |         |         |         V|
   24+15       0.7494      0.03  Q         |         |         |         V|
   24+20       0.7495      0.02  Q         |         |         |         V|
   24+25       0.7496      0.01  Q         |         |         |         V|
   24+30       0.7497      0.01  Q         |         |         |         V|
   24+35       0.7497      0.01  Q         |         |         |         V|
   24+40       0.7498      0.00  Q         |         |         |         V|
   24+45       0.7498      0.00  Q         |         |         |         V|
   24+50       0.7498      0.00  Q         |         |         |         V|
   24+55       0.7498      0.00  Q         |         |         |         V|
   25+ 0       0.7498      0.00  Q         |         |         |         V|
   25+ 5       0.7498      0.00  Q         |         |         |         V|
   25+10       0.7498      0.00  Q         |         |         |         V|
   25+15       0.7498      0.00  Q         |         |         |         V|
   25+20       0.7498      0.00  Q         |         |         |         V|
   25+25       0.7498      0.00  Q         |         |         |         V|
   25+30       0.7498      0.00  Q         |         |         |         V|
-------------------------------------------------------------------------
```

- 5 Year 3 Hour Pre-Development Unit Hydrograph – Area 'D'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/10/16   File Name EXD00503.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'D' - 5 YEAR 3 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 5

       Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 82.3       6.8          0.33     C     0.250     1.000    0.250
 82.3      13.5          0.67     D     0.200     1.000    0.200

Area-averaged adjusted loss rate Fm (In/Hr) =  0.217

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
     6.77   0.333         82.3      66.2       5.10     0.187

    13.54   0.667         82.3      66.2       5.10     0.187

Area-averaged catchment yield fraction, Y =  0.187
Area-averaged low loss fraction, Yb =  0.813
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.267 (hours)
Watershed area =      20.31(Ac.)
Catchment Lag time =   0.214 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 38.9651
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.217(In/Hr)
Average low loss rate fraction (Yb) = 0.813 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.260(In)
Computed peak 30-minute rainfall =  0.590(In)
Specified peak 1-hour rainfall =  0.780(In)
Computed peak 3-hour rainfall =  1.310(In)
Specified peak 6-hour rainfall =  1.810(In)
Specified peak 24-hour rainfall =  3.030(In)


Rainfall depth area reduction factors:
Using a total area of      20.31(Ac.) (Ref: fig. E-4)
```

```
5-minute factor = 0.999     Adjusted rainfall =  0.260(In)
30-minute factor = 0.999    Adjusted rainfall =  0.589(In)
1-hour factor = 0.999       Adjusted rainfall =  0.779(In)
3-hour factor = 1.000       Adjusted rainfall =  1.310(In)
6-hour factor = 1.000       Adjusted rainfall =  1.810(In)
24-hour factor = 1.000 Adjusted rainfall =  3.030(In)
--------------------------------------------------------------------

                     U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------
               (K =       245.62 (CFS))

  1                3.023                   7.425
  2               14.171                  27.382
  3               43.874                  72.958
  4               67.442                  57.889
  5               77.619                  24.996
  6               84.423                  16.713
  7               89.233                  11.816
  8               92.750                   8.637
  9               95.262                   6.169
 10               96.974                   4.206
 11               97.988                   2.490
 12               98.469                   1.183
 13               98.868                   0.980
 14               99.156                   0.707
 15               99.420                   0.649
 16               99.703                   0.695
 17               99.868                   0.404
 18              100.000                   0.325
--------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.2598              0.2598
  2              0.3566              0.0969
  3              0.4293              0.0727
  4              0.4897              0.0604
  5              0.5423              0.0526
  6              0.5894              0.0472
  7              0.6272              0.0378
  8              0.6618              0.0347
  9              0.6940              0.0322
 10              0.7241              0.0301
 11              0.7524              0.0283
 12              0.7793              0.0268
 13              0.8093              0.0300
 14              0.8382              0.0289
 15              0.8659              0.0278
 16              0.8928              0.0268
 17              0.9187              0.0260
 18              0.9439              0.0252
 19              0.9683              0.0244
 20              0.9921              0.0238
 21              1.0152              0.0231
 22              1.0378              0.0226
 23              1.0598              0.0220
 24              1.0814              0.0215
 25              1.1025              0.0211
 26              1.1231              0.0206
 27              1.1433              0.0202
 28              1.1631              0.0198
 29              1.1826              0.0195
 30              1.2017              0.0191
 31              1.2205              0.0188
 32              1.2389              0.0185
 33              1.2571              0.0182
 34              1.2749              0.0179
```

```
 35              1.2925              0.0176
 36              1.3098              0.0173
-------------------------------------------------------------------
Unit              Unit            Unit              Effective
Period            Rainfall        Soil-Loss         Rainfall
(number)            (In)          (In)                (In)
-------------------------------------------------------------------
  1               0.0173          0.0141              0.0032
  2               0.0176          0.0143              0.0033
  3               0.0182          0.0147              0.0034
  4               0.0185          0.0150              0.0035
  5               0.0191          0.0155              0.0036
  6               0.0195          0.0158              0.0036
  7               0.0202          0.0164              0.0038
  8               0.0206          0.0168              0.0039
  9               0.0215          0.0175              0.0040
 10               0.0220          0.0179              0.0041
 11               0.0231          0.0181              0.0051
 12               0.0238          0.0181              0.0057
 13               0.0252          0.0181              0.0071
 14               0.0260          0.0181              0.0079
 15               0.0278          0.0181              0.0097
 16               0.0289          0.0181              0.0108
 17               0.0268          0.0181              0.0088
 18               0.0283          0.0181              0.0103
 19               0.0322          0.0181              0.0141
 20               0.0347          0.0181              0.0166
 21               0.0472          0.0181              0.0291
 22               0.0526          0.0181              0.0346
 23               0.0727          0.0181              0.0546
 24               0.0969          0.0181              0.0788
 25               0.2598          0.0181              0.2417
 26               0.0604          0.0181              0.0423
 27               0.0378          0.0181              0.0197
 28               0.0301          0.0181              0.0120
 29               0.0300          0.0181              0.0120
 30               0.0268          0.0181              0.0088
 31               0.0244          0.0181              0.0064
 32               0.0226          0.0181              0.0045
 33               0.0211          0.0171              0.0039
 34               0.0198          0.0161              0.0037
 35               0.0188          0.0153              0.0035
 36               0.0179          0.0145              0.0033
-------------------------------------------------------------------
-------------------------------------------------------------------
Total soil rain loss =      0.62(In)
Total effective rainfall =      0.69(In)
Peak flow rate in flood hydrograph =     26.12(CFS)
-------------------------------------------------------------------
+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                    3 - H O U R    S T O R M
                R u n o f f      H y d r o g r a p h
-------------------------------------------------------------------
            Hydrograph in   5   Minute intervals ((CFS))

-------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0        7.5      15.0      22.5      30.0
-------------------------------------------------------------------
  0+ 5       0.0002      0.02  Q         |         |         |         |
  0+10       0.0009      0.11  Q         |         |         |         |
  0+15       0.0034      0.35  Q         |         |         |         |
  0+20       0.0071      0.55  Q         |         |         |         |
  0+25       0.0116      0.64  Q         |         |         |         |
  0+30       0.0165      0.71  Q         |         |         |         |
  0+35       0.0218      0.77  VQ        |         |         |         |
  0+40       0.0274      0.82  VQ        |         |         |         |
  0+45       0.0333      0.86  |Q        |         |         |         |
  0+50       0.0395      0.90  |Q        |         |         |         |
  0+55       0.0460      0.94  |Q        |         |         |         |
  1+ 0       0.0528      1.00  |Q        |         |         |         |
  1+ 5       0.0605      1.11  |QV       |         |         |         |
```

```
   1+10       0.0692      1.27  |QV       |         |         |         |
   1+15       0.0794      1.47  |QV       |         |         |         |
   1+20       0.0912      1.71  | QV      |         |         |         |
   1+25       0.1047      1.96  | QV      |         |         |         |
   1+30       0.1196      2.17  | Q V     |         |         |         |
   1+35       0.1350      2.24  | Q V     |         |         |         |
   1+40       0.1518      2.44  |  Q V    |         |         |         |
   1+45       0.1723      2.98  |  Q V    |         |         |         |
   1+50       0.1986      3.81  |    QV   |         |         |         |
   1+55       0.2350      5.29  |      QV |         |         |         |
   2+ 0       0.2852      7.29  |        Q|         |         |         |
   2+ 5       0.3634     11.35  |         | V  Q    |         |         |
   2+10       0.4851     17.67  |         |    V    |  Q      |         |
   2+15       0.6650     26.12  |         |         | V       |   Q     |
   2+20       0.8129     21.48  |         |         |      VQ |         |
   2+25       0.9020     12.94  |         |      Q  |         V         |
   2+30       0.9664      9.34  |         | Q       |         |  V      |
   2+35       1.0160      7.21  |        Q|         |         |   V     |
   2+40       1.0549      5.64  |      Q  |         |         |     V   |
   2+45       1.0844      4.29  |    Q    |         |         |      V  |
   2+50       1.1064      3.19  |   Q     |         |         |      V  |
   2+55       1.1225      2.34  |  Q      |         |         |       V |
   3+ 0       1.1346      1.77  | Q       |         |         |       V |
   3+ 5       1.1449      1.48  |Q        |         |         |        V|
   3+10       1.1531      1.20  |Q        |         |         |        V|
   3+15       1.1589      0.84  |Q        |         |         |        V|
   3+20       1.1629      0.58  Q         |         |         |        V|
   3+25       1.1656      0.38  Q         |         |         |        V|
   3+30       1.1674      0.26  Q         |         |         |        V|
   3+35       1.1683      0.13  Q         |         |         |        V|
   3+40       1.1689      0.08  Q         |         |         |        V|
   3+45       1.1692      0.05  Q         |         |         |        V|
   3+50       1.1695      0.03  Q         |         |         |        V|
   3+55       1.1696      0.02  Q         |         |         |        V|
   4+ 0       1.1697      0.01  Q         |         |         |        V|
   4+ 5       1.1698      0.01  Q         |         |         |        V|
   4+10       1.1698      0.01  Q         |         |         |        V|
   4+15       1.1699      0.00  Q         |         |         |        V|
   4+20       1.1699      0.00  Q         |         |         |        V|
   4+25       1.1699      0.00  Q         |         |         |         V
-------------------------------------------------------------------------
```

- 5 Year 6 Hour Pre-Development Unit Hydrograph – Area 'D'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/10/16   File Name EXD00506.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'D' - 5 YEAR 6 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 5

       Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 82.3       6.8          0.33     C     0.250     1.000    0.250
 82.3      13.5          0.67     D     0.200     1.000    0.200

Area-averaged adjusted loss rate Fm (In/Hr) =  0.217

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
     6.77   0.333         82.3      66.2       5.10     0.187

    13.54   0.667         82.3      66.2       5.10     0.187

Area-averaged catchment yield fraction, Y =  0.187
Area-averaged low loss fraction, Yb =  0.813
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.267 (hours)
Watershed area =      20.31(Ac.)
Catchment Lag time =   0.214 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 38.9651
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.217(In/Hr)
Average low loss rate fraction (Yb) = 0.813 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.260(In)
Computed peak 30-minute rainfall =  0.590(In)
Specified peak 1-hour rainfall =  0.780(In)
Computed peak 3-hour rainfall =  1.310(In)
Specified peak 6-hour rainfall =  1.810(In)
Specified peak 24-hour rainfall =  3.030(In)


Rainfall depth area reduction factors:
Using a total area of      20.31(Ac.) (Ref: fig. E-4)
```

```
5-minute factor = 0.999     Adjusted rainfall =  0.260(In)
30-minute factor = 0.999    Adjusted rainfall =  0.589(In)
1-hour factor = 0.999       Adjusted rainfall =  0.779(In)
3-hour factor = 1.000       Adjusted rainfall =  1.310(In)
6-hour factor = 1.000       Adjusted rainfall =  1.810(In)
24-hour factor = 1.000 Adjusted rainfall =  3.030(In)
--------------------------------------------------------------------

                     U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------
               (K =       245.62 (CFS))

  1                3.023                   7.425
  2               14.171                  27.382
  3               43.874                  72.958
  4               67.442                  57.889
  5               77.619                  24.996
  6               84.423                  16.713
  7               89.233                  11.816
  8               92.750                   8.637
  9               95.262                   6.169
 10               96.974                   4.206
 11               97.988                   2.490
 12               98.469                   1.183
 13               98.868                   0.980
 14               99.156                   0.707
 15               99.420                   0.649
 16               99.703                   0.695
 17               99.868                   0.404
 18              100.000                   0.325
--------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.2598              0.2598
  2              0.3566              0.0969
  3              0.4293              0.0727
  4              0.4897              0.0604
  5              0.5423              0.0526
  6              0.5894              0.0472
  7              0.6272              0.0378
  8              0.6618              0.0347
  9              0.6940              0.0322
 10              0.7241              0.0301
 11              0.7524              0.0283
 12              0.7793              0.0268
 13              0.8093              0.0300
 14              0.8382              0.0289
 15              0.8659              0.0278
 16              0.8928              0.0268
 17              0.9187              0.0260
 18              0.9439              0.0252
 19              0.9683              0.0244
 20              0.9921              0.0238
 21              1.0152              0.0231
 22              1.0378              0.0226
 23              1.0598              0.0220
 24              1.0814              0.0215
 25              1.1025              0.0211
 26              1.1231              0.0206
 27              1.1433              0.0202
 28              1.1631              0.0198
 29              1.1826              0.0195
 30              1.2017              0.0191
 31              1.2205              0.0188
 32              1.2389              0.0185
 33              1.2571              0.0182
 34              1.2749              0.0179
```

35	1.2925	0.0176
36	1.3098	0.0173
37	1.3267	0.0168
38	1.3433	0.0166
39	1.3597	0.0164
40	1.3758	0.0162
41	1.3918	0.0159
42	1.4075	0.0157
43	1.4230	0.0155
44	1.4384	0.0153
45	1.4535	0.0152
46	1.4685	0.0150
47	1.4833	0.0148
48	1.4980	0.0146
49	1.5124	0.0145
50	1.5268	0.0143
51	1.5409	0.0142
52	1.5550	0.0140
53	1.5688	0.0139
54	1.5826	0.0137
55	1.5962	0.0136
56	1.6097	0.0135
57	1.6230	0.0133
58	1.6362	0.0132
59	1.6493	0.0131
60	1.6623	0.0130
61	1.6752	0.0129
62	1.6879	0.0128
63	1.7006	0.0126
64	1.7131	0.0125
65	1.7256	0.0124
66	1.7379	0.0123
67	1.7501	0.0122
68	1.7623	0.0121
69	1.7743	0.0120
70	1.7863	0.0119
71	1.7981	0.0119
72	1.8099	0.0118

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0118	0.0096	0.0022
2	0.0119	0.0096	0.0022
3	0.0120	0.0098	0.0023
4	0.0121	0.0099	0.0023
5	0.0123	0.0100	0.0023
6	0.0124	0.0101	0.0023
7	0.0126	0.0103	0.0024
8	0.0128	0.0104	0.0024
9	0.0130	0.0105	0.0024
10	0.0131	0.0106	0.0025
11	0.0133	0.0108	0.0025
12	0.0135	0.0109	0.0025
13	0.0137	0.0112	0.0026
14	0.0139	0.0113	0.0026
15	0.0142	0.0115	0.0027
16	0.0143	0.0116	0.0027
17	0.0146	0.0119	0.0027
18	0.0148	0.0120	0.0028
19	0.0152	0.0123	0.0028
20	0.0153	0.0125	0.0029
21	0.0157	0.0128	0.0029
22	0.0159	0.0130	0.0030
23	0.0164	0.0133	0.0031
24	0.0166	0.0135	0.0031
25	0.0173	0.0141	0.0032
26	0.0176	0.0143	0.0033
27	0.0182	0.0147	0.0034
28	0.0185	0.0150	0.0035

```
 29              0.0191          0.0155              0.0036
 30              0.0195          0.0158              0.0036
 31              0.0202          0.0164              0.0038
 32              0.0206          0.0168              0.0039
 33              0.0215          0.0175              0.0040
 34              0.0220          0.0179              0.0041
 35              0.0231          0.0181              0.0051
 36              0.0238          0.0181              0.0057
 37              0.0252          0.0181              0.0071
 38              0.0260          0.0181              0.0079
 39              0.0278          0.0181              0.0097
 40              0.0289          0.0181              0.0108
 41              0.0268          0.0181              0.0088
 42              0.0283          0.0181              0.0103
 43              0.0322          0.0181              0.0141
 44              0.0347          0.0181              0.0166
 45              0.0472          0.0181              0.0291
 46              0.0526          0.0181              0.0346
 47              0.0727          0.0181              0.0546
 48              0.0969          0.0181              0.0788
 49              0.2598          0.0181              0.2417
 50              0.0604          0.0181              0.0423
 51              0.0378          0.0181              0.0197
 52              0.0301          0.0181              0.0120
 53              0.0300          0.0181              0.0120
 54              0.0268          0.0181              0.0088
 55              0.0244          0.0181              0.0064
 56              0.0226          0.0181              0.0045
 57              0.0211          0.0171              0.0039
 58              0.0198          0.0161              0.0037
 59              0.0188          0.0153              0.0035
 60              0.0179          0.0145              0.0033
 61              0.0168          0.0137              0.0032
 62              0.0162          0.0131              0.0030
 63              0.0155          0.0126              0.0029
 64              0.0150          0.0122              0.0028
 65              0.0145          0.0118              0.0027
 66              0.0140          0.0114              0.0026
 67              0.0136          0.0111              0.0026
 68              0.0132          0.0107              0.0025
 69              0.0129          0.0105              0.0024
 70              0.0125          0.0102              0.0024
 71              0.0122          0.0099              0.0023
 72              0.0119          0.0097              0.0022
-------------------------------------------------------------------
-------------------------------------------------------------------
Total soil rain loss =      1.02(In)
Total effective rainfall =      0.79(In)
Peak flow rate in flood hydrograph =     26.12(CFS)
-------------------------------------------------------------------
+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                  6 - H O U R    S T O R M
             R u n o f f     H y d r o g r a p h
-------------------------------------------------------------------
            Hydrograph in   5   Minute intervals ((CFS))

-------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0        7.5      15.0      22.5      30.0
-------------------------------------------------------------------
  0+ 5       0.0001      0.02  Q         |         |         |         |
  0+10       0.0006      0.08  Q         |         |         |         |
  0+15       0.0023      0.24  Q         |         |         |         |
  0+20       0.0048      0.37  Q         |         |         |         |
  0+25       0.0078      0.43  Q         |         |         |         |
  0+30       0.0110      0.47  Q         |         |         |         |
  0+35       0.0145      0.50  Q         |         |         |         |
  0+40       0.0181      0.53  Q         |         |         |         |
  0+45       0.0219      0.55  Q         |         |         |         |
  0+50       0.0257      0.56  Q         |         |         |         |
  0+55       0.0297      0.58  Q         |         |         |         |
  1+ 0       0.0337      0.59  QV        |         |         |         |
```

```
   1+ 5       0.0378      0.60  QV        |         |         |         |
   1+10       0.0420      0.61  QV        |         |         |         |
   1+15       0.0463      0.62  QV        |         |         |         |
   1+20       0.0506      0.63  QV        |         |         |         |
   1+25       0.0550      0.64  QV        |         |         |         |
   1+30       0.0594      0.65  QV        |         |         |         |
   1+35       0.0640      0.66  QV        |         |         |         |
   1+40       0.0686      0.67  Q V       |         |         |         |
   1+45       0.0732      0.68  Q V       |         |         |         |
   1+50       0.0780      0.69  Q V       |         |         |         |
   1+55       0.0829      0.71  Q V       |         |         |         |
   2+ 0       0.0878      0.72  Q V       |         |         |         |
-------------------------------------------------------------------------
```

- 5 Year 12 Hour Pre-Development Unit Hydrograph – Area 'D'

```
        U n i t   H y d r o g r a p h   A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989-2012, Version 7.2

        Study date  10/10/16   File Name EXD00512.out


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'D' - 5 YEAR 12 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

        Storm Event Year = 5

        Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 82.3       6.8          0.33     C     0.250     1.000    0.250
 82.3      13.5          0.67     D     0.200     1.000    0.200

Area-averaged adjusted loss rate Fm (In/Hr) =  0.217

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
     6.77   0.333         82.3      66.2       5.10     0.187

    13.54   0.667         82.3      66.2       5.10     0.187

Area-averaged catchment yield fraction, Y =  0.187
Area-averaged low loss fraction, Yb =  0.813
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.267 (hours)
Watershed area =      20.31(Ac.)
Catchment Lag time =   0.214 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 38.9651
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.217(In/Hr)
Average low loss rate fraction (Yb) = 0.813 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.260(In)
Computed peak 30-minute rainfall =  0.590(In)
Specified peak 1-hour rainfall =  0.780(In)
Computed peak 3-hour rainfall =  1.310(In)
Specified peak 6-hour rainfall =  1.810(In)
Specified peak 24-hour rainfall =  3.030(In)


Rainfall depth area reduction factors:
Using a total area of      20.31(Ac.) (Ref: fig. E-4)
```

```
5-minute factor = 0.999     Adjusted rainfall =  0.260(In)
30-minute factor = 0.999    Adjusted rainfall =  0.589(In)
1-hour factor = 0.999       Adjusted rainfall =  0.779(In)
3-hour factor = 1.000       Adjusted rainfall =  1.310(In)
6-hour factor = 1.000       Adjusted rainfall =  1.810(In)
24-hour factor = 1.000 Adjusted rainfall =  3.030(In)
--------------------------------------------------------------------

                     U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------
               (K =       245.62 (CFS))

  1                3.023                   7.425
  2               14.171                  27.382
  3               43.874                  72.958
  4               67.442                  57.889
  5               77.619                  24.996
  6               84.423                  16.713
  7               89.233                  11.816
  8               92.750                   8.637
  9               95.262                   6.169
 10               96.974                   4.206
 11               97.988                   2.490
 12               98.469                   1.183
 13               98.868                   0.980
 14               99.156                   0.707
 15               99.420                   0.649
 16               99.703                   0.695
 17               99.868                   0.404
 18              100.000                   0.325
--------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.2598              0.2598
  2              0.3566              0.0969
  3              0.4293              0.0727
  4              0.4897              0.0604
  5              0.5423              0.0526
  6              0.5894              0.0472
  7              0.6272              0.0378
  8              0.6618              0.0347
  9              0.6940              0.0322
 10              0.7241              0.0301
 11              0.7524              0.0283
 12              0.7793              0.0268
 13              0.8093              0.0300
 14              0.8382              0.0289
 15              0.8659              0.0278
 16              0.8928              0.0268
 17              0.9187              0.0260
 18              0.9439              0.0252
 19              0.9683              0.0244
 20              0.9921              0.0238
 21              1.0152              0.0231
 22              1.0378              0.0226
 23              1.0598              0.0220
 24              1.0814              0.0215
 25              1.1025              0.0211
 26              1.1231              0.0206
 27              1.1433              0.0202
 28              1.1631              0.0198
 29              1.1826              0.0195
 30              1.2017              0.0191
 31              1.2205              0.0188
 32              1.2389              0.0185
 33              1.2571              0.0182
 34              1.2749              0.0179
```

35	1.2925	0.0176
36	1.3098	0.0173
37	1.3267	0.0168
38	1.3433	0.0166
39	1.3597	0.0164
40	1.3758	0.0162
41	1.3918	0.0159
42	1.4075	0.0157
43	1.4230	0.0155
44	1.4384	0.0153
45	1.4535	0.0152
46	1.4685	0.0150
47	1.4833	0.0148
48	1.4980	0.0146
49	1.5124	0.0145
50	1.5268	0.0143
51	1.5409	0.0142
52	1.5550	0.0140
53	1.5688	0.0139
54	1.5826	0.0137
55	1.5962	0.0136
56	1.6097	0.0135
57	1.6230	0.0133
58	1.6362	0.0132
59	1.6493	0.0131
60	1.6623	0.0130
61	1.6752	0.0129
62	1.6879	0.0128
63	1.7006	0.0126
64	1.7131	0.0125
65	1.7256	0.0124
66	1.7379	0.0123
67	1.7501	0.0122
68	1.7623	0.0121
69	1.7743	0.0120
70	1.7863	0.0119
71	1.7981	0.0119
72	1.8099	0.0118
73	1.8192	0.0093
74	1.8284	0.0092
75	1.8376	0.0091
76	1.8466	0.0091
77	1.8556	0.0090
78	1.8645	0.0089
79	1.8734	0.0088
80	1.8822	0.0088
81	1.8909	0.0087
82	1.8995	0.0086
83	1.9081	0.0086
84	1.9166	0.0085
85	1.9251	0.0084
86	1.9334	0.0084
87	1.9418	0.0083
88	1.9500	0.0083
89	1.9582	0.0082
90	1.9664	0.0081
91	1.9745	0.0081
92	1.9825	0.0080
93	1.9905	0.0080
94	1.9984	0.0079
95	2.0063	0.0079
96	2.0141	0.0078
97	2.0219	0.0078
98	2.0296	0.0077
99	2.0373	0.0077
100	2.0449	0.0076
101	2.0525	0.0076
102	2.0600	0.0075
103	2.0675	0.0075
104	2.0750	0.0074
105	2.0824	0.0074

106	2.0897	0.0073
107	2.0970	0.0073
108	2.1043	0.0073
109	2.1115	0.0072
110	2.1187	0.0072
111	2.1258	0.0071
112	2.1329	0.0071
113	2.1400	0.0071
114	2.1470	0.0070
115	2.1540	0.0070
116	2.1609	0.0069
117	2.1678	0.0069
118	2.1747	0.0069
119	2.1815	0.0068
120	2.1883	0.0068
121	2.1951	0.0068
122	2.2018	0.0067
123	2.2085	0.0067
124	2.2152	0.0067
125	2.2218	0.0066
126	2.2284	0.0066
127	2.2349	0.0066
128	2.2414	0.0065
129	2.2479	0.0065
130	2.2544	0.0065
131	2.2608	0.0064
132	2.2672	0.0064
133	2.2736	0.0064
134	2.2799	0.0063
135	2.2862	0.0063
136	2.2925	0.0063
137	2.2988	0.0063
138	2.3050	0.0062
139	2.3112	0.0062
140	2.3174	0.0062
141	2.3235	0.0061
142	2.3296	0.0061
143	2.3357	0.0061
144	2.3418	0.0061

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0061	0.0049	0.0011
2	0.0061	0.0049	0.0011
3	0.0061	0.0050	0.0012
4	0.0062	0.0050	0.0012
5	0.0062	0.0051	0.0012
6	0.0063	0.0051	0.0012
7	0.0063	0.0051	0.0012
8	0.0063	0.0052	0.0012
9	0.0064	0.0052	0.0012
10	0.0064	0.0052	0.0012
11	0.0065	0.0053	0.0012
12	0.0065	0.0053	0.0012
13	0.0066	0.0054	0.0012
14	0.0066	0.0054	0.0012
15	0.0067	0.0054	0.0013
16	0.0067	0.0055	0.0013
17	0.0068	0.0055	0.0013
18	0.0068	0.0056	0.0013
19	0.0069	0.0056	0.0013
20	0.0069	0.0056	0.0013
21	0.0070	0.0057	0.0013
22	0.0071	0.0057	0.0013
23	0.0071	0.0058	0.0013
24	0.0072	0.0058	0.0013
25	0.0073	0.0059	0.0014
26	0.0073	0.0059	0.0014
27	0.0074	0.0060	0.0014

28	0.0074	0.0060	0.0014
29	0.0075	0.0061	0.0014
30	0.0076	0.0062	0.0014
31	0.0077	0.0062	0.0014
32	0.0077	0.0063	0.0014
33	0.0078	0.0064	0.0015
34	0.0079	0.0064	0.0015
35	0.0080	0.0065	0.0015
36	0.0080	0.0065	0.0015
37	0.0081	0.0066	0.0015
38	0.0082	0.0067	0.0015
39	0.0083	0.0068	0.0016
40	0.0084	0.0068	0.0016
41	0.0085	0.0069	0.0016
42	0.0086	0.0070	0.0016
43	0.0087	0.0071	0.0016
44	0.0088	0.0071	0.0016
45	0.0089	0.0072	0.0017
46	0.0090	0.0073	0.0017
47	0.0091	0.0074	0.0017
48	0.0092	0.0075	0.0017
49	0.0118	0.0096	0.0022
50	0.0119	0.0096	0.0022
51	0.0120	0.0098	0.0023
52	0.0121	0.0099	0.0023
53	0.0123	0.0100	0.0023
54	0.0124	0.0101	0.0023
55	0.0126	0.0103	0.0024
56	0.0128	0.0104	0.0024
57	0.0130	0.0105	0.0024
58	0.0131	0.0106	0.0025
59	0.0133	0.0108	0.0025
60	0.0135	0.0109	0.0025
61	0.0137	0.0112	0.0026
62	0.0139	0.0113	0.0026
63	0.0142	0.0115	0.0027
64	0.0143	0.0116	0.0027
65	0.0146	0.0119	0.0027
66	0.0148	0.0120	0.0028
67	0.0152	0.0123	0.0028
68	0.0153	0.0125	0.0029
69	0.0157	0.0128	0.0029
70	0.0159	0.0130	0.0030
71	0.0164	0.0133	0.0031
72	0.0166	0.0135	0.0031
73	0.0173	0.0141	0.0032
74	0.0176	0.0143	0.0033
75	0.0182	0.0147	0.0034
76	0.0185	0.0150	0.0035
77	0.0191	0.0155	0.0036
78	0.0195	0.0158	0.0036
79	0.0202	0.0164	0.0038
80	0.0206	0.0168	0.0039
81	0.0215	0.0175	0.0040
82	0.0220	0.0179	0.0041
83	0.0231	0.0181	0.0051
84	0.0238	0.0181	0.0057
85	0.0252	0.0181	0.0071
86	0.0260	0.0181	0.0079
87	0.0278	0.0181	0.0097
88	0.0289	0.0181	0.0108
89	0.0268	0.0181	0.0088
90	0.0283	0.0181	0.0103
91	0.0322	0.0181	0.0141
92	0.0347	0.0181	0.0166
93	0.0472	0.0181	0.0291
94	0.0526	0.0181	0.0346
95	0.0727	0.0181	0.0546
96	0.0969	0.0181	0.0788
97	0.2598	0.0181	0.2417
98	0.0604	0.0181	0.0423

```
 99              0.0378          0.0181              0.0197
100              0.0301          0.0181              0.0120
101              0.0300          0.0181              0.0120
102              0.0268          0.0181              0.0088
103              0.0244          0.0181              0.0064
104              0.0226          0.0181              0.0045
105              0.0211          0.0171              0.0039
106              0.0198          0.0161              0.0037
107              0.0188          0.0153              0.0035
108              0.0179          0.0145              0.0033
109              0.0168          0.0137              0.0032
110              0.0162          0.0131              0.0030
111              0.0155          0.0126              0.0029
112              0.0150          0.0122              0.0028
113              0.0145          0.0118              0.0027
114              0.0140          0.0114              0.0026
115              0.0136          0.0111              0.0026
116              0.0132          0.0107              0.0025
117              0.0129          0.0105              0.0024
118              0.0125          0.0102              0.0024
119              0.0122          0.0099              0.0023
120              0.0119          0.0097              0.0022
121              0.0093          0.0076              0.0017
122              0.0091          0.0074              0.0017
123              0.0088          0.0072              0.0017
124              0.0086          0.0070              0.0016
125              0.0084          0.0069              0.0016
126              0.0083          0.0067              0.0015
127              0.0081          0.0066              0.0015
128              0.0079          0.0064              0.0015
129              0.0078          0.0063              0.0015
130              0.0076          0.0062              0.0014
131              0.0075          0.0061              0.0014
132              0.0073          0.0060              0.0014
133              0.0072          0.0059              0.0014
134              0.0071          0.0058              0.0013
135              0.0070          0.0057              0.0013
136              0.0069          0.0056              0.0013
137              0.0068          0.0055              0.0013
138              0.0067          0.0054              0.0012
139              0.0066          0.0053              0.0012
140              0.0065          0.0053              0.0012
141              0.0064          0.0052              0.0012
142              0.0063          0.0051              0.0012
143              0.0062          0.0050              0.0012
144              0.0061          0.0050              0.0011
-------------------------------------------------------------------
-------------------------------------------------------------------
Total soil rain loss =      1.46(In)
Total effective rainfall =      0.89(In)
Peak flow rate in flood hydrograph =     26.12(CFS)
-------------------------------------------------------------------
+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                  12 - H O U R    S T O R M
               R u n o f f      H y d r o g r a p h
-------------------------------------------------------------------
            Hydrograph in   5   Minute intervals ((CFS))

-------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0        7.5      15.0      22.5      30.0
-------------------------------------------------------------------
  0+ 5       0.0001      0.01  Q         |         |         |         |
  0+10       0.0003      0.04  Q         |         |         |         |
  0+15       0.0012      0.12  Q         |         |         |         |
  0+20       0.0025      0.19  Q         |         |         |         |
  0+25       0.0040      0.22  Q         |         |         |         |
  0+30       0.0056      0.24  Q         |         |         |         |
  0+35       0.0074      0.25  Q         |         |         |         |
  0+40       0.0092      0.27  Q         |         |         |         |
  0+45       0.0111      0.27  Q         |         |         |         |
  0+50       0.0130      0.28  Q         |         |         |         |
```

```
0+55       0.0150      0.29  Q          |          |          |          |
1+ 0       0.0170      0.29  Q          |          |          |          |
1+ 5       0.0190      0.29  Q          |          |          |          |
1+10       0.0210      0.30  Q          |          |          |          |
1+15       0.0231      0.30  Q          |          |          |          |
1+20       0.0252      0.30  Q          |          |          |          |
1+25       0.0273      0.30  Q          |          |          |          |
1+30       0.0294      0.31  Q          |          |          |          |
1+35       0.0315      0.31  Q          |          |          |          |
1+40       0.0337      0.31  Q          |          |          |          |
1+45       0.0358      0.31  Q          |          |          |          |
1+50       0.0380      0.32  QV         |          |          |          |
1+55       0.0402      0.32  QV         |          |          |          |
2+ 0       0.0424      0.32  QV         |          |          |          |
2+ 5       0.0447      0.32  QV         |          |          |          |
2+10       0.0469      0.33  QV         |          |          |          |
2+15       0.0492      0.33  QV         |          |          |          |
2+20       0.0515      0.33  QV         |          |          |          |
2+25       0.0538      0.34  QV         |          |          |          |
2+30       0.0561      0.34  QV         |          |          |          |
2+35       0.0585      0.34  QV         |          |          |          |
2+40       0.0609      0.35  QV         |          |          |          |
2+45       0.0633      0.35  QV         |          |          |          |
2+50       0.0657      0.35  QV         |          |          |          |
2+55       0.0681      0.36  QV         |          |          |          |
3+ 0       0.0706      0.36  QV         |          |          |          |
3+ 5       0.0731      0.36  QV         |          |          |          |
3+10       0.0756      0.37  Q V        |          |          |          |
3+15       0.0781      0.37  Q V        |          |          |          |
3+20       0.0807      0.37  Q V        |          |          |          |
3+25       0.0833      0.38  Q V        |          |          |          |
3+30       0.0859      0.38  Q V        |          |          |          |
3+35       0.0886      0.39  Q V        |          |          |          |
3+40       0.0913      0.39  Q V        |          |          |          |
3+45       0.0940      0.39  Q V        |          |          |          |
3+50       0.0967      0.40  Q V        |          |          |          |
3+55       0.0995      0.40  Q V        |          |          |          |
4+ 0       0.1023      0.41  Q V        |          |          |          |
4+ 5       0.1052      0.42  Q V        |          |          |          |
4+10       0.1082      0.43  Q V        |          |          |          |
4+15       0.1114      0.47  Q V        |          |          |          |
4+20       0.1149      0.50  Q  V       |          |          |          |
4+25       0.1185      0.52  Q  V       |          |          |          |
4+30       0.1222      0.53  Q  V       |          |          |          |
4+35       0.1259      0.55  Q  V       |          |          |          |
4+40       0.1298      0.56  Q  V       |          |          |          |
4+45       0.1337      0.57  Q  V       |          |          |          |
4+50       0.1376      0.58  Q  V       |          |          |          |
4+55       0.1417      0.58  Q  V       |          |          |          |
5+ 0       0.1457      0.59  Q  V       |          |          |          |
5+ 5       0.1499      0.60  Q   V      |          |          |          |
5+10       0.1541      0.61  Q   V      |          |          |          |
5+15       0.1583      0.62  Q   V      |          |          |          |
5+20       0.1627      0.63  Q   V      |          |          |          |
5+25       0.1671      0.64  Q   V      |          |          |          |
5+30       0.1715      0.65  Q   V      |          |          |          |
5+35       0.1760      0.66  Q   V      |          |          |          |
5+40       0.1807      0.67  Q   V      |          |          |          |
5+45       0.1853      0.68  Q   V      |          |          |          |
5+50       0.1901      0.69  Q    V     |          |          |          |
5+55       0.1950      0.71  Q    V     |          |          |          |
6+ 0       0.1999      0.72  Q    V     |          |          |          |
6+ 5       0.2050      0.73  Q    V     |          |          |          |
6+10       0.2101      0.75  Q    V     |          |          |          |
6+15       0.2154      0.77  |Q   V     |          |          |          |
6+20       0.2208      0.79  |Q   V     |          |          |          |
6+25       0.2264      0.81  |Q    V    |          |          |          |
6+30       0.2321      0.83  |Q    V    |          |          |          |
6+35       0.2379      0.85  |Q    V    |          |          |          |
6+40       0.2439      0.87  |Q    V    |          |          |          |
6+45       0.2501      0.89  |Q    V    |          |          |          |
```

```
 6+50      0.2564      0.92  |Q    V   |          |          |          |
 6+55      0.2630      0.95  |Q     V  |          |          |          |
 7+ 0      0.2699      1.01  |Q     V  |          |          |          |
 7+ 5      0.2777      1.12  |Q     V  |          |          |          |
 7+10      0.2864      1.28  |Q     V  |          |          |          |
 7+15      0.2966      1.48  |Q     V  |          |          |          |
 7+20      0.3084      1.71  | Q     V |          |          |          |
 7+25      0.3219      1.96  | Q     V |          |          |          |
 7+30      0.3369      2.17  | Q      V|          |          |          |
 7+35      0.3523      2.24  | Q      V|          |          |          |
 7+40      0.3691      2.44  |  Q     V|          |          |          |
 7+45      0.3896      2.98  |  Q      V          |          |          |
 7+50      0.4158      3.81  |    Q    |V         |          |          |
 7+55      0.4523      5.29  |      Q  | V        |          |          |
 8+ 0      0.5024      7.29  |        Q|  V       |          |          |
 8+ 5      0.5806     11.35  |         |    Q     |          |          |
 8+10      0.7023     17.67  |         |       V  |  Q       |          |
 8+15      0.8823     26.12  |         |          |  V       |   Q      |
 8+20      1.0302     21.48  |         |          |     VQ   |          |
 8+25      1.1193     12.94  |         |       Q  |       V  |          |
 8+30      1.1836      9.34  |         | Q        |          |V         |
 8+35      1.2333      7.21  |        Q|          |          | V        |
 8+40      1.2721      5.64  |      Q  |          |          |  V       |
 8+45      1.3017      4.29  |    Q    |          |          |   V      |
 8+50      1.3236      3.19  |   Q     |          |          |    V     |
 8+55      1.3397      2.34  |  Q      |          |          |    V     |
 9+ 0      1.3519      1.77  | Q       |          |          |     V    |
 9+ 5      1.3623      1.51  | Q       |          |          |     V    |
 9+10      1.3713      1.31  |Q        |          |          |     V    |
 9+15      1.3794      1.18  |Q        |          |          |     V    |
 9+20      1.3869      1.09  |Q        |          |          |      V   |
 9+25      1.3934      0.95  |Q        |          |          |      V   |
 9+30      1.3993      0.86  |Q        |          |          |      V   |
 9+35      1.4044      0.74  Q         |          |          |      V   |
 9+40      1.4093      0.70  Q         |          |          |      V   |
 9+45      1.4139      0.67  Q         |          |          |      V   |
 9+50      1.4184      0.65  Q         |          |          |      V   |
 9+55      1.4227      0.62  Q         |          |          |       V  |
10+ 0      1.4268      0.61  Q         |          |          |       V  |
10+ 5      1.4309      0.59  Q         |          |          |       V  |
10+10      1.4347      0.56  Q         |          |          |       V  |
10+15      1.4382      0.51  Q         |          |          |       V  |
10+20      1.4415      0.47  Q         |          |          |       V  |
10+25      1.4446      0.45  Q         |          |          |       V  |
10+30      1.4476      0.43  Q         |          |          |       V  |
10+35      1.4504      0.42  Q         |          |          |       V  |
10+40      1.4532      0.40  Q         |          |          |       V  |
10+45      1.4559      0.39  Q         |          |          |       V  |
10+50      1.4585      0.38  Q         |          |          |       V  |
10+55      1.4611      0.37  Q         |          |          |        V|
11+ 0      1.4636      0.36  Q         |          |          |        V|
11+ 5      1.4660      0.36  Q         |          |          |        V|
11+10      1.4684      0.35  Q         |          |          |        V|
11+15      1.4708      0.34  Q         |          |          |        V|
11+20      1.4731      0.34  Q         |          |          |        V|
11+25      1.4754      0.33  Q         |          |          |        V|
11+30      1.4776      0.32  Q         |          |          |        V|
11+35      1.4798      0.32  Q         |          |          |        V|
11+40      1.4820      0.31  Q         |          |          |        V|
11+45      1.4841      0.31  Q         |          |          |        V|
11+50      1.4862      0.30  Q         |          |          |        V|
11+55      1.4883      0.30  Q         |          |          |        V|
12+ 0      1.4903      0.30  Q         |          |          |        V|
12+ 5      1.4923      0.28  Q         |          |          |        V|
12+10      1.4940      0.25  Q         |          |          |        V|
12+15      1.4951      0.16  Q         |          |          |        V|
12+20      1.4957      0.09  Q         |          |          |        V|
12+25      1.4962      0.06  Q         |          |          |        V|
12+30      1.4965      0.05  Q         |          |          |        V|
12+35      1.4967      0.03  Q         |          |          |        V|
12+40      1.4969      0.02  Q         |          |          |        V|
```

```
   12+45       1.4969      0.01  Q         |         |         |        V|
   12+50       1.4970      0.01  Q         |         |         |        V|
   12+55       1.4970      0.01  Q         |         |         |        V|
   13+ 0       1.4971      0.00  Q         |         |         |        V|
   13+ 5       1.4971      0.00  Q         |         |         |        V|
   13+10       1.4971      0.00  Q         |         |         |        V|
   13+15       1.4971      0.00  Q         |         |         |        V|
   13+20       1.4971      0.00  Q         |         |         |        V|
   13+25       1.4971      0.00  Q         |         |         |         V
-------------------------------------------------------------------------
```

- 5 Year 24 Hour Pre-Development Unit Hydrograph – Area 'D'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989-2012, Version 7.2

       Study date  10/10/16   File Name EXD00524.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'D' - 5 YEAR 24 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 5

       Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 82.3       6.8          0.33     C     0.250     1.000    0.250
 82.3      13.5          0.67     D     0.200     1.000    0.200

Area-averaged adjusted loss rate Fm (In/Hr) =  0.217

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
     6.77   0.333         82.3      66.2       5.10     0.187

    13.54   0.667         82.3      66.2       5.10     0.187

Area-averaged catchment yield fraction, Y =  0.187
Area-averaged low loss fraction, Yb =  0.813
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.267 (hours)
Watershed area =      20.31(Ac.)
Catchment Lag time =   0.214 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 38.9656
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.217(In/Hr)
Average low loss rate fraction (Yb) = 0.813 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.260(In)
Computed peak 30-minute rainfall =  0.590(In)
Specified peak 1-hour rainfall =  0.780(In)
Computed peak 3-hour rainfall =  1.310(In)
Specified peak 6-hour rainfall =  1.810(In)
Specified peak 24-hour rainfall =  3.030(In)


Rainfall depth area reduction factors:
Using a total area of      20.31(Ac.) (Ref: fig. E-4)
```

```
5-minute factor = 0.999     Adjusted rainfall =  0.260(In)
30-minute factor = 0.999    Adjusted rainfall =  0.589(In)
1-hour factor = 0.999       Adjusted rainfall =  0.779(In)
3-hour factor = 1.000       Adjusted rainfall =  1.310(In)
6-hour factor = 1.000       Adjusted rainfall =  1.810(In)
24-hour factor = 1.000 Adjusted rainfall =  3.030(In)
--------------------------------------------------------------------

                     U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------
               (K =       245.62 (CFS))

  1                3.023                   7.426
  2               14.171                  27.383
  3               43.875                  72.960
  4               67.443                  57.887
  5               77.619                  24.996
  6               84.423                  16.712
  7               89.234                  11.816
  8               92.750                   8.637
  9               95.262                   6.169
 10               96.974                   4.205
 11               97.988                   2.490
 12               98.469                   1.183
 13               98.868                   0.980
 14               99.156                   0.707
 15               99.421                   0.649
 16               99.704                   0.695
 17               99.868                   0.403
 18              100.000                   0.325
--------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.2598              0.2598
  2              0.3566              0.0969
  3              0.4293              0.0727
  4              0.4897              0.0604
  5              0.5423              0.0526
  6              0.5894              0.0472
  7              0.6272              0.0378
  8              0.6618              0.0347
  9              0.6940              0.0322
 10              0.7241              0.0301
 11              0.7524              0.0283
 12              0.7793              0.0268
 13              0.8093              0.0300
 14              0.8382              0.0289
 15              0.8659              0.0278
 16              0.8928              0.0268
 17              0.9187              0.0260
 18              0.9439              0.0252
 19              0.9683              0.0244
 20              0.9921              0.0238
 21              1.0152              0.0231
 22              1.0378              0.0226
 23              1.0598              0.0220
 24              1.0814              0.0215
 25              1.1025              0.0211
 26              1.1231              0.0206
 27              1.1433              0.0202
 28              1.1631              0.0198
 29              1.1826              0.0195
 30              1.2017              0.0191
 31              1.2205              0.0188
 32              1.2389              0.0185
 33              1.2571              0.0182
 34              1.2749              0.0179
```

35	1.2925	0.0176
36	1.3098	0.0173
37	1.3267	0.0168
38	1.3433	0.0166
39	1.3597	0.0164
40	1.3758	0.0162
41	1.3918	0.0159
42	1.4075	0.0157
43	1.4230	0.0155
44	1.4384	0.0153
45	1.4535	0.0152
46	1.4685	0.0150
47	1.4833	0.0148
48	1.4980	0.0146
49	1.5124	0.0145
50	1.5268	0.0143
51	1.5409	0.0142
52	1.5550	0.0140
53	1.5688	0.0139
54	1.5826	0.0137
55	1.5962	0.0136
56	1.6097	0.0135
57	1.6230	0.0133
58	1.6362	0.0132
59	1.6493	0.0131
60	1.6623	0.0130
61	1.6752	0.0129
62	1.6879	0.0128
63	1.7006	0.0126
64	1.7131	0.0125
65	1.7256	0.0124
66	1.7379	0.0123
67	1.7501	0.0122
68	1.7623	0.0121
69	1.7743	0.0120
70	1.7863	0.0119
71	1.7981	0.0119
72	1.8099	0.0118
73	1.8192	0.0093
74	1.8284	0.0092
75	1.8376	0.0091
76	1.8466	0.0091
77	1.8556	0.0090
78	1.8645	0.0089
79	1.8734	0.0088
80	1.8822	0.0088
81	1.8909	0.0087
82	1.8995	0.0086
83	1.9081	0.0086
84	1.9166	0.0085
85	1.9251	0.0084
86	1.9334	0.0084
87	1.9418	0.0083
88	1.9500	0.0083
89	1.9582	0.0082
90	1.9664	0.0081
91	1.9745	0.0081
92	1.9825	0.0080
93	1.9905	0.0080
94	1.9984	0.0079
95	2.0063	0.0079
96	2.0141	0.0078
97	2.0219	0.0078
98	2.0296	0.0077
99	2.0373	0.0077
100	2.0449	0.0076
101	2.0525	0.0076
102	2.0600	0.0075
103	2.0675	0.0075
104	2.0750	0.0074
105	2.0824	0.0074

106	2.0897	0.0073
107	2.0970	0.0073
108	2.1043	0.0073
109	2.1115	0.0072
110	2.1187	0.0072
111	2.1258	0.0071
112	2.1329	0.0071
113	2.1400	0.0071
114	2.1470	0.0070
115	2.1540	0.0070
116	2.1609	0.0069
117	2.1678	0.0069
118	2.1747	0.0069
119	2.1815	0.0068
120	2.1883	0.0068
121	2.1951	0.0068
122	2.2018	0.0067
123	2.2085	0.0067
124	2.2152	0.0067
125	2.2218	0.0066
126	2.2284	0.0066
127	2.2349	0.0066
128	2.2414	0.0065
129	2.2479	0.0065
130	2.2544	0.0065
131	2.2608	0.0064
132	2.2672	0.0064
133	2.2736	0.0064
134	2.2799	0.0063
135	2.2862	0.0063
136	2.2925	0.0063
137	2.2988	0.0063
138	2.3050	0.0062
139	2.3112	0.0062
140	2.3174	0.0062
141	2.3235	0.0061
142	2.3296	0.0061
143	2.3357	0.0061
144	2.3418	0.0061
145	2.3478	0.0060
146	2.3538	0.0060
147	2.3598	0.0060
148	2.3657	0.0060
149	2.3717	0.0059
150	2.3776	0.0059
151	2.3834	0.0059
152	2.3893	0.0059
153	2.3951	0.0058
154	2.4009	0.0058
155	2.4067	0.0058
156	2.4125	0.0058
157	2.4182	0.0057
158	2.4239	0.0057
159	2.4296	0.0057
160	2.4353	0.0057
161	2.4409	0.0056
162	2.4466	0.0056
163	2.4522	0.0056
164	2.4577	0.0056
165	2.4633	0.0056
166	2.4688	0.0055
167	2.4744	0.0055
168	2.4798	0.0055
169	2.4853	0.0055
170	2.4908	0.0055
171	2.4962	0.0054
172	2.5016	0.0054
173	2.5070	0.0054
174	2.5124	0.0054
175	2.5178	0.0054
176	2.5231	0.0053

177	2.5284	0.0053
178	2.5337	0.0053
179	2.5390	0.0053
180	2.5443	0.0053
181	2.5495	0.0052
182	2.5547	0.0052
183	2.5599	0.0052
184	2.5651	0.0052
185	2.5703	0.0052
186	2.5755	0.0052
187	2.5806	0.0051
188	2.5857	0.0051
189	2.5908	0.0051
190	2.5959	0.0051
191	2.6010	0.0051
192	2.6060	0.0051
193	2.6111	0.0050
194	2.6161	0.0050
195	2.6211	0.0050
196	2.6261	0.0050
197	2.6311	0.0050
198	2.6360	0.0050
199	2.6410	0.0049
200	2.6459	0.0049
201	2.6508	0.0049
202	2.6557	0.0049
203	2.6606	0.0049
204	2.6654	0.0049
205	2.6703	0.0048
206	2.6751	0.0048
207	2.6799	0.0048
208	2.6847	0.0048
209	2.6895	0.0048
210	2.6943	0.0048
211	2.6991	0.0048
212	2.7038	0.0047
213	2.7085	0.0047
214	2.7133	0.0047
215	2.7180	0.0047
216	2.7227	0.0047
217	2.7273	0.0047
218	2.7320	0.0047
219	2.7367	0.0047
220	2.7413	0.0046
221	2.7459	0.0046
222	2.7505	0.0046
223	2.7551	0.0046
224	2.7597	0.0046
225	2.7643	0.0046
226	2.7688	0.0046
227	2.7734	0.0045
228	2.7779	0.0045
229	2.7824	0.0045
230	2.7870	0.0045
231	2.7915	0.0045
232	2.7959	0.0045
233	2.8004	0.0045
234	2.8049	0.0045
235	2.8093	0.0044
236	2.8138	0.0044
237	2.8182	0.0044
238	2.8226	0.0044
239	2.8270	0.0044
240	2.8314	0.0044
241	2.8358	0.0044
242	2.8401	0.0044
243	2.8445	0.0044
244	2.8488	0.0043
245	2.8532	0.0043
246	2.8575	0.0043
247	2.8618	0.0043

248	2.8661	0.0043
249	2.8704	0.0043
250	2.8747	0.0043
251	2.8790	0.0043
252	2.8832	0.0043
253	2.8875	0.0042
254	2.8917	0.0042
255	2.8959	0.0042
256	2.9001	0.0042
257	2.9043	0.0042
258	2.9085	0.0042
259	2.9127	0.0042
260	2.9169	0.0042
261	2.9211	0.0042
262	2.9252	0.0042
263	2.9294	0.0041
264	2.9335	0.0041
265	2.9376	0.0041
266	2.9417	0.0041
267	2.9458	0.0041
268	2.9499	0.0041
269	2.9540	0.0041
270	2.9581	0.0041
271	2.9622	0.0041
272	2.9662	0.0041
273	2.9703	0.0040
274	2.9743	0.0040
275	2.9783	0.0040
276	2.9824	0.0040
277	2.9864	0.0040
278	2.9904	0.0040
279	2.9944	0.0040
280	2.9984	0.0040
281	3.0023	0.0040
282	3.0063	0.0040
283	3.0103	0.0040
284	3.0142	0.0039
285	3.0182	0.0039
286	3.0221	0.0039
287	3.0260	0.0039
288	3.0299	0.0039

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0039	0.0032	0.0007
2	0.0039	0.0032	0.0007
3	0.0039	0.0032	0.0007
4	0.0039	0.0032	0.0007
5	0.0040	0.0032	0.0007
6	0.0040	0.0032	0.0007
7	0.0040	0.0032	0.0007
8	0.0040	0.0033	0.0008
9	0.0040	0.0033	0.0008
10	0.0040	0.0033	0.0008
11	0.0040	0.0033	0.0008
12	0.0041	0.0033	0.0008
13	0.0041	0.0033	0.0008
14	0.0041	0.0033	0.0008
15	0.0041	0.0033	0.0008
16	0.0041	0.0033	0.0008
17	0.0041	0.0034	0.0008
18	0.0041	0.0034	0.0008
19	0.0042	0.0034	0.0008
20	0.0042	0.0034	0.0008
21	0.0042	0.0034	0.0008
22	0.0042	0.0034	0.0008
23	0.0042	0.0034	0.0008
24	0.0042	0.0034	0.0008
25	0.0043	0.0035	0.0008

26	0.0043	0.0035	0.0008
27	0.0043	0.0035	0.0008
28	0.0043	0.0035	0.0008
29	0.0043	0.0035	0.0008
30	0.0043	0.0035	0.0008
31	0.0044	0.0035	0.0008
32	0.0044	0.0035	0.0008
33	0.0044	0.0036	0.0008
34	0.0044	0.0036	0.0008
35	0.0044	0.0036	0.0008
36	0.0044	0.0036	0.0008
37	0.0045	0.0036	0.0008
38	0.0045	0.0036	0.0008
39	0.0045	0.0037	0.0008
40	0.0045	0.0037	0.0008
41	0.0045	0.0037	0.0009
42	0.0045	0.0037	0.0009
43	0.0046	0.0037	0.0009
44	0.0046	0.0037	0.0009
45	0.0046	0.0037	0.0009
46	0.0046	0.0038	0.0009
47	0.0047	0.0038	0.0009
48	0.0047	0.0038	0.0009
49	0.0047	0.0038	0.0009
50	0.0047	0.0038	0.0009
51	0.0047	0.0038	0.0009
52	0.0047	0.0039	0.0009
53	0.0048	0.0039	0.0009
54	0.0048	0.0039	0.0009
55	0.0048	0.0039	0.0009
56	0.0048	0.0039	0.0009
57	0.0049	0.0040	0.0009
58	0.0049	0.0040	0.0009
59	0.0049	0.0040	0.0009
60	0.0049	0.0040	0.0009
61	0.0050	0.0040	0.0009
62	0.0050	0.0040	0.0009
63	0.0050	0.0041	0.0009
64	0.0050	0.0041	0.0009
65	0.0051	0.0041	0.0009
66	0.0051	0.0041	0.0010
67	0.0051	0.0041	0.0010
68	0.0051	0.0042	0.0010
69	0.0052	0.0042	0.0010
70	0.0052	0.0042	0.0010
71	0.0052	0.0042	0.0010
72	0.0052	0.0042	0.0010
73	0.0053	0.0043	0.0010
74	0.0053	0.0043	0.0010
75	0.0053	0.0043	0.0010
76	0.0053	0.0043	0.0010
77	0.0054	0.0044	0.0010
78	0.0054	0.0044	0.0010
79	0.0054	0.0044	0.0010
80	0.0055	0.0044	0.0010
81	0.0055	0.0045	0.0010
82	0.0055	0.0045	0.0010
83	0.0056	0.0045	0.0010
84	0.0056	0.0045	0.0010
85	0.0056	0.0046	0.0011
86	0.0056	0.0046	0.0011
87	0.0057	0.0046	0.0011
88	0.0057	0.0046	0.0011
89	0.0058	0.0047	0.0011
90	0.0058	0.0047	0.0011
91	0.0058	0.0047	0.0011
92	0.0059	0.0048	0.0011
93	0.0059	0.0048	0.0011
94	0.0059	0.0048	0.0011
95	0.0060	0.0049	0.0011
96	0.0060	0.0049	0.0011

97	0.0061	0.0049	0.0011
98	0.0061	0.0049	0.0011
99	0.0061	0.0050	0.0012
100	0.0062	0.0050	0.0012
101	0.0062	0.0051	0.0012
102	0.0063	0.0051	0.0012
103	0.0063	0.0051	0.0012
104	0.0063	0.0052	0.0012
105	0.0064	0.0052	0.0012
106	0.0064	0.0052	0.0012
107	0.0065	0.0053	0.0012
108	0.0065	0.0053	0.0012
109	0.0066	0.0054	0.0012
110	0.0066	0.0054	0.0012
111	0.0067	0.0054	0.0013
112	0.0067	0.0055	0.0013
113	0.0068	0.0055	0.0013
114	0.0068	0.0056	0.0013
115	0.0069	0.0056	0.0013
116	0.0069	0.0056	0.0013
117	0.0070	0.0057	0.0013
118	0.0071	0.0057	0.0013
119	0.0071	0.0058	0.0013
120	0.0072	0.0058	0.0013
121	0.0073	0.0059	0.0014
122	0.0073	0.0059	0.0014
123	0.0074	0.0060	0.0014
124	0.0074	0.0060	0.0014
125	0.0075	0.0061	0.0014
126	0.0076	0.0062	0.0014
127	0.0077	0.0062	0.0014
128	0.0077	0.0063	0.0014
129	0.0078	0.0064	0.0015
130	0.0079	0.0064	0.0015
131	0.0080	0.0065	0.0015
132	0.0080	0.0065	0.0015
133	0.0081	0.0066	0.0015
134	0.0082	0.0067	0.0015
135	0.0083	0.0068	0.0016
136	0.0084	0.0068	0.0016
137	0.0085	0.0069	0.0016
138	0.0086	0.0070	0.0016
139	0.0087	0.0071	0.0016
140	0.0088	0.0071	0.0016
141	0.0089	0.0072	0.0017
142	0.0090	0.0073	0.0017
143	0.0091	0.0074	0.0017
144	0.0092	0.0075	0.0017
145	0.0118	0.0096	0.0022
146	0.0119	0.0096	0.0022
147	0.0120	0.0098	0.0023
148	0.0121	0.0099	0.0023
149	0.0123	0.0100	0.0023
150	0.0124	0.0101	0.0023
151	0.0126	0.0103	0.0024
152	0.0128	0.0104	0.0024
153	0.0130	0.0105	0.0024
154	0.0131	0.0106	0.0025
155	0.0133	0.0108	0.0025
156	0.0135	0.0109	0.0025
157	0.0137	0.0112	0.0026
158	0.0139	0.0113	0.0026
159	0.0142	0.0115	0.0027
160	0.0143	0.0116	0.0027
161	0.0146	0.0119	0.0027
162	0.0148	0.0120	0.0028
163	0.0152	0.0123	0.0028
164	0.0153	0.0125	0.0029
165	0.0157	0.0128	0.0029
166	0.0159	0.0130	0.0030
167	0.0164	0.0133	0.0031

168	0.0166	0.0135	0.0031
169	0.0173	0.0141	0.0032
170	0.0176	0.0143	0.0033
171	0.0182	0.0147	0.0034
172	0.0185	0.0150	0.0035
173	0.0191	0.0155	0.0036
174	0.0195	0.0158	0.0036
175	0.0202	0.0164	0.0038
176	0.0206	0.0168	0.0039
177	0.0215	0.0175	0.0040
178	0.0220	0.0179	0.0041
179	0.0231	0.0181	0.0051
180	0.0238	0.0181	0.0057
181	0.0252	0.0181	0.0071
182	0.0260	0.0181	0.0079
183	0.0278	0.0181	0.0097
184	0.0289	0.0181	0.0108
185	0.0268	0.0181	0.0088
186	0.0283	0.0181	0.0103
187	0.0322	0.0181	0.0141
188	0.0347	0.0181	0.0166
189	0.0472	0.0181	0.0291
190	0.0526	0.0181	0.0346
191	0.0727	0.0181	0.0546
192	0.0969	0.0181	0.0788
193	0.2598	0.0181	0.2417
194	0.0604	0.0181	0.0423
195	0.0378	0.0181	0.0197
196	0.0301	0.0181	0.0120
197	0.0300	0.0181	0.0120
198	0.0268	0.0181	0.0088
199	0.0244	0.0181	0.0064
200	0.0226	0.0181	0.0045
201	0.0211	0.0171	0.0039
202	0.0198	0.0161	0.0037
203	0.0188	0.0153	0.0035
204	0.0179	0.0145	0.0033
205	0.0168	0.0137	0.0032
206	0.0162	0.0131	0.0030
207	0.0155	0.0126	0.0029
208	0.0150	0.0122	0.0028
209	0.0145	0.0118	0.0027
210	0.0140	0.0114	0.0026
211	0.0136	0.0111	0.0026
212	0.0132	0.0107	0.0025
213	0.0129	0.0105	0.0024
214	0.0125	0.0102	0.0024
215	0.0122	0.0099	0.0023
216	0.0119	0.0097	0.0022
217	0.0093	0.0076	0.0017
218	0.0091	0.0074	0.0017
219	0.0088	0.0072	0.0017
220	0.0086	0.0070	0.0016
221	0.0084	0.0069	0.0016
222	0.0083	0.0067	0.0015
223	0.0081	0.0066	0.0015
224	0.0079	0.0064	0.0015
225	0.0078	0.0063	0.0015
226	0.0076	0.0062	0.0014
227	0.0075	0.0061	0.0014
228	0.0073	0.0060	0.0014
229	0.0072	0.0059	0.0014
230	0.0071	0.0058	0.0013
231	0.0070	0.0057	0.0013
232	0.0069	0.0056	0.0013
233	0.0068	0.0055	0.0013
234	0.0067	0.0054	0.0012
235	0.0066	0.0053	0.0012
236	0.0065	0.0053	0.0012
237	0.0064	0.0052	0.0012
238	0.0063	0.0051	0.0012

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      239              0.0062          0.0050              0.0012
      240              0.0061          0.0050              0.0011
      241              0.0060          0.0049              0.0011
      242              0.0060          0.0048              0.0011
      243              0.0059          0.0048              0.0011
      244              0.0058          0.0047              0.0011
      245              0.0057          0.0047              0.0011
      246              0.0057          0.0046              0.0011
      247              0.0056          0.0046              0.0011
      248              0.0055          0.0045              0.0010
      249              0.0055          0.0044              0.0010
      250              0.0054          0.0044              0.0010
      251              0.0054          0.0044              0.0010
      252              0.0053          0.0043              0.0010
      253              0.0052          0.0043              0.0010
      254              0.0052          0.0042              0.0010
      255              0.0051          0.0042              0.0010
      256              0.0051          0.0041              0.0010
      257              0.0050          0.0041              0.0009
      258              0.0050          0.0041              0.0009
      259              0.0049          0.0040              0.0009
      260              0.0049          0.0040              0.0009
      261              0.0048          0.0039              0.0009
      262              0.0048          0.0039              0.0009
      263              0.0048          0.0039              0.0009
      264              0.0047          0.0038              0.0009
      265              0.0047          0.0038              0.0009
      266              0.0046          0.0038              0.0009
      267              0.0046          0.0037              0.0009
      268              0.0046          0.0037              0.0009
      269              0.0045          0.0037              0.0008
      270              0.0045          0.0036              0.0008
      271              0.0044          0.0036              0.0008
      272              0.0044          0.0036              0.0008
      273              0.0044          0.0036              0.0008
      274              0.0043          0.0035              0.0008
      275              0.0043          0.0035              0.0008
      276              0.0043          0.0035              0.0008
      277              0.0042          0.0035              0.0008
      278              0.0042          0.0034              0.0008
      279              0.0042          0.0034              0.0008
      280              0.0042          0.0034              0.0008
      281              0.0041          0.0034              0.0008
      282              0.0041          0.0033              0.0008
      283              0.0041          0.0033              0.0008
      284              0.0040          0.0033              0.0008
      285              0.0040          0.0033              0.0008
      286              0.0040          0.0032              0.0007
      287              0.0040          0.0032              0.0007
      288              0.0039          0.0032              0.0007
      ------------------------------------------------------------------------
      ------------------------------------------------------------------------
      Total soil rain loss =      2.02(In)
      Total effective rainfall =      1.01(In)
      Peak flow rate in flood hydrograph =     26.12(CFS)
      ------------------------------------------------------------------------
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          24 - H O U R    S T O R M
                     R u n o f f      H y d r o g r a p h
      ------------------------------------------------------------------------
                  Hydrograph in   5   Minute intervals ((CFS))

      ------------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0        7.5      15.0      22.5      30.0
------------------------------------------------------------------------
  0+ 5       0.0000      0.01  Q         |         |         |         |
  0+10       0.0002      0.03  Q         |         |         |         |
  0+15       0.0008      0.08  Q         |         |         |         |
  0+20       0.0016      0.12  Q         |         |         |         |
  0+25       0.0026      0.14  Q         |         |         |         |
  0+30       0.0036      0.15  Q         |         |         |         |
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0+35	0.0047	0.16	Q	|	|	|	|
0+40	0.0059	0.17	Q	|	|	|	|
0+45	0.0071	0.17	Q	|	|	|	|
0+50	0.0083	0.18	Q	|	|	|	|
0+55	0.0096	0.18	Q	|	|	|	|
1+ 0	0.0108	0.18	Q	|	|	|	|
1+ 5	0.0121	0.18	Q	|	|	|	|
1+10	0.0134	0.18	Q	|	|	|	|
1+15	0.0146	0.19	Q	|	|	|	|
1+20	0.0159	0.19	Q	|	|	|	|
1+25	0.0172	0.19	Q	|	|	|	|
1+30	0.0185	0.19	Q	|	|	|	|
1+35	0.0198	0.19	Q	|	|	|	|
1+40	0.0211	0.19	Q	|	|	|	|
1+45	0.0225	0.19	Q	|	|	|	|
1+50	0.0238	0.19	Q	|	|	|	|
1+55	0.0251	0.19	Q	|	|	|	|
2+ 0	0.0264	0.19	Q	|	|	|	|
2+ 5	0.0278	0.19	Q	|	|	|	|
2+10	0.0291	0.19	Q	|	|	|	|
2+15	0.0304	0.19	Q	|	|	|	|
2+20	0.0318	0.20	Q	|	|	|	|
2+25	0.0331	0.20	Q	|	|	|	|
2+30	0.0345	0.20	Q	|	|	|	|
2+35	0.0359	0.20	Q	|	|	|	|
2+40	0.0372	0.20	Q	|	|	|	|
2+45	0.0386	0.20	Q	|	|	|	|
2+50	0.0400	0.20	Q	|	|	|	|
2+55	0.0414	0.20	Q	|	|	|	|
3+ 0	0.0427	0.20	Q	|	|	|	|
3+ 5	0.0441	0.20	QV	|	|	|	|
3+10	0.0455	0.20	QV	|	|	|	|
3+15	0.0469	0.20	QV	|	|	|	|
3+20	0.0484	0.20	QV	|	|	|	|
3+25	0.0498	0.21	QV	|	|	|	|
3+30	0.0512	0.21	QV	|	|	|	|
3+35	0.0526	0.21	QV	|	|	|	|
3+40	0.0541	0.21	QV	|	|	|	|
3+45	0.0555	0.21	QV	|	|	|	|
3+50	0.0570	0.21	QV	|	|	|	|
3+55	0.0584	0.21	QV	|	|	|	|
4+ 0	0.0599	0.21	QV	|	|	|	|
4+ 5	0.0613	0.21	QV	|	|	|	|
4+10	0.0628	0.21	QV	|	|	|	|
4+15	0.0643	0.21	QV	|	|	|	|
4+20	0.0658	0.22	QV	|	|	|	|
4+25	0.0673	0.22	QV	|	|	|	|
4+30	0.0688	0.22	QV	|	|	|	|
4+35	0.0703	0.22	QV	|	|	|	|
4+40	0.0718	0.22	QV	|	|	|	|
4+45	0.0733	0.22	QV	|	|	|	|
4+50	0.0748	0.22	QV	|	|	|	|
4+55	0.0763	0.22	QV	|	|	|	|
5+ 0	0.0779	0.22	QV	|	|	|	|
5+ 5	0.0794	0.22	QV	|	|	|	|
5+10	0.0810	0.23	QV	|	|	|	|
5+15	0.0825	0.23	QV	|	|	|	|
5+20	0.0841	0.23	QV	|	|	|	|
5+25	0.0857	0.23	QV	|	|	|	|
5+30	0.0873	0.23	Q V	|	|	|	|
5+35	0.0889	0.23	Q V	|	|	|	|
5+40	0.0905	0.23	Q V	|	|	|	|
5+45	0.0921	0.23	Q V	|	|	|	|
5+50	0.0937	0.23	Q V	|	|	|	|
5+55	0.0953	0.24	Q V	|	|	|	|
6+ 0	0.0969	0.24	Q V	|	|	|	|
6+ 5	0.0986	0.24	Q V	|	|	|	|
6+10	0.1002	0.24	Q V	|	|	|	|
6+15	0.1019	0.24	Q V	|	|	|	|
6+20	0.1035	0.24	Q V	|	|	|	|
6+25	0.1052	0.24	Q V	|	|	|	|

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 6+30      0.1069      0.24  Q V      |         |         |         |
 6+35      0.1086      0.25  Q V      |         |         |         |
 6+40      0.1103      0.25  Q V      |         |         |         |
 6+45      0.1120      0.25  Q V      |         |         |         |
 6+50      0.1137      0.25  Q V      |         |         |         |
 6+55      0.1154      0.25  Q V      |         |         |         |
 7+ 0      0.1172      0.25  Q V      |         |         |         |
 7+ 5      0.1189      0.25  Q V      |         |         |         |
 7+10      0.1207      0.26  Q V      |         |         |         |
 7+15      0.1224      0.26  Q V      |         |         |         |
 7+20      0.1242      0.26  Q V      |         |         |         |
 7+25      0.1260      0.26  Q V      |         |         |         |
 7+30      0.1278      0.26  Q V      |         |         |         |
 7+35      0.1296      0.26  Q  V     |         |         |         |
 7+40      0.1314      0.26  Q  V     |         |         |         |
 7+45      0.1333      0.27  Q  V     |         |         |         |
 7+50      0.1351      0.27  Q  V     |         |         |         |
 7+55      0.1370      0.27  Q  V     |         |         |         |
 8+ 0      0.1388      0.27  Q  V     |         |         |         |
 8+ 5      0.1407      0.27  Q  V     |         |         |         |
 8+10      0.1426      0.27  Q  V     |         |         |         |
 8+15      0.1445      0.28  Q  V     |         |         |         |
 8+20      0.1464      0.28  Q  V     |         |         |         |
 8+25      0.1483      0.28  Q  V     |         |         |         |
 8+30      0.1503      0.28  Q  V     |         |         |         |
 8+35      0.1522      0.28  Q  V     |         |         |         |
 8+40      0.1542      0.29  Q  V     |         |         |         |
 8+45      0.1562      0.29  Q  V     |         |         |         |
 8+50      0.1582      0.29  Q  V     |         |         |         |
 8+55      0.1602      0.29  Q  V     |         |         |         |
 9+ 0      0.1622      0.29  Q  V     |         |         |         |
 9+ 5      0.1642      0.30  Q  V     |         |         |         |
 9+10      0.1663      0.30  Q  V     |         |         |         |
 9+15      0.1684      0.30  Q  V     |         |         |         |
 9+20      0.1704      0.30  Q  V     |         |         |         |
 9+25      0.1725      0.30  Q   V    |         |         |         |
 9+30      0.1747      0.31  Q   V    |         |         |         |
 9+35      0.1768      0.31  Q   V    |         |         |         |
 9+40      0.1789      0.31  Q   V    |         |         |         |
 9+45      0.1811      0.31  Q   V    |         |         |         |
 9+50      0.1833      0.32  Q   V    |         |         |         |
 9+55      0.1855      0.32  Q   V    |         |         |         |
10+ 0      0.1877      0.32  Q   V    |         |         |         |
10+ 5      0.1899      0.32  Q   V    |         |         |         |
10+10      0.1922      0.33  Q   V    |         |         |         |
10+15      0.1944      0.33  Q   V    |         |         |         |
10+20      0.1967      0.33  Q   V    |         |         |         |
10+25      0.1991      0.34  Q   V    |         |         |         |
10+30      0.2014      0.34  Q   V    |         |         |         |
10+35      0.2037      0.34  Q   V    |         |         |         |
10+40      0.2061      0.35  Q   V    |         |         |         |
10+45      0.2085      0.35  Q   V    |         |         |         |
10+50      0.2109      0.35  Q   V    |         |         |         |
10+55      0.2134      0.36  Q   V    |         |         |         |
11+ 0      0.2159      0.36  Q    V   |         |         |         |
11+ 5      0.2183      0.36  Q    V   |         |         |         |
11+10      0.2209      0.37  Q    V   |         |         |         |
11+15      0.2234      0.37  Q    V   |         |         |         |
11+20      0.2260      0.37  Q    V   |         |         |         |
11+25      0.2286      0.38  Q    V   |         |         |         |
11+30      0.2312      0.38  Q    V   |         |         |         |
11+35      0.2339      0.39  Q    V   |         |         |         |
11+40      0.2365      0.39  Q    V   |         |         |         |
11+45      0.2393      0.39  Q    V   |         |         |         |
11+50      0.2420      0.40  Q    V   |         |         |         |
11+55      0.2448      0.40  Q    V   |         |         |         |
12+ 0      0.2476      0.41  Q    V   |         |         |         |
12+ 5      0.2505      0.42  Q    V   |         |         |         |
12+10      0.2535      0.43  Q    V   |         |         |         |
12+15      0.2567      0.47  Q    V   |         |         |         |
12+20      0.2602      0.50  Q     V  |         |         |         |
```

```
12+25       0.2638      0.52  Q     V   |          |          |          |
12+30       0.2674      0.53  Q     V   |          |          |          |
12+35       0.2712      0.55  Q     V   |          |          |          |
12+40       0.2750      0.56  Q     V   |          |          |          |
12+45       0.2789      0.57  Q     V   |          |          |          |
12+50       0.2829      0.58  Q     V   |          |          |          |
12+55       0.2869      0.58  Q     V   |          |          |          |
13+ 0       0.2910      0.59  Q     V   |          |          |          |
13+ 5       0.2951      0.60  Q     V   |          |          |          |
13+10       0.2993      0.61  Q     V   |          |          |          |
13+15       0.3036      0.62  Q      V  |          |          |          |
13+20       0.3079      0.63  Q      V  |          |          |          |
13+25       0.3123      0.64  Q      V  |          |          |          |
13+30       0.3168      0.65  Q      V  |          |          |          |
13+35       0.3213      0.66  Q      V  |          |          |          |
13+40       0.3259      0.67  Q      V  |          |          |          |
13+45       0.3306      0.68  Q      V  |          |          |          |
13+50       0.3354      0.69  Q      V  |          |          |          |
13+55       0.3402      0.71  Q      V  |          |          |          |
14+ 0       0.3452      0.72  Q       V |          |          |          |
14+ 5       0.3502      0.73  Q       V |          |          |          |
14+10       0.3554      0.75  Q       V |          |          |          |
14+15       0.3607      0.77  |Q      V |          |          |          |
14+20       0.3661      0.79  |Q      V |          |          |          |
14+25       0.3716      0.81  |Q      V |          |          |          |
14+30       0.3773      0.83  |Q      V |          |          |          |
14+35       0.3832      0.85  |Q      V |          |          |          |
14+40       0.3892      0.87  |Q       V|          |          |          |
14+45       0.3953      0.89  |Q       V|          |          |          |
14+50       0.4017      0.92  |Q       V|          |          |          |
14+55       0.4082      0.95  |Q       V|          |          |          |
15+ 0       0.4152      1.01  |Q       V|          |          |          |
15+ 5       0.4229      1.12  |Q       V|          |          |          |
15+10       0.4317      1.28  |Q        V          |          |          |
15+15       0.4419      1.48  |Q        V          |          |          |
15+20       0.4537      1.71  | Q       V          |          |          |
15+25       0.4672      1.96  | Q       V          |          |          |
15+30       0.4821      2.17  | Q       |V         |          |          |
15+35       0.4975      2.24  | Q       |V         |          |          |
15+40       0.5143      2.44  |  Q      |V         |          |          |
15+45       0.5348      2.98  |  Q      | V        |          |          |
15+50       0.5611      3.81  |    Q    |  V       |          |          |
15+55       0.5975      5.29  |      Q  |  V       |          |          |
16+ 0       0.6477      7.29  |        Q|    V     |          |          |
16+ 5       0.7259     11.35  |         |    QV    |          |          |
16+10       0.8476     17.67  |         |        V|  Q       |          |
16+15       1.0275     26.12  |         |         |  V       |   Q      |
16+20       1.1755     21.48  |         |         |     VQ   |          |
16+25       1.2646     12.94  |         |      Q  |       V|           |
16+30       1.3289      9.34  |         | Q       |         V          |
16+35       1.3785      7.21  |        Q|         |          | V       |
16+40       1.4174      5.64  |      Q  |         |          |  V      |
16+45       1.4469      4.29  |    Q    |         |          |  V      |
16+50       1.4689      3.19  |   Q     |         |          |   V     |
16+55       1.4850      2.34  |  Q      |         |          |   V     |
17+ 0       1.4972      1.77  | Q       |         |          |   V     |
17+ 5       1.5075      1.51  | Q       |         |          |    V    |
17+10       1.5165      1.31  |Q        |         |          |    V    |
17+15       1.5247      1.18  |Q        |         |          |    V    |
17+20       1.5321      1.09  |Q        |         |          |    V    |
17+25       1.5387      0.95  |Q        |         |          |    V    |
17+30       1.5446      0.86  |Q        |         |          |     V   |
17+35       1.5497      0.74  Q         |         |          |     V   |
17+40       1.5545      0.70  Q         |         |          |     V   |
17+45       1.5592      0.67  Q         |         |          |     V   |
17+50       1.5636      0.65  Q         |         |          |     V   |
17+55       1.5679      0.62  Q         |         |          |     V   |
18+ 0       1.5721      0.61  Q         |         |          |     V   |
18+ 5       1.5761      0.59  Q         |         |          |     V   |
18+10       1.5800      0.56  Q         |         |          |     V   |
18+15       1.5835      0.51  Q         |         |          |     V   |
```

18+20	1.5867	0.47	Q	|	|	|	V |
18+25	1.5898	0.45	Q	|	|	|	V |
18+30	1.5928	0.43	Q	|	|	|	V |
18+35	1.5957	0.42	Q	|	|	|	V |
18+40	1.5985	0.40	Q	|	|	|	V |
18+45	1.6012	0.39	Q	|	|	|	V |
18+50	1.6038	0.38	Q	|	|	|	V |
18+55	1.6063	0.37	Q	|	|	|	V |
19+ 0	1.6088	0.36	Q	|	|	|	V |
19+ 5	1.6113	0.36	Q	|	|	|	V |
19+10	1.6137	0.35	Q	|	|	|	V |
19+15	1.6161	0.34	Q	|	|	|	V |
19+20	1.6184	0.34	Q	|	|	|	V |
19+25	1.6207	0.33	Q	|	|	|	V |
19+30	1.6229	0.32	Q	|	|	|	V |
19+35	1.6251	0.32	Q	|	|	|	V |
19+40	1.6272	0.31	Q	|	|	|	V |
19+45	1.6294	0.31	Q	|	|	|	V |
19+50	1.6315	0.30	Q	|	|	|	V |
19+55	1.6335	0.30	Q	|	|	|	V |
20+ 0	1.6356	0.30	Q	|	|	|	V |
20+ 5	1.6376	0.29	Q	|	|	|	V |
20+10	1.6396	0.29	Q	|	|	|	V |
20+15	1.6415	0.28	Q	|	|	|	V |
20+20	1.6434	0.28	Q	|	|	|	V |
20+25	1.6453	0.28	Q	|	|	|	V |
20+30	1.6472	0.27	Q	|	|	|	V |
20+35	1.6491	0.27	Q	|	|	|	V |
20+40	1.6509	0.27	Q	|	|	|	V |
20+45	1.6527	0.26	Q	|	|	|	V |
20+50	1.6545	0.26	Q	|	|	|	V |
20+55	1.6563	0.26	Q	|	|	|	V |
21+ 0	1.6580	0.25	Q	|	|	|	V |
21+ 5	1.6597	0.25	Q	|	|	|	V |
21+10	1.6614	0.25	Q	|	|	|	V |
21+15	1.6631	0.25	Q	|	|	|	V |
21+20	1.6648	0.24	Q	|	|	|	V |
21+25	1.6665	0.24	Q	|	|	|	V |
21+30	1.6681	0.24	Q	|	|	|	V |
21+35	1.6697	0.24	Q	|	|	|	V |
21+40	1.6713	0.23	Q	|	|	|	V |
21+45	1.6729	0.23	Q	|	|	|	V|
21+50	1.6745	0.23	Q	|	|	|	V|
21+55	1.6760	0.23	Q	|	|	|	V|
22+ 0	1.6776	0.22	Q	|	|	|	V|
22+ 5	1.6791	0.22	Q	|	|	|	V|
22+10	1.6806	0.22	Q	|	|	|	V|
22+15	1.6821	0.22	Q	|	|	|	V|
22+20	1.6836	0.22	Q	|	|	|	V|
22+25	1.6851	0.21	Q	|	|	|	V|
22+30	1.6866	0.21	Q	|	|	|	V|
22+35	1.6880	0.21	Q	|	|	|	V|
22+40	1.6895	0.21	Q	|	|	|	V|
22+45	1.6909	0.21	Q	|	|	|	V|
22+50	1.6923	0.21	Q	|	|	|	V|
22+55	1.6937	0.20	Q	|	|	|	V|
23+ 0	1.6951	0.20	Q	|	|	|	V|
23+ 5	1.6965	0.20	Q	|	|	|	V|
23+10	1.6979	0.20	Q	|	|	|	V|
23+15	1.6992	0.20	Q	|	|	|	V|
23+20	1.7006	0.20	Q	|	|	|	V|
23+25	1.7019	0.19	Q	|	|	|	V|
23+30	1.7033	0.19	Q	|	|	|	V|
23+35	1.7046	0.19	Q	|	|	|	V|
23+40	1.7059	0.19	Q	|	|	|	V|
23+45	1.7072	0.19	Q	|	|	|	V|
23+50	1.7085	0.19	Q	|	|	|	V|
23+55	1.7098	0.19	Q	|	|	|	V|
24+ 0	1.7110	0.19	Q	|	|	|	V|
24+ 5	1.7123	0.18	Q	|	|	|	V|
24+10	1.7134	0.16	Q	|	|	|	V|

```
   24+15       1.7141      0.10  Q         |         |         |         V|
   24+20       1.7145      0.06  Q         |         |         |         V|
   24+25       1.7148      0.04  Q         |         |         |         V|
   24+30       1.7150      0.03  Q         |         |         |         V|
   24+35       1.7151      0.02  Q         |         |         |         V|
   24+40       1.7152      0.01  Q         |         |         |         V|
   24+45       1.7153      0.01  Q         |         |         |         V|
   24+50       1.7153      0.01  Q         |         |         |         V|
   24+55       1.7153      0.00  Q         |         |         |         V|
   25+ 0       1.7153      0.00  Q         |         |         |         V|
   25+ 5       1.7153      0.00  Q         |         |         |         V|
   25+10       1.7154      0.00  Q         |         |         |         V|
   25+15       1.7154      0.00  Q         |         |         |         V|
   25+20       1.7154      0.00  Q         |         |         |         V|
   25+25       1.7154      0.00  Q         |         |         |          V
------------------------------------------------------------------------
```

- 25 Year 3 Hour Pre-Development Unit Hydrograph – Area 'D'

```
        U n i t   H y d r o g r a p h   A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989-2012, Version 7.2

        Study date  10/10/16   File Name EXD02503.out


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'D' - 25 YEAR 3 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

        Storm Event Year = 25

        Antecedent Moisture Condition = 2

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 82.3       6.8          0.33     C     0.250     1.000    0.250
 82.3      13.5          0.67     D     0.200     1.000    0.200

Area-averaged adjusted loss rate Fm (In/Hr) =  0.217

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC2)          Yield Fr
     6.77   0.333         82.3      82.3       2.15     0.591

    13.54   0.667         82.3      82.3       2.15     0.591

Area-averaged catchment yield fraction, Y =  0.591
Area-averaged low loss fraction, Yb =  0.409
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.256 (hours)
Watershed area =      20.31(Ac.)
Catchment Lag time =   0.205 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 40.6901
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.217(In/Hr)
Average low loss rate fraction (Yb) = 0.409 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.400(In)
Computed peak 30-minute rainfall =  0.870(In)
Specified peak 1-hour rainfall =  1.150(In)
Computed peak 3-hour rainfall =  1.940(In)
Specified peak 6-hour rainfall =  2.710(In)
Specified peak 24-hour rainfall =  4.490(In)


Rainfall depth area reduction factors:
Using a total area of      20.31(Ac.) (Ref: fig. E-4)
```

```
5-minute factor = 0.999     Adjusted rainfall =  0.400(In)
30-minute factor = 0.999    Adjusted rainfall =  0.869(In)
1-hour factor = 0.999       Adjusted rainfall =  1.149(In)
3-hour factor = 1.000       Adjusted rainfall =  1.940(In)
6-hour factor = 1.000       Adjusted rainfall =  2.710(In)
24-hour factor = 1.000 Adjusted rainfall =  4.490(In)
--------------------------------------------------------------------

                     U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------
               (K =       245.62 (CFS))

  1                3.208                   7.879
  2               15.385                  29.910
  3               47.677                  79.317
  4               69.357                  53.249
  5               79.190                  24.153
  6               85.719                  16.036
  7               90.361                  11.404
  8               93.686                   8.166
  9               95.976                   5.624
 10               97.503                   3.751
 11               98.227                   1.779
 12               98.679                   1.111
 13               99.045                   0.898
 14               99.305                   0.640
 15               99.615                   0.760
 16               99.823                   0.511
 17               99.943                   0.295
 18              100.000                   0.141
--------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.3996              0.3996
  2              0.5398              0.1401
  3              0.6435              0.1038
  4              0.7290              0.0855
  5              0.8031              0.0741
  6              0.8692              0.0661
  7              0.9248              0.0556
  8              0.9759              0.0511
  9              1.0233              0.0474
 10              1.0676              0.0443
 11              1.1094              0.0418
 12              1.1489              0.0395
 13              1.1936              0.0447
 14              1.2365              0.0429
 15              1.2779              0.0413
 16              1.3178              0.0399
 17              1.3564              0.0386
 18              1.3939              0.0375
 19              1.4303              0.0364
 20              1.4657              0.0354
 21              1.5002              0.0345
 22              1.5339              0.0336
 23              1.5667              0.0329
 24              1.5988              0.0321
 25              1.6302              0.0314
 26              1.6610              0.0308
 27              1.6912              0.0302
 28              1.7207              0.0296
 29              1.7498              0.0290
 30              1.7783              0.0285
 31              1.8063              0.0280
 32              1.8338              0.0275
 33              1.8609              0.0271
 34              1.8876              0.0267
```

```
 35              1.9139              0.0263
 36              1.9398              0.0259
-------------------------------------------------------------------
Unit              Unit            Unit              Effective
Period            Rainfall        Soil-Loss         Rainfall
(number)            (In)          (In)                (In)
-------------------------------------------------------------------
  1               0.0259          0.0106              0.0153
  2               0.0263          0.0107              0.0155
  3               0.0271          0.0111              0.0160
  4               0.0275          0.0113              0.0163
  5               0.0285          0.0117              0.0169
  6               0.0290          0.0119              0.0172
  7               0.0302          0.0123              0.0178
  8               0.0308          0.0126              0.0182
  9               0.0321          0.0131              0.0190
 10               0.0329          0.0134              0.0194
 11               0.0345          0.0141              0.0204
 12               0.0354          0.0145              0.0209
 13               0.0375          0.0153              0.0221
 14               0.0386          0.0158              0.0228
 15               0.0413          0.0169              0.0244
 16               0.0429          0.0176              0.0254
 17               0.0395          0.0162              0.0234
 18               0.0418          0.0171              0.0247
 19               0.0474          0.0181              0.0293
 20               0.0511          0.0181              0.0330
 21               0.0661          0.0181              0.0480
 22               0.0741          0.0181              0.0560
 23               0.1038          0.0181              0.0857
 24               0.1401          0.0181              0.1221
 25               0.3996          0.0181              0.3816
 26               0.0855          0.0181              0.0675
 27               0.0556          0.0181              0.0376
 28               0.0443          0.0181              0.0263
 29               0.0447          0.0181              0.0266
 30               0.0399          0.0163              0.0236
 31               0.0364          0.0149              0.0215
 32               0.0336          0.0138              0.0199
 33               0.0314          0.0128              0.0186
 34               0.0296          0.0121              0.0175
 35               0.0280          0.0115              0.0166
 36               0.0267          0.0109              0.0158
-------------------------------------------------------------------
-------------------------------------------------------------------
Total soil rain loss =      0.54(In)
Total effective rainfall =      1.40(In)
Peak flow rate in flood hydrograph =     43.26(CFS)
-------------------------------------------------------------------
+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                    3 - H O U R    S T O R M
                R u n o f f      H y d r o g r a p h
-------------------------------------------------------------------
            Hydrograph in   5   Minute intervals ((CFS))

-------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0       12.5      25.0      37.5      50.0
-------------------------------------------------------------------
  0+ 5       0.0008      0.12  Q         |         |         |         |
  0+10       0.0048      0.58  Q         |         |         |         |
  0+15       0.0172      1.80  VQ        |         |         |         |
  0+20       0.0355      2.65  V Q       |         |         |         |
  0+25       0.0568      3.09  V Q       |         |         |         |
  0+30       0.0802      3.40  |VQ       |         |         |         |
  0+35       0.1055      3.67  |VQ       |         |         |         |
  0+40       0.1323      3.89  | VQ      |         |         |         |
  0+45       0.1604      4.08  | VQ      |         |         |         |
  0+50       0.1897      4.26  |  Q      |         |         |         |
  0+55       0.2202      4.42  |  Q      |         |         |         |
  1+ 0       0.2517      4.58  |  QV     |         |         |         |
  1+ 5       0.2845      4.76  |  QV     |         |         |         |
```

```
   1+10       0.3185      4.94  |  Q V    |         |         |         |
   1+15       0.3541      5.16  |   QV    |         |         |         |
   1+20       0.3913      5.39  |   Q V   |         |         |         |
   1+25       0.4301      5.64  |   Q  V  |         |         |         |
   1+30       0.4701      5.81  |   Q  V  |         |         |         |
   1+35       0.5104      5.85  |   Q   V |         |         |         |
   1+40       0.5523      6.09  |   Q    V|         |         |         |
   1+45       0.5989      6.76  |    Q   V         |         |         |
   1+50       0.6529      7.85  |     Q  |V        |         |         |
   1+55       0.7207      9.84  |      Q | V       |         |         |
   2+ 0       0.8077     12.63  |        Q  V      |         |         |
   2+ 5       0.9388     19.03  |         |   Q    |         |         |
   2+10       1.1405     29.30  |         |       V|  Q      |         |
   2+15       1.4385     43.26  |         |        |   V     |   Q     |
   2+20       1.6644     32.79  |         |        |     Q V |         |
   2+25       1.8071     20.73  |         |    Q   |        V         |
   2+30       1.9144     15.57  |         | Q      |         | V       |
   2+35       2.0013     12.62  |         Q        |         |  V      |
   2+40       2.0734     10.46  |       Q |        |         |   V     |
   2+45       2.1331      8.68  |     Q   |        |         |    V    |
   2+50       2.1832      7.27  |    Q    |        |         |     V   |
   2+55       2.2249      6.06  |   Q     |        |         |      V  |
   3+ 0       2.2620      5.39  |   Q     |        |         |       V |
   3+ 5       2.2954      4.85  |  Q      |        |         |       V |
   3+10       2.3232      4.04  |  Q      |        |         |        V|
   3+15       2.3414      2.64  | Q       |        |         |        V|
   3+20       2.3525      1.60  |Q        |        |         |        V|
   3+25       2.3598      1.06  Q         |        |         |        V|
   3+30       2.3646      0.69  Q         |        |         |        V|
   3+35       2.3675      0.43  Q         |        |         |        V|
   3+40       2.3694      0.28  Q         |        |         |        V|
   3+45       2.3707      0.18  Q         |        |         |        V|
   3+50       2.3714      0.11  Q         |        |         |        V|
   3+55       2.3720      0.08  Q         |        |         |        V|
   4+ 0       2.3724      0.06  Q         |        |         |        V|
   4+ 5       2.3726      0.04  Q         |        |         |        V|
   4+10       2.3728      0.03  Q         |        |         |        V|
   4+15       2.3729      0.02  Q         |        |         |        V|
   4+20       2.3730      0.01  Q         |        |         |        V|
   4+25       2.3730      0.00  Q         |        |         |         V
-------------------------------------------------------------------------
```

- 25 Year 6 Hour Pre-Development Unit Hydrograph – Area 'D'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/10/16   File Name EXD02506.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'D' - 25 YEAR 6 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 25

       Antecedent Moisture Condition = 2

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 82.3       6.8          0.33     C     0.250     1.000    0.250
 82.3      13.5          0.67     D     0.200     1.000    0.200

Area-averaged adjusted loss rate Fm (In/Hr) =  0.217

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC2)          Yield Fr
     6.77   0.333         82.3      82.3       2.15     0.591

    13.54   0.667         82.3      82.3       2.15     0.591

Area-averaged catchment yield fraction, Y =  0.591
Area-averaged low loss fraction, Yb =  0.409
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.256 (hours)
Watershed area =      20.31(Ac.)
Catchment Lag time =   0.205 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 40.6901
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.217(In/Hr)
Average low loss rate fraction (Yb) = 0.409 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.400(In)
Computed peak 30-minute rainfall =  0.870(In)
Specified peak 1-hour rainfall =  1.150(In)
Computed peak 3-hour rainfall =  1.940(In)
Specified peak 6-hour rainfall =  2.710(In)
Specified peak 24-hour rainfall =  4.490(In)


Rainfall depth area reduction factors:
Using a total area of      20.31(Ac.) (Ref: fig. E-4)
```

```
5-minute factor = 0.999     Adjusted rainfall =  0.400(In)
30-minute factor = 0.999    Adjusted rainfall =  0.869(In)
1-hour factor = 0.999       Adjusted rainfall =  1.149(In)
3-hour factor = 1.000       Adjusted rainfall =  1.940(In)
6-hour factor = 1.000       Adjusted rainfall =  2.710(In)
24-hour factor = 1.000 Adjusted rainfall =  4.490(In)
--------------------------------------------------------------------

                     U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------
               (K =       245.62 (CFS))

  1                3.208                   7.879
  2               15.385                  29.910
  3               47.677                  79.317
  4               69.357                  53.249
  5               79.190                  24.153
  6               85.719                  16.036
  7               90.361                  11.404
  8               93.686                   8.166
  9               95.976                   5.624
 10               97.503                   3.751
 11               98.227                   1.779
 12               98.679                   1.111
 13               99.045                   0.898
 14               99.305                   0.640
 15               99.615                   0.760
 16               99.823                   0.511
 17               99.943                   0.295
 18              100.000                   0.141
--------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.3996              0.3996
  2              0.5398              0.1401
  3              0.6435              0.1038
  4              0.7290              0.0855
  5              0.8031              0.0741
  6              0.8692              0.0661
  7              0.9248              0.0556
  8              0.9759              0.0511
  9              1.0233              0.0474
 10              1.0676              0.0443
 11              1.1094              0.0418
 12              1.1489              0.0395
 13              1.1936              0.0447
 14              1.2365              0.0429
 15              1.2779              0.0413
 16              1.3178              0.0399
 17              1.3564              0.0386
 18              1.3939              0.0375
 19              1.4303              0.0364
 20              1.4657              0.0354
 21              1.5002              0.0345
 22              1.5339              0.0336
 23              1.5667              0.0329
 24              1.5988              0.0321
 25              1.6302              0.0314
 26              1.6610              0.0308
 27              1.6912              0.0302
 28              1.7207              0.0296
 29              1.7498              0.0290
 30              1.7783              0.0285
 31              1.8063              0.0280
 32              1.8338              0.0275
 33              1.8609              0.0271
 34              1.8876              0.0267
```

35	1.9139	0.0263
36	1.9398	0.0259
37	1.9656	0.0258
38	1.9910	0.0254
39	2.0161	0.0251
40	2.0409	0.0248
41	2.0653	0.0245
42	2.0895	0.0241
43	2.1133	0.0238
44	2.1369	0.0236
45	2.1602	0.0233
46	2.1832	0.0230
47	2.2060	0.0228
48	2.2285	0.0225
49	2.2508	0.0223
50	2.2728	0.0220
51	2.2946	0.0218
52	2.3162	0.0216
53	2.3376	0.0214
54	2.3587	0.0212
55	2.3797	0.0210
56	2.4005	0.0208
57	2.4211	0.0206
58	2.4415	0.0204
59	2.4617	0.0202
60	2.4817	0.0200
61	2.5016	0.0199
62	2.5213	0.0197
63	2.5408	0.0195
64	2.5602	0.0194
65	2.5794	0.0192
66	2.5985	0.0191
67	2.6174	0.0189
68	2.6361	0.0188
69	2.6548	0.0186
70	2.6733	0.0185
71	2.6916	0.0184
72	2.7098	0.0182

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0182	0.0074	0.0108
2	0.0184	0.0075	0.0108
3	0.0186	0.0076	0.0110
4	0.0188	0.0077	0.0111
5	0.0191	0.0078	0.0113
6	0.0192	0.0079	0.0114
7	0.0195	0.0080	0.0115
8	0.0197	0.0081	0.0116
9	0.0200	0.0082	0.0118
10	0.0202	0.0083	0.0119
11	0.0206	0.0084	0.0122
12	0.0208	0.0085	0.0123
13	0.0212	0.0087	0.0125
14	0.0214	0.0087	0.0126
15	0.0218	0.0089	0.0129
16	0.0220	0.0090	0.0130
17	0.0225	0.0092	0.0133
18	0.0228	0.0093	0.0135
19	0.0233	0.0095	0.0138
20	0.0236	0.0096	0.0139
21	0.0241	0.0099	0.0143
22	0.0245	0.0100	0.0145
23	0.0251	0.0103	0.0148
24	0.0254	0.0104	0.0150
25	0.0259	0.0106	0.0153
26	0.0263	0.0107	0.0155
27	0.0271	0.0111	0.0160
28	0.0275	0.0113	0.0163

```
       29              0.0285          0.0117              0.0169
       30              0.0290          0.0119              0.0172
       31              0.0302          0.0123              0.0178
       32              0.0308          0.0126              0.0182
       33              0.0321          0.0131              0.0190
       34              0.0329          0.0134              0.0194
       35              0.0345          0.0141              0.0204
       36              0.0354          0.0145              0.0209
       37              0.0375          0.0153              0.0221
       38              0.0386          0.0158              0.0228
       39              0.0413          0.0169              0.0244
       40              0.0429          0.0176              0.0254
       41              0.0395          0.0162              0.0234
       42              0.0418          0.0171              0.0247
       43              0.0474          0.0181              0.0293
       44              0.0511          0.0181              0.0330
       45              0.0661          0.0181              0.0480
       46              0.0741          0.0181              0.0560
       47              0.1038          0.0181              0.0857
       48              0.1401          0.0181              0.1221
       49              0.3996          0.0181              0.3816
       50              0.0855          0.0181              0.0675
       51              0.0556          0.0181              0.0376
       52              0.0443          0.0181              0.0263
       53              0.0447          0.0181              0.0266
       54              0.0399          0.0163              0.0236
       55              0.0364          0.0149              0.0215
       56              0.0336          0.0138              0.0199
       57              0.0314          0.0128              0.0186
       58              0.0296          0.0121              0.0175
       59              0.0280          0.0115              0.0166
       60              0.0267          0.0109              0.0158
       61              0.0258          0.0106              0.0153
       62              0.0248          0.0101              0.0146
       63              0.0238          0.0098              0.0141
       64              0.0230          0.0094              0.0136
       65              0.0223          0.0091              0.0132
       66              0.0216          0.0088              0.0128
       67              0.0210          0.0086              0.0124
       68              0.0204          0.0083              0.0121
       69              0.0199          0.0081              0.0117
       70              0.0194          0.0079              0.0115
       71              0.0189          0.0077              0.0112
       72              0.0185          0.0076              0.0109
     ------------------------------------------------------------------------
     ------------------------------------------------------------------------
     Total soil rain loss =      0.85(In)
     Total effective rainfall =      1.86(In)
     Peak flow rate in flood hydrograph =     43.26(CFS)
     ------------------------------------------------------------------------
     ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                        6 - H O U R    S T O R M
                   R u n o f f      H y d r o g r a p h
     ------------------------------------------------------------------
                Hydrograph in   5   Minute intervals ((CFS))

     ------------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0       12.5      25.0      37.5      50.0
-------------------------------------------------------------------------
  0+ 5       0.0006      0.08  Q         |         |         |         |
  0+10       0.0034      0.41  Q         |         |         |         |
  0+15       0.0121      1.27  VQ        |         |         |         |
  0+20       0.0249      1.85  VQ        |         |         |         |
  0+25       0.0395      2.13  VQ        |         |         |         |
  0+30       0.0556      2.33  VQ        |         |         |         |
  0+35       0.0726      2.48  VQ        |         |         |         |
  0+40       0.0905      2.59  |VQ       |         |         |         |
  0+45       0.1090      2.69  |VQ       |         |         |         |
  0+50       0.1280      2.76  |VQ       |         |         |         |
  0+55       0.1474      2.81  |VQ       |         |         |         |
  1+ 0       0.1671      2.86  | Q       |         |         |         |
```

```
1+ 5       0.1871      2.91  | Q       |         |         |         |
1+10       0.2075      2.96  | Q       |         |         |         |
1+15       0.2282      3.01  | Q       |         |         |         |
1+20       0.2492      3.05  | QV      |         |         |         |
1+25       0.2706      3.10  | QV      |         |         |         |
1+30       0.2923      3.15  | QV      |         |         |         |
1+35       0.3143      3.20  | Q V     |         |         |         |
1+40       0.3367      3.25  | Q V     |         |         |         |
1+45       0.3595      3.31  | Q V     |         |         |         |
1+50       0.3827      3.36  | Q V     |         |         |         |
1+55       0.4062      3.42  | Q  V    |         |         |         |
2+ 0       0.4302      3.48  | Q  V    |         |         |         |
2+ 5       0.4547      3.55  | Q  V    |         |         |         |
2+10       0.4796      3.62  | Q   V   |         |         |         |
2+15       0.5049      3.68  | Q   V   |         |         |         |
2+20       0.5307      3.75  | Q   V   |         |         |         |
2+25       0.5571      3.83  |  Q   V  |         |         |         |
2+30       0.5841      3.91  |  Q   V  |         |         |         |
2+35       0.6117      4.01  |  Q   V  |         |         |         |
2+40       0.6400      4.11  |  Q    V |         |         |         |
2+45       0.6691      4.23  |  Q    V |         |         |         |
2+50       0.6991      4.35  |  Q    V |         |         |         |
2+55       0.7300      4.49  |  Q     V|         |         |         |
3+ 0       0.7618      4.63  |  Q     V|         |         |         |
3+ 5       0.7949      4.79  |  Q      V         |         |         |
3+10       0.8291      4.97  |  Q      V         |         |         |
3+15       0.8648      5.18  |   Q     |V        |         |         |
3+20       0.9019      5.40  |   Q     |V        |         |         |
3+25       0.9408      5.64  |   Q     |V        |         |         |
3+30       0.9808      5.81  |   Q     | V       |         |         |
3+35       1.0210      5.85  |   Q     | V       |         |         |
3+40       1.0630      6.09  |   Q     |  V      |         |         |
3+45       1.1096      6.76  |    Q    |   V     |         |         |
3+50       1.1636      7.85  |     Q   |   V     |         |         |
3+55       1.2314      9.84  |      Q  |    V    |         |         |
4+ 0       1.3184     12.63  |         Q     V   |         |         |
4+ 5       1.4494     19.03  |         |    Q  V |         |         |
4+10       1.6512     29.30  |         |         |V Q      |         |
4+15       1.9492     43.26  |         |         |   V     |   Q     |
4+20       2.1751     32.79  |         |         |     QV  |         |
4+25       2.3178     20.73  |         |     Q   |        V|         |
4+30       2.4251     15.57  |         | Q       |         V         |
4+35       2.5120     12.62  |         Q         |         |V        |
4+40       2.5841     10.46  |       Q |         |         | V       |
4+45       2.6438      8.68  |     Q   |         |         |  V      |
4+50       2.6939      7.27  |    Q    |         |         |   V     |
4+55       2.7356      6.06  |   Q     |         |         |   V     |
5+ 0       2.7727      5.39  |   Q     |         |         |    V    |
5+ 5       2.8069      4.97  |  Q      |         |         |    V    |
5+10       2.8387      4.61  |  Q      |         |         |     V   |
5+15       2.8690      4.40  |  Q      |         |         |     V   |
5+20       2.8973      4.11  |  Q      |         |         |     V   |
5+25       2.9237      3.84  |  Q      |         |         |      V  |
5+30       2.9486      3.62  | Q       |         |         |      V  |
5+35       2.9722      3.43  | Q       |         |         |      V  |
5+40       2.9950      3.30  | Q       |         |         |       V |
5+45       3.0170      3.20  | Q       |         |         |       V |
5+50       3.0383      3.10  | Q       |         |         |       V |
5+55       3.0590      3.01  | Q       |         |         |       V |
6+ 0       3.0792      2.93  | Q       |         |         |        V|
6+ 5       3.0982      2.77  | Q       |         |         |        V|
6+10       3.1146      2.38  |Q        |         |         |        V|
6+15       3.1248      1.47  |Q        |         |         |        V|
6+20       3.1307      0.87  Q         |         |         |        V|
6+25       3.1348      0.59  Q         |         |         |        V|
6+30       3.1376      0.40  Q         |         |         |        V|
6+35       3.1394      0.27  Q         |         |         |        V|
6+40       3.1407      0.18  Q         |         |         |        V|
6+45       3.1415      0.11  Q         |         |         |        V|
6+50       3.1419      0.07  Q         |         |         |        V|
6+55       3.1423      0.05  Q         |         |         |        V|
```

```
    7+ 0       3.1425      0.04  Q         |         |         |        V|
    7+ 5       3.1427      0.03  Q         |         |         |        V|
    7+10       3.1429      0.02  Q         |         |         |        V|
    7+15       3.1429      0.01  Q         |         |         |        V|
    7+20       3.1430      0.00  Q         |         |         |        V|
    7+25       3.1430      0.00  Q         |         |         |         V
--------------------------------------------------------------------------
```

- 25 Year 12 Hour Pre-Development Unit Hydrograph – Area 'D'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/10/16   File Name EXD02512.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'D' - 25 YEAR 12 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 25

       Antecedent Moisture Condition = 2

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 82.3       6.8          0.33     C     0.250     1.000    0.250
 82.3      13.5          0.67     D     0.200     1.000    0.200

Area-averaged adjusted loss rate Fm (In/Hr) =  0.217

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC2)          Yield Fr
     6.77   0.333         82.3      82.3       2.15     0.591

    13.54   0.667         82.3      82.3       2.15     0.591

Area-averaged catchment yield fraction, Y =  0.591
Area-averaged low loss fraction, Yb =  0.409
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.256 (hours)
Watershed area =      20.31(Ac.)
Catchment Lag time =   0.205 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 40.6901
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.217(In/Hr)
Average low loss rate fraction (Yb) = 0.409 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.400(In)
Computed peak 30-minute rainfall =  0.870(In)
Specified peak 1-hour rainfall =  1.150(In)
Computed peak 3-hour rainfall =  1.940(In)
Specified peak 6-hour rainfall =  2.710(In)
Specified peak 24-hour rainfall =  4.490(In)


Rainfall depth area reduction factors:
Using a total area of      20.31(Ac.) (Ref: fig. E-4)
```

```
5-minute factor = 0.999     Adjusted rainfall =  0.400(In)
30-minute factor = 0.999    Adjusted rainfall =  0.869(In)
1-hour factor = 0.999       Adjusted rainfall =  1.149(In)
3-hour factor = 1.000       Adjusted rainfall =  1.940(In)
6-hour factor = 1.000       Adjusted rainfall =  2.710(In)
24-hour factor = 1.000 Adjusted rainfall =  4.490(In)
--------------------------------------------------------------------

                     U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------
               (K =       245.62 (CFS))

  1                3.208                   7.879
  2               15.385                  29.910
  3               47.677                  79.317
  4               69.357                  53.249
  5               79.190                  24.153
  6               85.719                  16.036
  7               90.361                  11.404
  8               93.686                   8.166
  9               95.976                   5.624
 10               97.503                   3.751
 11               98.227                   1.779
 12               98.679                   1.111
 13               99.045                   0.898
 14               99.305                   0.640
 15               99.615                   0.760
 16               99.823                   0.511
 17               99.943                   0.295
 18              100.000                   0.141
--------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.3996              0.3996
  2              0.5398              0.1401
  3              0.6435              0.1038
  4              0.7290              0.0855
  5              0.8031              0.0741
  6              0.8692              0.0661
  7              0.9248              0.0556
  8              0.9759              0.0511
  9              1.0233              0.0474
 10              1.0676              0.0443
 11              1.1094              0.0418
 12              1.1489              0.0395
 13              1.1936              0.0447
 14              1.2365              0.0429
 15              1.2779              0.0413
 16              1.3178              0.0399
 17              1.3564              0.0386
 18              1.3939              0.0375
 19              1.4303              0.0364
 20              1.4657              0.0354
 21              1.5002              0.0345
 22              1.5339              0.0336
 23              1.5667              0.0329
 24              1.5988              0.0321
 25              1.6302              0.0314
 26              1.6610              0.0308
 27              1.6912              0.0302
 28              1.7207              0.0296
 29              1.7498              0.0290
 30              1.7783              0.0285
 31              1.8063              0.0280
 32              1.8338              0.0275
 33              1.8609              0.0271
 34              1.8876              0.0267
```

35	1.9139	0.0263
36	1.9398	0.0259
37	1.9656	0.0258
38	1.9910	0.0254
39	2.0161	0.0251
40	2.0409	0.0248
41	2.0653	0.0245
42	2.0895	0.0241
43	2.1133	0.0238
44	2.1369	0.0236
45	2.1602	0.0233
46	2.1832	0.0230
47	2.2060	0.0228
48	2.2285	0.0225
49	2.2508	0.0223
50	2.2728	0.0220
51	2.2946	0.0218
52	2.3162	0.0216
53	2.3376	0.0214
54	2.3587	0.0212
55	2.3797	0.0210
56	2.4005	0.0208
57	2.4211	0.0206
58	2.4415	0.0204
59	2.4617	0.0202
60	2.4817	0.0200
61	2.5016	0.0199
62	2.5213	0.0197
63	2.5408	0.0195
64	2.5602	0.0194
65	2.5794	0.0192
66	2.5985	0.0191
67	2.6174	0.0189
68	2.6361	0.0188
69	2.6548	0.0186
70	2.6733	0.0185
71	2.6916	0.0184
72	2.7098	0.0182
73	2.7235	0.0136
74	2.7370	0.0135
75	2.7504	0.0134
76	2.7637	0.0133
77	2.7769	0.0132
78	2.7900	0.0131
79	2.8030	0.0130
80	2.8158	0.0129
81	2.8286	0.0128
82	2.8413	0.0127
83	2.8539	0.0126
84	2.8663	0.0125
85	2.8787	0.0124
86	2.8910	0.0123
87	2.9032	0.0122
88	2.9153	0.0121
89	2.9273	0.0120
90	2.9393	0.0119
91	2.9511	0.0119
92	2.9629	0.0118
93	2.9746	0.0117
94	2.9862	0.0116
95	2.9977	0.0115
96	3.0092	0.0115
97	3.0206	0.0114
98	3.0319	0.0113
99	3.0431	0.0112
100	3.0543	0.0112
101	3.0654	0.0111
102	3.0764	0.0110
103	3.0873	0.0110
104	3.0982	0.0109
105	3.1090	0.0108

106	3.1198	0.0108
107	3.1305	0.0107
108	3.1411	0.0106
109	3.1517	0.0106
110	3.1622	0.0105
111	3.1726	0.0104
112	3.1830	0.0104
113	3.1933	0.0103
114	3.2036	0.0103
115	3.2138	0.0102
116	3.2239	0.0102
117	3.2340	0.0101
118	3.2441	0.0100
119	3.2540	0.0100
120	3.2640	0.0099
121	3.2739	0.0099
122	3.2837	0.0098
123	3.2935	0.0098
124	3.3032	0.0097
125	3.3129	0.0097
126	3.3225	0.0096
127	3.3321	0.0096
128	3.3416	0.0095
129	3.3511	0.0095
130	3.3605	0.0094
131	3.3699	0.0094
132	3.3793	0.0093
133	3.3886	0.0093
134	3.3978	0.0093
135	3.4071	0.0092
136	3.4162	0.0092
137	3.4254	0.0091
138	3.4344	0.0091
139	3.4435	0.0090
140	3.4525	0.0090
141	3.4615	0.0090
142	3.4704	0.0089
143	3.4793	0.0089
144	3.4881	0.0088

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0088	0.0036	0.0052
2	0.0089	0.0036	0.0052
3	0.0090	0.0037	0.0053
4	0.0090	0.0037	0.0053
5	0.0091	0.0037	0.0054
6	0.0091	0.0037	0.0054
7	0.0092	0.0038	0.0054
8	0.0093	0.0038	0.0055
9	0.0093	0.0038	0.0055
10	0.0094	0.0038	0.0056
11	0.0095	0.0039	0.0056
12	0.0095	0.0039	0.0056
13	0.0096	0.0039	0.0057
14	0.0097	0.0040	0.0057
15	0.0098	0.0040	0.0058
16	0.0098	0.0040	0.0058
17	0.0099	0.0041	0.0059
18	0.0100	0.0041	0.0059
19	0.0101	0.0041	0.0060
20	0.0102	0.0042	0.0060
21	0.0103	0.0042	0.0061
22	0.0103	0.0042	0.0061
23	0.0104	0.0043	0.0062
24	0.0105	0.0043	0.0062
25	0.0106	0.0043	0.0063
26	0.0107	0.0044	0.0063
27	0.0108	0.0044	0.0064

28	0.0109	0.0045	0.0064
29	0.0110	0.0045	0.0065
30	0.0111	0.0045	0.0066
31	0.0112	0.0046	0.0066
32	0.0113	0.0046	0.0067
33	0.0115	0.0047	0.0068
34	0.0115	0.0047	0.0068
35	0.0117	0.0048	0.0069
36	0.0118	0.0048	0.0070
37	0.0119	0.0049	0.0071
38	0.0120	0.0049	0.0071
39	0.0122	0.0050	0.0072
40	0.0123	0.0050	0.0073
41	0.0125	0.0051	0.0074
42	0.0126	0.0051	0.0074
43	0.0128	0.0052	0.0075
44	0.0129	0.0053	0.0076
45	0.0131	0.0053	0.0077
46	0.0132	0.0054	0.0078
47	0.0134	0.0055	0.0079
48	0.0135	0.0055	0.0080
49	0.0182	0.0074	0.0108
50	0.0184	0.0075	0.0108
51	0.0186	0.0076	0.0110
52	0.0188	0.0077	0.0111
53	0.0191	0.0078	0.0113
54	0.0192	0.0079	0.0114
55	0.0195	0.0080	0.0115
56	0.0197	0.0081	0.0116
57	0.0200	0.0082	0.0118
58	0.0202	0.0083	0.0119
59	0.0206	0.0084	0.0122
60	0.0208	0.0085	0.0123
61	0.0212	0.0087	0.0125
62	0.0214	0.0087	0.0126
63	0.0218	0.0089	0.0129
64	0.0220	0.0090	0.0130
65	0.0225	0.0092	0.0133
66	0.0228	0.0093	0.0135
67	0.0233	0.0095	0.0138
68	0.0236	0.0096	0.0139
69	0.0241	0.0099	0.0143
70	0.0245	0.0100	0.0145
71	0.0251	0.0103	0.0148
72	0.0254	0.0104	0.0150
73	0.0259	0.0106	0.0153
74	0.0263	0.0107	0.0155
75	0.0271	0.0111	0.0160
76	0.0275	0.0113	0.0163
77	0.0285	0.0117	0.0169
78	0.0290	0.0119	0.0172
79	0.0302	0.0123	0.0178
80	0.0308	0.0126	0.0182
81	0.0321	0.0131	0.0190
82	0.0329	0.0134	0.0194
83	0.0345	0.0141	0.0204
84	0.0354	0.0145	0.0209
85	0.0375	0.0153	0.0221
86	0.0386	0.0158	0.0228
87	0.0413	0.0169	0.0244
88	0.0429	0.0176	0.0254
89	0.0395	0.0162	0.0234
90	0.0418	0.0171	0.0247
91	0.0474	0.0181	0.0293
92	0.0511	0.0181	0.0330
93	0.0661	0.0181	0.0480
94	0.0741	0.0181	0.0560
95	0.1038	0.0181	0.0857
96	0.1401	0.0181	0.1221
97	0.3996	0.0181	0.3816
98	0.0855	0.0181	0.0675

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 99              0.0556          0.0181              0.0376
100              0.0443          0.0181              0.0263
101              0.0447          0.0181              0.0266
102              0.0399          0.0163              0.0236
103              0.0364          0.0149              0.0215
104              0.0336          0.0138              0.0199
105              0.0314          0.0128              0.0186
106              0.0296          0.0121              0.0175
107              0.0280          0.0115              0.0166
108              0.0267          0.0109              0.0158
109              0.0258          0.0106              0.0153
110              0.0248          0.0101              0.0146
111              0.0238          0.0098              0.0141
112              0.0230          0.0094              0.0136
113              0.0223          0.0091              0.0132
114              0.0216          0.0088              0.0128
115              0.0210          0.0086              0.0124
116              0.0204          0.0083              0.0121
117              0.0199          0.0081              0.0117
118              0.0194          0.0079              0.0115
119              0.0189          0.0077              0.0112
120              0.0185          0.0076              0.0109
121              0.0136          0.0056              0.0081
122              0.0133          0.0054              0.0079
123              0.0130          0.0053              0.0077
124              0.0127          0.0052              0.0075
125              0.0124          0.0051              0.0073
126              0.0121          0.0050              0.0072
127              0.0119          0.0048              0.0070
128              0.0116          0.0047              0.0069
129              0.0114          0.0047              0.0067
130              0.0112          0.0046              0.0066
131              0.0110          0.0045              0.0065
132              0.0108          0.0044              0.0064
133              0.0106          0.0043              0.0062
134              0.0104          0.0042              0.0061
135              0.0102          0.0042              0.0060
136              0.0100          0.0041              0.0059
137              0.0099          0.0040              0.0058
138              0.0097          0.0040              0.0057
139              0.0096          0.0039              0.0057
140              0.0094          0.0039              0.0056
141              0.0093          0.0038              0.0055
142              0.0092          0.0038              0.0054
143              0.0090          0.0037              0.0053
144              0.0089          0.0036              0.0053
-------------------------------------------------------------------
-------------------------------------------------------------------
Total soil rain loss =      1.17(In)
Total effective rainfall =      2.32(In)
Peak flow rate in flood hydrograph =     43.26(CFS)
-------------------------------------------------------------------
+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                    12 - H O U R    S T O R M
                R u n o f f      H y d r o g r a p h
-------------------------------------------------------------------
            Hydrograph in   5   Minute intervals ((CFS))

-------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0       12.5      25.0      37.5      50.0
-------------------------------------------------------------------
  0+ 5       0.0003      0.04  Q         |         |         |         |
  0+10       0.0016      0.20  Q         |         |         |         |
  0+15       0.0059      0.61  Q         |         |         |         |
  0+20       0.0120      0.90  Q         |         |         |         |
  0+25       0.0191      1.03  Q         |         |         |         |
  0+30       0.0268      1.12  Q         |         |         |         |
  0+35       0.0350      1.19  Q         |         |         |         |
  0+40       0.0435      1.24  Q         |         |         |         |
  0+45       0.0523      1.27  VQ        |         |         |         |
  0+50       0.0612      1.30  VQ        |         |         |         |
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0+55       0.0703      1.32  VQ        |         |         |         |
1+ 0       0.0795      1.34  VQ        |         |         |         |
1+ 5       0.0888      1.35  VQ        |         |         |         |
1+10       0.0982      1.36  |Q        |         |         |         |
1+15       0.1077      1.38  |Q        |         |         |         |
1+20       0.1173      1.39  |Q        |         |         |         |
1+25       0.1270      1.40  |Q        |         |         |         |
1+30       0.1367      1.42  |Q        |         |         |         |
1+35       0.1466      1.43  |Q        |         |         |         |
1+40       0.1565      1.44  |Q        |         |         |         |
1+45       0.1664      1.45  |Q        |         |         |         |
1+50       0.1765      1.46  |Q        |         |         |         |
1+55       0.1867      1.47  |Q        |         |         |         |
2+ 0       0.1969      1.49  |QV       |         |         |         |
2+ 5       0.2072      1.50  |QV       |         |         |         |
2+10       0.2176      1.51  |QV       |         |         |         |
2+15       0.2281      1.52  |QV       |         |         |         |
2+20       0.2387      1.54  |QV       |         |         |         |
2+25       0.2494      1.55  |QV       |         |         |         |
2+30       0.2601      1.57  |QV       |         |         |         |
2+35       0.2710      1.58  |QV       |         |         |         |
2+40       0.2820      1.59  |QV       |         |         |         |
2+45       0.2931      1.61  |QV       |         |         |         |
2+50       0.3043      1.62  |Q V      |         |         |         |
2+55       0.3156      1.64  |Q V      |         |         |         |
3+ 0       0.3270      1.66  |Q V      |         |         |         |
3+ 5       0.3385      1.67  |Q V      |         |         |         |
3+10       0.3502      1.69  |Q V      |         |         |         |
3+15       0.3619      1.71  |Q V      |         |         |         |
3+20       0.3738      1.73  |Q V      |         |         |         |
3+25       0.3858      1.75  |Q V      |         |         |         |
3+30       0.3980      1.76  |Q  V     |         |         |         |
3+35       0.4103      1.78  |Q  V     |         |         |         |
3+40       0.4227      1.80  |Q  V     |         |         |         |
3+45       0.4353      1.82  |Q  V     |         |         |         |
3+50       0.4480      1.85  |Q  V     |         |         |         |
3+55       0.4608      1.87  |Q  V     |         |         |         |
4+ 0       0.4739      1.89  |Q  V     |         |         |         |
4+ 5       0.4872      1.94  |Q  V     |         |         |         |
4+10       0.5012      2.04  |Q   V    |         |         |         |
4+15       0.5169      2.27  |Q   V    |         |         |         |
4+20       0.5337      2.44  |Q   V    |         |         |         |
4+25       0.5511      2.53  | Q  V    |         |         |         |
4+30       0.5690      2.60  | Q  V    |         |         |         |
4+35       0.5874      2.66  | Q  V    |         |         |         |
4+40       0.6061      2.72  | Q   V   |         |         |         |
4+45       0.6251      2.76  | Q   V   |         |         |         |
4+50       0.6444      2.81  | Q   V   |         |         |         |
4+55       0.6641      2.85  | Q   V   |         |         |         |
5+ 0       0.6839      2.89  | Q   V   |         |         |         |
5+ 5       0.7041      2.93  | Q    V  |         |         |         |
5+10       0.7246      2.97  | Q    V  |         |         |         |
5+15       0.7453      3.01  | Q    V  |         |         |         |
5+20       0.7664      3.06  | Q    V  |         |         |         |
5+25       0.7878      3.10  | Q     V |         |         |         |
5+30       0.8095      3.15  | Q     V |         |         |         |
5+35       0.8315      3.20  | Q     V |         |         |         |
5+40       0.8539      3.25  | Q     V |         |         |         |
5+45       0.8767      3.31  | Q     V |         |         |         |
5+50       0.8998      3.36  | Q      V|         |         |         |
5+55       0.9234      3.42  | Q      V|         |         |         |
6+ 0       0.9474      3.48  | Q      V|         |         |         |
6+ 5       0.9719      3.55  | Q      V|         |         |         |
6+10       0.9968      3.62  | Q       V         |         |         |
6+15       1.0221      3.68  | Q       V         |         |         |
6+20       1.0479      3.75  | Q       V         |         |         |
6+25       1.0743      3.83  |  Q      V         |         |         |
6+30       1.1012      3.91  |  Q      |V        |         |         |
6+35       1.1288      4.01  |  Q      |V        |         |         |
6+40       1.1572      4.11  |  Q      |V        |         |         |
6+45       1.1863      4.23  |  Q      | V       |         |         |
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 6+50      1.2162     4.35  |  Q      | V       |         |         |
 6+55      1.2471     4.49  |  Q      | V       |         |         |
 7+ 0      1.2790     4.63  |  Q      |  V      |         |         |
 7+ 5      1.3120     4.79  |  Q      |  V      |         |         |
 7+10      1.3462     4.97  |  Q      |  V      |         |         |
 7+15      1.3819     5.18  |   Q     |   V     |         |         |
 7+20      1.4191     5.40  |   Q     |   V     |         |         |
 7+25      1.4579     5.64  |   Q     |   V     |         |         |
 7+30      1.4979     5.81  |   Q     |    V    |         |         |
 7+35      1.5382     5.85  |   Q     |    V    |         |         |
 7+40      1.5802     6.09  |   Q     |     V   |         |         |
 7+45      1.6267     6.76  |    Q    |     V   |         |         |
 7+50      1.6808     7.85  |     Q   |      V  |         |         |
 7+55      1.7486     9.84  |      Q  |      V  |         |         |
 8+ 0      1.8356    12.63  |         Q       V |         |         |
 8+ 5      1.9666    19.03  |         |    Q    V         |         |
 8+10      2.1684    29.30  |         |         | VQ      |         |
 8+15      2.4663    43.26  |         |         |   V     |   Q     |
 8+20      2.6922    32.79  |         |         |    QV   |         |
 8+25      2.8350    20.73  |         |     Q   |      V  |         |
 8+30      2.9422    15.57  |         | Q       |         V         |
 8+35      3.0291    12.62  |         Q         |         V         |
 8+40      3.1012    10.46  |        Q  |       |         |V        |
 8+45      3.1610     8.68  |     Q     |       |         | V       |
 8+50      3.2111     7.27  |    Q      |       |         | V       |
 8+55      3.2528     6.06  |   Q       |       |         |  V      |
 9+ 0      3.2899     5.39  |   Q       |       |         |  V      |
 9+ 5      3.3241     4.97  |  Q        |       |         |  V      |
 9+10      3.3558     4.61  |  Q        |       |         |   V     |
 9+15      3.3862     4.40  |  Q        |       |         |   V     |
 9+20      3.4144     4.11  |  Q        |       |         |   V     |
 9+25      3.4409     3.84  |  Q        |       |         |    V    |
 9+30      3.4658     3.62  | Q         |       |         |    V    |
 9+35      3.4894     3.43  | Q         |       |         |    V    |
 9+40      3.5121     3.30  | Q         |       |         |    V    |
 9+45      3.5341     3.20  | Q         |       |         |     V   |
 9+50      3.5555     3.10  | Q         |       |         |     V   |
 9+55      3.5762     3.01  | Q         |       |         |     V   |
10+ 0      3.5963     2.93  | Q         |       |         |     V   |
10+ 5      3.6158     2.83  | Q         |       |         |     V   |
10+10      3.6343     2.68  | Q         |       |         |      V  |
10+15      3.6509     2.41  |Q          |       |         |      V  |
10+20      3.6661     2.21  |Q          |       |         |      V  |
10+25      3.6805     2.09  |Q          |       |         |      V  |
10+30      3.6943     2.00  |Q          |       |         |      V  |
10+35      3.7075     1.92  |Q          |       |         |      V  |
10+40      3.7203     1.86  |Q          |       |         |      V  |
10+45      3.7328     1.80  |Q          |       |         |       V |
10+50      3.7448     1.75  |Q          |       |         |       V |
10+55      3.7566     1.71  |Q          |       |         |       V |
11+ 0      3.7682     1.68  |Q          |       |         |       V |
11+ 5      3.7795     1.64  |Q          |       |         |       V |
11+10      3.7905     1.61  |Q          |       |         |       V |
11+15      3.8014     1.58  |Q          |       |         |       V |
11+20      3.8120     1.55  |Q          |       |         |       V |
11+25      3.8225     1.52  |Q          |       |         |       V |
11+30      3.8328     1.49  |Q          |       |         |        V|
11+35      3.8429     1.47  |Q          |       |         |        V|
11+40      3.8528     1.44  |Q          |       |         |        V|
11+45      3.8626     1.42  |Q          |       |         |        V|
11+50      3.8722     1.40  |Q          |       |         |        V|
11+55      3.8817     1.38  |Q          |       |         |        V|
12+ 0      3.8911     1.36  |Q          |       |         |        V|
12+ 5      3.9000     1.30  |Q          |       |         |        V|
12+10      3.9078     1.12  Q           |       |         |        V|
12+15      3.9126     0.70  Q           |       |         |        V|
12+20      3.9154     0.41  Q           |       |         |        V|
12+25      3.9173     0.28  Q           |       |         |        V|
12+30      3.9186     0.19  Q           |       |         |        V|
12+35      3.9195     0.13  Q           |       |         |        V|
12+40      3.9201     0.08  Q           |       |         |        V|
```

```
   12+45       3.9204      0.05  Q         |         |         |         V|
   12+50       3.9207      0.03  Q         |         |         |         V|
   12+55       3.9208      0.02  Q         |         |         |         V|
   13+ 0       3.9209      0.02  Q         |         |         |         V|
   13+ 5       3.9210      0.01  Q         |         |         |         V|
   13+10       3.9211      0.01  Q         |         |         |         V|
   13+15       3.9211      0.01  Q         |         |         |         V|
   13+20       3.9211      0.00  Q         |         |         |         V|
   13+25       3.9212      0.00  Q         |         |         |         V|
-------------------------------------------------------------------------
```

- 25 Year 24 Hour Pre-Development Unit Hydrograph – Area 'D'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/13/16   File Name EXD02524.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'D' - 25 YEAR 24 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 2

       Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 82.3       6.8          0.33     C     0.250     1.000    0.250
 82.3      13.5          0.67     D     0.200     1.000    0.200

Area-averaged adjusted loss rate Fm (In/Hr) =  0.217

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
     6.77   0.333         82.3      66.2       5.10     0.084

    13.54   0.667         82.3      66.2       5.10     0.084

Area-averaged catchment yield fraction, Y =  0.084
Area-averaged low loss fraction, Yb =  0.916
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.256 (hours)
Watershed area =      20.31(Ac.)
Catchment Lag time =   0.205 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 40.6901
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.217(In/Hr)
Average low loss rate fraction (Yb) = 0.916 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.190(In)
Computed peak 30-minute rainfall =  0.400(In)
Specified peak 1-hour rainfall =  0.530(In)
Computed peak 3-hour rainfall =  0.890(In)
Specified peak 6-hour rainfall =  1.220(In)
Specified peak 24-hour rainfall =  2.050(In)


Rainfall depth area reduction factors:
Using a total area of      20.31(Ac.) (Ref: fig. E-4)
```

```
5-minute factor = 0.999     Adjusted rainfall =  0.190(In)
30-minute factor = 0.999    Adjusted rainfall =  0.400(In)
1-hour factor = 0.999       Adjusted rainfall =  0.529(In)
3-hour factor = 1.000       Adjusted rainfall =  0.890(In)
6-hour factor = 1.000       Adjusted rainfall =  1.220(In)
24-hour factor = 1.000 Adjusted rainfall =  2.050(In)
--------------------------------------------------------------------

                     U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------
               (K =       245.62 (CFS))

  1                3.208                   7.879
  2               15.385                  29.910
  3               47.677                  79.317
  4               69.357                  53.249
  5               79.190                  24.153
  6               85.719                  16.036
  7               90.361                  11.404
  8               93.686                   8.166
  9               95.976                   5.624
 10               97.503                   3.751
 11               98.227                   1.779
 12               98.679                   1.111
 13               99.045                   0.898
 14               99.305                   0.640
 15               99.615                   0.760
 16               99.823                   0.511
 17               99.943                   0.295
 18              100.000                   0.141
--------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.1898              0.1898
  2              0.2532              0.0634
  3              0.2996              0.0465
  4              0.3377              0.0380
  5              0.3705              0.0328
  6              0.3996              0.0292
  7              0.4254              0.0258
  8              0.4491              0.0237
  9              0.4711              0.0220
 10              0.4917              0.0206
 11              0.5111              0.0194
 12              0.5295              0.0184
 13              0.5499              0.0204
 14              0.5695              0.0196
 15              0.5884              0.0189
 16              0.6066              0.0182
 17              0.6242              0.0176
 18              0.6413              0.0171
 19              0.6579              0.0166
 20              0.6741              0.0161
 21              0.6898              0.0157
 22              0.7051              0.0153
 23              0.7201              0.0150
 24              0.7347              0.0146
 25              0.7490              0.0143
 26              0.7630              0.0140
 27              0.7768              0.0137
 28              0.7902              0.0135
 29              0.8035              0.0132
 30              0.8164              0.0130
 31              0.8292              0.0127
 32              0.8417              0.0125
 33              0.8540              0.0123
 34              0.8662              0.0121
```

35	0.8781	0.0119
36	0.8899	0.0118
37	0.9011	0.0112
38	0.9121	0.0110
39	0.9229	0.0108
40	0.9336	0.0107
41	0.9442	0.0106
42	0.9546	0.0104
43	0.9648	0.0103
44	0.9750	0.0101
45	0.9850	0.0100
46	0.9949	0.0099
47	1.0047	0.0098
48	1.0144	0.0097
49	1.0239	0.0096
50	1.0334	0.0095
51	1.0427	0.0094
52	1.0520	0.0093
53	1.0612	0.0092
54	1.0702	0.0091
55	1.0792	0.0090
56	1.0881	0.0089
57	1.0969	0.0088
58	1.1056	0.0087
59	1.1142	0.0086
60	1.1228	0.0086
61	1.1313	0.0085
62	1.1397	0.0084
63	1.1480	0.0083
64	1.1563	0.0083
65	1.1644	0.0082
66	1.1726	0.0081
67	1.1806	0.0081
68	1.1886	0.0080
69	1.1965	0.0079
70	1.2044	0.0079
71	1.2122	0.0078
72	1.2199	0.0077
73	1.2262	0.0063
74	1.2325	0.0063
75	1.2387	0.0062
76	1.2449	0.0062
77	1.2510	0.0061
78	1.2570	0.0061
79	1.2630	0.0060
80	1.2690	0.0060
81	1.2749	0.0059
82	1.2808	0.0059
83	1.2866	0.0058
84	1.2924	0.0058
85	1.2981	0.0057
86	1.3038	0.0057
87	1.3095	0.0057
88	1.3151	0.0056
89	1.3207	0.0056
90	1.3262	0.0055
91	1.3317	0.0055
92	1.3372	0.0055
93	1.3426	0.0054
94	1.3480	0.0054
95	1.3533	0.0054
96	1.3587	0.0053
97	1.3639	0.0053
98	1.3692	0.0052
99	1.3744	0.0052
100	1.3796	0.0052
101	1.3847	0.0051
102	1.3898	0.0051
103	1.3949	0.0051
104	1.4000	0.0051
105	1.4050	0.0050

106	1.4100	0.0050
107	1.4150	0.0050
108	1.4199	0.0049
109	1.4248	0.0049
110	1.4297	0.0049
111	1.4345	0.0049
112	1.4394	0.0048
113	1.4442	0.0048
114	1.4489	0.0048
115	1.4537	0.0047
116	1.4584	0.0047
117	1.4631	0.0047
118	1.4678	0.0047
119	1.4724	0.0046
120	1.4770	0.0046
121	1.4816	0.0046
122	1.4862	0.0046
123	1.4908	0.0045
124	1.4953	0.0045
125	1.4998	0.0045
126	1.5043	0.0045
127	1.5087	0.0045
128	1.5132	0.0044
129	1.5176	0.0044
130	1.5220	0.0044
131	1.5263	0.0044
132	1.5307	0.0044
133	1.5350	0.0043
134	1.5393	0.0043
135	1.5436	0.0043
136	1.5479	0.0043
137	1.5522	0.0043
138	1.5564	0.0042
139	1.5606	0.0042
140	1.5648	0.0042
141	1.5690	0.0042
142	1.5731	0.0042
143	1.5773	0.0041
144	1.5814	0.0041
145	1.5855	0.0041
146	1.5896	0.0041
147	1.5936	0.0041
148	1.5977	0.0041
149	1.6017	0.0040
150	1.6057	0.0040
151	1.6097	0.0040
152	1.6137	0.0040
153	1.6177	0.0040
154	1.6216	0.0040
155	1.6256	0.0039
156	1.6295	0.0039
157	1.6334	0.0039
158	1.6373	0.0039
159	1.6412	0.0039
160	1.6450	0.0039
161	1.6489	0.0038
162	1.6527	0.0038
163	1.6565	0.0038
164	1.6603	0.0038
165	1.6641	0.0038
166	1.6678	0.0038
167	1.6716	0.0038
168	1.6753	0.0037
169	1.6791	0.0037
170	1.6828	0.0037
171	1.6865	0.0037
172	1.6902	0.0037
173	1.6938	0.0037
174	1.6975	0.0037
175	1.7011	0.0036
176	1.7048	0.0036

177	1.7084	0.0036
178	1.7120	0.0036
179	1.7156	0.0036
180	1.7192	0.0036
181	1.7227	0.0036
182	1.7263	0.0036
183	1.7298	0.0035
184	1.7334	0.0035
185	1.7369	0.0035
186	1.7404	0.0035
187	1.7439	0.0035
188	1.7474	0.0035
189	1.7509	0.0035
190	1.7543	0.0035
191	1.7578	0.0035
192	1.7612	0.0034
193	1.7647	0.0034
194	1.7681	0.0034
195	1.7715	0.0034
196	1.7749	0.0034
197	1.7783	0.0034
198	1.7816	0.0034
199	1.7850	0.0034
200	1.7883	0.0034
201	1.7917	0.0033
202	1.7950	0.0033
203	1.7983	0.0033
204	1.8017	0.0033
205	1.8050	0.0033
206	1.8082	0.0033
207	1.8115	0.0033
208	1.8148	0.0033
209	1.8181	0.0033
210	1.8213	0.0033
211	1.8246	0.0032
212	1.8278	0.0032
213	1.8310	0.0032
214	1.8342	0.0032
215	1.8374	0.0032
216	1.8406	0.0032
217	1.8438	0.0032
218	1.8470	0.0032
219	1.8502	0.0032
220	1.8533	0.0032
221	1.8565	0.0031
222	1.8596	0.0031
223	1.8627	0.0031
224	1.8659	0.0031
225	1.8690	0.0031
226	1.8721	0.0031
227	1.8752	0.0031
228	1.8783	0.0031
229	1.8813	0.0031
230	1.8844	0.0031
231	1.8875	0.0031
232	1.8905	0.0031
233	1.8936	0.0030
234	1.8966	0.0030
235	1.8997	0.0030
236	1.9027	0.0030
237	1.9057	0.0030
238	1.9087	0.0030
239	1.9117	0.0030
240	1.9147	0.0030
241	1.9177	0.0030
242	1.9206	0.0030
243	1.9236	0.0030
244	1.9266	0.0030
245	1.9295	0.0030
246	1.9325	0.0029
247	1.9354	0.0029

248	1.9383	0.0029
249	1.9413	0.0029
250	1.9442	0.0029
251	1.9471	0.0029
252	1.9500	0.0029
253	1.9529	0.0029
254	1.9558	0.0029
255	1.9586	0.0029
256	1.9615	0.0029
257	1.9644	0.0029
258	1.9672	0.0029
259	1.9701	0.0029
260	1.9729	0.0028
261	1.9758	0.0028
262	1.9786	0.0028
263	1.9814	0.0028
264	1.9842	0.0028
265	1.9871	0.0028
266	1.9899	0.0028
267	1.9927	0.0028
268	1.9954	0.0028
269	1.9982	0.0028
270	2.0010	0.0028
271	2.0038	0.0028
272	2.0065	0.0028
273	2.0093	0.0028
274	2.0121	0.0028
275	2.0148	0.0027
276	2.0175	0.0027
277	2.0203	0.0027
278	2.0230	0.0027
279	2.0257	0.0027
280	2.0284	0.0027
281	2.0311	0.0027
282	2.0339	0.0027
283	2.0366	0.0027
284	2.0392	0.0027
285	2.0419	0.0027
286	2.0446	0.0027
287	2.0473	0.0027
288	2.0499	0.0027

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0027	0.0024	0.0002
2	0.0027	0.0024	0.0002
3	0.0027	0.0025	0.0002
4	0.0027	0.0025	0.0002
5	0.0027	0.0025	0.0002
6	0.0027	0.0025	0.0002
7	0.0027	0.0025	0.0002
8	0.0027	0.0025	0.0002
9	0.0027	0.0025	0.0002
10	0.0027	0.0025	0.0002
11	0.0028	0.0025	0.0002
12	0.0028	0.0025	0.0002
13	0.0028	0.0025	0.0002
14	0.0028	0.0025	0.0002
15	0.0028	0.0026	0.0002
16	0.0028	0.0026	0.0002
17	0.0028	0.0026	0.0002
18	0.0028	0.0026	0.0002
19	0.0028	0.0026	0.0002
20	0.0028	0.0026	0.0002
21	0.0029	0.0026	0.0002
22	0.0029	0.0026	0.0002
23	0.0029	0.0026	0.0002
24	0.0029	0.0026	0.0002
25	0.0029	0.0027	0.0002

26	0.0029	0.0027	0.0002
27	0.0029	0.0027	0.0002
28	0.0029	0.0027	0.0002
29	0.0029	0.0027	0.0002
30	0.0030	0.0027	0.0002
31	0.0030	0.0027	0.0003
32	0.0030	0.0027	0.0003
33	0.0030	0.0027	0.0003
34	0.0030	0.0027	0.0003
35	0.0030	0.0028	0.0003
36	0.0030	0.0028	0.0003
37	0.0030	0.0028	0.0003
38	0.0030	0.0028	0.0003
39	0.0031	0.0028	0.0003
40	0.0031	0.0028	0.0003
41	0.0031	0.0028	0.0003
42	0.0031	0.0028	0.0003
43	0.0031	0.0029	0.0003
44	0.0031	0.0029	0.0003
45	0.0031	0.0029	0.0003
46	0.0031	0.0029	0.0003
47	0.0032	0.0029	0.0003
48	0.0032	0.0029	0.0003
49	0.0032	0.0029	0.0003
50	0.0032	0.0029	0.0003
51	0.0032	0.0030	0.0003
52	0.0032	0.0030	0.0003
53	0.0033	0.0030	0.0003
54	0.0033	0.0030	0.0003
55	0.0033	0.0030	0.0003
56	0.0033	0.0030	0.0003
57	0.0033	0.0030	0.0003
58	0.0033	0.0030	0.0003
59	0.0033	0.0031	0.0003
60	0.0034	0.0031	0.0003
61	0.0034	0.0031	0.0003
62	0.0034	0.0031	0.0003
63	0.0034	0.0031	0.0003
64	0.0034	0.0031	0.0003
65	0.0034	0.0031	0.0003
66	0.0035	0.0032	0.0003
67	0.0035	0.0032	0.0003
68	0.0035	0.0032	0.0003
69	0.0035	0.0032	0.0003
70	0.0035	0.0032	0.0003
71	0.0035	0.0032	0.0003
72	0.0036	0.0033	0.0003
73	0.0036	0.0033	0.0003
74	0.0036	0.0033	0.0003
75	0.0036	0.0033	0.0003
76	0.0036	0.0033	0.0003
77	0.0037	0.0034	0.0003
78	0.0037	0.0034	0.0003
79	0.0037	0.0034	0.0003
80	0.0037	0.0034	0.0003
81	0.0037	0.0034	0.0003
82	0.0038	0.0034	0.0003
83	0.0038	0.0035	0.0003
84	0.0038	0.0035	0.0003
85	0.0038	0.0035	0.0003
86	0.0038	0.0035	0.0003
87	0.0039	0.0035	0.0003
88	0.0039	0.0036	0.0003
89	0.0039	0.0036	0.0003
90	0.0039	0.0036	0.0003
91	0.0040	0.0036	0.0003
92	0.0040	0.0036	0.0003
93	0.0040	0.0037	0.0003
94	0.0040	0.0037	0.0003
95	0.0041	0.0037	0.0003
96	0.0041	0.0037	0.0003

97	0.0041	0.0038	0.0003
98	0.0041	0.0038	0.0003
99	0.0042	0.0038	0.0004
100	0.0042	0.0038	0.0004
101	0.0042	0.0039	0.0004
102	0.0043	0.0039	0.0004
103	0.0043	0.0039	0.0004
104	0.0043	0.0039	0.0004
105	0.0044	0.0040	0.0004
106	0.0044	0.0040	0.0004
107	0.0044	0.0040	0.0004
108	0.0044	0.0041	0.0004
109	0.0045	0.0041	0.0004
110	0.0045	0.0041	0.0004
111	0.0045	0.0042	0.0004
112	0.0046	0.0042	0.0004
113	0.0046	0.0042	0.0004
114	0.0046	0.0043	0.0004
115	0.0047	0.0043	0.0004
116	0.0047	0.0043	0.0004
117	0.0048	0.0044	0.0004
118	0.0048	0.0044	0.0004
119	0.0049	0.0044	0.0004
120	0.0049	0.0045	0.0004
121	0.0049	0.0045	0.0004
122	0.0050	0.0045	0.0004
123	0.0050	0.0046	0.0004
124	0.0051	0.0046	0.0004
125	0.0051	0.0047	0.0004
126	0.0051	0.0047	0.0004
127	0.0052	0.0048	0.0004
128	0.0052	0.0048	0.0004
129	0.0053	0.0049	0.0004
130	0.0054	0.0049	0.0005
131	0.0054	0.0050	0.0005
132	0.0055	0.0050	0.0005
133	0.0055	0.0051	0.0005
134	0.0056	0.0051	0.0005
135	0.0057	0.0052	0.0005
136	0.0057	0.0052	0.0005
137	0.0058	0.0053	0.0005
138	0.0058	0.0053	0.0005
139	0.0059	0.0054	0.0005
140	0.0060	0.0055	0.0005
141	0.0061	0.0055	0.0005
142	0.0061	0.0056	0.0005
143	0.0062	0.0057	0.0005
144	0.0063	0.0057	0.0005
145	0.0077	0.0071	0.0007
146	0.0078	0.0071	0.0007
147	0.0079	0.0073	0.0007
148	0.0080	0.0073	0.0007
149	0.0081	0.0074	0.0007
150	0.0082	0.0075	0.0007
151	0.0083	0.0076	0.0007
152	0.0084	0.0077	0.0007
153	0.0086	0.0078	0.0007
154	0.0086	0.0079	0.0007
155	0.0088	0.0081	0.0007
156	0.0089	0.0081	0.0007
157	0.0091	0.0083	0.0008
158	0.0092	0.0084	0.0008
159	0.0094	0.0086	0.0008
160	0.0095	0.0087	0.0008
161	0.0097	0.0089	0.0008
162	0.0098	0.0090	0.0008
163	0.0100	0.0092	0.0008
164	0.0101	0.0093	0.0009
165	0.0104	0.0095	0.0009
166	0.0106	0.0097	0.0009
167	0.0108	0.0099	0.0009

168	0.0110	0.0101	0.0009
169	0.0118	0.0108	0.0010
170	0.0119	0.0109	0.0010
171	0.0123	0.0113	0.0010
172	0.0125	0.0115	0.0011
173	0.0130	0.0119	0.0011
174	0.0132	0.0121	0.0011
175	0.0137	0.0126	0.0012
176	0.0140	0.0128	0.0012
177	0.0146	0.0134	0.0012
178	0.0150	0.0137	0.0013
179	0.0157	0.0144	0.0013
180	0.0161	0.0148	0.0014
181	0.0171	0.0156	0.0014
182	0.0176	0.0161	0.0015
183	0.0189	0.0173	0.0016
184	0.0196	0.0179	0.0017
185	0.0184	0.0168	0.0016
186	0.0194	0.0178	0.0016
187	0.0220	0.0181	0.0039
188	0.0237	0.0181	0.0056
189	0.0292	0.0181	0.0111
190	0.0328	0.0181	0.0147
191	0.0465	0.0181	0.0284
192	0.0634	0.0181	0.0453
193	0.1898	0.0181	0.1718
194	0.0380	0.0181	0.0200
195	0.0258	0.0181	0.0078
196	0.0206	0.0181	0.0025
197	0.0204	0.0181	0.0024
198	0.0182	0.0167	0.0015
199	0.0166	0.0152	0.0014
200	0.0153	0.0140	0.0013
201	0.0143	0.0131	0.0012
202	0.0135	0.0123	0.0011
203	0.0127	0.0117	0.0011
204	0.0121	0.0111	0.0010
205	0.0112	0.0102	0.0009
206	0.0107	0.0098	0.0009
207	0.0103	0.0094	0.0009
208	0.0099	0.0091	0.0008
209	0.0096	0.0088	0.0008
210	0.0093	0.0085	0.0008
211	0.0090	0.0082	0.0008
212	0.0087	0.0080	0.0007
213	0.0085	0.0078	0.0007
214	0.0083	0.0076	0.0007
215	0.0081	0.0074	0.0007
216	0.0079	0.0072	0.0007
217	0.0063	0.0058	0.0005
218	0.0062	0.0056	0.0005
219	0.0060	0.0055	0.0005
220	0.0059	0.0054	0.0005
221	0.0057	0.0053	0.0005
222	0.0056	0.0051	0.0005
223	0.0055	0.0050	0.0005
224	0.0054	0.0049	0.0005
225	0.0053	0.0048	0.0004
226	0.0052	0.0047	0.0004
227	0.0051	0.0047	0.0004
228	0.0050	0.0046	0.0004
229	0.0049	0.0045	0.0004
230	0.0048	0.0044	0.0004
231	0.0047	0.0043	0.0004
232	0.0047	0.0043	0.0004
233	0.0046	0.0042	0.0004
234	0.0045	0.0041	0.0004
235	0.0045	0.0041	0.0004
236	0.0044	0.0040	0.0004
237	0.0043	0.0040	0.0004
238	0.0043	0.0039	0.0004

```
      239              0.0042          0.0039              0.0004
      240              0.0042          0.0038              0.0004
      241              0.0041          0.0038              0.0003
      242              0.0041          0.0037              0.0003
      243              0.0040          0.0037              0.0003
      244              0.0040          0.0036              0.0003
      245              0.0039          0.0036              0.0003
      246              0.0039          0.0035              0.0003
      247              0.0038          0.0035              0.0003
      248              0.0038          0.0035              0.0003
      249              0.0037          0.0034              0.0003
      250              0.0037          0.0034              0.0003
      251              0.0036          0.0033              0.0003
      252              0.0036          0.0033              0.0003
      253              0.0036          0.0033              0.0003
      254              0.0035          0.0032              0.0003
      255              0.0035          0.0032              0.0003
      256              0.0035          0.0032              0.0003
      257              0.0034          0.0031              0.0003
      258              0.0034          0.0031              0.0003
      259              0.0034          0.0031              0.0003
      260              0.0033          0.0031              0.0003
      261              0.0033          0.0030              0.0003
      262              0.0033          0.0030              0.0003
      263              0.0032          0.0030              0.0003
      264              0.0032          0.0029              0.0003
      265              0.0032          0.0029              0.0003
      266              0.0032          0.0029              0.0003
      267              0.0031          0.0029              0.0003
      268              0.0031          0.0028              0.0003
      269              0.0031          0.0028              0.0003
      270              0.0031          0.0028              0.0003
      271              0.0030          0.0028              0.0003
      272              0.0030          0.0028              0.0003
      273              0.0030          0.0027              0.0003
      274              0.0030          0.0027              0.0002
      275              0.0029          0.0027              0.0002
      276              0.0029          0.0027              0.0002
      277              0.0029          0.0026              0.0002
      278              0.0029          0.0026              0.0002
      279              0.0029          0.0026              0.0002
      280              0.0028          0.0026              0.0002
      281              0.0028          0.0026              0.0002
      282              0.0028          0.0026              0.0002
      283              0.0028          0.0025              0.0002
      284              0.0028          0.0025              0.0002
      285              0.0027          0.0025              0.0002
      286              0.0027          0.0025              0.0002
      287              0.0027          0.0025              0.0002
      288              0.0027          0.0025              0.0002
      ------------------------------------------------------------------------
      ------------------------------------------------------------------------
      Total soil rain loss =      1.61(In)
      Total effective rainfall =      0.44(In)
      Peak flow rate in flood hydrograph =     17.83(CFS)
      ------------------------------------------------------------------------
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          24 - H O U R    S T O R M
                     R u n o f f      H y d r o g r a p h
      ------------------------------------------------------------------------
                 Hydrograph in   5   Minute intervals ((CFS))

      ------------------------------------------------------------------------
 Time(h+m) Volume Ac.Ft   Q(CFS)  0        5.0      10.0      15.0      20.0
 ------------------------------------------------------------------------
   0+ 5       0.0000      0.00  Q         |         |         |         |
   0+10       0.0001      0.01  Q         |         |         |         |
   0+15       0.0003      0.03  Q         |         |         |         |
   0+20       0.0005      0.04  Q         |         |         |         |
   0+25       0.0008      0.04  Q         |         |         |         |
   0+30       0.0011      0.05  Q         |         |         |         |
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0+35	0.0015	0.05	Q	|	|	|	|
0+40	0.0019	0.05	Q	|	|	|	|
0+45	0.0022	0.05	Q	|	|	|	|
0+50	0.0026	0.05	Q	|	|	|	|
0+55	0.0030	0.06	Q	|	|	|	|
1+ 0	0.0034	0.06	Q	|	|	|	|
1+ 5	0.0038	0.06	Q	|	|	|	|
1+10	0.0042	0.06	Q	|	|	|	|
1+15	0.0045	0.06	Q	|	|	|	|
1+20	0.0049	0.06	Q	|	|	|	|
1+25	0.0053	0.06	Q	|	|	|	|
1+30	0.0057	0.06	Q	|	|	|	|
1+35	0.0061	0.06	Q	|	|	|	|
1+40	0.0065	0.06	Q	|	|	|	|
1+45	0.0069	0.06	Q	|	|	|	|
1+50	0.0073	0.06	Q	|	|	|	|
1+55	0.0078	0.06	Q	|	|	|	|
2+ 0	0.0082	0.06	Q	|	|	|	|
2+ 5	0.0086	0.06	Q	|	|	|	|
2+10	0.0090	0.06	Q	|	|	|	|
2+15	0.0094	0.06	Q	|	|	|	|
2+20	0.0098	0.06	Q	|	|	|	|
2+25	0.0102	0.06	Q	|	|	|	|
2+30	0.0106	0.06	Q	|	|	|	|
2+35	0.0111	0.06	Q	|	|	|	|
2+40	0.0115	0.06	Q	|	|	|	|
2+45	0.0119	0.06	Q	|	|	|	|
2+50	0.0123	0.06	Q	|	|	|	|
2+55	0.0127	0.06	Q	|	|	|	|
3+ 0	0.0132	0.06	Q	|	|	|	|
3+ 5	0.0136	0.06	Q	|	|	|	|
3+10	0.0140	0.06	Q	|	|	|	|
3+15	0.0145	0.06	Q	|	|	|	|
3+20	0.0149	0.06	Q	|	|	|	|
3+25	0.0153	0.06	Q	|	|	|	|
3+30	0.0158	0.06	Q	|	|	|	|
3+35	0.0162	0.06	Q	|	|	|	|
3+40	0.0166	0.06	Q	|	|	|	|
3+45	0.0171	0.06	Q	|	|	|	|
3+50	0.0175	0.06	Q	|	|	|	|
3+55	0.0180	0.06	Q	|	|	|	|
4+ 0	0.0184	0.06	Q	|	|	|	|
4+ 5	0.0189	0.07	QV	|	|	|	|
4+10	0.0193	0.07	QV	|	|	|	|
4+15	0.0198	0.07	QV	|	|	|	|
4+20	0.0202	0.07	QV	|	|	|	|
4+25	0.0207	0.07	QV	|	|	|	|
4+30	0.0211	0.07	QV	|	|	|	|
4+35	0.0216	0.07	QV	|	|	|	|
4+40	0.0221	0.07	QV	|	|	|	|
4+45	0.0225	0.07	QV	|	|	|	|
4+50	0.0230	0.07	QV	|	|	|	|
4+55	0.0235	0.07	QV	|	|	|	|
5+ 0	0.0239	0.07	QV	|	|	|	|
5+ 5	0.0244	0.07	QV	|	|	|	|
5+10	0.0249	0.07	QV	|	|	|	|
5+15	0.0254	0.07	QV	|	|	|	|
5+20	0.0259	0.07	QV	|	|	|	|
5+25	0.0263	0.07	QV	|	|	|	|
5+30	0.0268	0.07	QV	|	|	|	|
5+35	0.0273	0.07	QV	|	|	|	|
5+40	0.0278	0.07	QV	|	|	|	|
5+45	0.0283	0.07	QV	|	|	|	|
5+50	0.0288	0.07	QV	|	|	|	|
5+55	0.0293	0.07	QV	|	|	|	|
6+ 0	0.0298	0.07	QV	|	|	|	|
6+ 5	0.0303	0.07	QV	|	|	|	|
6+10	0.0308	0.07	QV	|	|	|	|
6+15	0.0313	0.07	QV	|	|	|	|
6+20	0.0318	0.07	QV	|	|	|	|
6+25	0.0323	0.07	QV	|	|	|	|

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 6+30       0.0328      0.07  QV        |         |         |         |
 6+35       0.0334      0.08  QV        |         |         |         |
 6+40       0.0339      0.08  QV        |         |         |         |
 6+45       0.0344      0.08  QV        |         |         |         |
 6+50       0.0349      0.08  QV        |         |         |         |
 6+55       0.0355      0.08  QV        |         |         |         |
 7+ 0       0.0360      0.08  QV        |         |         |         |
 7+ 5       0.0365      0.08  QV        |         |         |         |
 7+10       0.0371      0.08  QV        |         |         |         |
 7+15       0.0376      0.08  Q V       |         |         |         |
 7+20       0.0382      0.08  Q V       |         |         |         |
 7+25       0.0387      0.08  Q V       |         |         |         |
 7+30       0.0392      0.08  Q V       |         |         |         |
 7+35       0.0398      0.08  Q V       |         |         |         |
 7+40       0.0404      0.08  Q V       |         |         |         |
 7+45       0.0409      0.08  Q V       |         |         |         |
 7+50       0.0415      0.08  Q V       |         |         |         |
 7+55       0.0421      0.08  Q V       |         |         |         |
 8+ 0       0.0426      0.08  Q V       |         |         |         |
 8+ 5       0.0432      0.08  Q V       |         |         |         |
 8+10       0.0438      0.08  Q V       |         |         |         |
 8+15       0.0444      0.08  Q V       |         |         |         |
 8+20       0.0450      0.09  Q V       |         |         |         |
 8+25       0.0455      0.09  Q V       |         |         |         |
 8+30       0.0461      0.09  Q V       |         |         |         |
 8+35       0.0467      0.09  Q V       |         |         |         |
 8+40       0.0473      0.09  Q V       |         |         |         |
 8+45       0.0479      0.09  Q V       |         |         |         |
 8+50       0.0486      0.09  Q V       |         |         |         |
 8+55       0.0492      0.09  Q V       |         |         |         |
 9+ 0       0.0498      0.09  Q V       |         |         |         |
 9+ 5       0.0504      0.09  Q V       |         |         |         |
 9+10       0.0510      0.09  Q V       |         |         |         |
 9+15       0.0517      0.09  Q V       |         |         |         |
 9+20       0.0523      0.09  Q V       |         |         |         |
 9+25       0.0530      0.09  Q V       |         |         |         |
 9+30       0.0536      0.09  Q V       |         |         |         |
 9+35       0.0543      0.09  Q V       |         |         |         |
 9+40       0.0549      0.10  Q V       |         |         |         |
 9+45       0.0556      0.10  Q V       |         |         |         |
 9+50       0.0562      0.10  Q  V      |         |         |         |
 9+55       0.0569      0.10  Q  V      |         |         |         |
10+ 0       0.0576      0.10  Q  V      |         |         |         |
10+ 5       0.0583      0.10  Q  V      |         |         |         |
10+10       0.0590      0.10  Q  V      |         |         |         |
10+15       0.0597      0.10  Q  V      |         |         |         |
10+20       0.0604      0.10  Q  V      |         |         |         |
10+25       0.0611      0.10  Q  V      |         |         |         |
10+30       0.0618      0.10  Q  V      |         |         |         |
10+35       0.0625      0.10  Q  V      |         |         |         |
10+40       0.0632      0.11  Q  V      |         |         |         |
10+45       0.0640      0.11  Q  V      |         |         |         |
10+50       0.0647      0.11  Q  V      |         |         |         |
10+55       0.0655      0.11  Q  V      |         |         |         |
11+ 0       0.0662      0.11  Q  V      |         |         |         |
11+ 5       0.0670      0.11  Q  V      |         |         |         |
11+10       0.0678      0.11  Q  V      |         |         |         |
11+15       0.0685      0.11  Q  V      |         |         |         |
11+20       0.0693      0.11  Q  V      |         |         |         |
11+25       0.0701      0.12  Q  V      |         |         |         |
11+30       0.0709      0.12  Q  V      |         |         |         |
11+35       0.0717      0.12  Q  V      |         |         |         |
11+40       0.0726      0.12  Q  V      |         |         |         |
11+45       0.0734      0.12  Q  V      |         |         |         |
11+50       0.0742      0.12  Q  V      |         |         |         |
11+55       0.0751      0.12  Q   V     |         |         |         |
12+ 0       0.0759      0.12  Q   V     |         |         |         |
12+ 5       0.0768      0.13  Q   V     |         |         |         |
12+10       0.0777      0.13  Q   V     |         |         |         |
12+15       0.0787      0.14  Q   V     |         |         |         |
12+20       0.0798      0.15  Q   V     |         |         |         |
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12+25       0.0808      0.16  Q   V     |          |          |          |
12+30       0.0819      0.16  Q   V     |          |          |          |
12+35       0.0831      0.16  Q   V     |          |          |          |
12+40       0.0842      0.17  Q   V     |          |          |          |
12+45       0.0854      0.17  Q   V     |          |          |          |
12+50       0.0865      0.17  Q   V     |          |          |          |
12+55       0.0877      0.17  Q   V     |          |          |          |
13+ 0       0.0889      0.18  Q   V     |          |          |          |
13+ 5       0.0902      0.18  Q   V     |          |          |          |
13+10       0.0914      0.18  Q   V     |          |          |          |
13+15       0.0927      0.18  Q   V     |          |          |          |
13+20       0.0940      0.19  Q    V    |          |          |          |
13+25       0.0953      0.19  Q    V    |          |          |          |
13+30       0.0966      0.19  Q    V    |          |          |          |
13+35       0.0980      0.20  Q    V    |          |          |          |
13+40       0.0993      0.20  Q    V    |          |          |          |
13+45       0.1007      0.20  Q    V    |          |          |          |
13+50       0.1022      0.21  Q    V    |          |          |          |
13+55       0.1036      0.21  Q    V    |          |          |          |
14+ 0       0.1051      0.21  Q    V    |          |          |          |
14+ 5       0.1066      0.22  Q    V    |          |          |          |
14+10       0.1081      0.22  Q    V    |          |          |          |
14+15       0.1097      0.23  Q    V    |          |          |          |
14+20       0.1114      0.24  Q    V    |          |          |          |
14+25       0.1131      0.25  Q     V   |          |          |          |
14+30       0.1148      0.25  Q     V   |          |          |          |
14+35       0.1166      0.26  Q     V   |          |          |          |
14+40       0.1184      0.27  Q     V   |          |          |          |
14+45       0.1203      0.27  Q     V   |          |          |          |
14+50       0.1223      0.28  Q     V   |          |          |          |
14+55       0.1243      0.29  Q     V   |          |          |          |
15+ 0       0.1264      0.30  Q     V   |          |          |          |
15+ 5       0.1285      0.31  Q     V   |          |          |          |
15+10       0.1307      0.32  Q     V   |          |          |          |
15+15       0.1330      0.34  Q      V  |          |          |          |
15+20       0.1355      0.35  Q      V  |          |          |          |
15+25       0.1380      0.37  Q      V  |          |          |          |
15+30       0.1406      0.38  Q      V  |          |          |          |
15+35       0.1434      0.40  Q      V  |          |          |          |
15+40       0.1467      0.49  Q      V  |          |          |          |
15+45       0.1520      0.77  |Q      V  |          |          |          |
15+50       0.1605      1.22  | Q     V  |          |          |          |
15+55       0.1744      2.02  |   Q    V|          |          |          |
16+ 0       0.1966      3.22  |     Q   V          |          |          |
16+ 5       0.2392      6.19  |          | Q       |          |          |
16+10       0.3153     11.05  |          |     V   | Q        |          |
16+15       0.4381     17.83  |          |         |  V       |    Q     |
16+20       0.5266     12.85  |          |         |    Q  V  |          |
16+25       0.5761      7.19  |          |   Q     |          V          |
16+30       0.6093      4.83  |         Q|         |          | V        |
16+35       0.6332      3.46  |     Q    |         |          |  V       |
16+40       0.6506      2.53  |    Q     |         |          |   V      |
16+45       0.6631      1.81  |  Q       |         |          |    V     |
16+50       0.6719      1.29  | Q        |         |          |    V     |
16+55       0.6777      0.84  |Q         |         |          |     V    |
17+ 0       0.6820      0.63  |Q         |         |          |     V    |
17+ 5       0.6857      0.54  |Q         |         |          |     V    |
17+10       0.6889      0.46  Q          |         |          |     V    |
17+15       0.6919      0.44  Q          |         |          |     V    |
17+20       0.6944      0.36  Q          |         |          |      V   |
17+25       0.6965      0.30  Q          |         |          |      V   |
17+30       0.6982      0.25  Q          |         |          |      V   |
17+35       0.6997      0.22  Q          |         |          |      V   |
17+40       0.7011      0.20  Q          |         |          |      V   |
17+45       0.7025      0.20  Q          |         |          |      V   |
17+50       0.7038      0.19  Q          |         |          |      V   |
17+55       0.7051      0.18  Q          |         |          |      V   |
18+ 0       0.7063      0.18  Q          |         |          |      V   |
18+ 5       0.7075      0.17  Q          |         |          |      V   |
18+10       0.7086      0.16  Q          |         |          |      V   |
18+15       0.7097      0.15  Q          |         |          |      V   |
```

```
18+20       0.7106      0.14  Q          |          |          |      V   |
18+25       0.7116      0.14  Q          |          |          |      V   |
18+30       0.7125      0.13  Q          |          |          |       V  |
18+35       0.7133      0.13  Q          |          |          |       V  |
18+40       0.7142      0.12  Q          |          |          |       V  |
18+45       0.7150      0.12  Q          |          |          |       V  |
18+50       0.7158      0.12  Q          |          |          |       V  |
18+55       0.7166      0.11  Q          |          |          |       V  |
19+ 0       0.7173      0.11  Q          |          |          |       V  |
19+ 5       0.7181      0.11  Q          |          |          |       V  |
19+10       0.7188      0.11  Q          |          |          |       V  |
19+15       0.7195      0.10  Q          |          |          |       V  |
19+20       0.7202      0.10  Q          |          |          |       V  |
19+25       0.7209      0.10  Q          |          |          |       V  |
19+30       0.7216      0.10  Q          |          |          |       V  |
19+35       0.7223      0.10  Q          |          |          |       V  |
19+40       0.7229      0.10  Q          |          |          |       V  |
19+45       0.7236      0.09  Q          |          |          |       V  |
19+50       0.7242      0.09  Q          |          |          |       V  |
19+55       0.7249      0.09  Q          |          |          |       V  |
20+ 0       0.7255      0.09  Q          |          |          |       V  |
20+ 5       0.7261      0.09  Q          |          |          |       V  |
20+10       0.7267      0.09  Q          |          |          |       V  |
20+15       0.7273      0.09  Q          |          |          |       V  |
20+20       0.7279      0.09  Q          |          |          |       V  |
20+25       0.7285      0.08  Q          |          |          |       V  |
20+30       0.7290      0.08  Q          |          |          |       V  |
20+35       0.7296      0.08  Q          |          |          |       V  |
20+40       0.7302      0.08  Q          |          |          |       V  |
20+45       0.7307      0.08  Q          |          |          |       V  |
20+50       0.7313      0.08  Q          |          |          |        V |
20+55       0.7318      0.08  Q          |          |          |        V |
21+ 0       0.7323      0.08  Q          |          |          |        V |
21+ 5       0.7329      0.08  Q          |          |          |        V |
21+10       0.7334      0.08  Q          |          |          |        V |
21+15       0.7339      0.08  Q          |          |          |        V |
21+20       0.7344      0.07  Q          |          |          |        V |
21+25       0.7349      0.07  Q          |          |          |        V |
21+30       0.7354      0.07  Q          |          |          |        V |
21+35       0.7359      0.07  Q          |          |          |        V |
21+40       0.7364      0.07  Q          |          |          |        V |
21+45       0.7369      0.07  Q          |          |          |        V |
21+50       0.7374      0.07  Q          |          |          |        V |
21+55       0.7379      0.07  Q          |          |          |        V |
22+ 0       0.7383      0.07  Q          |          |          |        V |
22+ 5       0.7388      0.07  Q          |          |          |        V |
22+10       0.7393      0.07  Q          |          |          |        V |
22+15       0.7397      0.07  Q          |          |          |        V |
22+20       0.7402      0.07  Q          |          |          |        V |
22+25       0.7406      0.07  Q          |          |          |        V |
22+30       0.7411      0.07  Q          |          |          |        V |
22+35       0.7415      0.06  Q          |          |          |        V |
22+40       0.7420      0.06  Q          |          |          |        V |
22+45       0.7424      0.06  Q          |          |          |        V |
22+50       0.7428      0.06  Q          |          |          |        V |
22+55       0.7433      0.06  Q          |          |          |        V |
23+ 0       0.7437      0.06  Q          |          |          |        V |
23+ 5       0.7441      0.06  Q          |          |          |        V |
23+10       0.7445      0.06  Q          |          |          |        V |
23+15       0.7450      0.06  Q          |          |          |        V |
23+20       0.7454      0.06  Q          |          |          |        V |
23+25       0.7458      0.06  Q          |          |          |        V |
23+30       0.7462      0.06  Q          |          |          |        V |
23+35       0.7466      0.06  Q          |          |          |        V |
23+40       0.7470      0.06  Q          |          |          |        V |
23+45       0.7474      0.06  Q          |          |          |        V |
23+50       0.7478      0.06  Q          |          |          |        V |
23+55       0.7482      0.06  Q          |          |          |        V |
24+ 0       0.7486      0.06  Q          |          |          |        V |
24+ 5       0.7489      0.05  Q          |          |          |        V |
24+10       0.7493      0.05  Q          |          |          |        V |
```

```
   24+15       0.7495      0.03  Q          |          |          |         V|
   24+20       0.7496      0.02  Q          |          |          |         V|
   24+25       0.7497      0.01  Q          |          |          |         V|
   24+30       0.7497      0.01  Q          |          |          |         V|
   24+35       0.7498      0.01  Q          |          |          |         V|
   24+40       0.7498      0.00  Q          |          |          |         V|
   24+45       0.7498      0.00  Q          |          |          |         V|
   24+50       0.7498      0.00  Q          |          |          |         V|
   24+55       0.7498      0.00  Q          |          |          |         V|
   25+ 0       0.7498      0.00  Q          |          |          |         V|
   25+ 5       0.7498      0.00  Q          |          |          |         V|
   25+10       0.7498      0.00  Q          |          |          |         V|
   25+15       0.7498      0.00  Q          |          |          |         V|
   25+20       0.7498      0.00  Q          |          |          |         V|
   25+25       0.7498      0.00  Q          |          |          |          V
---------------------------------------------------------------------------
```

- 100 Year 3 Hour Pre-Development Unit Hydrograph – Area 'D'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/10/16   File Name EXD10003.out


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------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'D' - 100 YEAR 3 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 100

       Antecedent Moisture Condition = 3

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 82.3       6.8          0.33     C     0.250     1.000    0.250
 82.3      13.5          0.67     D     0.200     1.000    0.200

Area-averaged adjusted loss rate Fm (In/Hr) =  0.217

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC3)          Yield Fr
     6.77   0.333         82.3      95.4       0.48     0.904

    13.54   0.667         82.3      95.4       0.48     0.904

Area-averaged catchment yield fraction, Y =  0.904
Area-averaged low loss fraction, Yb =  0.096
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.250 (hours)
Watershed area =      20.31(Ac.)
Catchment Lag time =   0.200 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 41.6389
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.217(In/Hr)
Average low loss rate fraction (Yb) = 0.096 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.520(In)
Computed peak 30-minute rainfall =  1.090(In)
Specified peak 1-hour rainfall =  1.450(In)
Computed peak 3-hour rainfall =  2.430(In)
Specified peak 6-hour rainfall =  3.360(In)
Specified peak 24-hour rainfall =  5.630(In)


Rainfall depth area reduction factors:
Using a total area of      20.31(Ac.) (Ref: fig. E-4)
```

```
5-minute factor = 0.999     Adjusted rainfall =  0.520(In)
30-minute factor = 0.999    Adjusted rainfall =  1.089(In)
1-hour factor = 0.999       Adjusted rainfall =  1.449(In)
3-hour factor = 1.000       Adjusted rainfall =  2.430(In)
6-hour factor = 1.000       Adjusted rainfall =  3.360(In)
24-hour factor = 1.000 Adjusted rainfall =  5.630(In)
--------------------------------------------------------------------

                    U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------
               (K =       245.62 (CFS))

  1                3.312                   8.135
  2               16.090                  31.387
  3               49.672                  82.485
  4               70.331                  50.743
  5               80.000                  23.750
  6               86.400                  15.720
  7               90.931                  11.127
  8               94.160                   7.932
  9               96.330                   5.329
 10               97.724                   3.425
 11               98.345                   1.524
 12               98.788                   1.089
 13               99.123                   0.821
 14               99.399                   0.678
 15               99.701                   0.742
 16               99.875                   0.428
 17              100.000                   0.306
--------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.5195              0.5195
  2              0.6917              0.1722
  3              0.8178              0.1261
  4              0.9210              0.1032
  5              1.0100              0.0889
  6              1.0890              0.0790
  7              1.1603              0.0714
  8              1.2259              0.0656
  9              1.2868              0.0609
 10              1.3439              0.0570
 11              1.3976              0.0538
 12              1.4486              0.0510
 13              1.5042              0.0556
 14              1.5576              0.0534
 15              1.6091              0.0514
 16              1.6587              0.0496
 17              1.7067              0.0480
 18              1.7533              0.0465
 19              1.7985              0.0452
 20              1.8424              0.0440
 21              1.8852              0.0428
 22              1.9270              0.0417
 23              1.9677              0.0407
 24              2.0075              0.0398
 25              2.0465              0.0390
 26              2.0846              0.0381
 27              2.1220              0.0374
 28              2.1586              0.0366
 29              2.1946              0.0360
 30              2.2299              0.0353
 31              2.2646              0.0347
 32              2.2987              0.0341
 33              2.3322              0.0335
 34              2.3652              0.0330
 35              2.3977              0.0325
```

```
 36              2.4297              0.0320
------------------------------------------------------------------------
Unit              Unit            Unit              Effective
Period            Rainfall        Soil-Loss         Rainfall
(number)            (In)          (In)                 (In)
------------------------------------------------------------------------
  1               0.0320          0.0031              0.0289
  2               0.0325          0.0031              0.0294
  3               0.0335          0.0032              0.0303
  4               0.0341          0.0033              0.0308
  5               0.0353          0.0034              0.0319
  6               0.0360          0.0035              0.0325
  7               0.0374          0.0036              0.0338
  8               0.0381          0.0037              0.0345
  9               0.0398          0.0038              0.0360
 10               0.0407          0.0039              0.0368
 11               0.0428          0.0041              0.0387
 12               0.0440          0.0042              0.0397
 13               0.0465          0.0045              0.0421
 14               0.0480          0.0046              0.0434
 15               0.0514          0.0050              0.0465
 16               0.0534          0.0051              0.0483
 17               0.0510          0.0049              0.0461
 18               0.0538          0.0052              0.0486
 19               0.0609          0.0059              0.0550
 20               0.0656          0.0063              0.0593
 21               0.0790          0.0076              0.0714
 22               0.0889          0.0086              0.0804
 23               0.1261          0.0121              0.1140
 24               0.1722          0.0166              0.1556
 25               0.5195          0.0181              0.5014
 26               0.1032          0.0099              0.0933
 27               0.0714          0.0069              0.0645
 28               0.0570          0.0055              0.0516
 29               0.0556          0.0054              0.0503
 30               0.0496          0.0048              0.0449
 31               0.0452          0.0044              0.0408
 32               0.0417          0.0040              0.0377
 33               0.0390          0.0038              0.0352
 34               0.0366          0.0035              0.0331
 35               0.0347          0.0033              0.0313
 36               0.0330          0.0032              0.0298
------------------------------------------------------------------------
------------------------------------------------------------------------
Total soil rain loss =      0.20(In)
Total effective rainfall =      2.23(In)
Peak flow rate in flood hydrograph =     58.66(CFS)
------------------------------------------------------------------------
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                    3 - H O U R    S T O R M
                R u n o f f      H y d r o g r a p h
------------------------------------------------------------------------
            Hydrograph in   5   Minute intervals ((CFS))

------------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0       15.0      30.0      45.0      60.0
------------------------------------------------------------------------
  0+ 5       0.0016      0.24  Q         |         |         |         |
  0+10       0.0095      1.15  Q         |         |         |         |
  0+15       0.0340      3.55  V Q       |         |         |         |
  0+20       0.0691      5.09  V  Q      |         |         |         |
  0+25       0.1097      5.90  |V Q      |         |         |         |
  0+30       0.1545      6.50  |V  Q     |         |         |         |
  0+35       0.2026      6.99  | V Q     |         |         |         |
  0+40       0.2536      7.40  | V Q     |         |         |         |
  0+45       0.3072      7.77  |  V Q    |         |         |         |
  0+50       0.3629      8.10  |  V Q    |         |         |         |
  0+55       0.4208      8.41  |   VQ    |         |         |         |
  1+ 0       0.4808      8.71  |    Q    |         |         |         |
  1+ 5       0.5432      9.06  |    VQ   |         |         |         |
  1+10       0.6080      9.41  |     Q   |         |         |         |
```

```
   1+15       0.6757      9.84  |     QV  |         |         |         |
   1+20       0.7465     10.27  |     QV  |         |         |         |
   1+25       0.8206     10.76  |      QV |         |         |         |
   1+30       0.8972     11.12  |      Q V|         |         |         |
   1+35       0.9751     11.31  |      Q  V         |         |         |
   1+40       1.0563     11.79  |      Q  |V        |         |         |
   1+45       1.1439     12.72  |       Q | V       |         |         |
   1+50       1.2399     13.94  |        Q|  V      |         |         |
   1+55       1.3496     15.92  |         Q   V     |         |         |
   2+ 0       1.4798     18.91  |          | Q  V   |         |         |
   2+ 5       1.6638     26.71  |          |      Q  |         |         |
   2+10       1.9387     39.91  |          |         V     Q   |         |
   2+15       2.3426     58.66  |          |          |   V     |        Q|
   2+20       2.6408     43.29  |          |          |       Q |         |
   2+25       2.8418     29.20  |          |          Q|        V         |
   2+30       3.0014     23.16  |          |    Q     |         |V        |
   2+35       3.1358     19.52  |          |  Q       |         |  V      |
   2+40       3.2506     16.67  |          |Q         |         |   V     |
   2+45       3.3485     14.22  |         Q|          |         |    V    |
   2+50       3.4330     12.27  |        Q |          |         |     V   |
   2+55       3.5060     10.60  |       Q  |          |         |      V  |
   3+ 0       3.5726      9.68  |     Q    |          |         |      V  |
   3+ 5       3.6329      8.74  |    Q     |          |         |       V |
   3+10       3.6831      7.30  |   Q      |          |         |        V|
   3+15       3.7146      4.56  |  Q       |          |         |        V|
   3+20       3.7334      2.73  |Q         |          |         |        V|
   3+25       3.7459      1.83  |Q         |          |         |        V|
   3+30       3.7538      1.14  Q          |          |         |        V|
   3+35       3.7590      0.75  Q          |          |         |        V|
   3+40       3.7624      0.48  Q          |          |         |        V|
   3+45       3.7645      0.31  Q          |          |         |        V|
   3+50       3.7658      0.19  Q          |          |         |        V|
   3+55       3.7667      0.14  Q          |          |         |        V|
   4+ 0       3.7674      0.10  Q          |          |         |        V|
   4+ 5       3.7678      0.07  Q          |          |         |        V|
   4+10       3.7682      0.05  Q          |          |         |        V|
   4+15       3.7683      0.02  Q          |          |         |        V|
   4+20       3.7684      0.01  Q          |          |         |         V
-------------------------------------------------------------------------
```

- 100 Year 6 Hour Pre-Development Unit Hydrograph – Area 'D'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/10/16   File Name EXD10006.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'D' - 100 YEAR 6 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 100

       Antecedent Moisture Condition = 3

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 82.3       6.8          0.33     C     0.250     1.000    0.250
 82.3      13.5          0.67     D     0.200     1.000    0.200

Area-averaged adjusted loss rate Fm (In/Hr) =  0.217

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC3)          Yield Fr
     6.77   0.333         82.3      95.4       0.48     0.904

    13.54   0.667         82.3      95.4       0.48     0.904

Area-averaged catchment yield fraction, Y =  0.904
Area-averaged low loss fraction, Yb =  0.096
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.250 (hours)
Watershed area =      20.31(Ac.)
Catchment Lag time =   0.200 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 41.6389
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.217(In/Hr)
Average low loss rate fraction (Yb) = 0.096 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.520(In)
Computed peak 30-minute rainfall =  1.090(In)
Specified peak 1-hour rainfall =  1.450(In)
Computed peak 3-hour rainfall =  2.430(In)
Specified peak 6-hour rainfall =  3.360(In)
Specified peak 24-hour rainfall =  5.630(In)


Rainfall depth area reduction factors:
Using a total area of      20.31(Ac.) (Ref: fig. E-4)
```

```
5-minute factor = 0.999     Adjusted rainfall =  0.520(In)
30-minute factor = 0.999    Adjusted rainfall =  1.089(In)
1-hour factor = 0.999       Adjusted rainfall =  1.449(In)
3-hour factor = 1.000       Adjusted rainfall =  2.430(In)
6-hour factor = 1.000       Adjusted rainfall =  3.360(In)
24-hour factor = 1.000 Adjusted rainfall =  5.630(In)
--------------------------------------------------------------------

                     U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------
               (K =       245.62 (CFS))

  1                3.312                   8.135
  2               16.090                  31.387
  3               49.672                  82.485
  4               70.331                  50.743
  5               80.000                  23.750
  6               86.400                  15.720
  7               90.931                  11.127
  8               94.160                   7.932
  9               96.330                   5.329
 10               97.724                   3.425
 11               98.345                   1.524
 12               98.788                   1.089
 13               99.123                   0.821
 14               99.399                   0.678
 15               99.701                   0.742
 16               99.875                   0.428
 17              100.000                   0.306
--------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.5195              0.5195
  2              0.6917              0.1722
  3              0.8178              0.1261
  4              0.9210              0.1032
  5              1.0100              0.0889
  6              1.0890              0.0790
  7              1.1603              0.0714
  8              1.2259              0.0656
  9              1.2868              0.0609
 10              1.3439              0.0570
 11              1.3976              0.0538
 12              1.4486              0.0510
 13              1.5042              0.0556
 14              1.5576              0.0534
 15              1.6091              0.0514
 16              1.6587              0.0496
 17              1.7067              0.0480
 18              1.7533              0.0465
 19              1.7985              0.0452
 20              1.8424              0.0440
 21              1.8852              0.0428
 22              1.9270              0.0417
 23              1.9677              0.0407
 24              2.0075              0.0398
 25              2.0465              0.0390
 26              2.0846              0.0381
 27              2.1220              0.0374
 28              2.1586              0.0366
 29              2.1946              0.0360
 30              2.2299              0.0353
 31              2.2646              0.0347
 32              2.2987              0.0341
 33              2.3322              0.0335
 34              2.3652              0.0330
 35              2.3977              0.0325
```

36	2.4297	0.0320
37	2.4610	0.0313
38	2.4919	0.0309
39	2.5224	0.0305
40	2.5524	0.0300
41	2.5820	0.0296
42	2.6113	0.0293
43	2.6402	0.0289
44	2.6687	0.0285
45	2.6969	0.0282
46	2.7248	0.0279
47	2.7523	0.0275
48	2.7795	0.0272
49	2.8065	0.0269
50	2.8331	0.0266
51	2.8595	0.0264
52	2.8855	0.0261
53	2.9114	0.0258
54	2.9369	0.0256
55	2.9622	0.0253
56	2.9873	0.0251
57	3.0121	0.0248
58	3.0367	0.0246
59	3.0611	0.0244
60	3.0852	0.0242
61	3.1092	0.0239
62	3.1329	0.0237
63	3.1564	0.0235
64	3.1798	0.0233
65	3.2029	0.0231
66	3.2258	0.0229
67	3.2486	0.0228
68	3.2712	0.0226
69	3.2936	0.0224
70	3.3158	0.0222
71	3.3379	0.0221
72	3.3598	0.0219

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0219	0.0021	0.0198
2	0.0221	0.0021	0.0199
3	0.0224	0.0022	0.0202
4	0.0226	0.0022	0.0204
5	0.0229	0.0022	0.0207
6	0.0231	0.0022	0.0209
7	0.0235	0.0023	0.0213
8	0.0237	0.0023	0.0214
9	0.0242	0.0023	0.0218
10	0.0244	0.0023	0.0220
11	0.0248	0.0024	0.0224
12	0.0251	0.0024	0.0226
13	0.0256	0.0025	0.0231
14	0.0258	0.0025	0.0233
15	0.0264	0.0025	0.0238
16	0.0266	0.0026	0.0241
17	0.0272	0.0026	0.0246
18	0.0275	0.0027	0.0249
19	0.0282	0.0027	0.0255
20	0.0285	0.0027	0.0258
21	0.0293	0.0028	0.0264
22	0.0296	0.0029	0.0268
23	0.0305	0.0029	0.0275
24	0.0309	0.0030	0.0279
25	0.0320	0.0031	0.0289
26	0.0325	0.0031	0.0294
27	0.0335	0.0032	0.0303
28	0.0341	0.0033	0.0308
29	0.0353	0.0034	0.0319

30	0.0360	0.0035	0.0325
31	0.0374	0.0036	0.0338
32	0.0381	0.0037	0.0345
33	0.0398	0.0038	0.0360
34	0.0407	0.0039	0.0368
35	0.0428	0.0041	0.0387
36	0.0440	0.0042	0.0397
37	0.0465	0.0045	0.0421
38	0.0480	0.0046	0.0434
39	0.0514	0.0050	0.0465
40	0.0534	0.0051	0.0483
41	0.0510	0.0049	0.0461
42	0.0538	0.0052	0.0486
43	0.0609	0.0059	0.0550
44	0.0656	0.0063	0.0593
45	0.0790	0.0076	0.0714
46	0.0889	0.0086	0.0804
47	0.1261	0.0121	0.1140
48	0.1722	0.0166	0.1556
49	0.5195	0.0181	0.5014
50	0.1032	0.0099	0.0933
51	0.0714	0.0069	0.0645
52	0.0570	0.0055	0.0516
53	0.0556	0.0054	0.0503
54	0.0496	0.0048	0.0449
55	0.0452	0.0044	0.0408
56	0.0417	0.0040	0.0377
57	0.0390	0.0038	0.0352
58	0.0366	0.0035	0.0331
59	0.0347	0.0033	0.0313
60	0.0330	0.0032	0.0298
61	0.0313	0.0030	0.0283
62	0.0300	0.0029	0.0271
63	0.0289	0.0028	0.0261
64	0.0279	0.0027	0.0252
65	0.0269	0.0026	0.0243
66	0.0261	0.0025	0.0236
67	0.0253	0.0024	0.0229
68	0.0246	0.0024	0.0222
69	0.0239	0.0023	0.0216
70	0.0233	0.0022	0.0211
71	0.0228	0.0022	0.0206
72	0.0222	0.0021	0.0201

Total soil rain loss = 0.29(In)
Total effective rainfall = 3.07(In)
Peak flow rate in flood hydrograph = 58.66(CFS)

++

6 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	15.0	30.0	45.0	60.0
0+ 5	0.0011	0.16	Q	|	|	|	|
0+10	0.0065	0.78	Q	|	|	|	|
0+15	0.0232	2.42	VQ	|	|	|	|
0+20	0.0470	3.45	V Q	|	|	|	|
0+25	0.0742	3.96	V Q	|	|	|	|
0+30	0.1040	4.32	V Q	|	|	|	|
0+35	0.1356	4.59	|V Q	|	|	|	|
0+40	0.1686	4.80	|V Q	|	|	|	|
0+45	0.2028	4.97	|V Q	|	|	|	|
0+50	0.2379	5.10	|V Q	|	|	|	|
0+55	0.2737	5.19	| VQ	|	|	|	|
1+ 0	0.3101	5.28	| VQ	|	|	|	|
1+ 5	0.3471	5.37	| VQ	|	|	|	|

```
1+10       0.3847      5.46  | VQ      |         |         |         |
1+15       0.4230      5.56  |  Q      |         |         |         |
1+20       0.4619      5.64  |  Q      |         |         |         |
1+25       0.5014      5.74  |  Q      |         |         |         |
1+30       0.5415      5.83  |  QV     |         |         |         |
1+35       0.5823      5.92  |  QV     |         |         |         |
1+40       0.6237      6.02  |   Q     |         |         |         |
1+45       0.6659      6.12  |   QV    |         |         |         |
1+50       0.7088      6.23  |   QV    |         |         |         |
1+55       0.7525      6.35  |   QV    |         |         |         |
2+ 0       0.7970      6.46  |   Q V   |         |         |         |
2+ 5       0.8424      6.60  |   Q V   |         |         |         |
2+10       0.8888      6.73  |   Q V   |         |         |         |
2+15       0.9363      6.90  |   Q  V  |         |         |         |
2+20       0.9849      7.05  |   Q  V  |         |         |         |
2+25       1.0347      7.23  |   Q  V  |         |         |         |
2+30       1.0856      7.40  |   Q   V |         |         |         |
2+35       1.1379      7.59  |    Q  V |         |         |         |
2+40       1.1916      7.79  |    Q   V|         |         |         |
2+45       1.2468      8.02  |    Q   V|         |         |         |
2+50       1.3036      8.25  |    Q    V         |         |         |
2+55       1.3623      8.52  |    Q    V         |         |         |
3+ 0       1.4228      8.79  |    Q    V         |         |         |
3+ 5       1.4856      9.11  |     Q   |V        |         |         |
3+10       1.5507      9.45  |     Q   |V        |         |         |
3+15       1.6185      9.86  |     Q   | V       |         |         |
3+20       1.6894     10.28  |     Q   |  V      |         |         |
3+25       1.7635     10.76  |      Q  |  V      |         |         |
3+30       1.8401     11.12  |      Q  |   V     |         |         |
3+35       1.9180     11.31  |      Q  |   V     |         |         |
3+40       1.9991     11.79  |      Q  |    V    |         |         |
3+45       2.0868     12.72  |       Q |     V   |         |         |
3+50       2.1828     13.94  |        Q|     V   |         |         |
3+55       2.2925     15.92  |         Q      V  |         |         |
4+ 0       2.4227     18.91  |          | Q     V |         |         |
4+ 5       2.6067     26.71  |          |      Q  V         |         |
4+10       2.8815     39.91  |          |          | V   Q  |         |
4+15       3.2855     58.66  |          |          |    V   |        Q|
4+20       3.5837     43.29  |          |          |      VQ |         |
4+25       3.7847     29.20  |          |         Q|        V|         |
4+30       3.9443     23.16  |          |    Q     |         V         |
4+35       4.0787     19.52  |          |  Q       |          |V       |
4+40       4.1935     16.67  |          |Q         |          | V      |
4+45       4.2914     14.22  |        Q|          |          |  V      |
4+50       4.3759     12.27  |       Q |          |          |  V      |
4+55       4.4489     10.60  |      Q  |          |          |   V     |
5+ 0       4.5155      9.68  |     Q   |          |          |   V     |
5+ 5       4.5773      8.97  |    Q    |          |          |    V    |
5+10       4.6352      8.41  |    Q    |          |          |    V    |
5+15       4.6901      7.96  |    Q    |          |          |     V   |
5+20       4.7413      7.43  |   Q     |          |          |     V   |
5+25       4.7896      7.02  |   Q     |          |          |     V   |
5+30       4.8350      6.59  |   Q     |          |          |      V  |
5+35       4.8786      6.33  |   Q     |          |          |      V  |
5+40       4.9206      6.10  |   Q     |          |          |      V  |
5+45       4.9611      5.89  |  Q      |          |          |       V |
5+50       5.0004      5.71  |  Q      |          |          |       V |
5+55       5.0385      5.54  |  Q      |          |          |       V |
6+ 0       5.0756      5.38  |  Q      |          |          |        V|
6+ 5       5.1106      5.08  |  Q      |          |          |        V|
6+10       5.1404      4.33  | Q       |          |          |        V|
6+15       5.1584      2.61  |Q        |          |          |        V|
6+20       5.1690      1.55  |Q        |          |          |        V|
6+25       5.1762      1.04  Q         |          |          |        V|
6+30       5.1811      0.71  Q         |          |          |        V|
6+35       5.1843      0.47  Q         |          |          |        V|
6+40       5.1864      0.30  Q         |          |          |        V|
6+45       5.1877      0.19  Q         |          |          |        V|
6+50       5.1885      0.12  Q         |          |          |        V|
6+55       5.1891      0.09  Q         |          |          |        V|
7+ 0       5.1895      0.06  Q         |          |          |        V|
```

```
    7+ 5       5.1898      0.04  Q         |         |         |        V|
    7+10       5.1900      0.03  Q         |         |         |        V|
    7+15       5.1901      0.01  Q         |         |         |        V|
    7+20       5.1902      0.01  Q         |         |         |         V
-------------------------------------------------------------------------
```

- 100 Year 12 Hour Pre-Development Unit Hydrograph – Area 'D'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989-2012, Version 7.2

       Study date  10/10/16   File Name EXD10012.out


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------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'D' - 100 YEAR 12 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 100

       Antecedent Moisture Condition = 3

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 82.3       6.8          0.33     C     0.250     1.000    0.250
 82.3      13.5          0.67     D     0.200     1.000    0.200

Area-averaged adjusted loss rate Fm (In/Hr) =  0.217

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC3)          Yield Fr
     6.77   0.333         82.3      95.4       0.48     0.904

    13.54   0.667         82.3      95.4       0.48     0.904

Area-averaged catchment yield fraction, Y =  0.904
Area-averaged low loss fraction, Yb =  0.096
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.250 (hours)
Watershed area =      20.31(Ac.)
Catchment Lag time =   0.200 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 41.6389
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.217(In/Hr)
Average low loss rate fraction (Yb) = 0.096 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.520(In)
Computed peak 30-minute rainfall =  1.090(In)
Specified peak 1-hour rainfall =  1.450(In)
Computed peak 3-hour rainfall =  2.430(In)
Specified peak 6-hour rainfall =  3.360(In)
Specified peak 24-hour rainfall =  5.630(In)


Rainfall depth area reduction factors:
Using a total area of      20.31(Ac.) (Ref: fig. E-4)
```

```
5-minute factor = 0.999     Adjusted rainfall =  0.520(In)
30-minute factor = 0.999    Adjusted rainfall =  1.089(In)
1-hour factor = 0.999       Adjusted rainfall =  1.449(In)
3-hour factor = 1.000       Adjusted rainfall =  2.430(In)
6-hour factor = 1.000       Adjusted rainfall =  3.360(In)
24-hour factor = 1.000 Adjusted rainfall =  5.630(In)
--------------------------------------------------------------------

                     U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------
               (K =       245.62 (CFS))

  1                3.312                   8.135
  2               16.090                  31.387
  3               49.672                  82.485
  4               70.331                  50.743
  5               80.000                  23.750
  6               86.400                  15.720
  7               90.931                  11.127
  8               94.160                   7.932
  9               96.330                   5.329
 10               97.724                   3.425
 11               98.345                   1.524
 12               98.788                   1.089
 13               99.123                   0.821
 14               99.399                   0.678
 15               99.701                   0.742
 16               99.875                   0.428
 17              100.000                   0.306
--------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.5195              0.5195
  2              0.6917              0.1722
  3              0.8178              0.1261
  4              0.9210              0.1032
  5              1.0100              0.0889
  6              1.0890              0.0790
  7              1.1603              0.0714
  8              1.2259              0.0656
  9              1.2868              0.0609
 10              1.3439              0.0570
 11              1.3976              0.0538
 12              1.4486              0.0510
 13              1.5042              0.0556
 14              1.5576              0.0534
 15              1.6091              0.0514
 16              1.6587              0.0496
 17              1.7067              0.0480
 18              1.7533              0.0465
 19              1.7985              0.0452
 20              1.8424              0.0440
 21              1.8852              0.0428
 22              1.9270              0.0417
 23              1.9677              0.0407
 24              2.0075              0.0398
 25              2.0465              0.0390
 26              2.0846              0.0381
 27              2.1220              0.0374
 28              2.1586              0.0366
 29              2.1946              0.0360
 30              2.2299              0.0353
 31              2.2646              0.0347
 32              2.2987              0.0341
 33              2.3322              0.0335
 34              2.3652              0.0330
 35              2.3977              0.0325
```

36	2.4297	0.0320
37	2.4610	0.0313
38	2.4919	0.0309
39	2.5224	0.0305
40	2.5524	0.0300
41	2.5820	0.0296
42	2.6113	0.0293
43	2.6402	0.0289
44	2.6687	0.0285
45	2.6969	0.0282
46	2.7248	0.0279
47	2.7523	0.0275
48	2.7795	0.0272
49	2.8065	0.0269
50	2.8331	0.0266
51	2.8595	0.0264
52	2.8855	0.0261
53	2.9114	0.0258
54	2.9369	0.0256
55	2.9622	0.0253
56	2.9873	0.0251
57	3.0121	0.0248
58	3.0367	0.0246
59	3.0611	0.0244
60	3.0852	0.0242
61	3.1092	0.0239
62	3.1329	0.0237
63	3.1564	0.0235
64	3.1798	0.0233
65	3.2029	0.0231
66	3.2258	0.0229
67	3.2486	0.0228
68	3.2712	0.0226
69	3.2936	0.0224
70	3.3158	0.0222
71	3.3379	0.0221
72	3.3598	0.0219
73	3.3771	0.0173
74	3.3942	0.0172
75	3.4112	0.0170
76	3.4281	0.0169
77	3.4448	0.0167
78	3.4614	0.0166
79	3.4779	0.0165
80	3.4942	0.0163
81	3.5104	0.0162
82	3.5265	0.0161
83	3.5424	0.0160
84	3.5583	0.0158
85	3.5740	0.0157
86	3.5896	0.0156
87	3.6051	0.0155
88	3.6205	0.0154
89	3.6357	0.0153
90	3.6509	0.0152
91	3.6659	0.0151
92	3.6809	0.0149
93	3.6957	0.0148
94	3.7105	0.0147
95	3.7251	0.0146
96	3.7397	0.0146
97	3.7541	0.0145
98	3.7685	0.0144
99	3.7828	0.0143
100	3.7970	0.0142
101	3.8111	0.0141
102	3.8251	0.0140
103	3.8390	0.0139
104	3.8528	0.0138
105	3.8666	0.0138
106	3.8802	0.0137

107	3.8938	0.0136
108	3.9073	0.0135
109	3.9208	0.0134
110	3.9341	0.0134
111	3.9474	0.0133
112	3.9606	0.0132
113	3.9737	0.0131
114	3.9868	0.0131
115	3.9998	0.0130
116	4.0127	0.0129
117	4.0256	0.0128
118	4.0383	0.0128
119	4.0510	0.0127
120	4.0637	0.0126
121	4.0763	0.0126
122	4.0888	0.0125
123	4.1012	0.0124
124	4.1136	0.0124
125	4.1259	0.0123
126	4.1382	0.0123
127	4.1504	0.0122
128	4.1625	0.0121
129	4.1746	0.0121
130	4.1866	0.0120
131	4.1986	0.0120
132	4.2105	0.0119
133	4.2223	0.0118
134	4.2341	0.0118
135	4.2459	0.0117
136	4.2576	0.0117
137	4.2692	0.0116
138	4.2808	0.0116
139	4.2923	0.0115
140	4.3038	0.0115
141	4.3152	0.0114
142	4.3266	0.0114
143	4.3379	0.0113
144	4.3492	0.0113

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0113	0.0011	0.0102
2	0.0113	0.0011	0.0102
3	0.0114	0.0011	0.0103
4	0.0115	0.0011	0.0104
5	0.0116	0.0011	0.0105
6	0.0116	0.0011	0.0105
7	0.0117	0.0011	0.0106
8	0.0118	0.0011	0.0107
9	0.0119	0.0011	0.0108
10	0.0120	0.0012	0.0108
11	0.0121	0.0012	0.0109
12	0.0121	0.0012	0.0110
13	0.0123	0.0012	0.0111
14	0.0123	0.0012	0.0111
15	0.0124	0.0012	0.0112
16	0.0125	0.0012	0.0113
17	0.0126	0.0012	0.0114
18	0.0127	0.0012	0.0115
19	0.0128	0.0012	0.0116
20	0.0129	0.0012	0.0117
21	0.0131	0.0013	0.0118
22	0.0131	0.0013	0.0119
23	0.0133	0.0013	0.0120
24	0.0134	0.0013	0.0121
25	0.0135	0.0013	0.0122
26	0.0136	0.0013	0.0123
27	0.0138	0.0013	0.0124
28	0.0138	0.0013	0.0125

29	0.0140	0.0013	0.0127
30	0.0141	0.0014	0.0127
31	0.0143	0.0014	0.0129
32	0.0144	0.0014	0.0130
33	0.0146	0.0014	0.0132
34	0.0146	0.0014	0.0132
35	0.0148	0.0014	0.0134
36	0.0149	0.0014	0.0135
37	0.0152	0.0015	0.0137
38	0.0153	0.0015	0.0138
39	0.0155	0.0015	0.0140
40	0.0156	0.0015	0.0141
41	0.0158	0.0015	0.0143
42	0.0160	0.0015	0.0144
43	0.0162	0.0016	0.0146
44	0.0163	0.0016	0.0148
45	0.0166	0.0016	0.0150
46	0.0167	0.0016	0.0151
47	0.0170	0.0016	0.0154
48	0.0172	0.0017	0.0155
49	0.0219	0.0021	0.0198
50	0.0221	0.0021	0.0199
51	0.0224	0.0022	0.0202
52	0.0226	0.0022	0.0204
53	0.0229	0.0022	0.0207
54	0.0231	0.0022	0.0209
55	0.0235	0.0023	0.0213
56	0.0237	0.0023	0.0214
57	0.0242	0.0023	0.0218
58	0.0244	0.0023	0.0220
59	0.0248	0.0024	0.0224
60	0.0251	0.0024	0.0226
61	0.0256	0.0025	0.0231
62	0.0258	0.0025	0.0233
63	0.0264	0.0025	0.0238
64	0.0266	0.0026	0.0241
65	0.0272	0.0026	0.0246
66	0.0275	0.0027	0.0249
67	0.0282	0.0027	0.0255
68	0.0285	0.0027	0.0258
69	0.0293	0.0028	0.0264
70	0.0296	0.0029	0.0268
71	0.0305	0.0029	0.0275
72	0.0309	0.0030	0.0279
73	0.0320	0.0031	0.0289
74	0.0325	0.0031	0.0294
75	0.0335	0.0032	0.0303
76	0.0341	0.0033	0.0308
77	0.0353	0.0034	0.0319
78	0.0360	0.0035	0.0325
79	0.0374	0.0036	0.0338
80	0.0381	0.0037	0.0345
81	0.0398	0.0038	0.0360
82	0.0407	0.0039	0.0368
83	0.0428	0.0041	0.0387
84	0.0440	0.0042	0.0397
85	0.0465	0.0045	0.0421
86	0.0480	0.0046	0.0434
87	0.0514	0.0050	0.0465
88	0.0534	0.0051	0.0483
89	0.0510	0.0049	0.0461
90	0.0538	0.0052	0.0486
91	0.0609	0.0059	0.0550
92	0.0656	0.0063	0.0593
93	0.0790	0.0076	0.0714
94	0.0889	0.0086	0.0804
95	0.1261	0.0121	0.1140
96	0.1722	0.0166	0.1556
97	0.5195	0.0181	0.5014
98	0.1032	0.0099	0.0933
99	0.0714	0.0069	0.0645

```
      100              0.0570          0.0055              0.0516
      101              0.0556          0.0054              0.0503
      102              0.0496          0.0048              0.0449
      103              0.0452          0.0044              0.0408
      104              0.0417          0.0040              0.0377
      105              0.0390          0.0038              0.0352
      106              0.0366          0.0035              0.0331
      107              0.0347          0.0033              0.0313
      108              0.0330          0.0032              0.0298
      109              0.0313          0.0030              0.0283
      110              0.0300          0.0029              0.0271
      111              0.0289          0.0028              0.0261
      112              0.0279          0.0027              0.0252
      113              0.0269          0.0026              0.0243
      114              0.0261          0.0025              0.0236
      115              0.0253          0.0024              0.0229
      116              0.0246          0.0024              0.0222
      117              0.0239          0.0023              0.0216
      118              0.0233          0.0022              0.0211
      119              0.0228          0.0022              0.0206
      120              0.0222          0.0021              0.0201
      121              0.0173          0.0017              0.0156
      122              0.0169          0.0016              0.0152
      123              0.0165          0.0016              0.0149
      124              0.0161          0.0015              0.0145
      125              0.0157          0.0015              0.0142
      126              0.0154          0.0015              0.0139
      127              0.0151          0.0014              0.0136
      128              0.0147          0.0014              0.0133
      129              0.0145          0.0014              0.0131
      130              0.0142          0.0014              0.0128
      131              0.0139          0.0013              0.0126
      132              0.0137          0.0013              0.0124
      133              0.0134          0.0013              0.0121
      134              0.0132          0.0013              0.0119
      135              0.0130          0.0013              0.0117
      136              0.0128          0.0012              0.0115
      137              0.0126          0.0012              0.0114
      138              0.0124          0.0012              0.0112
      139              0.0122          0.0012              0.0110
      140              0.0120          0.0012              0.0109
      141              0.0118          0.0011              0.0107
      142              0.0117          0.0011              0.0106
      143              0.0115          0.0011              0.0104
      144              0.0114          0.0011              0.0103
      ---------------------------------------------------------------------
      ---------------------------------------------------------------------
      Total soil rain loss =      0.39(In)
      Total effective rainfall =      3.96(In)
      Peak flow rate in flood hydrograph =     58.66(CFS)
      ---------------------------------------------------------------------
      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                        12 - H O U R    S T O R M
                    R u n o f f      H y d r o g r a p h
      ---------------------------------------------------------------------
                Hydrograph in   5   Minute intervals ((CFS))

      ---------------------------------------------------------------------
 Time(h+m) Volume Ac.Ft   Q(CFS)  0       15.0      30.0      45.0      60.0
 ---------------------------------------------------------------------------
   0+ 5       0.0006      0.08  Q         |         |         |         |
   0+10       0.0033      0.40  Q         |         |         |         |
   0+15       0.0119      1.25  Q         |         |         |         |
   0+20       0.0241      1.77  VQ        |         |         |         |
   0+25       0.0380      2.02  VQ        |         |         |         |
   0+30       0.0532      2.20  VQ        |         |         |         |
   0+35       0.0692      2.32  VQ        |         |         |         |
   0+40       0.0858      2.42  VQ        |         |         |         |
   0+45       0.1030      2.49  VQ        |         |         |         |
   0+50       0.1205      2.54  VQ        |         |         |         |
   0+55       0.1383      2.58  VQ        |         |         |         |
```

```
1+ 0       0.1562      2.61  VQ        |         |         |         |
1+ 5       0.1744      2.63  |Q        |         |         |         |
1+10       0.1927      2.66  |Q        |         |         |         |
1+15       0.2112      2.69  |Q        |         |         |         |
1+20       0.2299      2.71  |Q        |         |         |         |
1+25       0.2487      2.74  |Q        |         |         |         |
1+30       0.2677      2.76  |Q        |         |         |         |
1+35       0.2868      2.78  |Q        |         |         |         |
1+40       0.3061      2.80  |Q        |         |         |         |
1+45       0.3255      2.82  |Q        |         |         |         |
1+50       0.3451      2.84  |QV       |         |         |         |
1+55       0.3649      2.87  |QV       |         |         |         |
2+ 0       0.3848      2.89  |QV       |         |         |         |
2+ 5       0.4049      2.92  |QV       |         |         |         |
2+10       0.4251      2.94  |QV       |         |         |         |
2+15       0.4455      2.97  |QV       |         |         |         |
2+20       0.4661      2.99  |QV       |         |         |         |
2+25       0.4869      3.02  | Q       |         |         |         |
2+30       0.5079      3.04  | QV      |         |         |         |
2+35       0.5290      3.07  | QV      |         |         |         |
2+40       0.5504      3.10  | QV      |         |         |         |
2+45       0.5719      3.13  | QV      |         |         |         |
2+50       0.5937      3.16  | QV      |         |         |         |
2+55       0.6157      3.19  | QV      |         |         |         |
3+ 0       0.6378      3.22  | QV      |         |         |         |
3+ 5       0.6603      3.25  | QV      |         |         |         |
3+10       0.6829      3.29  | Q V     |         |         |         |
3+15       0.7057      3.32  | Q V     |         |         |         |
3+20       0.7288      3.35  | Q V     |         |         |         |
3+25       0.7522      3.39  | Q V     |         |         |         |
3+30       0.7758      3.43  | Q V     |         |         |         |
3+35       0.7996      3.46  | Q V     |         |         |         |
3+40       0.8238      3.50  | Q V     |         |         |         |
3+45       0.8482      3.54  | Q  V    |         |         |         |
3+50       0.8728      3.58  | Q  V    |         |         |         |
3+55       0.8978      3.63  | Q  V    |         |         |         |
4+ 0       0.9231      3.67  | Q  V    |         |         |         |
4+ 5       0.9489      3.75  | Q  V    |         |         |         |
4+10       0.9759      3.92  | Q  V    |         |         |         |
4+15       1.0055      4.30  | Q   V   |         |         |         |
4+20       1.0369      4.56  |  Q  V   |         |         |         |
4+25       1.0693      4.71  |  Q  V   |         |         |         |
4+30       1.1025      4.82  |  Q  V   |         |         |         |
4+35       1.1365      4.93  |  Q  V   |         |         |         |
4+40       1.1710      5.02  |  Q  V   |         |         |         |
4+45       1.2062      5.10  |  Q   V  |         |         |         |
4+50       1.2419      5.18  |  Q   V  |         |         |         |
4+55       1.2781      5.26  |  Q   V  |         |         |         |
5+ 0       1.3148      5.33  |  Q   V  |         |         |         |
5+ 5       1.3520      5.41  |  Q    V |         |         |         |
5+10       1.3898      5.48  |  Q    V |         |         |         |
5+15       1.4281      5.57  |  Q    V |         |         |         |
5+20       1.4670      5.65  |  Q    V |         |         |         |
5+25       1.5065      5.74  |  Q    V |         |         |         |
5+30       1.5466      5.83  |  Q     V|         |         |         |
5+35       1.5874      5.92  |  Q     V|         |         |         |
5+40       1.6289      6.02  |   Q    V|         |         |         |
5+45       1.6710      6.12  |   Q    V|         |         |         |
5+50       1.7139      6.23  |   Q     V         |         |         |
5+55       1.7577      6.35  |   Q     V         |         |         |
6+ 0       1.8022      6.46  |   Q     V         |         |         |
6+ 5       1.8476      6.60  |   Q     |V        |         |         |
6+10       1.8940      6.73  |   Q     |V        |         |         |
6+15       1.9415      6.90  |   Q     |V        |         |         |
6+20       1.9901      7.05  |   Q     |V        |         |         |
6+25       2.0398      7.23  |   Q     | V       |         |         |
6+30       2.0908      7.40  |   Q     | V       |         |         |
6+35       2.1431      7.59  |    Q    | V       |         |         |
6+40       2.1968      7.79  |    Q    |  V      |         |         |
6+45       2.2520      8.02  |    Q    |  V      |         |         |
6+50       2.3088      8.25  |    Q    |  V      |         |         |
```

```
 6+55      2.3674      8.52  |    Q    |   V     |         |         |
 7+ 0      2.4280      8.79  |    Q    |   V     |         |         |
 7+ 5      2.4907      9.11  |     Q   |   V     |         |         |
 7+10      2.5558      9.45  |     Q   |    V    |         |         |
 7+15      2.6237      9.86  |     Q   |    V    |         |         |
 7+20      2.6945     10.28  |     Q   |     V   |         |         |
 7+25      2.7686     10.76  |      Q  |     V   |         |         |
 7+30      2.8452     11.12  |      Q  |     V   |         |         |
 7+35      2.9231     11.31  |      Q  |      V  |         |         |
 7+40      3.0043     11.79  |      Q  |      V  |         |         |
 7+45      3.0919     12.72  |       Q |       V |         |         |
 7+50      3.1879     13.94  |        Q|        V|         |         |
 7+55      3.2976     15.92  |         Q        V|         |         |
 8+ 0      3.4279     18.91  |          | Q       V        |         |
 8+ 5      3.6119     26.71  |          |      Q  |V        |         |
 8+10      3.8867     39.91  |          |         |  V  Q   |         |
 8+15      4.2907     58.66  |          |         |    V    |        Q|
 8+20      4.5888     43.29  |          |         |      VQ |         |
 8+25      4.7899     29.20  |          |        Q|       V |         |
 8+30      4.9494     23.16  |          |    Q    |        V|         |
 8+35      5.0838     19.52  |          |  Q      |         V         |
 8+40      5.1986     16.67  |          |Q        |         |V        |
 8+45      5.2966     14.22  |        Q|         |         |V        |
 8+50      5.3811     12.27  |       Q |         |         | V       |
 8+55      5.4540     10.60  |      Q  |         |         | V       |
 9+ 0      5.5207      9.68  |     Q   |         |         | V       |
 9+ 5      5.5825      8.97  |    Q    |         |         |  V      |
 9+10      5.6404      8.41  |    Q    |         |         |  V      |
 9+15      5.6952      7.96  |    Q    |         |         |  V      |
 9+20      5.7464      7.43  |   Q     |         |         |   V     |
 9+25      5.7947      7.02  |   Q     |         |         |   V     |
 9+30      5.8401      6.59  |   Q     |         |         |   V     |
 9+35      5.8837      6.33  |   Q     |         |         |    V    |
 9+40      5.9257      6.10  |   Q     |         |         |    V    |
 9+45      5.9663      5.89  |  Q      |         |         |    V    |
 9+50      6.0056      5.71  |  Q      |         |         |    V    |
 9+55      6.0437      5.54  |  Q      |         |         |     V   |
10+ 0      6.0808      5.38  |  Q      |         |         |     V   |
10+ 5      6.1166      5.21  |  Q      |         |         |     V   |
10+10      6.1507      4.95  |  Q      |         |         |     V   |
10+15      6.1817      4.50  | Q       |         |         |     V   |
10+20      6.2105      4.18  | Q       |         |         |      V  |
10+25      6.2379      3.98  | Q       |         |         |      V  |
10+30      6.2642      3.83  | Q       |         |         |      V  |
10+35      6.2897      3.69  | Q       |         |         |      V  |
10+40      6.3143      3.58  | Q       |         |         |      V  |
10+45      6.3383      3.48  | Q       |         |         |      V  |
10+50      6.3616      3.39  | Q       |         |         |      V  |
10+55      6.3844      3.31  | Q       |         |         |       V |
11+ 0      6.4068      3.24  | Q       |         |         |       V |
11+ 5      6.4287      3.18  | Q       |         |         |       V |
11+10      6.4501      3.12  | Q       |         |         |       V |
11+15      6.4712      3.06  | Q       |         |         |       V |
11+20      6.4918      3.00  | Q       |         |         |       V |
11+25      6.5121      2.95  |Q        |         |         |       V |
11+30      6.5321      2.90  |Q        |         |         |       V |
11+35      6.5517      2.85  |Q        |         |         |        V|
11+40      6.5710      2.81  |Q        |         |         |        V|
11+45      6.5901      2.76  |Q        |         |         |        V|
11+50      6.6088      2.72  |Q        |         |         |        V|
11+55      6.6273      2.68  |Q        |         |         |        V|
12+ 0      6.6455      2.64  |Q        |         |         |        V|
12+ 5      6.6628      2.52  |Q        |         |         |        V|
12+10      6.6778      2.17  |Q        |         |         |        V|
12+15      6.6867      1.30  Q         |         |         |        V|
12+20      6.6920      0.77  Q         |         |         |        V|
12+25      6.6956      0.52  Q         |         |         |        V|
12+30      6.6981      0.35  Q         |         |         |        V|
12+35      6.6997      0.23  Q         |         |         |        V|
12+40      6.7007      0.15  Q         |         |         |        V|
12+45      6.7014      0.10  Q         |         |         |        V|
```

```
   12+50       6.7018      0.06  Q         |         |         |        V|
   12+55       6.7021      0.04  Q         |         |         |        V|
   13+ 0       6.7023      0.03  Q         |         |         |        V|
   13+ 5       6.7024      0.02  Q         |         |         |        V|
   13+10       6.7025      0.02  Q         |         |         |        V|
   13+15       6.7026      0.01  Q         |         |         |        V|
   13+20       6.7026      0.00  Q         |         |         |         V
-------------------------------------------------------------------------
```

- 100 Year 24 Hour Pre-Development Unit Hydrograph – Area 'D'

```
        U n i t   H y d r o g r a p h   A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989-2012, Version 7.2

        Study date  10/10/16   File Name EXD10024.out


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'D' - 100 YEAR 24 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

        Storm Event Year = 100

        Antecedent Moisture Condition = 3

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 82.3       6.8          0.33     C     0.250     1.000    0.250
 82.3      13.5          0.67     D     0.200     1.000    0.200

Area-averaged adjusted loss rate Fm (In/Hr) =  0.217

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC3)           Yield Fr
     6.77   0.333         82.3      95.4       0.48     0.904

    13.54   0.667         82.3      95.4       0.48     0.904

Area-averaged catchment yield fraction, Y =  0.904
Area-averaged low loss fraction, Yb =  0.096
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.250 (hours)
Watershed area =      20.31(Ac.)
Catchment Lag time =   0.200 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 41.6389
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.217(In/Hr)
Average low loss rate fraction (Yb) = 0.096 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.520(In)
Computed peak 30-minute rainfall =  1.090(In)
Specified peak 1-hour rainfall =  1.450(In)
Computed peak 3-hour rainfall =  2.430(In)
Specified peak 6-hour rainfall =  3.360(In)
Specified peak 24-hour rainfall =  5.630(In)


Rainfall depth area reduction factors:
Using a total area of      20.31(Ac.) (Ref: fig. E-4)
```

```
5-minute factor = 0.999     Adjusted rainfall =  0.520(In)
30-minute factor = 0.999    Adjusted rainfall =  1.089(In)
1-hour factor = 0.999       Adjusted rainfall =  1.449(In)
3-hour factor = 1.000       Adjusted rainfall =  2.430(In)
6-hour factor = 1.000       Adjusted rainfall =  3.360(In)
24-hour factor = 1.000 Adjusted rainfall =  5.630(In)
--------------------------------------------------------------------

                     U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------
               (K =       245.62 (CFS))

  1                3.312                   8.135
  2               16.090                  31.387
  3               49.672                  82.485
  4               70.331                  50.743
  5               80.000                  23.750
  6               86.400                  15.720
  7               90.931                  11.127
  8               94.160                   7.932
  9               96.330                   5.329
 10               97.724                   3.425
 11               98.345                   1.524
 12               98.788                   1.089
 13               99.123                   0.821
 14               99.399                   0.678
 15               99.701                   0.742
 16               99.875                   0.428
 17              100.000                   0.306
--------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.5195              0.5195
  2              0.6917              0.1722
  3              0.8178              0.1261
  4              0.9210              0.1032
  5              1.0100              0.0889
  6              1.0890              0.0790
  7              1.1603              0.0714
  8              1.2259              0.0656
  9              1.2868              0.0609
 10              1.3439              0.0570
 11              1.3976              0.0538
 12              1.4486              0.0510
 13              1.5042              0.0556
 14              1.5576              0.0534
 15              1.6091              0.0514
 16              1.6587              0.0496
 17              1.7067              0.0480
 18              1.7533              0.0465
 19              1.7985              0.0452
 20              1.8424              0.0440
 21              1.8852              0.0428
 22              1.9270              0.0417
 23              1.9677              0.0407
 24              2.0075              0.0398
 25              2.0465              0.0390
 26              2.0846              0.0381
 27              2.1220              0.0374
 28              2.1586              0.0366
 29              2.1946              0.0360
 30              2.2299              0.0353
 31              2.2646              0.0347
 32              2.2987              0.0341
 33              2.3322              0.0335
 34              2.3652              0.0330
 35              2.3977              0.0325
```

36	2.4297	0.0320
37	2.4610	0.0313
38	2.4919	0.0309
39	2.5224	0.0305
40	2.5524	0.0300
41	2.5820	0.0296
42	2.6113	0.0293
43	2.6402	0.0289
44	2.6687	0.0285
45	2.6969	0.0282
46	2.7248	0.0279
47	2.7523	0.0275
48	2.7795	0.0272
49	2.8065	0.0269
50	2.8331	0.0266
51	2.8595	0.0264
52	2.8855	0.0261
53	2.9114	0.0258
54	2.9369	0.0256
55	2.9622	0.0253
56	2.9873	0.0251
57	3.0121	0.0248
58	3.0367	0.0246
59	3.0611	0.0244
60	3.0852	0.0242
61	3.1092	0.0239
62	3.1329	0.0237
63	3.1564	0.0235
64	3.1798	0.0233
65	3.2029	0.0231
66	3.2258	0.0229
67	3.2486	0.0228
68	3.2712	0.0226
69	3.2936	0.0224
70	3.3158	0.0222
71	3.3379	0.0221
72	3.3598	0.0219
73	3.3771	0.0173
74	3.3942	0.0172
75	3.4112	0.0170
76	3.4281	0.0169
77	3.4448	0.0167
78	3.4614	0.0166
79	3.4779	0.0165
80	3.4942	0.0163
81	3.5104	0.0162
82	3.5265	0.0161
83	3.5424	0.0160
84	3.5583	0.0158
85	3.5740	0.0157
86	3.5896	0.0156
87	3.6051	0.0155
88	3.6205	0.0154
89	3.6357	0.0153
90	3.6509	0.0152
91	3.6659	0.0151
92	3.6809	0.0149
93	3.6957	0.0148
94	3.7105	0.0147
95	3.7251	0.0146
96	3.7397	0.0146
97	3.7541	0.0145
98	3.7685	0.0144
99	3.7828	0.0143
100	3.7970	0.0142
101	3.8111	0.0141
102	3.8251	0.0140
103	3.8390	0.0139
104	3.8528	0.0138
105	3.8666	0.0138
106	3.8802	0.0137

107	3.8938	0.0136
108	3.9073	0.0135
109	3.9208	0.0134
110	3.9341	0.0134
111	3.9474	0.0133
112	3.9606	0.0132
113	3.9737	0.0131
114	3.9868	0.0131
115	3.9998	0.0130
116	4.0127	0.0129
117	4.0256	0.0128
118	4.0383	0.0128
119	4.0510	0.0127
120	4.0637	0.0126
121	4.0763	0.0126
122	4.0888	0.0125
123	4.1012	0.0124
124	4.1136	0.0124
125	4.1259	0.0123
126	4.1382	0.0123
127	4.1504	0.0122
128	4.1625	0.0121
129	4.1746	0.0121
130	4.1866	0.0120
131	4.1986	0.0120
132	4.2105	0.0119
133	4.2223	0.0118
134	4.2341	0.0118
135	4.2459	0.0117
136	4.2576	0.0117
137	4.2692	0.0116
138	4.2808	0.0116
139	4.2923	0.0115
140	4.3038	0.0115
141	4.3152	0.0114
142	4.3266	0.0114
143	4.3379	0.0113
144	4.3492	0.0113
145	4.3604	0.0112
146	4.3715	0.0112
147	4.3827	0.0111
148	4.3938	0.0111
149	4.4048	0.0110
150	4.4158	0.0110
151	4.4267	0.0109
152	4.4376	0.0109
153	4.4484	0.0108
154	4.4593	0.0108
155	4.4700	0.0108
156	4.4807	0.0107
157	4.4914	0.0107
158	4.5020	0.0106
159	4.5126	0.0106
160	4.5232	0.0105
161	4.5337	0.0105
162	4.5441	0.0105
163	4.5546	0.0104
164	4.5650	0.0104
165	4.5753	0.0103
166	4.5856	0.0103
167	4.5959	0.0103
168	4.6061	0.0102
169	4.6163	0.0102
170	4.6264	0.0102
171	4.6366	0.0101
172	4.6466	0.0101
173	4.6567	0.0100
174	4.6667	0.0100
175	4.6766	0.0100
176	4.6866	0.0099
177	4.6965	0.0099

178	4.7063	0.0099
179	4.7162	0.0098
180	4.7260	0.0098
181	4.7357	0.0098
182	4.7454	0.0097
183	4.7551	0.0097
184	4.7648	0.0097
185	4.7744	0.0096
186	4.7840	0.0096
187	4.7936	0.0096
188	4.8031	0.0095
189	4.8126	0.0095
190	4.8221	0.0095
191	4.8315	0.0094
192	4.8409	0.0094
193	4.8503	0.0094
194	4.8596	0.0093
195	4.8689	0.0093
196	4.8782	0.0093
197	4.8875	0.0093
198	4.8967	0.0092
199	4.9059	0.0092
200	4.9151	0.0092
201	4.9242	0.0091
202	4.9333	0.0091
203	4.9424	0.0091
204	4.9514	0.0091
205	4.9605	0.0090
206	4.9695	0.0090
207	4.9784	0.0090
208	4.9874	0.0089
209	4.9963	0.0089
210	5.0052	0.0089
211	5.0140	0.0089
212	5.0229	0.0088
213	5.0317	0.0088
214	5.0405	0.0088
215	5.0492	0.0088
216	5.0580	0.0087
217	5.0667	0.0087
218	5.0753	0.0087
219	5.0840	0.0087
220	5.0926	0.0086
221	5.1012	0.0086
222	5.1098	0.0086
223	5.1184	0.0086
224	5.1269	0.0085
225	5.1354	0.0085
226	5.1439	0.0085
227	5.1524	0.0085
228	5.1608	0.0084
229	5.1692	0.0084
230	5.1776	0.0084
231	5.1860	0.0084
232	5.1943	0.0083
233	5.2027	0.0083
234	5.2110	0.0083
235	5.2193	0.0083
236	5.2275	0.0083
237	5.2358	0.0082
238	5.2440	0.0082
239	5.2522	0.0082
240	5.2603	0.0082
241	5.2685	0.0082
242	5.2766	0.0081
243	5.2847	0.0081
244	5.2928	0.0081
245	5.3009	0.0081
246	5.3089	0.0080
247	5.3169	0.0080
248	5.3250	0.0080

249	5.3329	0.0080
250	5.3409	0.0080
251	5.3488	0.0079
252	5.3568	0.0079
253	5.3647	0.0079
254	5.3726	0.0079
255	5.3804	0.0079
256	5.3883	0.0078
257	5.3961	0.0078
258	5.4039	0.0078
259	5.4117	0.0078
260	5.4195	0.0078
261	5.4272	0.0078
262	5.4350	0.0077
263	5.4427	0.0077
264	5.4504	0.0077
265	5.4581	0.0077
266	5.4657	0.0077
267	5.4734	0.0076
268	5.4810	0.0076
269	5.4886	0.0076
270	5.4962	0.0076
271	5.5037	0.0076
272	5.5113	0.0076
273	5.5188	0.0075
274	5.5264	0.0075
275	5.5339	0.0075
276	5.5413	0.0075
277	5.5488	0.0075
278	5.5563	0.0075
279	5.5637	0.0074
280	5.5711	0.0074
281	5.5785	0.0074
282	5.5859	0.0074
283	5.5933	0.0074
284	5.6006	0.0074
285	5.6079	0.0073
286	5.6153	0.0073
287	5.6226	0.0073
288	5.6299	0.0073

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0073	0.0007	0.0066
2	0.0073	0.0007	0.0066
3	0.0073	0.0007	0.0066
4	0.0074	0.0007	0.0066
5	0.0074	0.0007	0.0067
6	0.0074	0.0007	0.0067
7	0.0074	0.0007	0.0067
8	0.0075	0.0007	0.0067
9	0.0075	0.0007	0.0068
10	0.0075	0.0007	0.0068
11	0.0075	0.0007	0.0068
12	0.0076	0.0007	0.0068
13	0.0076	0.0007	0.0069
14	0.0076	0.0007	0.0069
15	0.0076	0.0007	0.0069
16	0.0077	0.0007	0.0069
17	0.0077	0.0007	0.0070
18	0.0077	0.0007	0.0070
19	0.0078	0.0007	0.0070
20	0.0078	0.0007	0.0070
21	0.0078	0.0008	0.0071
22	0.0078	0.0008	0.0071
23	0.0079	0.0008	0.0071
24	0.0079	0.0008	0.0071
25	0.0079	0.0008	0.0072
26	0.0079	0.0008	0.0072

27	0.0080	0.0008	0.0072
28	0.0080	0.0008	0.0072
29	0.0080	0.0008	0.0073
30	0.0081	0.0008	0.0073
31	0.0081	0.0008	0.0073
32	0.0081	0.0008	0.0073
33	0.0082	0.0008	0.0074
34	0.0082	0.0008	0.0074
35	0.0082	0.0008	0.0074
36	0.0083	0.0008	0.0075
37	0.0083	0.0008	0.0075
38	0.0083	0.0008	0.0075
39	0.0084	0.0008	0.0076
40	0.0084	0.0008	0.0076
41	0.0084	0.0008	0.0076
42	0.0085	0.0008	0.0076
43	0.0085	0.0008	0.0077
44	0.0085	0.0008	0.0077
45	0.0086	0.0008	0.0078
46	0.0086	0.0008	0.0078
47	0.0087	0.0008	0.0078
48	0.0087	0.0008	0.0078
49	0.0087	0.0008	0.0079
50	0.0088	0.0008	0.0079
51	0.0088	0.0008	0.0080
52	0.0088	0.0009	0.0080
53	0.0089	0.0009	0.0080
54	0.0089	0.0009	0.0081
55	0.0090	0.0009	0.0081
56	0.0090	0.0009	0.0081
57	0.0091	0.0009	0.0082
58	0.0091	0.0009	0.0082
59	0.0091	0.0009	0.0083
60	0.0092	0.0009	0.0083
61	0.0092	0.0009	0.0083
62	0.0093	0.0009	0.0084
63	0.0093	0.0009	0.0084
64	0.0093	0.0009	0.0084
65	0.0094	0.0009	0.0085
66	0.0094	0.0009	0.0085
67	0.0095	0.0009	0.0086
68	0.0095	0.0009	0.0086
69	0.0096	0.0009	0.0087
70	0.0096	0.0009	0.0087
71	0.0097	0.0009	0.0088
72	0.0097	0.0009	0.0088
73	0.0098	0.0009	0.0089
74	0.0098	0.0009	0.0089
75	0.0099	0.0010	0.0089
76	0.0099	0.0010	0.0090
77	0.0100	0.0010	0.0090
78	0.0100	0.0010	0.0091
79	0.0101	0.0010	0.0091
80	0.0102	0.0010	0.0092
81	0.0102	0.0010	0.0092
82	0.0103	0.0010	0.0093
83	0.0103	0.0010	0.0093
84	0.0104	0.0010	0.0094
85	0.0105	0.0010	0.0095
86	0.0105	0.0010	0.0095
87	0.0106	0.0010	0.0096
88	0.0106	0.0010	0.0096
89	0.0107	0.0010	0.0097
90	0.0108	0.0010	0.0097
91	0.0108	0.0010	0.0098
92	0.0109	0.0010	0.0098
93	0.0110	0.0011	0.0099
94	0.0110	0.0011	0.0100
95	0.0111	0.0011	0.0101
96	0.0112	0.0011	0.0101
97	0.0113	0.0011	0.0102

98	0.0113	0.0011	0.0102
99	0.0114	0.0011	0.0103
100	0.0115	0.0011	0.0104
101	0.0116	0.0011	0.0105
102	0.0116	0.0011	0.0105
103	0.0117	0.0011	0.0106
104	0.0118	0.0011	0.0107
105	0.0119	0.0011	0.0108
106	0.0120	0.0012	0.0108
107	0.0121	0.0012	0.0109
108	0.0121	0.0012	0.0110
109	0.0123	0.0012	0.0111
110	0.0123	0.0012	0.0111
111	0.0124	0.0012	0.0112
112	0.0125	0.0012	0.0113
113	0.0126	0.0012	0.0114
114	0.0127	0.0012	0.0115
115	0.0128	0.0012	0.0116
116	0.0129	0.0012	0.0117
117	0.0131	0.0013	0.0118
118	0.0131	0.0013	0.0119
119	0.0133	0.0013	0.0120
120	0.0134	0.0013	0.0121
121	0.0135	0.0013	0.0122
122	0.0136	0.0013	0.0123
123	0.0138	0.0013	0.0124
124	0.0138	0.0013	0.0125
125	0.0140	0.0013	0.0127
126	0.0141	0.0014	0.0127
127	0.0143	0.0014	0.0129
128	0.0144	0.0014	0.0130
129	0.0146	0.0014	0.0132
130	0.0146	0.0014	0.0132
131	0.0148	0.0014	0.0134
132	0.0149	0.0014	0.0135
133	0.0152	0.0015	0.0137
134	0.0153	0.0015	0.0138
135	0.0155	0.0015	0.0140
136	0.0156	0.0015	0.0141
137	0.0158	0.0015	0.0143
138	0.0160	0.0015	0.0144
139	0.0162	0.0016	0.0146
140	0.0163	0.0016	0.0148
141	0.0166	0.0016	0.0150
142	0.0167	0.0016	0.0151
143	0.0170	0.0016	0.0154
144	0.0172	0.0017	0.0155
145	0.0219	0.0021	0.0198
146	0.0221	0.0021	0.0199
147	0.0224	0.0022	0.0202
148	0.0226	0.0022	0.0204
149	0.0229	0.0022	0.0207
150	0.0231	0.0022	0.0209
151	0.0235	0.0023	0.0213
152	0.0237	0.0023	0.0214
153	0.0242	0.0023	0.0218
154	0.0244	0.0023	0.0220
155	0.0248	0.0024	0.0224
156	0.0251	0.0024	0.0226
157	0.0256	0.0025	0.0231
158	0.0258	0.0025	0.0233
159	0.0264	0.0025	0.0238
160	0.0266	0.0026	0.0241
161	0.0272	0.0026	0.0246
162	0.0275	0.0027	0.0249
163	0.0282	0.0027	0.0255
164	0.0285	0.0027	0.0258
165	0.0293	0.0028	0.0264
166	0.0296	0.0029	0.0268
167	0.0305	0.0029	0.0275
168	0.0309	0.0030	0.0279

169	0.0320	0.0031	0.0289
170	0.0325	0.0031	0.0294
171	0.0335	0.0032	0.0303
172	0.0341	0.0033	0.0308
173	0.0353	0.0034	0.0319
174	0.0360	0.0035	0.0325
175	0.0374	0.0036	0.0338
176	0.0381	0.0037	0.0345
177	0.0398	0.0038	0.0360
178	0.0407	0.0039	0.0368
179	0.0428	0.0041	0.0387
180	0.0440	0.0042	0.0397
181	0.0465	0.0045	0.0421
182	0.0480	0.0046	0.0434
183	0.0514	0.0050	0.0465
184	0.0534	0.0051	0.0483
185	0.0510	0.0049	0.0461
186	0.0538	0.0052	0.0486
187	0.0609	0.0059	0.0550
188	0.0656	0.0063	0.0593
189	0.0790	0.0076	0.0714
190	0.0889	0.0086	0.0804
191	0.1261	0.0121	0.1140
192	0.1722	0.0166	0.1556
193	0.5195	0.0181	0.5014
194	0.1032	0.0099	0.0933
195	0.0714	0.0069	0.0645
196	0.0570	0.0055	0.0516
197	0.0556	0.0054	0.0503
198	0.0496	0.0048	0.0449
199	0.0452	0.0044	0.0408
200	0.0417	0.0040	0.0377
201	0.0390	0.0038	0.0352
202	0.0366	0.0035	0.0331
203	0.0347	0.0033	0.0313
204	0.0330	0.0032	0.0298
205	0.0313	0.0030	0.0283
206	0.0300	0.0029	0.0271
207	0.0289	0.0028	0.0261
208	0.0279	0.0027	0.0252
209	0.0269	0.0026	0.0243
210	0.0261	0.0025	0.0236
211	0.0253	0.0024	0.0229
212	0.0246	0.0024	0.0222
213	0.0239	0.0023	0.0216
214	0.0233	0.0022	0.0211
215	0.0228	0.0022	0.0206
216	0.0222	0.0021	0.0201
217	0.0173	0.0017	0.0156
218	0.0169	0.0016	0.0152
219	0.0165	0.0016	0.0149
220	0.0161	0.0015	0.0145
221	0.0157	0.0015	0.0142
222	0.0154	0.0015	0.0139
223	0.0151	0.0014	0.0136
224	0.0147	0.0014	0.0133
225	0.0145	0.0014	0.0131
226	0.0142	0.0014	0.0128
227	0.0139	0.0013	0.0126
228	0.0137	0.0013	0.0124
229	0.0134	0.0013	0.0121
230	0.0132	0.0013	0.0119
231	0.0130	0.0013	0.0117
232	0.0128	0.0012	0.0115
233	0.0126	0.0012	0.0114
234	0.0124	0.0012	0.0112
235	0.0122	0.0012	0.0110
236	0.0120	0.0012	0.0109
237	0.0118	0.0011	0.0107
238	0.0117	0.0011	0.0106
239	0.0115	0.0011	0.0104

240	0.0114	0.0011	0.0103
241	0.0112	0.0011	0.0101
242	0.0111	0.0011	0.0100
243	0.0109	0.0011	0.0099
244	0.0108	0.0010	0.0098
245	0.0107	0.0010	0.0096
246	0.0105	0.0010	0.0095
247	0.0104	0.0010	0.0094
248	0.0103	0.0010	0.0093
249	0.0102	0.0010	0.0092
250	0.0101	0.0010	0.0091
251	0.0100	0.0010	0.0090
252	0.0099	0.0009	0.0089
253	0.0098	0.0009	0.0088
254	0.0097	0.0009	0.0087
255	0.0096	0.0009	0.0086
256	0.0095	0.0009	0.0086
257	0.0094	0.0009	0.0085
258	0.0093	0.0009	0.0084
259	0.0092	0.0009	0.0083
260	0.0091	0.0009	0.0082
261	0.0090	0.0009	0.0082
262	0.0089	0.0009	0.0081
263	0.0089	0.0009	0.0080
264	0.0088	0.0008	0.0079
265	0.0087	0.0008	0.0079
266	0.0086	0.0008	0.0078
267	0.0086	0.0008	0.0077
268	0.0085	0.0008	0.0077
269	0.0084	0.0008	0.0076
270	0.0083	0.0008	0.0075
271	0.0083	0.0008	0.0075
272	0.0082	0.0008	0.0074
273	0.0082	0.0008	0.0074
274	0.0081	0.0008	0.0073
275	0.0080	0.0008	0.0073
276	0.0080	0.0008	0.0072
277	0.0079	0.0008	0.0071
278	0.0078	0.0008	0.0071
279	0.0078	0.0008	0.0070
280	0.0077	0.0007	0.0070
281	0.0077	0.0007	0.0069
282	0.0076	0.0007	0.0069
283	0.0076	0.0007	0.0068
284	0.0075	0.0007	0.0068
285	0.0075	0.0007	0.0067
286	0.0074	0.0007	0.0067
287	0.0074	0.0007	0.0067
288	0.0073	0.0007	0.0066

Total soil rain loss = 0.51(In)
Total effective rainfall = 5.12(In)
Peak flow rate in flood hydrograph = 58.66(CFS)

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24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	15.0	30.0	45.0	60.0
0+ 5	0.0004	0.05	Q	|	|	|	|
0+10	0.0022	0.26	Q	|	|	|	|
0+15	0.0077	0.80	Q	|	|	|	|
0+20	0.0156	1.14	Q	|	|	|	|
0+25	0.0245	1.30	Q	|	|	|	|
0+30	0.0342	1.41	Q	|	|	|	|
0+35	0.0445	1.49	Q	|	|	|	|

```
0+40       0.0551      1.54  VQ        |         |         |         |
0+45       0.0660      1.58  VQ        |         |         |         |
0+50       0.0771      1.61  VQ        |         |         |         |
0+55       0.0883      1.63  VQ        |         |         |         |
1+ 0       0.0996      1.64  VQ        |         |         |         |
1+ 5       0.1110      1.65  VQ        |         |         |         |
1+10       0.1224      1.66  VQ        |         |         |         |
1+15       0.1339      1.67  VQ        |         |         |         |
1+20       0.1455      1.68  VQ        |         |         |         |
1+25       0.1571      1.69  VQ        |         |         |         |
1+30       0.1688      1.69  VQ        |         |         |         |
1+35       0.1805      1.70  VQ        |         |         |         |
1+40       0.1922      1.71  VQ        |         |         |         |
1+45       0.2040      1.71  VQ        |         |         |         |
1+50       0.2159      1.72  VQ        |         |         |         |
1+55       0.2278      1.72  |Q        |         |         |         |
2+ 0       0.2397      1.73  |Q        |         |         |         |
2+ 5       0.2516      1.74  |Q        |         |         |         |
2+10       0.2637      1.74  |Q        |         |         |         |
2+15       0.2757      1.75  |Q        |         |         |         |
2+20       0.2878      1.76  |Q        |         |         |         |
2+25       0.3000      1.76  |Q        |         |         |         |
2+30       0.3121      1.77  |Q        |         |         |         |
2+35       0.3244      1.78  |Q        |         |         |         |
2+40       0.3367      1.78  |Q        |         |         |         |
2+45       0.3490      1.79  |Q        |         |         |         |
2+50       0.3614      1.80  |Q        |         |         |         |
2+55       0.3738      1.80  |Q        |         |         |         |
3+ 0       0.3863      1.81  |Q        |         |         |         |
3+ 5       0.3988      1.82  |Q        |         |         |         |
3+10       0.4114      1.83  |Q        |         |         |         |
3+15       0.4240      1.83  |Q        |         |         |         |
3+20       0.4367      1.84  |QV       |         |         |         |
3+25       0.4494      1.85  |QV       |         |         |         |
3+30       0.4622      1.86  |QV       |         |         |         |
3+35       0.4750      1.86  |QV       |         |         |         |
3+40       0.4879      1.87  |QV       |         |         |         |
3+45       0.5008      1.88  |QV       |         |         |         |
3+50       0.5138      1.89  |QV       |         |         |         |
3+55       0.5269      1.89  |QV       |         |         |         |
4+ 0       0.5400      1.90  |QV       |         |         |         |
4+ 5       0.5531      1.91  |QV       |         |         |         |
4+10       0.5664      1.92  |QV       |         |         |         |
4+15       0.5796      1.93  |QV       |         |         |         |
4+20       0.5930      1.94  |QV       |         |         |         |
4+25       0.6063      1.94  |QV       |         |         |         |
4+30       0.6198      1.95  |QV       |         |         |         |
4+35       0.6333      1.96  |QV       |         |         |         |
4+40       0.6469      1.97  |QV       |         |         |         |
4+45       0.6605      1.98  |Q V      |         |         |         |
4+50       0.6742      1.99  |Q V      |         |         |         |
4+55       0.6879      2.00  |Q V      |         |         |         |
5+ 0       0.7018      2.01  |Q V      |         |         |         |
5+ 5       0.7156      2.02  |Q V      |         |         |         |
5+10       0.7296      2.02  |Q V      |         |         |         |
5+15       0.7436      2.03  |Q V      |         |         |         |
5+20       0.7577      2.04  |Q V      |         |         |         |
5+25       0.7718      2.05  |Q V      |         |         |         |
5+30       0.7860      2.06  |Q V      |         |         |         |
5+35       0.8003      2.07  |Q V      |         |         |         |
5+40       0.8147      2.08  |Q V      |         |         |         |
5+45       0.8291      2.09  |Q V      |         |         |         |
5+50       0.8436      2.10  |Q V      |         |         |         |
5+55       0.8582      2.12  |Q V      |         |         |         |
6+ 0       0.8728      2.13  |Q  V     |         |         |         |
6+ 5       0.8875      2.14  |Q  V     |         |         |         |
6+10       0.9023      2.15  |Q  V     |         |         |         |
6+15       0.9172      2.16  |Q  V     |         |         |         |
6+20       0.9321      2.17  |Q  V     |         |         |         |
6+25       0.9471      2.18  |Q  V     |         |         |         |
6+30       0.9622      2.19  |Q  V     |         |         |         |
```

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 6+35      0.9774     2.21  |Q  V     |         |         |         |
 6+40      0.9927     2.22  |Q  V     |         |         |         |
 6+45      1.0080     2.23  |Q  V     |         |         |         |
 6+50      1.0235     2.24  |Q  V     |         |         |         |
 6+55      1.0390     2.25  |Q  V     |         |         |         |
 7+ 0      1.0546     2.27  |Q  V     |         |         |         |
 7+ 5      1.0703     2.28  |Q  V     |         |         |         |
 7+10      1.0861     2.29  |Q   V    |         |         |         |
 7+15      1.1020     2.31  |Q   V    |         |         |         |
 7+20      1.1179     2.32  |Q   V    |         |         |         |
 7+25      1.1340     2.33  |Q   V    |         |         |         |
 7+30      1.1501     2.35  |Q   V    |         |         |         |
 7+35      1.1664     2.36  |Q   V    |         |         |         |
 7+40      1.1828     2.37  |Q   V    |         |         |         |
 7+45      1.1992     2.39  |Q   V    |         |         |         |
 7+50      1.2158     2.40  |Q   V    |         |         |         |
 7+55      1.2324     2.42  |Q   V    |         |         |         |
 8+ 0      1.2492     2.43  |Q   V    |         |         |         |
 8+ 5      1.2660     2.45  |Q   V    |         |         |         |
 8+10      1.2830     2.46  |Q   V    |         |         |         |
 8+15      1.3001     2.48  |Q    V   |         |         |         |
 8+20      1.3173     2.50  |Q    V   |         |         |         |
 8+25      1.3346     2.51  |Q    V   |         |         |         |
 8+30      1.3520     2.53  |Q    V   |         |         |         |
 8+35      1.3695     2.55  |Q    V   |         |         |         |
 8+40      1.3872     2.56  |Q    V   |         |         |         |
 8+45      1.4050     2.58  |Q    V   |         |         |         |
 8+50      1.4229     2.60  |Q    V   |         |         |         |
 8+55      1.4409     2.62  |Q    V   |         |         |         |
 9+ 0      1.4591     2.64  |Q    V   |         |         |         |
 9+ 5      1.4774     2.66  |Q    V   |         |         |         |
 9+10      1.4958     2.67  |Q    V   |         |         |         |
 9+15      1.5144     2.70  |Q    V   |         |         |         |
 9+20      1.5331     2.71  |Q     V  |         |         |         |
 9+25      1.5519     2.74  |Q     V  |         |         |         |
 9+30      1.5709     2.76  |Q     V  |         |         |         |
 9+35      1.5900     2.78  |Q     V  |         |         |         |
 9+40      1.6093     2.80  |Q     V  |         |         |         |
 9+45      1.6287     2.82  |Q     V  |         |         |         |
 9+50      1.6483     2.84  |Q     V  |         |         |         |
 9+55      1.6681     2.87  |Q     V  |         |         |         |
10+ 0      1.6880     2.89  |Q     V  |         |         |         |
10+ 5      1.7080     2.92  |Q     V  |         |         |         |
10+10      1.7283     2.94  |Q     V  |         |         |         |
10+15      1.7487     2.97  |Q      V |         |         |         |
10+20      1.7693     2.99  |Q      V |         |         |         |
10+25      1.7901     3.02  | Q     V |         |         |         |
10+30      1.8111     3.04  | Q     V |         |         |         |
10+35      1.8322     3.07  | Q     V |         |         |         |
10+40      1.8536     3.10  | Q     V |         |         |         |
10+45      1.8751     3.13  | Q     V |         |         |         |
10+50      1.8969     3.16  | Q     V |         |         |         |
10+55      1.9188     3.19  | Q     V |         |         |         |
11+ 0      1.9410     3.22  | Q     V |         |         |         |
11+ 5      1.9634     3.25  | Q      V|         |         |         |
11+10      1.9861     3.29  | Q      V|         |         |         |
11+15      2.0089     3.32  | Q      V|         |         |         |
11+20      2.0320     3.35  | Q      V|         |         |         |
11+25      2.0554     3.39  | Q      V|         |         |         |
11+30      2.0790     3.43  | Q      V|         |         |         |
11+35      2.1028     3.46  | Q      V|         |         |         |
11+40      2.1269     3.50  | Q      V|         |         |         |
11+45      2.1513     3.54  | Q      V|         |         |         |
11+50      2.1760     3.58  | Q       V         |         |         |
11+55      2.2010     3.63  | Q       V         |         |         |
12+ 0      2.2263     3.67  | Q       V         |         |         |
12+ 5      2.2521     3.75  | Q       V         |         |         |
12+10      2.2791     3.92  | Q       V         |         |         |
12+15      2.3087     4.30  | Q       V         |         |         |
12+20      2.3401     4.56  |  Q      V         |         |         |
12+25      2.3725     4.71  |  Q      V         |         |         |
```

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12+30      2.4057     4.82  |  Q      |V        |         |         |
12+35      2.4397     4.93  |  Q      |V        |         |         |
12+40      2.4742     5.02  |  Q      |V        |         |         |
12+45      2.5094     5.10  |  Q      |V        |         |         |
12+50      2.5451     5.18  |  Q      |V        |         |         |
12+55      2.5813     5.26  |  Q      |V        |         |         |
13+ 0      2.6179     5.33  |  Q      | V       |         |         |
13+ 5      2.6552     5.41  |  Q      | V       |         |         |
13+10      2.6929     5.48  |  Q      | V       |         |         |
13+15      2.7313     5.57  |  Q      | V       |         |         |
13+20      2.7702     5.65  |  Q      | V       |         |         |
13+25      2.8097     5.74  |  Q      | V       |         |         |
13+30      2.8498     5.83  |  Q      |  V      |         |         |
13+35      2.8906     5.92  |  Q      |  V      |         |         |
13+40      2.9321     6.02  |   Q     |  V      |         |         |
13+45      2.9742     6.12  |   Q     |  V      |         |         |
13+50      3.0171     6.23  |   Q     |  V      |         |         |
13+55      3.0608     6.35  |   Q     |   V     |         |         |
14+ 0      3.1054     6.46  |   Q     |   V     |         |         |
14+ 5      3.1508     6.60  |   Q     |   V     |         |         |
14+10      3.1972     6.73  |   Q     |   V     |         |         |
14+15      3.2447     6.90  |   Q     |   V     |         |         |
14+20      3.2932     7.05  |   Q     |    V    |         |         |
14+25      3.3430     7.23  |   Q     |    V    |         |         |
14+30      3.3940     7.40  |   Q     |    V    |         |         |
14+35      3.4463     7.59  |    Q    |    V    |         |         |
14+40      3.4999     7.79  |    Q    |     V   |         |         |
14+45      3.5552     8.02  |    Q    |     V   |         |         |
14+50      3.6120     8.25  |    Q    |     V   |         |         |
14+55      3.6706     8.52  |    Q    |     V   |         |         |
15+ 0      3.7311     8.79  |    Q    |      V  |         |         |
15+ 5      3.7939     9.11  |     Q   |      V  |         |         |
15+10      3.8590     9.45  |     Q   |      V  |         |         |
15+15      3.9269     9.86  |     Q   |       V |         |         |
15+20      3.9977    10.28  |     Q   |       V |         |         |
15+25      4.0718    10.76  |      Q  |       V |         |         |
15+30      4.1484    11.12  |      Q  |        V|         |         |
15+35      4.2263    11.31  |      Q  |        V|         |         |
15+40      4.3075    11.79  |      Q  |        V|         |         |
15+45      4.3951    12.72  |       Q |         V         |         |
15+50      4.4911    13.94  |        Q|         V         |         |
15+55      4.6008    15.92  |         Q         |V        |         |
16+ 0      4.7311    18.91  |         | Q       |V        |         |
16+ 5      4.9150    26.71  |         |      Q  | V       |         |
16+10      5.1899    39.91  |         |         |  V  Q   |         |
16+15      5.5938    58.66  |         |         |    V    |         |Q
16+20      5.8920    43.29  |         |         |      VQ |         |
16+25      6.0931    29.20  |         |        Q|       V |         |
16+30      6.2526    23.16  |         |    Q    |       V |         |
16+35      6.3870    19.52  |         |  Q      |        V|         |
16+40      6.5018    16.67  |         |Q        |         V         |
16+45      6.5997    14.22  |        Q|         |         V         |
16+50      6.6843    12.27  |       Q |         |         V         |
16+55      6.7572    10.60  |      Q  |         |         |V        |
17+ 0      6.8239     9.68  |     Q   |         |         |V        |
17+ 5      6.8857     8.97  |    Q    |         |         |V        |
17+10      6.9436     8.41  |    Q    |         |         | V       |
17+15      6.9984     7.96  |    Q    |         |         | V       |
17+20      7.0496     7.43  |   Q     |         |         | V       |
17+25      7.0979     7.02  |   Q     |         |         | V       |
17+30      7.1433     6.59  |   Q     |         |         | V       |
17+35      7.1869     6.33  |   Q     |         |         |  V      |
17+40      7.2289     6.10  |   Q     |         |         |  V      |
17+45      7.2695     5.89  |  Q      |         |         |  V      |
17+50      7.3088     5.71  |  Q      |         |         |  V      |
17+55      7.3469     5.54  |  Q      |         |         |  V      |
18+ 0      7.3839     5.38  |  Q      |         |         |   V     |
18+ 5      7.4198     5.21  |  Q      |         |         |   V     |
18+10      7.4539     4.95  |  Q      |         |         |   V     |
18+15      7.4848     4.50  | Q       |         |         |   V     |
18+20      7.5136     4.18  | Q       |         |         |   V     |
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18+25       7.5411      3.98  | Q       |         |         |   V     |
18+30       7.5674      3.83  | Q       |         |         |   V     |
18+35       7.5928      3.69  | Q       |         |         |    V    |
18+40       7.6175      3.58  | Q       |         |         |    V    |
18+45       7.6414      3.48  | Q       |         |         |    V    |
18+50       7.6648      3.39  | Q       |         |         |    V    |
18+55       7.6876      3.31  | Q       |         |         |    V    |
19+ 0       7.7099      3.24  | Q       |         |         |    V    |
19+ 5       7.7318      3.18  | Q       |         |         |    V    |
19+10       7.7533      3.12  | Q       |         |         |    V    |
19+15       7.7743      3.06  | Q       |         |         |    V    |
19+20       7.7950      3.00  | Q       |         |         |     V   |
19+25       7.8153      2.95  |Q        |         |         |     V   |
19+30       7.8353      2.90  |Q        |         |         |     V   |
19+35       7.8549      2.85  |Q        |         |         |     V   |
19+40       7.8742      2.81  |Q        |         |         |     V   |
19+45       7.8933      2.76  |Q        |         |         |     V   |
19+50       7.9120      2.72  |Q        |         |         |     V   |
19+55       7.9304      2.68  |Q        |         |         |     V   |
20+ 0       7.9486      2.64  |Q        |         |         |     V   |
20+ 5       7.9666      2.60  |Q        |         |         |     V   |
20+10       7.9843      2.57  |Q        |         |         |     V   |
20+15       8.0017      2.53  |Q        |         |         |     V   |
20+20       8.0189      2.50  |Q        |         |         |      V  |
20+25       8.0359      2.47  |Q        |         |         |      V  |
20+30       8.0527      2.44  |Q        |         |         |      V  |
20+35       8.0693      2.41  |Q        |         |         |      V  |
20+40       8.0857      2.38  |Q        |         |         |      V  |
20+45       8.1019      2.35  |Q        |         |         |      V  |
20+50       8.1178      2.32  |Q        |         |         |      V  |
20+55       8.1337      2.29  |Q        |         |         |      V  |
21+ 0       8.1493      2.27  |Q        |         |         |      V  |
21+ 5       8.1647      2.24  |Q        |         |         |      V  |
21+10       8.1800      2.22  |Q        |         |         |      V  |
21+15       8.1951      2.20  |Q        |         |         |      V  |
21+20       8.2101      2.17  |Q        |         |         |      V  |
21+25       8.2249      2.15  |Q        |         |         |      V  |
21+30       8.2396      2.13  |Q        |         |         |       V |
21+35       8.2541      2.11  |Q        |         |         |       V |
21+40       8.2684      2.09  |Q        |         |         |       V |
21+45       8.2827      2.07  |Q        |         |         |       V |
21+50       8.2968      2.05  |Q        |         |         |       V |
21+55       8.3107      2.03  |Q        |         |         |       V |
22+ 0       8.3245      2.01  |Q        |         |         |       V |
22+ 5       8.3383      1.99  |Q        |         |         |       V |
22+10       8.3518      1.97  |Q        |         |         |       V |
22+15       8.3653      1.95  |Q        |         |         |       V |
22+20       8.3786      1.94  |Q        |         |         |       V |
22+25       8.3919      1.92  |Q        |         |         |       V |
22+30       8.4050      1.90  |Q        |         |         |       V |
22+35       8.4180      1.89  |Q        |         |         |       V |
22+40       8.4309      1.87  |Q        |         |         |       V |
22+45       8.4437      1.86  |Q        |         |         |       V |
22+50       8.4563      1.84  |Q        |         |         |        V|
22+55       8.4689      1.83  |Q        |         |         |        V|
23+ 0       8.4814      1.81  |Q        |         |         |        V|
23+ 5       8.4938      1.80  |Q        |         |         |        V|
23+10       8.5061      1.78  |Q        |         |         |        V|
23+15       8.5183      1.77  |Q        |         |         |        V|
23+20       8.5304      1.76  |Q        |         |         |        V|
23+25       8.5424      1.75  |Q        |         |         |        V|
23+30       8.5543      1.73  |Q        |         |         |        V|
23+35       8.5662      1.72  |Q        |         |         |        V|
23+40       8.5779      1.71  |Q        |         |         |        V|
23+45       8.5896      1.70  |Q        |         |         |        V|
23+50       8.6012      1.68  |Q        |         |         |        V|
23+55       8.6127      1.67  |Q        |         |         |        V|
24+ 0       8.6242      1.66  |Q        |         |         |        V|
24+ 5       8.6352      1.60  |Q        |         |         |        V|
24+10       8.6447      1.38  Q         |         |         |        V|
24+15       8.6504      0.83  Q         |         |         |        V|
```

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   24+20       8.6537      0.49  Q         |         |         |         V|
   24+25       8.6560      0.33  Q         |         |         |         V|
   24+30       8.6575      0.22  Q         |         |         |         V|
   24+35       8.6586      0.15  Q         |         |         |         V|
   24+40       8.6592      0.10  Q         |         |         |         V|
   24+45       8.6596      0.06  Q         |         |         |         V|
   24+50       8.6599      0.04  Q         |         |         |         V|
   24+55       8.6601      0.03  Q         |         |         |         V|
   25+ 0       8.6602      0.02  Q         |         |         |         V|
   25+ 5       8.6603      0.01  Q         |         |         |         V|
   25+10       8.6604      0.01  Q         |         |         |         V|
   25+15       8.6604      0.00  Q         |         |         |         V|
   25+20       8.6604      0.00  Q         |         |         |          V
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- 2 Year 3 Hour Post-Development Unit Hydrograph – Area 'D'

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       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/11/16   File Name PRD00203.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

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RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'D' - 2 YEAR 3 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 2

       Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 82.2       6.8          0.33     C     0.250     1.000    0.250
 82.2      13.7          0.67     D     0.200     1.000    0.200

Area-averaged adjusted loss rate Fm (In/Hr) =  0.217

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
     6.84   0.333         82.2      66.1       5.13     0.083

    13.70   0.667         82.2      66.1       5.13     0.083

Area-averaged catchment yield fraction, Y =  0.083
Area-averaged low loss fraction, Yb =  0.917
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.278 (hours)
Watershed area =      20.54(Ac.)
Catchment Lag time =   0.222 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 37.4970
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.217(In/Hr)
Average low loss rate fraction (Yb) = 0.917 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.190(In)
Computed peak 30-minute rainfall =  0.400(In)
Specified peak 1-hour rainfall =  0.530(In)
Computed peak 3-hour rainfall =  0.890(In)
Specified peak 6-hour rainfall =  1.220(In)
Specified peak 24-hour rainfall =  2.050(In)


Rainfall depth area reduction factors:
Using a total area of      20.54(Ac.) (Ref: fig. E-4)
```

```
5-minute factor = 0.999     Adjusted rainfall =  0.190(In)
30-minute factor = 0.999    Adjusted rainfall =  0.400(In)
1-hour factor = 0.999       Adjusted rainfall =  0.529(In)
3-hour factor = 1.000       Adjusted rainfall =  0.890(In)
6-hour factor = 1.000       Adjusted rainfall =  1.220(In)
24-hour factor = 1.000 Adjusted rainfall =  2.050(In)
--------------------------------------------------------------------

                    U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------
               (K =       248.41 (CFS))

  1                2.870                   7.130
  2               13.214                  25.695
  3               40.438                  67.625
  4               65.651                  62.632
  5               76.214                  26.238
  6               83.214                  17.389
  7               88.198                  12.380
  8               91.865                   9.109
  9               94.565                   6.708
 10               96.432                   4.638
 11               97.691                   3.127
 12               98.275                   1.450
 13               98.687                   1.025
 14               99.029                   0.849
 15               99.266                   0.590
 16               99.550                   0.704
 17               99.775                   0.559
 18               99.908                   0.331
 19              100.000                   0.228
--------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.1898              0.1898
  2              0.2532              0.0634
  3              0.2996              0.0465
  4              0.3377              0.0380
  5              0.3705              0.0328
  6              0.3996              0.0292
  7              0.4254              0.0258
  8              0.4491              0.0237
  9              0.4711              0.0220
 10              0.4917              0.0206
 11              0.5111              0.0194
 12              0.5295              0.0184
 13              0.5499              0.0204
 14              0.5695              0.0196
 15              0.5884              0.0189
 16              0.6066              0.0182
 17              0.6242              0.0176
 18              0.6413              0.0171
 19              0.6579              0.0166
 20              0.6741              0.0161
 21              0.6898              0.0157
 22              0.7051              0.0153
 23              0.7201              0.0150
 24              0.7347              0.0146
 25              0.7490              0.0143
 26              0.7630              0.0140
 27              0.7768              0.0137
 28              0.7902              0.0135
 29              0.8035              0.0132
 30              0.8164              0.0130
 31              0.8292              0.0127
 32              0.8417              0.0125
 33              0.8540              0.0123
```

```
 34              0.8662              0.0121
 35              0.8781              0.0119
 36              0.8899              0.0118
---------------------------------------------------------------------
Unit              Unit            Unit              Effective
Period            Rainfall        Soil-Loss         Rainfall
(number)            (In)          (In)                (In)
---------------------------------------------------------------------
  1              0.0118           0.0108              0.0010
  2              0.0119           0.0110              0.0010
  3              0.0123           0.0113              0.0010
  4              0.0125           0.0115              0.0010
  5              0.0130           0.0119              0.0011
  6              0.0132           0.0121              0.0011
  7              0.0137           0.0126              0.0011
  8              0.0140           0.0128              0.0012
  9              0.0146           0.0134              0.0012
 10              0.0150           0.0137              0.0012
 11              0.0157           0.0144              0.0013
 12              0.0161           0.0148              0.0013
 13              0.0171           0.0157              0.0014
 14              0.0176           0.0162              0.0015
 15              0.0189           0.0173              0.0016
 16              0.0196           0.0180              0.0016
 17              0.0184           0.0169              0.0015
 18              0.0194           0.0178              0.0016
 19              0.0220           0.0181              0.0039
 20              0.0237           0.0181              0.0056
 21              0.0292           0.0181              0.0111
 22              0.0328           0.0181              0.0147
 23              0.0465           0.0181              0.0284
 24              0.0634           0.0181              0.0453
 25              0.1898           0.0181              0.1718
 26              0.0380           0.0181              0.0200
 27              0.0258           0.0181              0.0078
 28              0.0206           0.0181              0.0025
 29              0.0204           0.0181              0.0024
 30              0.0182           0.0167              0.0015
 31              0.0166           0.0152              0.0014
 32              0.0153           0.0141              0.0013
 33              0.0143           0.0131              0.0012
 34              0.0135           0.0123              0.0011
 35              0.0127           0.0117              0.0011
 36              0.0121           0.0111              0.0010
---------------------------------------------------------------------
---------------------------------------------------------------------
Total soil rain loss =      0.55(In)
Total effective rainfall =      0.34(In)
Peak flow rate in flood hydrograph =     16.26(CFS)
---------------------------------------------------------------------
+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                    3 - H O U R    S T O R M
                R u n o f f      H y d r o g r a p h
---------------------------------------------------------------------
            Hydrograph in   5   Minute intervals ((CFS))

---------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0        5.0      10.0      15.0      20.0
---------------------------------------------------------------------
  0+ 5       0.0000      0.01  Q         |         |         |         |
  0+10       0.0003      0.03  Q         |         |         |         |
  0+15       0.0009      0.10  Q         |         |         |         |
  0+20       0.0021      0.16  Q         |         |         |         |
  0+25       0.0034      0.19  Q         |         |         |         |
  0+30       0.0048      0.21  Q         |         |         |         |
  0+35       0.0064      0.23  Q         |         |         |         |
  0+40       0.0081      0.25  Q         |         |         |         |
  0+45       0.0099      0.26  Q         |         |         |         |
  0+50       0.0118      0.27  Q         |         |         |         |
  0+55       0.0137      0.28  Q         |         |         |         |
  1+ 0       0.0157      0.29  QV        |         |         |         |
```

```
   1+ 5       0.0178      0.30  QV        |         |         |         |
   1+10       0.0200      0.32  QV        |         |         |         |
   1+15       0.0223      0.33  QV        |         |         |         |
   1+20       0.0247      0.35  QV        |         |         |         |
   1+25       0.0271      0.36  QV        |         |         |         |
   1+30       0.0297      0.37  Q V       |         |         |         |
   1+35       0.0324      0.40  Q V       |         |         |         |
   1+40       0.0357      0.47  Q V       |         |         |         |
   1+45       0.0407      0.72  |QV       |         |         |         |
   1+50       0.0486      1.15  | QV      |         |         |         |
   1+55       0.0615      1.88  |  QV     |         |         |         |
   2+ 0       0.0824      3.03  |    VQ   |         |         |         |
   2+ 5       0.1217      5.72  |       V |Q        |         |         |
   2+10       0.1914     10.11  |         | V       Q         |         |
   2+15       0.3034     16.26  |         |         V         | Q       |
   2+20       0.4023     14.36  |         |         |      VQ |         |
   2+25       0.4557      7.76  |         |    Q    |         V         |
   2+30       0.4918      5.24  |         Q         |         |  V      |
   2+35       0.5177      3.77  |      Q  |         |         |    V    |
   2+40       0.5372      2.82  |    Q    |         |         |     V   |
   2+45       0.5517      2.11  |   Q     |         |         |      V  |
   2+50       0.5623      1.54  |  Q      |         |         |       V |
   2+55       0.5699      1.11  | Q       |         |         |       V |
   3+ 0       0.5750      0.74  |Q        |         |         |       V |
   3+ 5       0.5790      0.58  |Q        |         |         |        V|
   3+10       0.5823      0.48  Q         |         |         |        V|
   3+15       0.5847      0.35  Q         |         |         |        V|
   3+20       0.5866      0.27  Q         |         |         |        V|
   3+25       0.5880      0.20  Q         |         |         |        V|
   3+30       0.5889      0.13  Q         |         |         |        V|
   3+35       0.5894      0.08  Q         |         |         |        V|
   3+40       0.5897      0.03  Q         |         |         |        V|
   3+45       0.5898      0.02  Q         |         |         |        V|
   3+50       0.5899      0.01  Q         |         |         |        V|
   3+55       0.5899      0.01  Q         |         |         |        V|
   4+ 0       0.5899      0.00  Q         |         |         |        V|
   4+ 5       0.5900      0.00  Q         |         |         |        V|
   4+10       0.5900      0.00  Q         |         |         |        V|
   4+15       0.5900      0.00  Q         |         |         |        V|
   4+20       0.5900      0.00  Q         |         |         |        V|
   4+25       0.5900      0.00  Q         |         |         |        V|
   4+30       0.5900      0.00  Q         |         |         |        V|
------------------------------------------------------------------------
```

- 2 Year 6 Hour Post-Development Unit Hydrograph – Area 'D'

```
        U n i t   H y d r o g r a p h   A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989-2012, Version 7.2

        Study date  10/11/16   File Name PRD00206.out


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------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

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RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'D' - 2 YEAR 6 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

        Storm Event Year = 2

        Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 82.2       6.8          0.33     C     0.250     1.000    0.250
 82.2      13.7          0.67     D     0.200     1.000    0.200

Area-averaged adjusted loss rate Fm (In/Hr) =  0.217

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
     6.84   0.333         82.2      66.1       5.13     0.083

    13.70   0.667         82.2      66.1       5.13     0.083

Area-averaged catchment yield fraction, Y =  0.083
Area-averaged low loss fraction, Yb =  0.917
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.278 (hours)
Watershed area =      20.54(Ac.)
Catchment Lag time =   0.222 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 37.4970
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.217(In/Hr)
Average low loss rate fraction (Yb) = 0.917 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.190(In)
Computed peak 30-minute rainfall =  0.400(In)
Specified peak 1-hour rainfall =  0.530(In)
Computed peak 3-hour rainfall =  0.890(In)
Specified peak 6-hour rainfall =  1.220(In)
Specified peak 24-hour rainfall =  2.050(In)


Rainfall depth area reduction factors:
Using a total area of      20.54(Ac.) (Ref: fig. E-4)
```

```
5-minute factor = 0.999     Adjusted rainfall =  0.190(In)
30-minute factor = 0.999    Adjusted rainfall =  0.400(In)
1-hour factor = 0.999       Adjusted rainfall =  0.529(In)
3-hour factor = 1.000       Adjusted rainfall =  0.890(In)
6-hour factor = 1.000       Adjusted rainfall =  1.220(In)
24-hour factor = 1.000 Adjusted rainfall =  2.050(In)
--------------------------------------------------------------------

                    U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------
               (K =       248.41 (CFS))

  1                2.870                   7.130
  2               13.214                  25.695
  3               40.438                  67.625
  4               65.651                  62.632
  5               76.214                  26.238
  6               83.214                  17.389
  7               88.198                  12.380
  8               91.865                   9.109
  9               94.565                   6.708
 10               96.432                   4.638
 11               97.691                   3.127
 12               98.275                   1.450
 13               98.687                   1.025
 14               99.029                   0.849
 15               99.266                   0.590
 16               99.550                   0.704
 17               99.775                   0.559
 18               99.908                   0.331
 19              100.000                   0.228
--------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.1898              0.1898
  2              0.2532              0.0634
  3              0.2996              0.0465
  4              0.3377              0.0380
  5              0.3705              0.0328
  6              0.3996              0.0292
  7              0.4254              0.0258
  8              0.4491              0.0237
  9              0.4711              0.0220
 10              0.4917              0.0206
 11              0.5111              0.0194
 12              0.5295              0.0184
 13              0.5499              0.0204
 14              0.5695              0.0196
 15              0.5884              0.0189
 16              0.6066              0.0182
 17              0.6242              0.0176
 18              0.6413              0.0171
 19              0.6579              0.0166
 20              0.6741              0.0161
 21              0.6898              0.0157
 22              0.7051              0.0153
 23              0.7201              0.0150
 24              0.7347              0.0146
 25              0.7490              0.0143
 26              0.7630              0.0140
 27              0.7768              0.0137
 28              0.7902              0.0135
 29              0.8035              0.0132
 30              0.8164              0.0130
 31              0.8292              0.0127
 32              0.8417              0.0125
 33              0.8540              0.0123
```

34	0.8662	0.0121
35	0.8781	0.0119
36	0.8899	0.0118
37	0.9011	0.0112
38	0.9121	0.0110
39	0.9229	0.0108
40	0.9336	0.0107
41	0.9441	0.0106
42	0.9546	0.0104
43	0.9648	0.0103
44	0.9750	0.0101
45	0.9850	0.0100
46	0.9949	0.0099
47	1.0047	0.0098
48	1.0144	0.0097
49	1.0239	0.0096
50	1.0334	0.0095
51	1.0427	0.0094
52	1.0520	0.0093
53	1.0612	0.0092
54	1.0702	0.0091
55	1.0792	0.0090
56	1.0881	0.0089
57	1.0969	0.0088
58	1.1056	0.0087
59	1.1142	0.0086
60	1.1228	0.0086
61	1.1313	0.0085
62	1.1397	0.0084
63	1.1480	0.0083
64	1.1563	0.0083
65	1.1644	0.0082
66	1.1726	0.0081
67	1.1806	0.0081
68	1.1886	0.0080
69	1.1965	0.0079
70	1.2044	0.0079
71	1.2122	0.0078
72	1.2199	0.0077

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0077	0.0071	0.0006
2	0.0078	0.0072	0.0006
3	0.0079	0.0073	0.0007
4	0.0080	0.0073	0.0007
5	0.0081	0.0074	0.0007
6	0.0082	0.0075	0.0007
7	0.0083	0.0076	0.0007
8	0.0084	0.0077	0.0007
9	0.0086	0.0078	0.0007
10	0.0086	0.0079	0.0007
11	0.0088	0.0081	0.0007
12	0.0089	0.0081	0.0007
13	0.0091	0.0083	0.0008
14	0.0092	0.0084	0.0008
15	0.0094	0.0086	0.0008
16	0.0095	0.0087	0.0008
17	0.0097	0.0089	0.0008
18	0.0098	0.0090	0.0008
19	0.0100	0.0092	0.0008
20	0.0101	0.0093	0.0008
21	0.0104	0.0095	0.0009
22	0.0106	0.0097	0.0009
23	0.0108	0.0099	0.0009
24	0.0110	0.0101	0.0009
25	0.0118	0.0108	0.0010
26	0.0119	0.0110	0.0010
27	0.0123	0.0113	0.0010

28	0.0125	0.0115	0.0010
29	0.0130	0.0119	0.0011
30	0.0132	0.0121	0.0011
31	0.0137	0.0126	0.0011
32	0.0140	0.0128	0.0012
33	0.0146	0.0134	0.0012
34	0.0150	0.0137	0.0012
35	0.0157	0.0144	0.0013
36	0.0161	0.0148	0.0013
37	0.0171	0.0157	0.0014
38	0.0176	0.0162	0.0015
39	0.0189	0.0173	0.0016
40	0.0196	0.0180	0.0016
41	0.0184	0.0169	0.0015
42	0.0194	0.0178	0.0016
43	0.0220	0.0181	0.0039
44	0.0237	0.0181	0.0056
45	0.0292	0.0181	0.0111
46	0.0328	0.0181	0.0147
47	0.0465	0.0181	0.0284
48	0.0634	0.0181	0.0453
49	0.1898	0.0181	0.1718
50	0.0380	0.0181	0.0200
51	0.0258	0.0181	0.0078
52	0.0206	0.0181	0.0025
53	0.0204	0.0181	0.0024
54	0.0182	0.0167	0.0015
55	0.0166	0.0152	0.0014
56	0.0153	0.0141	0.0013
57	0.0143	0.0131	0.0012
58	0.0135	0.0123	0.0011
59	0.0127	0.0117	0.0011
60	0.0121	0.0111	0.0010
61	0.0112	0.0102	0.0009
62	0.0107	0.0098	0.0009
63	0.0103	0.0094	0.0009
64	0.0099	0.0091	0.0008
65	0.0096	0.0088	0.0008
66	0.0093	0.0085	0.0008
67	0.0090	0.0082	0.0007
68	0.0087	0.0080	0.0007
69	0.0085	0.0078	0.0007
70	0.0083	0.0076	0.0007
71	0.0081	0.0074	0.0007
72	0.0079	0.0072	0.0007

Total soil rain loss = 0.85(In)
Total effective rainfall = 0.37(In)
Peak flow rate in flood hydrograph = 16.26(CFS)

++

6 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	5.0	10.0	15.0	20.0
0+ 5	0.0000	0.00	Q	|	|	|	|
0+10	0.0002	0.02	Q	|	|	|	|
0+15	0.0006	0.06	Q	|	|	|	|
0+20	0.0014	0.11	Q	|	|	|	|
0+25	0.0022	0.12	Q	|	|	|	|
0+30	0.0031	0.14	Q	|	|	|	|
0+35	0.0041	0.15	Q	|	|	|	|
0+40	0.0052	0.15	Q	|	|	|	|
0+45	0.0063	0.16	Q	|	|	|	|
0+50	0.0074	0.16	Q	|	|	|	|
0+55	0.0086	0.17	Q	|	|	|	|

```
1+ 0       0.0098      0.17  Q          |          |          |          |
1+ 5       0.0110      0.18  Q          |          |          |          |
1+10       0.0122      0.18  Q          |          |          |          |
1+15       0.0135      0.18  Q          |          |          |          |
1+20       0.0147      0.18  Q          |          |          |          |
1+25       0.0160      0.19  QV         |          |          |          |
1+30       0.0174      0.19  QV         |          |          |          |
1+35       0.0187      0.19  QV         |          |          |          |
1+40       0.0200      0.20  QV         |          |          |          |
1+45       0.0214      0.20  QV         |          |          |          |
1+50       0.0228      0.20  QV         |          |          |          |
1+55       0.0243      0.21  QV         |          |          |          |
2+ 0       0.0257      0.21  QV         |          |          |          |
2+ 5       0.0272      0.22  QV         |          |          |          |
2+10       0.0288      0.22  QV         |          |          |          |
2+15       0.0303      0.23  QV         |          |          |          |
2+20       0.0320      0.24  Q V        |          |          |          |
2+25       0.0336      0.24  Q V        |          |          |          |
2+30       0.0354      0.25  Q V        |          |          |          |
2+35       0.0371      0.26  Q V        |          |          |          |
2+40       0.0389      0.26  Q V        |          |          |          |
2+45       0.0408      0.27  Q V        |          |          |          |
2+50       0.0427      0.28  Q V        |          |          |          |
2+55       0.0447      0.29  Q V        |          |          |          |
3+ 0       0.0467      0.30  Q V        |          |          |          |
3+ 5       0.0489      0.31  Q  V       |          |          |          |
3+10       0.0511      0.32  Q  V       |          |          |          |
3+15       0.0533      0.33  Q  V       |          |          |          |
3+20       0.0557      0.35  Q  V       |          |          |          |
3+25       0.0582      0.36  Q  V       |          |          |          |
3+30       0.0608      0.37  Q  V       |          |          |          |
3+35       0.0635      0.40  Q  V       |          |          |          |
3+40       0.0668      0.47  Q   V      |          |          |          |
3+45       0.0717      0.72  |Q  V      |          |          |          |
3+50       0.0796      1.15  | Q  V     |          |          |          |
3+55       0.0926      1.88  |  Q V     |          |          |          |
4+ 0       0.1134      3.03  |     QV   |          |          |          |
4+ 5       0.1528      5.72  |        V|Q         |          |          |
4+10       0.2224     10.11  |         |  V       Q          |          |
4+15       0.3344     16.26  |         |          |V         | Q        |
4+20       0.4333     14.36  |         |          |      VQ  |          |
4+25       0.4868      7.76  |         |    Q     |          V          |
4+30       0.5229      5.24  |         Q          |          | V        |
4+35       0.5488      3.77  |       Q  |         |          |   V      |
4+40       0.5682      2.82  |     Q    |         |          |    V     |
4+45       0.5827      2.11  |    Q     |         |          |     V    |
4+50       0.5933      1.54  |  Q       |         |          |      V   |
4+55       0.6010      1.11  | Q        |         |          |      V   |
5+ 0       0.6061      0.74  |Q         |         |          |       V  |
5+ 5       0.6101      0.59  |Q         |         |          |       V  |
5+10       0.6137      0.51  |Q         |         |          |       V  |
5+15       0.6167      0.44  Q          |         |          |       V  |
5+20       0.6195      0.42  Q          |         |          |       V  |
5+25       0.6221      0.37  Q          |         |          |        V|
5+30       0.6242      0.30  Q          |         |          |        V|
5+35       0.6260      0.26  Q          |         |          |        V|
5+40       0.6274      0.21  Q          |         |          |        V|
5+45       0.6288      0.20  Q          |         |          |        V|
5+50       0.6301      0.19  Q          |         |          |        V|
5+55       0.6314      0.19  Q          |         |          |        V|
6+ 0       0.6326      0.18  Q          |         |          |        V|
6+ 5       0.6338      0.17  Q          |         |          |        V|
6+10       0.6348      0.15  Q          |         |          |        V|
6+15       0.6355      0.10  Q          |         |          |        V|
6+20       0.6359      0.06  Q          |         |          |        V|
6+25       0.6362      0.04  Q          |         |          |        V|
6+30       0.6364      0.03  Q          |         |          |        V|
6+35       0.6366      0.02  Q          |         |          |        V|
6+40       0.6367      0.01  Q          |         |          |        V|
6+45       0.6367      0.01  Q          |         |          |        V|
6+50       0.6368      0.01  Q          |         |          |        V|
```

```
    6+55       0.6368      0.00  Q         |         |         |         V|
    7+ 0       0.6368      0.00  Q         |         |         |         V|
    7+ 5       0.6368      0.00  Q         |         |         |         V|
    7+10       0.6368      0.00  Q         |         |         |         V|
    7+15       0.6368      0.00  Q         |         |         |         V|
    7+20       0.6369      0.00  Q         |         |         |         V|
    7+25       0.6369      0.00  Q         |         |         |         V|
    7+30       0.6369      0.00  Q         |         |         |         V|
-------------------------------------------------------------------------
```

- 2 Year 12 Hour Post-Development Unit Hydrograph – Area 'D'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/11/16   File Name PRD00212.out


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------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'D' - 2 YEAR 12 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 2

       Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 82.2       6.8          0.33     C     0.250     1.000    0.250
 82.2      13.7          0.67     D     0.200     1.000    0.200

Area-averaged adjusted loss rate Fm (In/Hr) =  0.217

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
     6.84   0.333         82.2      66.1       5.13     0.083

    13.70   0.667         82.2      66.1       5.13     0.083

Area-averaged catchment yield fraction, Y =  0.083
Area-averaged low loss fraction, Yb =  0.917
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.278 (hours)
Watershed area =      20.54(Ac.)
Catchment Lag time =   0.222 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 37.4970
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.217(In/Hr)
Average low loss rate fraction (Yb) = 0.917 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.190(In)
Computed peak 30-minute rainfall =  0.400(In)
Specified peak 1-hour rainfall =  0.530(In)
Computed peak 3-hour rainfall =  0.890(In)
Specified peak 6-hour rainfall =  1.220(In)
Specified peak 24-hour rainfall =  2.050(In)


Rainfall depth area reduction factors:
Using a total area of      20.54(Ac.) (Ref: fig. E-4)
```

```
5-minute factor = 0.999     Adjusted rainfall =  0.190(In)
30-minute factor = 0.999    Adjusted rainfall =  0.400(In)
1-hour factor = 0.999       Adjusted rainfall =  0.529(In)
3-hour factor = 1.000       Adjusted rainfall =  0.890(In)
6-hour factor = 1.000       Adjusted rainfall =  1.220(In)
24-hour factor = 1.000 Adjusted rainfall =  2.050(In)
--------------------------------------------------------------------

                     U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------
               (K =       248.41 (CFS))

  1                2.870                   7.130
  2               13.214                  25.695
  3               40.438                  67.625
  4               65.651                  62.632
  5               76.214                  26.238
  6               83.214                  17.389
  7               88.198                  12.380
  8               91.865                   9.109
  9               94.565                   6.708
 10               96.432                   4.638
 11               97.691                   3.127
 12               98.275                   1.450
 13               98.687                   1.025
 14               99.029                   0.849
 15               99.266                   0.590
 16               99.550                   0.704
 17               99.775                   0.559
 18               99.908                   0.331
 19              100.000                   0.228
--------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.1898              0.1898
  2              0.2532              0.0634
  3              0.2996              0.0465
  4              0.3377              0.0380
  5              0.3705              0.0328
  6              0.3996              0.0292
  7              0.4254              0.0258
  8              0.4491              0.0237
  9              0.4711              0.0220
 10              0.4917              0.0206
 11              0.5111              0.0194
 12              0.5295              0.0184
 13              0.5499              0.0204
 14              0.5695              0.0196
 15              0.5884              0.0189
 16              0.6066              0.0182
 17              0.6242              0.0176
 18              0.6413              0.0171
 19              0.6579              0.0166
 20              0.6741              0.0161
 21              0.6898              0.0157
 22              0.7051              0.0153
 23              0.7201              0.0150
 24              0.7347              0.0146
 25              0.7490              0.0143
 26              0.7630              0.0140
 27              0.7768              0.0137
 28              0.7902              0.0135
 29              0.8035              0.0132
 30              0.8164              0.0130
 31              0.8292              0.0127
 32              0.8417              0.0125
 33              0.8540              0.0123
```

34	0.8662	0.0121
35	0.8781	0.0119
36	0.8899	0.0118
37	0.9011	0.0112
38	0.9121	0.0110
39	0.9229	0.0108
40	0.9336	0.0107
41	0.9441	0.0106
42	0.9546	0.0104
43	0.9648	0.0103
44	0.9750	0.0101
45	0.9850	0.0100
46	0.9949	0.0099
47	1.0047	0.0098
48	1.0144	0.0097
49	1.0239	0.0096
50	1.0334	0.0095
51	1.0427	0.0094
52	1.0520	0.0093
53	1.0612	0.0092
54	1.0702	0.0091
55	1.0792	0.0090
56	1.0881	0.0089
57	1.0969	0.0088
58	1.1056	0.0087
59	1.1142	0.0086
60	1.1228	0.0086
61	1.1313	0.0085
62	1.1397	0.0084
63	1.1480	0.0083
64	1.1563	0.0083
65	1.1644	0.0082
66	1.1726	0.0081
67	1.1806	0.0081
68	1.1886	0.0080
69	1.1965	0.0079
70	1.2044	0.0079
71	1.2122	0.0078
72	1.2199	0.0077
73	1.2262	0.0063
74	1.2325	0.0063
75	1.2387	0.0062
76	1.2449	0.0062
77	1.2510	0.0061
78	1.2570	0.0061
79	1.2630	0.0060
80	1.2690	0.0060
81	1.2749	0.0059
82	1.2808	0.0059
83	1.2866	0.0058
84	1.2924	0.0058
85	1.2981	0.0057
86	1.3038	0.0057
87	1.3095	0.0057
88	1.3151	0.0056
89	1.3207	0.0056
90	1.3262	0.0055
91	1.3317	0.0055
92	1.3372	0.0055
93	1.3426	0.0054
94	1.3480	0.0054
95	1.3533	0.0054
96	1.3587	0.0053
97	1.3639	0.0053
98	1.3692	0.0052
99	1.3744	0.0052
100	1.3796	0.0052
101	1.3847	0.0051
102	1.3898	0.0051
103	1.3949	0.0051
104	1.4000	0.0051

105	1.4050	0.0050
106	1.4100	0.0050
107	1.4150	0.0050
108	1.4199	0.0049
109	1.4248	0.0049
110	1.4297	0.0049
111	1.4345	0.0049
112	1.4394	0.0048
113	1.4442	0.0048
114	1.4489	0.0048
115	1.4537	0.0047
116	1.4584	0.0047
117	1.4631	0.0047
118	1.4678	0.0047
119	1.4724	0.0046
120	1.4770	0.0046
121	1.4816	0.0046
122	1.4862	0.0046
123	1.4908	0.0045
124	1.4953	0.0045
125	1.4998	0.0045
126	1.5043	0.0045
127	1.5087	0.0045
128	1.5132	0.0044
129	1.5176	0.0044
130	1.5220	0.0044
131	1.5263	0.0044
132	1.5307	0.0044
133	1.5350	0.0043
134	1.5393	0.0043
135	1.5436	0.0043
136	1.5479	0.0043
137	1.5522	0.0043
138	1.5564	0.0042
139	1.5606	0.0042
140	1.5648	0.0042
141	1.5690	0.0042
142	1.5731	0.0042
143	1.5773	0.0041
144	1.5814	0.0041

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0041	0.0038	0.0003
2	0.0041	0.0038	0.0003
3	0.0042	0.0038	0.0003
4	0.0042	0.0038	0.0003
5	0.0042	0.0039	0.0004
6	0.0043	0.0039	0.0004
7	0.0043	0.0039	0.0004
8	0.0043	0.0040	0.0004
9	0.0044	0.0040	0.0004
10	0.0044	0.0040	0.0004
11	0.0044	0.0040	0.0004
12	0.0044	0.0041	0.0004
13	0.0045	0.0041	0.0004
14	0.0045	0.0041	0.0004
15	0.0045	0.0042	0.0004
16	0.0046	0.0042	0.0004
17	0.0046	0.0042	0.0004
18	0.0046	0.0043	0.0004
19	0.0047	0.0043	0.0004
20	0.0047	0.0043	0.0004
21	0.0048	0.0044	0.0004
22	0.0048	0.0044	0.0004
23	0.0049	0.0044	0.0004
24	0.0049	0.0045	0.0004
25	0.0049	0.0045	0.0004
26	0.0050	0.0046	0.0004

27	0.0050	0.0046	0.0004
28	0.0051	0.0046	0.0004
29	0.0051	0.0047	0.0004
30	0.0051	0.0047	0.0004
31	0.0052	0.0048	0.0004
32	0.0052	0.0048	0.0004
33	0.0053	0.0049	0.0004
34	0.0054	0.0049	0.0004
35	0.0054	0.0050	0.0005
36	0.0055	0.0050	0.0005
37	0.0055	0.0051	0.0005
38	0.0056	0.0051	0.0005
39	0.0057	0.0052	0.0005
40	0.0057	0.0052	0.0005
41	0.0058	0.0053	0.0005
42	0.0058	0.0053	0.0005
43	0.0059	0.0054	0.0005
44	0.0060	0.0055	0.0005
45	0.0061	0.0056	0.0005
46	0.0061	0.0056	0.0005
47	0.0062	0.0057	0.0005
48	0.0063	0.0057	0.0005
49	0.0077	0.0071	0.0006
50	0.0078	0.0072	0.0006
51	0.0079	0.0073	0.0007
52	0.0080	0.0073	0.0007
53	0.0081	0.0074	0.0007
54	0.0082	0.0075	0.0007
55	0.0083	0.0076	0.0007
56	0.0084	0.0077	0.0007
57	0.0086	0.0078	0.0007
58	0.0086	0.0079	0.0007
59	0.0088	0.0081	0.0007
60	0.0089	0.0081	0.0007
61	0.0091	0.0083	0.0008
62	0.0092	0.0084	0.0008
63	0.0094	0.0086	0.0008
64	0.0095	0.0087	0.0008
65	0.0097	0.0089	0.0008
66	0.0098	0.0090	0.0008
67	0.0100	0.0092	0.0008
68	0.0101	0.0093	0.0008
69	0.0104	0.0095	0.0009
70	0.0106	0.0097	0.0009
71	0.0108	0.0099	0.0009
72	0.0110	0.0101	0.0009
73	0.0118	0.0108	0.0010
74	0.0119	0.0110	0.0010
75	0.0123	0.0113	0.0010
76	0.0125	0.0115	0.0010
77	0.0130	0.0119	0.0011
78	0.0132	0.0121	0.0011
79	0.0137	0.0126	0.0011
80	0.0140	0.0128	0.0012
81	0.0146	0.0134	0.0012
82	0.0150	0.0137	0.0012
83	0.0157	0.0144	0.0013
84	0.0161	0.0148	0.0013
85	0.0171	0.0157	0.0014
86	0.0176	0.0162	0.0015
87	0.0189	0.0173	0.0016
88	0.0196	0.0180	0.0016
89	0.0184	0.0169	0.0015
90	0.0194	0.0178	0.0016
91	0.0220	0.0181	0.0039
92	0.0237	0.0181	0.0056
93	0.0292	0.0181	0.0111
94	0.0328	0.0181	0.0147
95	0.0465	0.0181	0.0284
96	0.0634	0.0181	0.0453
97	0.1898	0.0181	0.1718

```
 98              0.0380          0.0181              0.0200
 99              0.0258          0.0181              0.0078
100              0.0206          0.0181              0.0025
101              0.0204          0.0181              0.0024
102              0.0182          0.0167              0.0015
103              0.0166          0.0152              0.0014
104              0.0153          0.0141              0.0013
105              0.0143          0.0131              0.0012
106              0.0135          0.0123              0.0011
107              0.0127          0.0117              0.0011
108              0.0121          0.0111              0.0010
109              0.0112          0.0102              0.0009
110              0.0107          0.0098              0.0009
111              0.0103          0.0094              0.0009
112              0.0099          0.0091              0.0008
113              0.0096          0.0088              0.0008
114              0.0093          0.0085              0.0008
115              0.0090          0.0082              0.0007
116              0.0087          0.0080              0.0007
117              0.0085          0.0078              0.0007
118              0.0083          0.0076              0.0007
119              0.0081          0.0074              0.0007
120              0.0079          0.0072              0.0007
121              0.0063          0.0058              0.0005
122              0.0062          0.0056              0.0005
123              0.0060          0.0055              0.0005
124              0.0059          0.0054              0.0005
125              0.0057          0.0053              0.0005
126              0.0056          0.0051              0.0005
127              0.0055          0.0050              0.0005
128              0.0054          0.0049              0.0004
129              0.0053          0.0048              0.0004
130              0.0052          0.0048              0.0004
131              0.0051          0.0047              0.0004
132              0.0050          0.0046              0.0004
133              0.0049          0.0045              0.0004
134              0.0048          0.0044              0.0004
135              0.0047          0.0044              0.0004
136              0.0047          0.0043              0.0004
137              0.0046          0.0042              0.0004
138              0.0045          0.0042              0.0004
139              0.0045          0.0041              0.0004
140              0.0044          0.0040              0.0004
141              0.0043          0.0040              0.0004
142              0.0043          0.0039              0.0004
143              0.0042          0.0039              0.0003
144              0.0042          0.0038              0.0003
-------------------------------------------------------------------------
-------------------------------------------------------------------------
Total soil rain loss =      1.18(In)
Total effective rainfall =      0.40(In)
Peak flow rate in flood hydrograph =     16.26(CFS)
-------------------------------------------------------------------------
+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                    12 - H O U R    S T O R M
                R u n o f f      H y d r o g r a p h
-------------------------------------------------------------------------
            Hydrograph in   5   Minute intervals ((CFS))

-------------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0        5.0      10.0      15.0      20.0
-------------------------------------------------------------------------
  0+ 5       0.0000      0.00  Q         |         |         |         |
  0+10       0.0001      0.01  Q         |         |         |         |
  0+15       0.0003      0.03  Q         |         |         |         |
  0+20       0.0007      0.06  Q         |         |         |         |
  0+25       0.0012      0.07  Q         |         |         |         |
  0+30       0.0017      0.07  Q         |         |         |         |
  0+35       0.0022      0.08  Q         |         |         |         |
  0+40       0.0027      0.08  Q         |         |         |         |
  0+45       0.0033      0.08  Q         |         |         |         |
```

```
0+50       0.0039      0.09  Q          |          |          |          |
0+55       0.0045      0.09  Q          |          |          |          |
1+ 0       0.0051      0.09  Q          |          |          |          |
1+ 5       0.0057      0.09  Q          |          |          |          |
1+10       0.0063      0.09  Q          |          |          |          |
1+15       0.0070      0.09  Q          |          |          |          |
1+20       0.0076      0.09  Q          |          |          |          |
1+25       0.0082      0.09  Q          |          |          |          |
1+30       0.0089      0.09  Q          |          |          |          |
1+35       0.0095      0.09  Q          |          |          |          |
1+40       0.0102      0.09  Q          |          |          |          |
1+45       0.0108      0.10  Q          |          |          |          |
1+50       0.0115      0.10  Q          |          |          |          |
1+55       0.0122      0.10  Q          |          |          |          |
2+ 0       0.0128      0.10  Q          |          |          |          |
2+ 5       0.0135      0.10  Q          |          |          |          |
2+10       0.0142      0.10  Q          |          |          |          |
2+15       0.0149      0.10  Q          |          |          |          |
2+20       0.0156      0.10  Q          |          |          |          |
2+25       0.0163      0.10  Q          |          |          |          |
2+30       0.0170      0.10  Q          |          |          |          |
2+35       0.0177      0.10  QV         |          |          |          |
2+40       0.0184      0.10  QV         |          |          |          |
2+45       0.0192      0.11  QV         |          |          |          |
2+50       0.0199      0.11  QV         |          |          |          |
2+55       0.0206      0.11  QV         |          |          |          |
3+ 0       0.0214      0.11  QV         |          |          |          |
3+ 5       0.0221      0.11  QV         |          |          |          |
3+10       0.0229      0.11  QV         |          |          |          |
3+15       0.0237      0.11  QV         |          |          |          |
3+20       0.0245      0.11  QV         |          |          |          |
3+25       0.0252      0.11  QV         |          |          |          |
3+30       0.0260      0.12  QV         |          |          |          |
3+35       0.0269      0.12  QV         |          |          |          |
3+40       0.0277      0.12  QV         |          |          |          |
3+45       0.0285      0.12  QV         |          |          |          |
3+50       0.0293      0.12  QV         |          |          |          |
3+55       0.0302      0.12  QV         |          |          |          |
4+ 0       0.0310      0.12  QV         |          |          |          |
4+ 5       0.0319      0.13  QV         |          |          |          |
4+10       0.0328      0.13  QV         |          |          |          |
4+15       0.0338      0.14  QV         |          |          |          |
4+20       0.0348      0.15  Q V        |          |          |          |
4+25       0.0358      0.15  Q V        |          |          |          |
4+30       0.0369      0.16  Q V        |          |          |          |
4+35       0.0380      0.16  Q V        |          |          |          |
4+40       0.0392      0.16  Q V        |          |          |          |
4+45       0.0403      0.17  Q V        |          |          |          |
4+50       0.0415      0.17  Q V        |          |          |          |
4+55       0.0427      0.17  Q V        |          |          |          |
5+ 0       0.0439      0.17  Q V        |          |          |          |
5+ 5       0.0451      0.18  Q V        |          |          |          |
5+10       0.0463      0.18  Q V        |          |          |          |
5+15       0.0476      0.18  Q V        |          |          |          |
5+20       0.0488      0.19  Q V        |          |          |          |
5+25       0.0501      0.19  Q V        |          |          |          |
5+30       0.0515      0.19  Q V        |          |          |          |
5+35       0.0528      0.19  Q  V       |          |          |          |
5+40       0.0542      0.20  Q  V       |          |          |          |
5+45       0.0555      0.20  Q  V       |          |          |          |
5+50       0.0569      0.20  Q  V       |          |          |          |
5+55       0.0584      0.21  Q  V       |          |          |          |
6+ 0       0.0598      0.21  Q  V       |          |          |          |
6+ 5       0.0613      0.22  Q  V       |          |          |          |
6+10       0.0629      0.22  Q  V       |          |          |          |
6+15       0.0644      0.23  Q  V       |          |          |          |
6+20       0.0661      0.24  Q  V       |          |          |          |
6+25       0.0677      0.24  Q  V       |          |          |          |
6+30       0.0695      0.25  Q   V      |          |          |          |
6+35       0.0712      0.26  Q   V      |          |          |          |
6+40       0.0730      0.26  Q   V      |          |          |          |
```

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 6+45      0.0749      0.27  Q   V     |          |          |          |
 6+50      0.0768      0.28  Q   V     |          |          |          |
 6+55      0.0788      0.29  Q   V     |          |          |          |
 7+ 0      0.0808      0.30  Q   V     |          |          |          |
 7+ 5      0.0830      0.31  Q   V     |          |          |          |
 7+10      0.0852      0.32  Q   V     |          |          |          |
 7+15      0.0874      0.33  Q    V    |          |          |          |
 7+20      0.0898      0.35  Q    V    |          |          |          |
 7+25      0.0923      0.36  Q    V    |          |          |          |
 7+30      0.0949      0.37  Q    V    |          |          |          |
 7+35      0.0976      0.40  Q    V    |          |          |          |
 7+40      0.1009      0.47  Q    V    |          |          |          |
 7+45      0.1058      0.72  |Q    V    |          |          |          |
 7+50      0.1137      1.15  | Q   V    |          |          |          |
 7+55      0.1267      1.88  |  Q   V   |          |          |          |
 8+ 0      0.1475      3.03  |     Q V  |          |          |          |
 8+ 5      0.1869      5.72  |         VQ          |          |          |
 8+10      0.2565     10.11  |          |   V     Q          |          |
 8+15      0.3685     16.26  |          |         |V         | Q        |
 8+20      0.4674     14.36  |          |         |      VQ  |          |
 8+25      0.5209      7.76  |          |    Q    |          V          |
 8+30      0.5570      5.24  |         Q|         |          | V        |
 8+35      0.5829      3.77  |       Q  |         |          |  V       |
 8+40      0.6023      2.82  |    Q     |         |          |    V     |
 8+45      0.6168      2.11  |   Q      |         |          |    V     |
 8+50      0.6274      1.54  |  Q       |         |          |     V    |
 8+55      0.6351      1.11  | Q        |         |          |     V    |
 9+ 0      0.6402      0.74  |Q         |         |          |      V   |
 9+ 5      0.6443      0.59  |Q         |         |          |      V   |
 9+10      0.6478      0.51  |Q         |         |          |      V   |
 9+15      0.6508      0.44  Q          |         |          |      V   |
 9+20      0.6536      0.42  Q          |         |          |      V   |
 9+25      0.6562      0.37  Q          |         |          |       V  |
 9+30      0.6583      0.30  Q          |         |          |       V  |
 9+35      0.6601      0.26  Q          |         |          |       V  |
 9+40      0.6615      0.21  Q          |         |          |       V  |
 9+45      0.6629      0.20  Q          |         |          |       V  |
 9+50      0.6642      0.19  Q          |         |          |       V  |
 9+55      0.6655      0.19  Q          |         |          |       V  |
10+ 0      0.6667      0.18  Q          |         |          |       V  |
10+ 5      0.6679      0.17  Q          |         |          |       V  |
10+10      0.6691      0.17  Q          |         |          |       V  |
10+15      0.6701      0.15  Q          |         |          |       V  |
10+20      0.6711      0.14  Q          |         |          |        V|
10+25      0.6721      0.14  Q          |         |          |        V|
10+30      0.6730      0.13  Q          |         |          |        V|
10+35      0.6738      0.13  Q          |         |          |        V|
10+40      0.6747      0.12  Q          |         |          |        V|
10+45      0.6755      0.12  Q          |         |          |        V|
10+50      0.6763      0.12  Q          |         |          |        V|
10+55      0.6771      0.11  Q          |         |          |        V|
11+ 0      0.6779      0.11  Q          |         |          |        V|
11+ 5      0.6786      0.11  Q          |         |          |        V|
11+10      0.6793      0.11  Q          |         |          |        V|
11+15      0.6801      0.10  Q          |         |          |        V|
11+20      0.6808      0.10  Q          |         |          |        V|
11+25      0.6815      0.10  Q          |         |          |        V|
11+30      0.6821      0.10  Q          |         |          |        V|
11+35      0.6828      0.10  Q          |         |          |        V|
11+40      0.6835      0.10  Q          |         |          |        V|
11+45      0.6841      0.09  Q          |         |          |        V|
11+50      0.6848      0.09  Q          |         |          |        V|
11+55      0.6854      0.09  Q          |         |          |        V|
12+ 0      0.6860      0.09  Q          |         |          |        V|
12+ 5      0.6866      0.09  Q          |         |          |        V|
12+10      0.6871      0.08  Q          |         |          |        V|
12+15      0.6875      0.05  Q          |         |          |        V|
12+20      0.6877      0.03  Q          |         |          |        V|
12+25      0.6878      0.02  Q          |         |          |        V|
12+30      0.6879      0.01  Q          |         |          |        V|
12+35      0.6880      0.01  Q          |         |          |        V|
```

```
   12+40       0.6881      0.01  Q         |         |         |         V|
   12+45       0.6881      0.00  Q         |         |         |         V|
   12+50       0.6881      0.00  Q         |         |         |         V|
   12+55       0.6881      0.00  Q         |         |         |         V|
   13+ 0       0.6881      0.00  Q         |         |         |         V|
   13+ 5       0.6882      0.00  Q         |         |         |         V|
   13+10       0.6882      0.00  Q         |         |         |         V|
   13+15       0.6882      0.00  Q         |         |         |         V|
   13+20       0.6882      0.00  Q         |         |         |         V|
   13+25       0.6882      0.00  Q         |         |         |         V|
   13+30       0.6882      0.00  Q         |         |         |         V|
-------------------------------------------------------------------------
```

- 2 Year 24 Hour Post-Development Unit Hydrograph – Area 'D'

```
        U n i t   H y d r o g r a p h   A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989-2012, Version 7.2

        Study date  10/11/16   File Name PRD00224.out


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------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'D' - 2 YEAR 24 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

        Storm Event Year = 2

        Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 82.2       6.8          0.33     C     0.250     1.000    0.250
 82.2      13.7          0.67     D     0.200     1.000    0.200

Area-averaged adjusted loss rate Fm (In/Hr) =  0.217

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
     6.84   0.333         82.2      66.1       5.13     0.083

    13.70   0.667         82.2      66.1       5.13     0.083

Area-averaged catchment yield fraction, Y =  0.083
Area-averaged low loss fraction, Yb =  0.917
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.278 (hours)
Watershed area =      20.54(Ac.)
Catchment Lag time =   0.222 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 37.4970
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.217(In/Hr)
Average low loss rate fraction (Yb) = 0.917 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.190(In)
Computed peak 30-minute rainfall =  0.400(In)
Specified peak 1-hour rainfall =  0.530(In)
Computed peak 3-hour rainfall =  0.890(In)
Specified peak 6-hour rainfall =  1.220(In)
Specified peak 24-hour rainfall =  2.050(In)


Rainfall depth area reduction factors:
Using a total area of      20.54(Ac.) (Ref: fig. E-4)
```

```
5-minute factor = 0.999     Adjusted rainfall =  0.190(In)
30-minute factor = 0.999    Adjusted rainfall =  0.400(In)
1-hour factor = 0.999       Adjusted rainfall =  0.529(In)
3-hour factor = 1.000       Adjusted rainfall =  0.890(In)
6-hour factor = 1.000       Adjusted rainfall =  1.220(In)
24-hour factor = 1.000 Adjusted rainfall =  2.050(In)
--------------------------------------------------------------------

                     U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------
               (K =       248.41 (CFS))

  1                2.870                   7.130
  2               13.214                  25.695
  3               40.438                  67.625
  4               65.651                  62.632
  5               76.214                  26.238
  6               83.214                  17.389
  7               88.198                  12.380
  8               91.865                   9.109
  9               94.565                   6.708
 10               96.432                   4.638
 11               97.691                   3.127
 12               98.275                   1.450
 13               98.687                   1.025
 14               99.029                   0.849
 15               99.266                   0.590
 16               99.550                   0.704
 17               99.775                   0.559
 18               99.908                   0.331
 19              100.000                   0.228
--------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.1898              0.1898
  2              0.2532              0.0634
  3              0.2996              0.0465
  4              0.3377              0.0380
  5              0.3705              0.0328
  6              0.3996              0.0292
  7              0.4254              0.0258
  8              0.4491              0.0237
  9              0.4711              0.0220
 10              0.4917              0.0206
 11              0.5111              0.0194
 12              0.5295              0.0184
 13              0.5499              0.0204
 14              0.5695              0.0196
 15              0.5884              0.0189
 16              0.6066              0.0182
 17              0.6242              0.0176
 18              0.6413              0.0171
 19              0.6579              0.0166
 20              0.6741              0.0161
 21              0.6898              0.0157
 22              0.7051              0.0153
 23              0.7201              0.0150
 24              0.7347              0.0146
 25              0.7490              0.0143
 26              0.7630              0.0140
 27              0.7768              0.0137
 28              0.7902              0.0135
 29              0.8035              0.0132
 30              0.8164              0.0130
 31              0.8292              0.0127
 32              0.8417              0.0125
 33              0.8540              0.0123
```

34	0.8662	0.0121
35	0.8781	0.0119
36	0.8899	0.0118
37	0.9011	0.0112
38	0.9121	0.0110
39	0.9229	0.0108
40	0.9336	0.0107
41	0.9441	0.0106
42	0.9546	0.0104
43	0.9648	0.0103
44	0.9750	0.0101
45	0.9850	0.0100
46	0.9949	0.0099
47	1.0047	0.0098
48	1.0144	0.0097
49	1.0239	0.0096
50	1.0334	0.0095
51	1.0427	0.0094
52	1.0520	0.0093
53	1.0612	0.0092
54	1.0702	0.0091
55	1.0792	0.0090
56	1.0881	0.0089
57	1.0969	0.0088
58	1.1056	0.0087
59	1.1142	0.0086
60	1.1228	0.0086
61	1.1313	0.0085
62	1.1397	0.0084
63	1.1480	0.0083
64	1.1563	0.0083
65	1.1644	0.0082
66	1.1726	0.0081
67	1.1806	0.0081
68	1.1886	0.0080
69	1.1965	0.0079
70	1.2044	0.0079
71	1.2122	0.0078
72	1.2199	0.0077
73	1.2262	0.0063
74	1.2325	0.0063
75	1.2387	0.0062
76	1.2449	0.0062
77	1.2510	0.0061
78	1.2570	0.0061
79	1.2630	0.0060
80	1.2690	0.0060
81	1.2749	0.0059
82	1.2808	0.0059
83	1.2866	0.0058
84	1.2924	0.0058
85	1.2981	0.0057
86	1.3038	0.0057
87	1.3095	0.0057
88	1.3151	0.0056
89	1.3207	0.0056
90	1.3262	0.0055
91	1.3317	0.0055
92	1.3372	0.0055
93	1.3426	0.0054
94	1.3480	0.0054
95	1.3533	0.0054
96	1.3587	0.0053
97	1.3639	0.0053
98	1.3692	0.0052
99	1.3744	0.0052
100	1.3796	0.0052
101	1.3847	0.0051
102	1.3898	0.0051
103	1.3949	0.0051
104	1.4000	0.0051

105	1.4050	0.0050
106	1.4100	0.0050
107	1.4150	0.0050
108	1.4199	0.0049
109	1.4248	0.0049
110	1.4297	0.0049
111	1.4345	0.0049
112	1.4394	0.0048
113	1.4442	0.0048
114	1.4489	0.0048
115	1.4537	0.0047
116	1.4584	0.0047
117	1.4631	0.0047
118	1.4678	0.0047
119	1.4724	0.0046
120	1.4770	0.0046
121	1.4816	0.0046
122	1.4862	0.0046
123	1.4908	0.0045
124	1.4953	0.0045
125	1.4998	0.0045
126	1.5043	0.0045
127	1.5087	0.0045
128	1.5132	0.0044
129	1.5176	0.0044
130	1.5220	0.0044
131	1.5263	0.0044
132	1.5307	0.0044
133	1.5350	0.0043
134	1.5393	0.0043
135	1.5436	0.0043
136	1.5479	0.0043
137	1.5522	0.0043
138	1.5564	0.0042
139	1.5606	0.0042
140	1.5648	0.0042
141	1.5690	0.0042
142	1.5731	0.0042
143	1.5773	0.0041
144	1.5814	0.0041
145	1.5855	0.0041
146	1.5896	0.0041
147	1.5936	0.0041
148	1.5977	0.0041
149	1.6017	0.0040
150	1.6057	0.0040
151	1.6097	0.0040
152	1.6137	0.0040
153	1.6177	0.0040
154	1.6216	0.0040
155	1.6256	0.0039
156	1.6295	0.0039
157	1.6334	0.0039
158	1.6373	0.0039
159	1.6412	0.0039
160	1.6450	0.0039
161	1.6489	0.0038
162	1.6527	0.0038
163	1.6565	0.0038
164	1.6603	0.0038
165	1.6641	0.0038
166	1.6678	0.0038
167	1.6716	0.0038
168	1.6753	0.0037
169	1.6791	0.0037
170	1.6828	0.0037
171	1.6865	0.0037
172	1.6902	0.0037
173	1.6938	0.0037
174	1.6975	0.0037
175	1.7011	0.0036

176	1.7048	0.0036
177	1.7084	0.0036
178	1.7120	0.0036
179	1.7156	0.0036
180	1.7192	0.0036
181	1.7227	0.0036
182	1.7263	0.0036
183	1.7298	0.0035
184	1.7334	0.0035
185	1.7369	0.0035
186	1.7404	0.0035
187	1.7439	0.0035
188	1.7474	0.0035
189	1.7509	0.0035
190	1.7543	0.0035
191	1.7578	0.0035
192	1.7612	0.0034
193	1.7647	0.0034
194	1.7681	0.0034
195	1.7715	0.0034
196	1.7749	0.0034
197	1.7783	0.0034
198	1.7816	0.0034
199	1.7850	0.0034
200	1.7883	0.0034
201	1.7917	0.0033
202	1.7950	0.0033
203	1.7983	0.0033
204	1.8017	0.0033
205	1.8050	0.0033
206	1.8082	0.0033
207	1.8115	0.0033
208	1.8148	0.0033
209	1.8181	0.0033
210	1.8213	0.0033
211	1.8246	0.0032
212	1.8278	0.0032
213	1.8310	0.0032
214	1.8342	0.0032
215	1.8374	0.0032
216	1.8406	0.0032
217	1.8438	0.0032
218	1.8470	0.0032
219	1.8502	0.0032
220	1.8533	0.0032
221	1.8565	0.0031
222	1.8596	0.0031
223	1.8627	0.0031
224	1.8659	0.0031
225	1.8690	0.0031
226	1.8721	0.0031
227	1.8752	0.0031
228	1.8783	0.0031
229	1.8813	0.0031
230	1.8844	0.0031
231	1.8875	0.0031
232	1.8905	0.0031
233	1.8936	0.0030
234	1.8966	0.0030
235	1.8997	0.0030
236	1.9027	0.0030
237	1.9057	0.0030
238	1.9087	0.0030
239	1.9117	0.0030
240	1.9147	0.0030
241	1.9177	0.0030
242	1.9206	0.0030
243	1.9236	0.0030
244	1.9266	0.0030
245	1.9295	0.0030
246	1.9325	0.0029

247	1.9354	0.0029
248	1.9383	0.0029
249	1.9413	0.0029
250	1.9442	0.0029
251	1.9471	0.0029
252	1.9500	0.0029
253	1.9529	0.0029
254	1.9558	0.0029
255	1.9586	0.0029
256	1.9615	0.0029
257	1.9644	0.0029
258	1.9672	0.0029
259	1.9701	0.0029
260	1.9729	0.0028
261	1.9758	0.0028
262	1.9786	0.0028
263	1.9814	0.0028
264	1.9842	0.0028
265	1.9871	0.0028
266	1.9899	0.0028
267	1.9927	0.0028
268	1.9954	0.0028
269	1.9982	0.0028
270	2.0010	0.0028
271	2.0038	0.0028
272	2.0065	0.0028
273	2.0093	0.0028
274	2.0121	0.0028
275	2.0148	0.0027
276	2.0175	0.0027
277	2.0203	0.0027
278	2.0230	0.0027
279	2.0257	0.0027
280	2.0284	0.0027
281	2.0311	0.0027
282	2.0339	0.0027
283	2.0365	0.0027
284	2.0392	0.0027
285	2.0419	0.0027
286	2.0446	0.0027
287	2.0473	0.0027
288	2.0499	0.0027

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0027	0.0024	0.0002
2	0.0027	0.0025	0.0002
3	0.0027	0.0025	0.0002
4	0.0027	0.0025	0.0002
5	0.0027	0.0025	0.0002
6	0.0027	0.0025	0.0002
7	0.0027	0.0025	0.0002
8	0.0027	0.0025	0.0002
9	0.0027	0.0025	0.0002
10	0.0027	0.0025	0.0002
11	0.0028	0.0025	0.0002
12	0.0028	0.0025	0.0002
13	0.0028	0.0025	0.0002
14	0.0028	0.0026	0.0002
15	0.0028	0.0026	0.0002
16	0.0028	0.0026	0.0002
17	0.0028	0.0026	0.0002
18	0.0028	0.0026	0.0002
19	0.0028	0.0026	0.0002
20	0.0028	0.0026	0.0002
21	0.0029	0.0026	0.0002
22	0.0029	0.0026	0.0002
23	0.0029	0.0026	0.0002
24	0.0029	0.0026	0.0002

25	0.0029	0.0027	0.0002
26	0.0029	0.0027	0.0002
27	0.0029	0.0027	0.0002
28	0.0029	0.0027	0.0002
29	0.0029	0.0027	0.0002
30	0.0030	0.0027	0.0002
31	0.0030	0.0027	0.0002
32	0.0030	0.0027	0.0002
33	0.0030	0.0027	0.0002
34	0.0030	0.0027	0.0002
35	0.0030	0.0028	0.0003
36	0.0030	0.0028	0.0003
37	0.0030	0.0028	0.0003
38	0.0030	0.0028	0.0003
39	0.0031	0.0028	0.0003
40	0.0031	0.0028	0.0003
41	0.0031	0.0028	0.0003
42	0.0031	0.0028	0.0003
43	0.0031	0.0029	0.0003
44	0.0031	0.0029	0.0003
45	0.0031	0.0029	0.0003
46	0.0031	0.0029	0.0003
47	0.0032	0.0029	0.0003
48	0.0032	0.0029	0.0003
49	0.0032	0.0029	0.0003
50	0.0032	0.0029	0.0003
51	0.0032	0.0030	0.0003
52	0.0032	0.0030	0.0003
53	0.0033	0.0030	0.0003
54	0.0033	0.0030	0.0003
55	0.0033	0.0030	0.0003
56	0.0033	0.0030	0.0003
57	0.0033	0.0030	0.0003
58	0.0033	0.0030	0.0003
59	0.0033	0.0031	0.0003
60	0.0034	0.0031	0.0003
61	0.0034	0.0031	0.0003
62	0.0034	0.0031	0.0003
63	0.0034	0.0031	0.0003
64	0.0034	0.0031	0.0003
65	0.0034	0.0032	0.0003
66	0.0035	0.0032	0.0003
67	0.0035	0.0032	0.0003
68	0.0035	0.0032	0.0003
69	0.0035	0.0032	0.0003
70	0.0035	0.0032	0.0003
71	0.0035	0.0033	0.0003
72	0.0036	0.0033	0.0003
73	0.0036	0.0033	0.0003
74	0.0036	0.0033	0.0003
75	0.0036	0.0033	0.0003
76	0.0036	0.0033	0.0003
77	0.0037	0.0034	0.0003
78	0.0037	0.0034	0.0003
79	0.0037	0.0034	0.0003
80	0.0037	0.0034	0.0003
81	0.0037	0.0034	0.0003
82	0.0038	0.0034	0.0003
83	0.0038	0.0035	0.0003
84	0.0038	0.0035	0.0003
85	0.0038	0.0035	0.0003
86	0.0038	0.0035	0.0003
87	0.0039	0.0036	0.0003
88	0.0039	0.0036	0.0003
89	0.0039	0.0036	0.0003
90	0.0039	0.0036	0.0003
91	0.0040	0.0036	0.0003
92	0.0040	0.0037	0.0003
93	0.0040	0.0037	0.0003
94	0.0040	0.0037	0.0003
95	0.0041	0.0037	0.0003

96	0.0041	0.0037	0.0003
97	0.0041	0.0038	0.0003
98	0.0041	0.0038	0.0003
99	0.0042	0.0038	0.0003
100	0.0042	0.0038	0.0003
101	0.0042	0.0039	0.0004
102	0.0043	0.0039	0.0004
103	0.0043	0.0039	0.0004
104	0.0043	0.0040	0.0004
105	0.0044	0.0040	0.0004
106	0.0044	0.0040	0.0004
107	0.0044	0.0040	0.0004
108	0.0044	0.0041	0.0004
109	0.0045	0.0041	0.0004
110	0.0045	0.0041	0.0004
111	0.0045	0.0042	0.0004
112	0.0046	0.0042	0.0004
113	0.0046	0.0042	0.0004
114	0.0046	0.0043	0.0004
115	0.0047	0.0043	0.0004
116	0.0047	0.0043	0.0004
117	0.0048	0.0044	0.0004
118	0.0048	0.0044	0.0004
119	0.0049	0.0044	0.0004
120	0.0049	0.0045	0.0004
121	0.0049	0.0045	0.0004
122	0.0050	0.0046	0.0004
123	0.0050	0.0046	0.0004
124	0.0051	0.0046	0.0004
125	0.0051	0.0047	0.0004
126	0.0051	0.0047	0.0004
127	0.0052	0.0048	0.0004
128	0.0052	0.0048	0.0004
129	0.0053	0.0049	0.0004
130	0.0054	0.0049	0.0004
131	0.0054	0.0050	0.0005
132	0.0055	0.0050	0.0005
133	0.0055	0.0051	0.0005
134	0.0056	0.0051	0.0005
135	0.0057	0.0052	0.0005
136	0.0057	0.0052	0.0005
137	0.0058	0.0053	0.0005
138	0.0058	0.0053	0.0005
139	0.0059	0.0054	0.0005
140	0.0060	0.0055	0.0005
141	0.0061	0.0056	0.0005
142	0.0061	0.0056	0.0005
143	0.0062	0.0057	0.0005
144	0.0063	0.0057	0.0005
145	0.0077	0.0071	0.0006
146	0.0078	0.0072	0.0006
147	0.0079	0.0073	0.0007
148	0.0080	0.0073	0.0007
149	0.0081	0.0074	0.0007
150	0.0082	0.0075	0.0007
151	0.0083	0.0076	0.0007
152	0.0084	0.0077	0.0007
153	0.0086	0.0078	0.0007
154	0.0086	0.0079	0.0007
155	0.0088	0.0081	0.0007
156	0.0089	0.0081	0.0007
157	0.0091	0.0083	0.0008
158	0.0092	0.0084	0.0008
159	0.0094	0.0086	0.0008
160	0.0095	0.0087	0.0008
161	0.0097	0.0089	0.0008
162	0.0098	0.0090	0.0008
163	0.0100	0.0092	0.0008
164	0.0101	0.0093	0.0008
165	0.0104	0.0095	0.0009
166	0.0106	0.0097	0.0009

167	0.0108	0.0099	0.0009
168	0.0110	0.0101	0.0009
169	0.0118	0.0108	0.0010
170	0.0119	0.0110	0.0010
171	0.0123	0.0113	0.0010
172	0.0125	0.0115	0.0010
173	0.0130	0.0119	0.0011
174	0.0132	0.0121	0.0011
175	0.0137	0.0126	0.0011
176	0.0140	0.0128	0.0012
177	0.0146	0.0134	0.0012
178	0.0150	0.0137	0.0012
179	0.0157	0.0144	0.0013
180	0.0161	0.0148	0.0013
181	0.0171	0.0157	0.0014
182	0.0176	0.0162	0.0015
183	0.0189	0.0173	0.0016
184	0.0196	0.0180	0.0016
185	0.0184	0.0169	0.0015
186	0.0194	0.0178	0.0016
187	0.0220	0.0181	0.0039
188	0.0237	0.0181	0.0056
189	0.0292	0.0181	0.0111
190	0.0328	0.0181	0.0147
191	0.0465	0.0181	0.0284
192	0.0634	0.0181	0.0453
193	0.1898	0.0181	0.1718
194	0.0380	0.0181	0.0200
195	0.0258	0.0181	0.0078
196	0.0206	0.0181	0.0025
197	0.0204	0.0181	0.0024
198	0.0182	0.0167	0.0015
199	0.0166	0.0152	0.0014
200	0.0153	0.0141	0.0013
201	0.0143	0.0131	0.0012
202	0.0135	0.0123	0.0011
203	0.0127	0.0117	0.0011
204	0.0121	0.0111	0.0010
205	0.0112	0.0102	0.0009
206	0.0107	0.0098	0.0009
207	0.0103	0.0094	0.0009
208	0.0099	0.0091	0.0008
209	0.0096	0.0088	0.0008
210	0.0093	0.0085	0.0008
211	0.0090	0.0082	0.0007
212	0.0087	0.0080	0.0007
213	0.0085	0.0078	0.0007
214	0.0083	0.0076	0.0007
215	0.0081	0.0074	0.0007
216	0.0079	0.0072	0.0007
217	0.0063	0.0058	0.0005
218	0.0062	0.0056	0.0005
219	0.0060	0.0055	0.0005
220	0.0059	0.0054	0.0005
221	0.0057	0.0053	0.0005
222	0.0056	0.0051	0.0005
223	0.0055	0.0050	0.0005
224	0.0054	0.0049	0.0004
225	0.0053	0.0048	0.0004
226	0.0052	0.0048	0.0004
227	0.0051	0.0047	0.0004
228	0.0050	0.0046	0.0004
229	0.0049	0.0045	0.0004
230	0.0048	0.0044	0.0004
231	0.0047	0.0044	0.0004
232	0.0047	0.0043	0.0004
233	0.0046	0.0042	0.0004
234	0.0045	0.0042	0.0004
235	0.0045	0.0041	0.0004
236	0.0044	0.0040	0.0004
237	0.0043	0.0040	0.0004

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      238              0.0043          0.0039              0.0004
      239              0.0042          0.0039              0.0003
      240              0.0042          0.0038              0.0003
      241              0.0041          0.0038              0.0003
      242              0.0041          0.0037              0.0003
      243              0.0040          0.0037              0.0003
      244              0.0040          0.0036              0.0003
      245              0.0039          0.0036              0.0003
      246              0.0039          0.0035              0.0003
      247              0.0038          0.0035              0.0003
      248              0.0038          0.0035              0.0003
      249              0.0037          0.0034              0.0003
      250              0.0037          0.0034              0.0003
      251              0.0036          0.0033              0.0003
      252              0.0036          0.0033              0.0003
      253              0.0036          0.0033              0.0003
      254              0.0035          0.0032              0.0003
      255              0.0035          0.0032              0.0003
      256              0.0035          0.0032              0.0003
      257              0.0034          0.0031              0.0003
      258              0.0034          0.0031              0.0003
      259              0.0034          0.0031              0.0003
      260              0.0033          0.0031              0.0003
      261              0.0033          0.0030              0.0003
      262              0.0033          0.0030              0.0003
      263              0.0032          0.0030              0.0003
      264              0.0032          0.0029              0.0003
      265              0.0032          0.0029              0.0003
      266              0.0032          0.0029              0.0003
      267              0.0031          0.0029              0.0003
      268              0.0031          0.0028              0.0003
      269              0.0031          0.0028              0.0003
      270              0.0031          0.0028              0.0003
      271              0.0030          0.0028              0.0003
      272              0.0030          0.0028              0.0002
      273              0.0030          0.0027              0.0002
      274              0.0030          0.0027              0.0002
      275              0.0029          0.0027              0.0002
      276              0.0029          0.0027              0.0002
      277              0.0029          0.0027              0.0002
      278              0.0029          0.0026              0.0002
      279              0.0029          0.0026              0.0002
      280              0.0028          0.0026              0.0002
      281              0.0028          0.0026              0.0002
      282              0.0028          0.0026              0.0002
      283              0.0028          0.0025              0.0002
      284              0.0028          0.0025              0.0002
      285              0.0027          0.0025              0.0002
      286              0.0027          0.0025              0.0002
      287              0.0027          0.0025              0.0002
      288              0.0027          0.0025              0.0002
      ------------------------------------------------------------------------
      ------------------------------------------------------------------------
      Total soil rain loss =      1.61(In)
      Total effective rainfall =      0.44(In)
      Peak flow rate in flood hydrograph =     16.26(CFS)
      ------------------------------------------------------------------------
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                         24 - H O U R    S T O R M
                    R u n o f f      H y d r o g r a p h
      ------------------------------------------------------------------------
                Hydrograph in   5   Minute intervals ((CFS))

      ------------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0        5.0      10.0      15.0      20.0
----------------------------------------------------------------------------
  0+ 5       0.0000      0.00  Q         |         |         |         |
  0+10       0.0001      0.01  Q         |         |         |         |
  0+15       0.0002      0.02  Q         |         |         |         |
  0+20       0.0005      0.04  Q         |         |         |         |
  0+25       0.0008      0.04  Q         |         |         |         |
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0+30	0.0011	0.05	Q	|	|	|	|
0+35	0.0014	0.05	Q	|	|	|	|
0+40	0.0018	0.05	Q	|	|	|	|
0+45	0.0021	0.05	Q	|	|	|	|
0+50	0.0025	0.05	Q	|	|	|	|
0+55	0.0029	0.05	Q	|	|	|	|
1+ 0	0.0033	0.06	Q	|	|	|	|
1+ 5	0.0036	0.06	Q	|	|	|	|
1+10	0.0040	0.06	Q	|	|	|	|
1+15	0.0044	0.06	Q	|	|	|	|
1+20	0.0048	0.06	Q	|	|	|	|
1+25	0.0052	0.06	Q	|	|	|	|
1+30	0.0056	0.06	Q	|	|	|	|
1+35	0.0060	0.06	Q	|	|	|	|
1+40	0.0064	0.06	Q	|	|	|	|
1+45	0.0068	0.06	Q	|	|	|	|
1+50	0.0072	0.06	Q	|	|	|	|
1+55	0.0076	0.06	Q	|	|	|	|
2+ 0	0.0080	0.06	Q	|	|	|	|
2+ 5	0.0084	0.06	Q	|	|	|	|
2+10	0.0088	0.06	Q	|	|	|	|
2+15	0.0092	0.06	Q	|	|	|	|
2+20	0.0096	0.06	Q	|	|	|	|
2+25	0.0101	0.06	Q	|	|	|	|
2+30	0.0105	0.06	Q	|	|	|	|
2+35	0.0109	0.06	Q	|	|	|	|
2+40	0.0113	0.06	Q	|	|	|	|
2+45	0.0117	0.06	Q	|	|	|	|
2+50	0.0121	0.06	Q	|	|	|	|
2+55	0.0126	0.06	Q	|	|	|	|
3+ 0	0.0130	0.06	Q	|	|	|	|
3+ 5	0.0134	0.06	Q	|	|	|	|
3+10	0.0138	0.06	Q	|	|	|	|
3+15	0.0143	0.06	Q	|	|	|	|
3+20	0.0147	0.06	Q	|	|	|	|
3+25	0.0151	0.06	Q	|	|	|	|
3+30	0.0156	0.06	Q	|	|	|	|
3+35	0.0160	0.06	Q	|	|	|	|
3+40	0.0164	0.06	Q	|	|	|	|
3+45	0.0169	0.06	Q	|	|	|	|
3+50	0.0173	0.06	Q	|	|	|	|
3+55	0.0178	0.06	Q	|	|	|	|
4+ 0	0.0182	0.06	Q	|	|	|	|
4+ 5	0.0186	0.06	Q	|	|	|	|
4+10	0.0191	0.07	QV	|	|	|	|
4+15	0.0195	0.07	QV	|	|	|	|
4+20	0.0200	0.07	QV	|	|	|	|
4+25	0.0204	0.07	QV	|	|	|	|
4+30	0.0209	0.07	QV	|	|	|	|
4+35	0.0214	0.07	QV	|	|	|	|
4+40	0.0218	0.07	QV	|	|	|	|
4+45	0.0223	0.07	QV	|	|	|	|
4+50	0.0228	0.07	QV	|	|	|	|
4+55	0.0232	0.07	QV	|	|	|	|
5+ 0	0.0237	0.07	QV	|	|	|	|
5+ 5	0.0242	0.07	QV	|	|	|	|
5+10	0.0246	0.07	QV	|	|	|	|
5+15	0.0251	0.07	QV	|	|	|	|
5+20	0.0256	0.07	QV	|	|	|	|
5+25	0.0261	0.07	QV	|	|	|	|
5+30	0.0265	0.07	QV	|	|	|	|
5+35	0.0270	0.07	QV	|	|	|	|
5+40	0.0275	0.07	QV	|	|	|	|
5+45	0.0280	0.07	QV	|	|	|	|
5+50	0.0285	0.07	QV	|	|	|	|
5+55	0.0290	0.07	QV	|	|	|	|
6+ 0	0.0295	0.07	QV	|	|	|	|
6+ 5	0.0300	0.07	QV	|	|	|	|
6+10	0.0305	0.07	QV	|	|	|	|
6+15	0.0310	0.07	QV	|	|	|	|
6+20	0.0315	0.07	QV	|	|	|	|

6+25	0.0320	0.07	QV	|	|	|	|
6+30	0.0325	0.07	QV	|	|	|	|
6+35	0.0330	0.07	QV	|	|	|	|
6+40	0.0336	0.08	QV	|	|	|	|
6+45	0.0341	0.08	QV	|	|	|	|
6+50	0.0346	0.08	QV	|	|	|	|
6+55	0.0351	0.08	QV	|	|	|	|
7+ 0	0.0356	0.08	QV	|	|	|	|
7+ 5	0.0362	0.08	QV	|	|	|	|
7+10	0.0367	0.08	QV	|	|	|	|
7+15	0.0373	0.08	QV	|	|	|	|
7+20	0.0378	0.08	Q V	|	|	|	|
7+25	0.0383	0.08	Q V	|	|	|	|
7+30	0.0389	0.08	Q V	|	|	|	|
7+35	0.0394	0.08	Q V	|	|	|	|
7+40	0.0400	0.08	Q V	|	|	|	|
7+45	0.0406	0.08	Q V	|	|	|	|
7+50	0.0411	0.08	Q V	|	|	|	|
7+55	0.0417	0.08	Q V	|	|	|	|
8+ 0	0.0422	0.08	Q V	|	|	|	|
8+ 5	0.0428	0.08	Q V	|	|	|	|
8+10	0.0434	0.08	Q V	|	|	|	|
8+15	0.0440	0.08	Q V	|	|	|	|
8+20	0.0446	0.08	Q V	|	|	|	|
8+25	0.0451	0.09	Q V	|	|	|	|
8+30	0.0457	0.09	Q V	|	|	|	|
8+35	0.0463	0.09	Q V	|	|	|	|
8+40	0.0469	0.09	Q V	|	|	|	|
8+45	0.0475	0.09	Q V	|	|	|	|
8+50	0.0481	0.09	Q V	|	|	|	|
8+55	0.0487	0.09	Q V	|	|	|	|
9+ 0	0.0494	0.09	Q V	|	|	|	|
9+ 5	0.0500	0.09	Q V	|	|	|	|
9+10	0.0506	0.09	Q V	|	|	|	|
9+15	0.0512	0.09	Q V	|	|	|	|
9+20	0.0519	0.09	Q V	|	|	|	|
9+25	0.0525	0.09	Q V	|	|	|	|
9+30	0.0531	0.09	Q V	|	|	|	|
9+35	0.0538	0.09	Q V	|	|	|	|
9+40	0.0544	0.09	Q V	|	|	|	|
9+45	0.0551	0.10	Q V	|	|	|	|
9+50	0.0558	0.10	Q V	|	|	|	|
9+55	0.0564	0.10	Q V	|	|	|	|
10+ 0	0.0571	0.10	Q V	|	|	|	|
10+ 5	0.0578	0.10	Q V	|	|	|	|
10+10	0.0585	0.10	Q V	|	|	|	|
10+15	0.0592	0.10	Q V	|	|	|	|
10+20	0.0599	0.10	Q V	|	|	|	|
10+25	0.0606	0.10	Q V	|	|	|	|
10+30	0.0613	0.10	Q V	|	|	|	|
10+35	0.0620	0.10	Q V	|	|	|	|
10+40	0.0627	0.10	Q V	|	|	|	|
10+45	0.0634	0.11	Q V	|	|	|	|
10+50	0.0642	0.11	Q V	|	|	|	|
10+55	0.0649	0.11	Q V	|	|	|	|
11+ 0	0.0657	0.11	Q V	|	|	|	|
11+ 5	0.0664	0.11	Q V	|	|	|	|
11+10	0.0672	0.11	Q V	|	|	|	|
11+15	0.0680	0.11	Q V	|	|	|	|
11+20	0.0687	0.11	Q V	|	|	|	|
11+25	0.0695	0.11	Q V	|	|	|	|
11+30	0.0703	0.12	Q V	|	|	|	|
11+35	0.0711	0.12	Q V	|	|	|	|
11+40	0.0719	0.12	Q V	|	|	|	|
11+45	0.0728	0.12	Q V	|	|	|	|
11+50	0.0736	0.12	Q V	|	|	|	|
11+55	0.0744	0.12	Q V	|	|	|	|
12+ 0	0.0753	0.12	Q V	|	|	|	|
12+ 5	0.0762	0.13	Q V	|	|	|	|
12+10	0.0771	0.13	Q V	|	|	|	|
12+15	0.0780	0.14	Q V	|	|	|	|

```
12+20       0.0791      0.15  Q   V     |          |          |          |
12+25       0.0801      0.15  Q   V     |          |          |          |
12+30       0.0812      0.16  Q   V     |          |          |          |
12+35       0.0823      0.16  Q   V     |          |          |          |
12+40       0.0834      0.16  Q   V     |          |          |          |
12+45       0.0846      0.17  Q   V     |          |          |          |
12+50       0.0858      0.17  Q   V     |          |          |          |
12+55       0.0869      0.17  Q   V     |          |          |          |
13+ 0       0.0881      0.17  Q   V     |          |          |          |
13+ 5       0.0894      0.18  Q   V     |          |          |          |
13+10       0.0906      0.18  Q   V     |          |          |          |
13+15       0.0918      0.18  Q   V     |          |          |          |
13+20       0.0931      0.19  Q   V     |          |          |          |
13+25       0.0944      0.19  Q    V    |          |          |          |
13+30       0.0957      0.19  Q    V    |          |          |          |
13+35       0.0971      0.19  Q    V    |          |          |          |
13+40       0.0984      0.20  Q    V    |          |          |          |
13+45       0.0998      0.20  Q    V    |          |          |          |
13+50       0.1012      0.20  Q    V    |          |          |          |
13+55       0.1027      0.21  Q    V    |          |          |          |
14+ 0       0.1041      0.21  Q    V    |          |          |          |
14+ 5       0.1056      0.22  Q    V    |          |          |          |
14+10       0.1071      0.22  Q    V    |          |          |          |
14+15       0.1087      0.23  Q    V    |          |          |          |
14+20       0.1103      0.24  Q    V    |          |          |          |
14+25       0.1120      0.24  Q    V    |          |          |          |
14+30       0.1137      0.25  Q     V   |          |          |          |
14+35       0.1155      0.26  Q     V   |          |          |          |
14+40       0.1173      0.26  Q     V   |          |          |          |
14+45       0.1192      0.27  Q     V   |          |          |          |
14+50       0.1211      0.28  Q     V   |          |          |          |
14+55       0.1231      0.29  Q     V   |          |          |          |
15+ 0       0.1251      0.30  Q     V   |          |          |          |
15+ 5       0.1272      0.31  Q     V   |          |          |          |
15+10       0.1294      0.32  Q     V   |          |          |          |
15+15       0.1317      0.33  Q     V   |          |          |          |
15+20       0.1341      0.35  Q      V  |          |          |          |
15+25       0.1366      0.36  Q      V  |          |          |          |
15+30       0.1392      0.37  Q      V  |          |          |          |
15+35       0.1419      0.40  Q      V  |          |          |          |
15+40       0.1451      0.47  Q      V  |          |          |          |
15+45       0.1501      0.72  |Q     V  |          |          |          |
15+50       0.1580      1.15  | Q     V |          |          |          |
15+55       0.1710      1.88  |  Q     V|          |          |          |
16+ 0       0.1918      3.03  |     Q   V          |          |          |
16+ 5       0.2312      5.72  |          |QV       |          |          |
16+10       0.3008     10.11  |          |    V    Q          |          |
16+15       0.4128     16.26  |          |         |V         | Q        |
16+20       0.5117     14.36  |          |         |      VQ  |          |
16+25       0.5652      7.76  |          |    Q    |        V |          |
16+30       0.6012      5.24  |          Q         |          |V         |
16+35       0.6272      3.77  |       Q  |         |          |  V       |
16+40       0.6466      2.82  |     Q    |         |          |   V      |
16+45       0.6611      2.11  |   Q      |         |          |    V     |
16+50       0.6717      1.54  |  Q       |         |          |    V     |
16+55       0.6794      1.11  | Q        |         |          |     V    |
17+ 0       0.6845      0.74  |Q         |         |          |     V    |
17+ 5       0.6885      0.59  |Q         |         |          |     V    |
17+10       0.6920      0.51  |Q         |         |          |     V    |
17+15       0.6950      0.44  Q          |         |          |     V    |
17+20       0.6979      0.42  Q          |         |          |     V    |
17+25       0.7004      0.37  Q          |         |          |      V   |
17+30       0.7025      0.30  Q          |         |          |      V   |
17+35       0.7043      0.26  Q          |         |          |      V   |
17+40       0.7058      0.21  Q          |         |          |      V   |
17+45       0.7072      0.20  Q          |         |          |      V   |
17+50       0.7085      0.19  Q          |         |          |      V   |
17+55       0.7098      0.19  Q          |         |          |      V   |
18+ 0       0.7110      0.18  Q          |         |          |      V   |
18+ 5       0.7122      0.17  Q          |         |          |      V   |
18+10       0.7134      0.17  Q          |         |          |      V   |
```

18+15	0.7144	0.15	Q	|	|	|	V |
18+20	0.7154	0.14	Q	|	|	|	V |
18+25	0.7163	0.14	Q	|	|	|	V |
18+30	0.7172	0.13	Q	|	|	|	V |
18+35	0.7181	0.13	Q	|	|	|	V |
18+40	0.7190	0.12	Q	|	|	|	V |
18+45	0.7198	0.12	Q	|	|	|	V |
18+50	0.7206	0.12	Q	|	|	|	V |
18+55	0.7214	0.11	Q	|	|	|	V |
19+ 0	0.7221	0.11	Q	|	|	|	V |
19+ 5	0.7229	0.11	Q	|	|	|	V |
19+10	0.7236	0.11	Q	|	|	|	V |
19+15	0.7243	0.10	Q	|	|	|	V |
19+20	0.7250	0.10	Q	|	|	|	V |
19+25	0.7257	0.10	Q	|	|	|	V |
19+30	0.7264	0.10	Q	|	|	|	V |
19+35	0.7271	0.10	Q	|	|	|	V |
19+40	0.7277	0.10	Q	|	|	|	V |
19+45	0.7284	0.09	Q	|	|	|	V |
19+50	0.7290	0.09	Q	|	|	|	V |
19+55	0.7297	0.09	Q	|	|	|	V |
20+ 0	0.7303	0.09	Q	|	|	|	V |
20+ 5	0.7309	0.09	Q	|	|	|	V |
20+10	0.7315	0.09	Q	|	|	|	V |
20+15	0.7321	0.09	Q	|	|	|	V |
20+20	0.7327	0.09	Q	|	|	|	V |
20+25	0.7333	0.08	Q	|	|	|	V |
20+30	0.7338	0.08	Q	|	|	|	V |
20+35	0.7344	0.08	Q	|	|	|	V |
20+40	0.7350	0.08	Q	|	|	|	V |
20+45	0.7355	0.08	Q	|	|	|	V |
20+50	0.7361	0.08	Q	|	|	|	V|
20+55	0.7366	0.08	Q	|	|	|	V|
21+ 0	0.7371	0.08	Q	|	|	|	V|
21+ 5	0.7377	0.08	Q	|	|	|	V|
21+10	0.7382	0.08	Q	|	|	|	V|
21+15	0.7387	0.07	Q	|	|	|	V|
21+20	0.7392	0.07	Q	|	|	|	V|
21+25	0.7397	0.07	Q	|	|	|	V|
21+30	0.7402	0.07	Q	|	|	|	V|
21+35	0.7407	0.07	Q	|	|	|	V|
21+40	0.7412	0.07	Q	|	|	|	V|
21+45	0.7417	0.07	Q	|	|	|	V|
21+50	0.7422	0.07	Q	|	|	|	V|
21+55	0.7426	0.07	Q	|	|	|	V|
22+ 0	0.7431	0.07	Q	|	|	|	V|
22+ 5	0.7436	0.07	Q	|	|	|	V|
22+10	0.7440	0.07	Q	|	|	|	V|
22+15	0.7445	0.07	Q	|	|	|	V|
22+20	0.7449	0.07	Q	|	|	|	V|
22+25	0.7454	0.07	Q	|	|	|	V|
22+30	0.7458	0.06	Q	|	|	|	V|
22+35	0.7463	0.06	Q	|	|	|	V|
22+40	0.7467	0.06	Q	|	|	|	V|
22+45	0.7472	0.06	Q	|	|	|	V|
22+50	0.7476	0.06	Q	|	|	|	V|
22+55	0.7480	0.06	Q	|	|	|	V|
23+ 0	0.7485	0.06	Q	|	|	|	V|
23+ 5	0.7489	0.06	Q	|	|	|	V|
23+10	0.7493	0.06	Q	|	|	|	V|
23+15	0.7497	0.06	Q	|	|	|	V|
23+20	0.7501	0.06	Q	|	|	|	V|
23+25	0.7505	0.06	Q	|	|	|	V|
23+30	0.7509	0.06	Q	|	|	|	V|
23+35	0.7513	0.06	Q	|	|	|	V|
23+40	0.7517	0.06	Q	|	|	|	V|
23+45	0.7521	0.06	Q	|	|	|	V|
23+50	0.7525	0.06	Q	|	|	|	V|
23+55	0.7529	0.06	Q	|	|	|	V|
24+ 0	0.7533	0.06	Q	|	|	|	V|
24+ 5	0.7537	0.05	Q	|	|	|	V|

```
   24+10       0.7540      0.05  Q         |         |         |         V|
   24+15       0.7543      0.03  Q         |         |         |         V|
   24+20       0.7544      0.02  Q         |         |         |         V|
   24+25       0.7545      0.01  Q         |         |         |         V|
   24+30       0.7545      0.01  Q         |         |         |         V|
   24+35       0.7546      0.01  Q         |         |         |         V|
   24+40       0.7546      0.00  Q         |         |         |         V|
   24+45       0.7546      0.00  Q         |         |         |         V|
   24+50       0.7547      0.00  Q         |         |         |         V|
   24+55       0.7547      0.00  Q         |         |         |         V|
   25+ 0       0.7547      0.00  Q         |         |         |         V|
   25+ 5       0.7547      0.00  Q         |         |         |         V|
   25+10       0.7547      0.00  Q         |         |         |         V|
   25+15       0.7547      0.00  Q         |         |         |         V|
   25+20       0.7547      0.00  Q         |         |         |         V|
   25+25       0.7547      0.00  Q         |         |         |         V|
   25+30       0.7547      0.00  Q         |         |         |         V|
-------------------------------------------------------------------------
```

- 5 Year 3 Hour Post-Development Unit Hydrograph – Area 'D'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989-2012, Version 7.2

       Study date  10/11/16   File Name PRD00503.out


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------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'D' - 5 YEAR 3 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 5

       Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 82.2       6.8          0.33     C     0.250     1.000    0.250
 82.2      13.7          0.67     D     0.200     1.000    0.200

Area-averaged adjusted loss rate Fm (In/Hr) =  0.217

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
     6.84   0.333         82.2      66.1       5.13     0.186

    13.70   0.667         82.2      66.1       5.13     0.186

Area-averaged catchment yield fraction, Y =  0.186
Area-averaged low loss fraction, Yb =  0.814
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.267 (hours)
Watershed area =      20.54(Ac.)
Catchment Lag time =   0.213 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 39.0869
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.217(In/Hr)
Average low loss rate fraction (Yb) = 0.814 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.260(In)
Computed peak 30-minute rainfall =  0.590(In)
Specified peak 1-hour rainfall =  0.780(In)
Computed peak 3-hour rainfall =  1.310(In)
Specified peak 6-hour rainfall =  1.810(In)
Specified peak 24-hour rainfall =  3.030(In)


Rainfall depth area reduction factors:
Using a total area of      20.54(Ac.) (Ref: fig. E-4)
```

```
5-minute factor = 0.999     Adjusted rainfall =  0.260(In)
30-minute factor = 0.999    Adjusted rainfall =  0.589(In)
1-hour factor = 0.999       Adjusted rainfall =  0.779(In)
3-hour factor = 1.000       Adjusted rainfall =  1.310(In)
6-hour factor = 1.000       Adjusted rainfall =  1.810(In)
24-hour factor = 1.000 Adjusted rainfall =  3.030(In)
--------------------------------------------------------------------

                     U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------
               (K =       248.41 (CFS))

  1                3.036                   7.541
  2               14.254                  27.866
  3               44.151                  74.266
  4               67.584                  58.209
  5               77.733                  25.210
  6               84.518                  16.856
  7               89.317                  11.919
  8               92.819                   8.699
  9               95.316                   6.204
 10               97.014                   4.218
 11               98.008                   2.468
 12               98.485                   1.184
 13               98.882                   0.988
 14               99.166                   0.704
 15               99.434                   0.666
 16               99.714                   0.694
 17               99.874                   0.399
 18              100.000                   0.312
--------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.2597              0.2597
  2              0.3566              0.0969
  3              0.4293              0.0727
  4              0.4897              0.0604
  5              0.5423              0.0526
  6              0.5894              0.0472
  7              0.6272              0.0378
  8              0.6618              0.0347
  9              0.6940              0.0322
 10              0.7241              0.0301
 11              0.7524              0.0283
 12              0.7792              0.0268
 13              0.8093              0.0300
 14              0.8382              0.0289
 15              0.8659              0.0278
 16              0.8928              0.0268
 17              0.9187              0.0260
 18              0.9439              0.0252
 19              0.9683              0.0244
 20              0.9921              0.0238
 21              1.0152              0.0231
 22              1.0378              0.0226
 23              1.0598              0.0220
 24              1.0814              0.0215
 25              1.1024              0.0211
 26              1.1231              0.0206
 27              1.1433              0.0202
 28              1.1631              0.0198
 29              1.1826              0.0195
 30              1.2017              0.0191
 31              1.2204              0.0188
 32              1.2389              0.0185
 33              1.2571              0.0182
 34              1.2749              0.0179
```

```
 35              1.2925              0.0176
 36              1.3098              0.0173
-------------------------------------------------------------------
Unit              Unit            Unit              Effective
Period            Rainfall        Soil-Loss         Rainfall
(number)            (In)          (In)                (In)
-------------------------------------------------------------------
  1               0.0173          0.0141              0.0032
  2               0.0176          0.0143              0.0033
  3               0.0182          0.0148              0.0034
  4               0.0185          0.0150              0.0034
  5               0.0191          0.0156              0.0035
  6               0.0195          0.0158              0.0036
  7               0.0202          0.0165              0.0038
  8               0.0206          0.0168              0.0038
  9               0.0215          0.0175              0.0040
 10               0.0220          0.0179              0.0041
 11               0.0231          0.0181              0.0051
 12               0.0238          0.0181              0.0057
 13               0.0252          0.0181              0.0071
 14               0.0260          0.0181              0.0079
 15               0.0278          0.0181              0.0097
 16               0.0289          0.0181              0.0108
 17               0.0268          0.0181              0.0088
 18               0.0283          0.0181              0.0103
 19               0.0322          0.0181              0.0141
 20               0.0347          0.0181              0.0166
 21               0.0472          0.0181              0.0291
 22               0.0526          0.0181              0.0346
 23               0.0727          0.0181              0.0546
 24               0.0969          0.0181              0.0788
 25               0.2597          0.0181              0.2417
 26               0.0604          0.0181              0.0423
 27               0.0378          0.0181              0.0197
 28               0.0301          0.0181              0.0120
 29               0.0300          0.0181              0.0120
 30               0.0268          0.0181              0.0088
 31               0.0244          0.0181              0.0064
 32               0.0226          0.0181              0.0045
 33               0.0211          0.0172              0.0039
 34               0.0198          0.0161              0.0037
 35               0.0188          0.0153              0.0035
 36               0.0179          0.0145              0.0033
-------------------------------------------------------------------
-------------------------------------------------------------------
Total soil rain loss =      0.62(In)
Total effective rainfall =      0.69(In)
Peak flow rate in flood hydrograph =     26.51(CFS)
-------------------------------------------------------------------
+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                    3 - H O U R    S T O R M
                R u n o f f      H y d r o g r a p h
-------------------------------------------------------------------
            Hydrograph in   5   Minute intervals ((CFS))

-------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0        7.5      15.0      22.5      30.0
-------------------------------------------------------------------
  0+ 5       0.0002      0.02  Q         |         |         |         |
  0+10       0.0010      0.11  Q         |         |         |         |
  0+15       0.0034      0.36  Q         |         |         |         |
  0+20       0.0072      0.55  Q         |         |         |         |
  0+25       0.0116      0.64  Q         |         |         |         |
  0+30       0.0165      0.71  Q         |         |         |         |
  0+35       0.0218      0.77  VQ        |         |         |         |
  0+40       0.0275      0.82  VQ        |         |         |         |
  0+45       0.0334      0.86  |Q        |         |         |         |
  0+50       0.0396      0.90  |Q        |         |         |         |
  0+55       0.0461      0.94  |Q        |         |         |         |
  1+ 0       0.0530      1.00  |Q        |         |         |         |
  1+ 5       0.0607      1.12  |QV       |         |         |         |
```

```
   1+10       0.0695      1.28  |QV       |          |          |          |
   1+15       0.0798      1.49  |QV       |          |          |          |
   1+20       0.0917      1.73  | QV      |          |          |          |
   1+25       0.1054      1.99  | QV      |          |          |          |
   1+30       0.1205      2.19  | Q V     |          |          |          |
   1+35       0.1361      2.26  |  QV     |          |          |          |
   1+40       0.1531      2.47  |  Q V    |          |          |          |
   1+45       0.1739      3.02  |   QV    |          |          |          |
   1+50       0.2005      3.86  |    QV   |          |          |          |
   1+55       0.2374      5.36  |      QV |          |          |          |
   2+ 0       0.2883      7.38  |        Q|          |          |          |
   2+ 5       0.3675     11.51  |         | V  Q     |          |          |
   2+10       0.4910     17.93  |         |    V     |  Q       |          |
   2+15       0.6736     26.51  |         |          | V        |    Q     |
   2+20       0.8227     21.65  |         |          |      VQ  |          |
   2+25       0.9126     13.06  |         |      Q   |          V          |
   2+30       0.9776      9.43  |         | Q        |          |  V       |
   2+35       1.0277      7.28  |        Q|          |          |   V      |
   2+40       1.0669      5.69  |      Q  |          |          |     V    |
   2+45       1.0966      4.32  |    Q    |          |          |      V   |
   2+50       1.1187      3.21  |   Q     |          |          |      V   |
   2+55       1.1349      2.35  |  Q      |          |          |       V  |
   3+ 0       1.1471      1.77  | Q       |          |          |       V  |
   3+ 5       1.1573      1.49  |Q        |          |          |        V |
   3+10       1.1656      1.20  |Q        |          |          |        V |
   3+15       1.1714      0.85  |Q        |          |          |        V |
   3+20       1.1754      0.58  Q         |          |          |        V |
   3+25       1.1780      0.38  Q         |          |          |        V |
   3+30       1.1798      0.26  Q         |          |          |        V |
   3+35       1.1807      0.13  Q         |          |          |        V |
   3+40       1.1813      0.08  Q         |          |          |        V |
   3+45       1.1817      0.05  Q         |          |          |        V |
   3+50       1.1819      0.03  Q         |          |          |        V |
   3+55       1.1820      0.02  Q         |          |          |        V |
   4+ 0       1.1821      0.01  Q         |          |          |        V |
   4+ 5       1.1822      0.01  Q         |          |          |        V |
   4+10       1.1823      0.01  Q         |          |          |        V |
   4+15       1.1823      0.00  Q         |          |          |        V |
   4+20       1.1823      0.00  Q         |          |          |        V |
   4+25       1.1823      0.00  Q         |          |          |        V |
-------------------------------------------------------------------------
```

- 5 Year 6 Hour Post-Development Unit Hydrograph – Area 'D'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/11/16   File Name PRD00506.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'D' - 5 YEAR 6 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 5

       Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 82.2       6.8          0.33     C     0.250     1.000    0.250
 82.2      13.7          0.67     D     0.200     1.000    0.200

Area-averaged adjusted loss rate Fm (In/Hr) =  0.217

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
     6.84   0.333         82.2      66.1       5.13     0.186

    13.70   0.667         82.2      66.1       5.13     0.186

Area-averaged catchment yield fraction, Y =  0.186
Area-averaged low loss fraction, Yb =  0.814
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.267 (hours)
Watershed area =      20.54(Ac.)
Catchment Lag time =   0.213 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 39.0869
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.217(In/Hr)
Average low loss rate fraction (Yb) = 0.814 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.260(In)
Computed peak 30-minute rainfall =  0.590(In)
Specified peak 1-hour rainfall =  0.780(In)
Computed peak 3-hour rainfall =  1.310(In)
Specified peak 6-hour rainfall =  1.810(In)
Specified peak 24-hour rainfall =  3.030(In)


Rainfall depth area reduction factors:
Using a total area of      20.54(Ac.) (Ref: fig. E-4)
```

```
5-minute factor = 0.999     Adjusted rainfall =  0.260(In)
30-minute factor = 0.999    Adjusted rainfall =  0.589(In)
1-hour factor = 0.999       Adjusted rainfall =  0.779(In)
3-hour factor = 1.000       Adjusted rainfall =  1.310(In)
6-hour factor = 1.000       Adjusted rainfall =  1.810(In)
24-hour factor = 1.000 Adjusted rainfall =  3.030(In)
--------------------------------------------------------------------

                     U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------
               (K =       248.41 (CFS))

  1                3.036                   7.541
  2               14.254                  27.866
  3               44.151                  74.266
  4               67.584                  58.209
  5               77.733                  25.210
  6               84.518                  16.856
  7               89.317                  11.919
  8               92.819                   8.699
  9               95.316                   6.204
 10               97.014                   4.218
 11               98.008                   2.468
 12               98.485                   1.184
 13               98.882                   0.988
 14               99.166                   0.704
 15               99.434                   0.666
 16               99.714                   0.694
 17               99.874                   0.399
 18              100.000                   0.312
--------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.2597              0.2597
  2              0.3566              0.0969
  3              0.4293              0.0727
  4              0.4897              0.0604
  5              0.5423              0.0526
  6              0.5894              0.0472
  7              0.6272              0.0378
  8              0.6618              0.0347
  9              0.6940              0.0322
 10              0.7241              0.0301
 11              0.7524              0.0283
 12              0.7792              0.0268
 13              0.8093              0.0300
 14              0.8382              0.0289
 15              0.8659              0.0278
 16              0.8928              0.0268
 17              0.9187              0.0260
 18              0.9439              0.0252
 19              0.9683              0.0244
 20              0.9921              0.0238
 21              1.0152              0.0231
 22              1.0378              0.0226
 23              1.0598              0.0220
 24              1.0814              0.0215
 25              1.1024              0.0211
 26              1.1231              0.0206
 27              1.1433              0.0202
 28              1.1631              0.0198
 29              1.1826              0.0195
 30              1.2017              0.0191
 31              1.2204              0.0188
 32              1.2389              0.0185
 33              1.2571              0.0182
 34              1.2749              0.0179
```

35	1.2925	0.0176
36	1.3098	0.0173
37	1.3267	0.0168
38	1.3433	0.0166
39	1.3597	0.0164
40	1.3758	0.0162
41	1.3918	0.0159
42	1.4075	0.0157
43	1.4230	0.0155
44	1.4384	0.0153
45	1.4535	0.0152
46	1.4685	0.0150
47	1.4833	0.0148
48	1.4980	0.0146
49	1.5124	0.0145
50	1.5268	0.0143
51	1.5409	0.0142
52	1.5550	0.0140
53	1.5688	0.0139
54	1.5826	0.0137
55	1.5962	0.0136
56	1.6097	0.0135
57	1.6230	0.0133
58	1.6362	0.0132
59	1.6493	0.0131
60	1.6623	0.0130
61	1.6752	0.0129
62	1.6879	0.0128
63	1.7006	0.0126
64	1.7131	0.0125
65	1.7256	0.0124
66	1.7379	0.0123
67	1.7501	0.0122
68	1.7623	0.0121
69	1.7743	0.0120
70	1.7863	0.0119
71	1.7981	0.0119
72	1.8099	0.0118

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0118	0.0096	0.0022
2	0.0119	0.0097	0.0022
3	0.0120	0.0098	0.0022
4	0.0121	0.0099	0.0023
5	0.0123	0.0100	0.0023
6	0.0124	0.0101	0.0023
7	0.0126	0.0103	0.0023
8	0.0128	0.0104	0.0024
9	0.0130	0.0106	0.0024
10	0.0131	0.0107	0.0024
11	0.0133	0.0109	0.0025
12	0.0135	0.0110	0.0025
13	0.0137	0.0112	0.0026
14	0.0139	0.0113	0.0026
15	0.0142	0.0115	0.0026
16	0.0143	0.0117	0.0027
17	0.0146	0.0119	0.0027
18	0.0148	0.0121	0.0027
19	0.0152	0.0123	0.0028
20	0.0153	0.0125	0.0028
21	0.0157	0.0128	0.0029
22	0.0159	0.0130	0.0030
23	0.0164	0.0133	0.0030
24	0.0166	0.0135	0.0031
25	0.0173	0.0141	0.0032
26	0.0176	0.0143	0.0033
27	0.0182	0.0148	0.0034
28	0.0185	0.0150	0.0034

29	0.0191	0.0156	0.0035
30	0.0195	0.0158	0.0036
31	0.0202	0.0165	0.0038
32	0.0206	0.0168	0.0038
33	0.0215	0.0175	0.0040
34	0.0220	0.0179	0.0041
35	0.0231	0.0181	0.0051
36	0.0238	0.0181	0.0057
37	0.0252	0.0181	0.0071
38	0.0260	0.0181	0.0079
39	0.0278	0.0181	0.0097
40	0.0289	0.0181	0.0108
41	0.0268	0.0181	0.0088
42	0.0283	0.0181	0.0103
43	0.0322	0.0181	0.0141
44	0.0347	0.0181	0.0166
45	0.0472	0.0181	0.0291
46	0.0526	0.0181	0.0346
47	0.0727	0.0181	0.0546
48	0.0969	0.0181	0.0788
49	0.2597	0.0181	0.2417
50	0.0604	0.0181	0.0423
51	0.0378	0.0181	0.0197
52	0.0301	0.0181	0.0120
53	0.0300	0.0181	0.0120
54	0.0268	0.0181	0.0088
55	0.0244	0.0181	0.0064
56	0.0226	0.0181	0.0045
57	0.0211	0.0172	0.0039
58	0.0198	0.0161	0.0037
59	0.0188	0.0153	0.0035
60	0.0179	0.0145	0.0033
61	0.0168	0.0137	0.0031
62	0.0162	0.0132	0.0030
63	0.0155	0.0127	0.0029
64	0.0150	0.0122	0.0028
65	0.0145	0.0118	0.0027
66	0.0140	0.0114	0.0026
67	0.0136	0.0111	0.0025
68	0.0132	0.0108	0.0025
69	0.0129	0.0105	0.0024
70	0.0125	0.0102	0.0023
71	0.0122	0.0100	0.0023
72	0.0119	0.0097	0.0022

Total soil rain loss = 1.03(In)
Total effective rainfall = 0.78(In)
Peak flow rate in flood hydrograph = 26.51(CFS)

++

6 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	7.5	15.0	22.5	30.0
0+ 5	0.0001	0.02	Q	|	|	|	|
0+10	0.0006	0.08	Q	|	|	|	|
0+15	0.0023	0.24	Q	|	|	|	|
0+20	0.0049	0.37	Q	|	|	|	|
0+25	0.0078	0.43	Q	|	|	|	|
0+30	0.0111	0.47	Q	|	|	|	|
0+35	0.0145	0.50	Q	|	|	|	|
0+40	0.0181	0.53	Q	|	|	|	|
0+45	0.0219	0.55	Q	|	|	|	|
0+50	0.0258	0.56	Q	|	|	|	|
0+55	0.0298	0.58	Q	|	|	|	|
1+ 0	0.0338	0.59	QV	|	|	|	|

```
1+ 5       0.0379      0.60  QV        |         |         |         |
1+10       0.0421      0.61  QV        |         |         |         |
1+15       0.0464      0.62  QV        |         |         |         |
1+20       0.0507      0.63  QV        |         |         |         |
1+25       0.0551      0.64  QV        |         |         |         |
1+30       0.0595      0.65  QV        |         |         |         |
1+35       0.0641      0.66  QV        |         |         |         |
1+40       0.0687      0.67  Q V       |         |         |         |
1+45       0.0734      0.68  Q V       |         |         |         |
1+50       0.0782      0.69  Q V       |         |         |         |
1+55       0.0830      0.71  Q V       |         |         |         |
2+ 0       0.0880      0.72  Q V       |         |         |         |
2+ 5       0.0930      0.73  Q V       |         |         |         |
2+10       0.0982      0.75  Q V       |         |         |         |
2+15       0.1035      0.77  |Q V       |         |         |         |
2+20       0.1089      0.79  |Q V       |         |         |         |
2+25       0.1145      0.81  |Q V       |         |         |         |
2+30       0.1202      0.83  |Q V       |         |         |         |
2+35       0.1260      0.85  |Q V       |         |         |         |
2+40       0.1320      0.87  |Q V       |         |         |         |
2+45       0.1382      0.90  |Q  V      |         |         |         |
2+50       0.1446      0.92  |Q  V      |         |         |         |
2+55       0.1511      0.96  |Q  V      |         |         |         |
3+ 0       0.1581      1.01  |Q  V      |         |         |         |
3+ 5       0.1659      1.13  |Q  V      |         |         |         |
3+10       0.1748      1.29  |Q   V     |         |         |         |
3+15       0.1851      1.50  |Q   V     |         |         |         |
3+20       0.1970      1.73  | Q  V     |         |         |         |
3+25       0.2107      1.99  | Q   V    |         |         |         |
3+30       0.2258      2.19  | Q   V    |         |         |         |
3+35       0.2414      2.26  |  Q   V   |         |         |         |
3+40       0.2584      2.47  |  Q   V   |         |         |         |
3+45       0.2792      3.02  |   Q   V  |         |         |         |
3+50       0.3058      3.86  |    Q   V|         |         |         |
3+55       0.3427      5.36  |      Q  V         |         |         |
4+ 0       0.3936      7.38  |        Q|V        |         |         |
4+ 5       0.4728     11.51  |         |  VQ     |         |         |
4+10       0.5963     17.93  |         |     V   |  Q      |         |
4+15       0.7789     26.51  |         |         |  V      |    Q    |
4+20       0.9280     21.65  |         |         |     VQ  |         |
4+25       1.0179     13.06  |         |      Q  |        V          |
4+30       1.0829      9.43  |         | Q       |         | V       |
4+35       1.1330      7.28  |        Q|         |         |  V      |
4+40       1.1722      5.69  |       Q |         |         |   V     |
4+45       1.2019      4.32  |     Q   |         |         |    V    |
4+50       1.2240      3.21  |    Q    |         |         |     V   |
4+55       1.2402      2.35  |  Q      |         |         |     V   |
5+ 0       1.2524      1.77  | Q       |         |         |      V  |
5+ 5       1.2628      1.51  | Q       |         |         |      V  |
5+10       1.2718      1.31  |Q        |         |         |      V  |
5+15       1.2799      1.18  |Q        |         |         |       V |
5+20       1.2874      1.09  |Q        |         |         |       V |
5+25       1.2940      0.95  |Q        |         |         |       V |
5+30       1.2999      0.86  |Q        |         |         |       V |
5+35       1.3050      0.74  Q         |         |         |       V |
5+40       1.3098      0.70  Q         |         |         |        V|
5+45       1.3145      0.67  Q         |         |         |        V|
5+50       1.3189      0.65  Q         |         |         |        V|
5+55       1.3232      0.63  Q         |         |         |        V|
6+ 0       1.3274      0.61  Q         |         |         |        V|
6+ 5       1.3313      0.57  Q         |         |         |        V|
6+10       1.3348      0.50  Q         |         |         |        V|
6+15       1.3370      0.32  Q         |         |         |        V|
6+20       1.3383      0.19  Q         |         |         |        V|
6+25       1.3392      0.13  Q         |         |         |        V|
6+30       1.3398      0.09  Q         |         |         |        V|
6+35       1.3403      0.06  Q         |         |         |        V|
6+40       1.3405      0.04  Q         |         |         |        V|
6+45       1.3407      0.03  Q         |         |         |        V|
6+50       1.3408      0.02  Q         |         |         |        V|
6+55       1.3409      0.01  Q         |         |         |        V|
```

```
    7+ 0       1.3410      0.01  Q         |         |         |        V|
    7+ 5       1.3410      0.01  Q         |         |         |        V|
    7+10       1.3411      0.00  Q         |         |         |        V|
    7+15       1.3411      0.00  Q         |         |         |        V|
    7+20       1.3411      0.00  Q         |         |         |        V|
    7+25       1.3411      0.00  Q         |         |         |        V|
--------------------------------------------------------------------------
```

- 5 Year 12 Hour Post-Development Unit Hydrograph – Area 'D'

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       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/11/16   File Name PRD00512.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'D' - 5 YEAR 12 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 5

       Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 82.2       6.8          0.33     C     0.250     1.000    0.250
 82.2      13.7          0.67     D     0.200     1.000    0.200

Area-averaged adjusted loss rate Fm (In/Hr) =  0.217

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
     6.84   0.333         82.2      66.1       5.13     0.186

    13.70   0.667         82.2      66.1       5.13     0.186

Area-averaged catchment yield fraction, Y =  0.186
Area-averaged low loss fraction, Yb =  0.814
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.267 (hours)
Watershed area =      20.54(Ac.)
Catchment Lag time =   0.213 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 39.0869
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.217(In/Hr)
Average low loss rate fraction (Yb) = 0.814 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.260(In)
Computed peak 30-minute rainfall =  0.590(In)
Specified peak 1-hour rainfall =  0.780(In)
Computed peak 3-hour rainfall =  1.310(In)
Specified peak 6-hour rainfall =  1.810(In)
Specified peak 24-hour rainfall =  3.030(In)


Rainfall depth area reduction factors:
Using a total area of      20.54(Ac.) (Ref: fig. E-4)
```

```
5-minute factor = 0.999     Adjusted rainfall =  0.260(In)
30-minute factor = 0.999    Adjusted rainfall =  0.589(In)
1-hour factor = 0.999       Adjusted rainfall =  0.779(In)
3-hour factor = 1.000       Adjusted rainfall =  1.310(In)
6-hour factor = 1.000       Adjusted rainfall =  1.810(In)
24-hour factor = 1.000 Adjusted rainfall =  3.030(In)
--------------------------------------------------------------------

                     U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------
               (K =       248.41 (CFS))

  1                3.036                   7.541
  2               14.254                  27.866
  3               44.151                  74.266
  4               67.584                  58.209
  5               77.733                  25.210
  6               84.518                  16.856
  7               89.317                  11.919
  8               92.819                   8.699
  9               95.316                   6.204
 10               97.014                   4.218
 11               98.008                   2.468
 12               98.485                   1.184
 13               98.882                   0.988
 14               99.166                   0.704
 15               99.434                   0.666
 16               99.714                   0.694
 17               99.874                   0.399
 18              100.000                   0.312
--------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.2597              0.2597
  2              0.3566              0.0969
  3              0.4293              0.0727
  4              0.4897              0.0604
  5              0.5423              0.0526
  6              0.5894              0.0472
  7              0.6272              0.0378
  8              0.6618              0.0347
  9              0.6940              0.0322
 10              0.7241              0.0301
 11              0.7524              0.0283
 12              0.7792              0.0268
 13              0.8093              0.0300
 14              0.8382              0.0289
 15              0.8659              0.0278
 16              0.8928              0.0268
 17              0.9187              0.0260
 18              0.9439              0.0252
 19              0.9683              0.0244
 20              0.9921              0.0238
 21              1.0152              0.0231
 22              1.0378              0.0226
 23              1.0598              0.0220
 24              1.0814              0.0215
 25              1.1024              0.0211
 26              1.1231              0.0206
 27              1.1433              0.0202
 28              1.1631              0.0198
 29              1.1826              0.0195
 30              1.2017              0.0191
 31              1.2204              0.0188
 32              1.2389              0.0185
 33              1.2571              0.0182
 34              1.2749              0.0179
```

35	1.2925	0.0176
36	1.3098	0.0173
37	1.3267	0.0168
38	1.3433	0.0166
39	1.3597	0.0164
40	1.3758	0.0162
41	1.3918	0.0159
42	1.4075	0.0157
43	1.4230	0.0155
44	1.4384	0.0153
45	1.4535	0.0152
46	1.4685	0.0150
47	1.4833	0.0148
48	1.4980	0.0146
49	1.5124	0.0145
50	1.5268	0.0143
51	1.5409	0.0142
52	1.5550	0.0140
53	1.5688	0.0139
54	1.5826	0.0137
55	1.5962	0.0136
56	1.6097	0.0135
57	1.6230	0.0133
58	1.6362	0.0132
59	1.6493	0.0131
60	1.6623	0.0130
61	1.6752	0.0129
62	1.6879	0.0128
63	1.7006	0.0126
64	1.7131	0.0125
65	1.7256	0.0124
66	1.7379	0.0123
67	1.7501	0.0122
68	1.7623	0.0121
69	1.7743	0.0120
70	1.7863	0.0119
71	1.7981	0.0119
72	1.8099	0.0118
73	1.8192	0.0093
74	1.8284	0.0092
75	1.8376	0.0091
76	1.8466	0.0091
77	1.8556	0.0090
78	1.8645	0.0089
79	1.8734	0.0088
80	1.8822	0.0088
81	1.8909	0.0087
82	1.8995	0.0086
83	1.9081	0.0086
84	1.9166	0.0085
85	1.9251	0.0084
86	1.9334	0.0084
87	1.9418	0.0083
88	1.9500	0.0083
89	1.9582	0.0082
90	1.9664	0.0081
91	1.9745	0.0081
92	1.9825	0.0080
93	1.9905	0.0080
94	1.9984	0.0079
95	2.0063	0.0079
96	2.0141	0.0078
97	2.0219	0.0078
98	2.0296	0.0077
99	2.0373	0.0077
100	2.0449	0.0076
101	2.0525	0.0076
102	2.0600	0.0075
103	2.0675	0.0075
104	2.0750	0.0074
105	2.0824	0.0074

106	2.0897	0.0073
107	2.0970	0.0073
108	2.1043	0.0073
109	2.1115	0.0072
110	2.1187	0.0072
111	2.1258	0.0071
112	2.1329	0.0071
113	2.1400	0.0071
114	2.1470	0.0070
115	2.1540	0.0070
116	2.1609	0.0069
117	2.1678	0.0069
118	2.1747	0.0069
119	2.1815	0.0068
120	2.1883	0.0068
121	2.1951	0.0068
122	2.2018	0.0067
123	2.2085	0.0067
124	2.2151	0.0067
125	2.2218	0.0066
126	2.2284	0.0066
127	2.2349	0.0066
128	2.2414	0.0065
129	2.2479	0.0065
130	2.2544	0.0065
131	2.2608	0.0064
132	2.2672	0.0064
133	2.2736	0.0064
134	2.2799	0.0063
135	2.2862	0.0063
136	2.2925	0.0063
137	2.2988	0.0063
138	2.3050	0.0062
139	2.3112	0.0062
140	2.3174	0.0062
141	2.3235	0.0061
142	2.3296	0.0061
143	2.3357	0.0061
144	2.3418	0.0061

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0061	0.0049	0.0011
2	0.0061	0.0050	0.0011
3	0.0061	0.0050	0.0011
4	0.0062	0.0050	0.0011
5	0.0062	0.0051	0.0012
6	0.0063	0.0051	0.0012
7	0.0063	0.0051	0.0012
8	0.0063	0.0052	0.0012
9	0.0064	0.0052	0.0012
10	0.0064	0.0052	0.0012
11	0.0065	0.0053	0.0012
12	0.0065	0.0053	0.0012
13	0.0066	0.0054	0.0012
14	0.0066	0.0054	0.0012
15	0.0067	0.0054	0.0012
16	0.0067	0.0055	0.0012
17	0.0068	0.0055	0.0013
18	0.0068	0.0056	0.0013
19	0.0069	0.0056	0.0013
20	0.0069	0.0057	0.0013
21	0.0070	0.0057	0.0013
22	0.0071	0.0057	0.0013
23	0.0071	0.0058	0.0013
24	0.0072	0.0058	0.0013
25	0.0073	0.0059	0.0013
26	0.0073	0.0059	0.0014
27	0.0074	0.0060	0.0014

28	0.0074	0.0061	0.0014
29	0.0075	0.0061	0.0014
30	0.0076	0.0062	0.0014
31	0.0077	0.0062	0.0014
32	0.0077	0.0063	0.0014
33	0.0078	0.0064	0.0015
34	0.0079	0.0064	0.0015
35	0.0080	0.0065	0.0015
36	0.0080	0.0065	0.0015
37	0.0081	0.0066	0.0015
38	0.0082	0.0067	0.0015
39	0.0083	0.0068	0.0015
40	0.0084	0.0068	0.0016
41	0.0085	0.0069	0.0016
42	0.0086	0.0070	0.0016
43	0.0087	0.0071	0.0016
44	0.0088	0.0071	0.0016
45	0.0089	0.0073	0.0017
46	0.0090	0.0073	0.0017
47	0.0091	0.0074	0.0017
48	0.0092	0.0075	0.0017
49	0.0118	0.0096	0.0022
50	0.0119	0.0097	0.0022
51	0.0120	0.0098	0.0022
52	0.0121	0.0099	0.0023
53	0.0123	0.0100	0.0023
54	0.0124	0.0101	0.0023
55	0.0126	0.0103	0.0023
56	0.0128	0.0104	0.0024
57	0.0130	0.0106	0.0024
58	0.0131	0.0107	0.0024
59	0.0133	0.0109	0.0025
60	0.0135	0.0110	0.0025
61	0.0137	0.0112	0.0026
62	0.0139	0.0113	0.0026
63	0.0142	0.0115	0.0026
64	0.0143	0.0117	0.0027
65	0.0146	0.0119	0.0027
66	0.0148	0.0121	0.0027
67	0.0152	0.0123	0.0028
68	0.0153	0.0125	0.0028
69	0.0157	0.0128	0.0029
70	0.0159	0.0130	0.0030
71	0.0164	0.0133	0.0030
72	0.0166	0.0135	0.0031
73	0.0173	0.0141	0.0032
74	0.0176	0.0143	0.0033
75	0.0182	0.0148	0.0034
76	0.0185	0.0150	0.0034
77	0.0191	0.0156	0.0035
78	0.0195	0.0158	0.0036
79	0.0202	0.0165	0.0038
80	0.0206	0.0168	0.0038
81	0.0215	0.0175	0.0040
82	0.0220	0.0179	0.0041
83	0.0231	0.0181	0.0051
84	0.0238	0.0181	0.0057
85	0.0252	0.0181	0.0071
86	0.0260	0.0181	0.0079
87	0.0278	0.0181	0.0097
88	0.0289	0.0181	0.0108
89	0.0268	0.0181	0.0088
90	0.0283	0.0181	0.0103
91	0.0322	0.0181	0.0141
92	0.0347	0.0181	0.0166
93	0.0472	0.0181	0.0291
94	0.0526	0.0181	0.0346
95	0.0727	0.0181	0.0546
96	0.0969	0.0181	0.0788
97	0.2597	0.0181	0.2417
98	0.0604	0.0181	0.0423

```
 99              0.0378          0.0181              0.0197
100              0.0301          0.0181              0.0120
101              0.0300          0.0181              0.0120
102              0.0268          0.0181              0.0088
103              0.0244          0.0181              0.0064
104              0.0226          0.0181              0.0045
105              0.0211          0.0172              0.0039
106              0.0198          0.0161              0.0037
107              0.0188          0.0153              0.0035
108              0.0179          0.0145              0.0033
109              0.0168          0.0137              0.0031
110              0.0162          0.0132              0.0030
111              0.0155          0.0127              0.0029
112              0.0150          0.0122              0.0028
113              0.0145          0.0118              0.0027
114              0.0140          0.0114              0.0026
115              0.0136          0.0111              0.0025
116              0.0132          0.0108              0.0025
117              0.0129          0.0105              0.0024
118              0.0125          0.0102              0.0023
119              0.0122          0.0100              0.0023
120              0.0119          0.0097              0.0022
121              0.0093          0.0076              0.0017
122              0.0091          0.0074              0.0017
123              0.0088          0.0072              0.0016
124              0.0086          0.0070              0.0016
125              0.0084          0.0069              0.0016
126              0.0083          0.0067              0.0015
127              0.0081          0.0066              0.0015
128              0.0079          0.0065              0.0015
129              0.0078          0.0063              0.0014
130              0.0076          0.0062              0.0014
131              0.0075          0.0061              0.0014
132              0.0073          0.0060              0.0014
133              0.0072          0.0059              0.0013
134              0.0071          0.0058              0.0013
135              0.0070          0.0057              0.0013
136              0.0069          0.0056              0.0013
137              0.0068          0.0055              0.0013
138              0.0067          0.0054              0.0012
139              0.0066          0.0053              0.0012
140              0.0065          0.0053              0.0012
141              0.0064          0.0052              0.0012
142              0.0063          0.0051              0.0012
143              0.0062          0.0050              0.0011
144              0.0061          0.0050              0.0011
-------------------------------------------------------------------
-------------------------------------------------------------------
Total soil rain loss =      1.46(In)
Total effective rainfall =      0.88(In)
Peak flow rate in flood hydrograph =     26.51(CFS)
-------------------------------------------------------------------
+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                  12 - H O U R    S T O R M
               R u n o f f      H y d r o g r a p h
-------------------------------------------------------------------
            Hydrograph in   5   Minute intervals ((CFS))

-------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0        7.5      15.0      22.5      30.0
-------------------------------------------------------------------
  0+ 5       0.0001      0.01  Q         |         |         |         |
  0+10       0.0003      0.04  Q         |         |         |         |
  0+15       0.0012      0.12  Q         |         |         |         |
  0+20       0.0025      0.19  Q         |         |         |         |
  0+25       0.0040      0.22  Q         |         |         |         |
  0+30       0.0057      0.24  Q         |         |         |         |
  0+35       0.0074      0.25  Q         |         |         |         |
  0+40       0.0092      0.27  Q         |         |         |         |
  0+45       0.0111      0.28  Q         |         |         |         |
  0+50       0.0131      0.28  Q         |         |         |         |
```

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0+55      0.0150      0.29  Q          |          |          |          |
1+ 0      0.0170      0.29  Q          |          |          |          |
1+ 5      0.0191      0.29  Q          |          |          |          |
1+10      0.0211      0.30  Q          |          |          |          |
1+15      0.0232      0.30  Q          |          |          |          |
1+20      0.0252      0.30  Q          |          |          |          |
1+25      0.0273      0.30  Q          |          |          |          |
1+30      0.0294      0.31  Q          |          |          |          |
1+35      0.0316      0.31  Q          |          |          |          |
1+40      0.0337      0.31  Q          |          |          |          |
1+45      0.0359      0.31  Q          |          |          |          |
1+50      0.0381      0.32  QV         |          |          |          |
1+55      0.0403      0.32  QV         |          |          |          |
2+ 0      0.0425      0.32  QV         |          |          |          |
2+ 5      0.0447      0.32  QV         |          |          |          |
2+10      0.0470      0.33  QV         |          |          |          |
2+15      0.0493      0.33  QV         |          |          |          |
2+20      0.0516      0.33  QV         |          |          |          |
2+25      0.0539      0.34  QV         |          |          |          |
2+30      0.0562      0.34  QV         |          |          |          |
2+35      0.0586      0.34  QV         |          |          |          |
2+40      0.0610      0.35  QV         |          |          |          |
2+45      0.0634      0.35  QV         |          |          |          |
2+50      0.0658      0.35  QV         |          |          |          |
2+55      0.0682      0.36  QV         |          |          |          |
3+ 0      0.0707      0.36  QV         |          |          |          |
3+ 5      0.0732      0.36  QV         |          |          |          |
3+10      0.0757      0.37  Q V        |          |          |          |
3+15      0.0783      0.37  Q V        |          |          |          |
3+20      0.0808      0.37  Q V        |          |          |          |
3+25      0.0834      0.38  Q V        |          |          |          |
3+30      0.0861      0.38  Q V        |          |          |          |
3+35      0.0887      0.39  Q V        |          |          |          |
3+40      0.0914      0.39  Q V        |          |          |          |
3+45      0.0941      0.39  Q V        |          |          |          |
3+50      0.0969      0.40  Q V        |          |          |          |
3+55      0.0997      0.40  Q V        |          |          |          |
4+ 0      0.1025      0.41  Q V        |          |          |          |
4+ 5      0.1054      0.42  Q V        |          |          |          |
4+10      0.1084      0.43  Q V        |          |          |          |
4+15      0.1116      0.47  Q V        |          |          |          |
4+20      0.1151      0.50  Q  V       |          |          |          |
4+25      0.1187      0.52  Q  V       |          |          |          |
4+30      0.1224      0.54  Q  V       |          |          |          |
4+35      0.1261      0.55  Q  V       |          |          |          |
4+40      0.1300      0.56  Q  V       |          |          |          |
4+45      0.1339      0.57  Q  V       |          |          |          |
4+50      0.1379      0.58  Q  V       |          |          |          |
4+55      0.1419      0.58  Q  V       |          |          |          |
5+ 0      0.1460      0.59  Q  V       |          |          |          |
5+ 5      0.1501      0.60  Q  V       |          |          |          |
5+10      0.1543      0.61  Q   V      |          |          |          |
5+15      0.1586      0.62  Q   V      |          |          |          |
5+20      0.1629      0.63  Q   V      |          |          |          |
5+25      0.1673      0.64  Q   V      |          |          |          |
5+30      0.1718      0.65  Q   V      |          |          |          |
5+35      0.1763      0.66  Q   V      |          |          |          |
5+40      0.1809      0.67  Q   V      |          |          |          |
5+45      0.1856      0.68  Q   V      |          |          |          |
5+50      0.1904      0.69  Q    V     |          |          |          |
5+55      0.1953      0.71  Q    V     |          |          |          |
6+ 0      0.2002      0.72  Q    V     |          |          |          |
6+ 5      0.2053      0.73  Q    V     |          |          |          |
6+10      0.2104      0.75  Q    V     |          |          |          |
6+15      0.2157      0.77  |Q   V     |          |          |          |
6+20      0.2212      0.79  |Q   V     |          |          |          |
6+25      0.2267      0.81  |Q    V    |          |          |          |
6+30      0.2324      0.83  |Q    V    |          |          |          |
6+35      0.2383      0.85  |Q    V    |          |          |          |
6+40      0.2443      0.87  |Q    V    |          |          |          |
6+45      0.2504      0.90  |Q    V    |          |          |          |
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 6+50      0.2568      0.92  |Q    V   |          |          |          |
 6+55      0.2634      0.96  |Q    V   |          |          |          |
 7+ 0      0.2704      1.01  |Q     V  |          |          |          |
 7+ 5      0.2782      1.13  |Q     V  |          |          |          |
 7+10      0.2870      1.29  |Q     V  |          |          |          |
 7+15      0.2973      1.50  |Q     V  |          |          |          |
 7+20      0.3093      1.73  | Q     V |          |          |          |
 7+25      0.3230      1.99  | Q     V |          |          |          |
 7+30      0.3380      2.19  | Q     V |          |          |          |
 7+35      0.3536      2.26  |  Q     V|          |          |          |
 7+40      0.3706      2.47  |  Q     V|          |          |          |
 7+45      0.3914      3.02  |   Q     V          |          |          |
 7+50      0.4180      3.86  |    Q    |V         |          |          |
 7+55      0.4549      5.36  |      Q  | V        |          |          |
 8+ 0      0.5058      7.38  |        Q|  V       |          |          |
 8+ 5      0.5851     11.51  |         |    Q     |          |          |
 8+10      0.7086     17.93  |         |       V  |  Q       |          |
 8+15      0.8911     26.51  |         |          |  V       |    Q     |
 8+20      1.0403     21.65  |         |          |     VQ   |          |
 8+25      1.1302     13.06  |         |       Q  |       V  |          |
 8+30      1.1951      9.43  |         | Q        |          |V         |
 8+35      1.2452      7.28  |         |Q         |          | V        |
 8+40      1.2844      5.69  |       Q |          |          |   V      |
 8+45      1.3141      4.32  |    Q    |          |          |   V      |
 8+50      1.3362      3.21  |   Q     |          |          |    V     |
 8+55      1.3524      2.35  |  Q      |          |          |    V     |
 9+ 0      1.3646      1.77  | Q       |          |          |     V    |
 9+ 5      1.3750      1.51  | Q       |          |          |     V    |
 9+10      1.3840      1.31  |Q        |          |          |     V    |
 9+15      1.3922      1.18  |Q        |          |          |     V    |
 9+20      1.3997      1.09  |Q        |          |          |      V   |
 9+25      1.4062      0.95  |Q        |          |          |      V   |
 9+30      1.4121      0.86  |Q        |          |          |      V   |
 9+35      1.4172      0.74  Q         |          |          |      V   |
 9+40      1.4221      0.70  Q         |          |          |      V   |
 9+45      1.4267      0.67  Q         |          |          |      V   |
 9+50      1.4312      0.65  Q         |          |          |      V   |
 9+55      1.4355      0.63  Q         |          |          |       V  |
10+ 0      1.4396      0.61  Q         |          |          |       V  |
10+ 5      1.4437      0.59  Q         |          |          |       V  |
10+10      1.4475      0.56  Q         |          |          |       V  |
10+15      1.4510      0.51  Q         |          |          |       V  |
10+20      1.4543      0.47  Q         |          |          |       V  |
10+25      1.4574      0.45  Q         |          |          |       V  |
10+30      1.4604      0.43  Q         |          |          |       V  |
10+35      1.4632      0.42  Q         |          |          |       V  |
10+40      1.4660      0.40  Q         |          |          |       V  |
10+45      1.4687      0.39  Q         |          |          |       V  |
10+50      1.4713      0.38  Q         |          |          |       V  |
10+55      1.4739      0.37  Q         |          |          |        V |
11+ 0      1.4764      0.36  Q         |          |          |        V |
11+ 5      1.4789      0.36  Q         |          |          |        V |
11+10      1.4813      0.35  Q         |          |          |        V |
11+15      1.4836      0.34  Q         |          |          |        V |
11+20      1.4860      0.34  Q         |          |          |        V |
11+25      1.4882      0.33  Q         |          |          |        V |
11+30      1.4905      0.32  Q         |          |          |        V |
11+35      1.4927      0.32  Q         |          |          |        V |
11+40      1.4948      0.31  Q         |          |          |        V |
11+45      1.4970      0.31  Q         |          |          |        V |
11+50      1.4991      0.30  Q         |          |          |        V |
11+55      1.5011      0.30  Q         |          |          |        V |
12+ 0      1.5032      0.30  Q         |          |          |        V |
12+ 5      1.5051      0.28  Q         |          |          |        V |
12+10      1.5068      0.25  Q         |          |          |        V |
12+15      1.5079      0.16  Q         |          |          |        V |
12+20      1.5086      0.09  Q         |          |          |        V |
12+25      1.5090      0.06  Q         |          |          |        V |
12+30      1.5093      0.04  Q         |          |          |        V |
12+35      1.5096      0.03  Q         |          |          |        V |
12+40      1.5097      0.02  Q         |          |          |        V |
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   12+45       1.5098      0.01  Q         |         |         |         V|
   12+50       1.5099      0.01  Q         |         |         |         V|
   12+55       1.5099      0.01  Q         |         |         |         V|
   13+ 0       1.5099      0.00  Q         |         |         |         V|
   13+ 5       1.5100      0.00  Q         |         |         |         V|
   13+10       1.5100      0.00  Q         |         |         |         V|
   13+15       1.5100      0.00  Q         |         |         |         V|
   13+20       1.5100      0.00  Q         |         |         |         V|
   13+25       1.5100      0.00  Q         |         |         |          V
-------------------------------------------------------------------------
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- 5 Year 24 Hour Post-Development Unit Hydrograph – Area 'D'

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       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/11/16   File Name PRD00524.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

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RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'D' - 5 YEAR 24 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
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       Storm Event Year = 5

       Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
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******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 82.2       6.8          0.33     C     0.250     1.000    0.250
 82.2      13.7          0.67     D     0.200     1.000    0.200

Area-averaged adjusted loss rate Fm (In/Hr) =  0.217

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
     6.84   0.333         82.2      66.1       5.13     0.186

    13.70   0.667         82.2      66.1       5.13     0.186

Area-averaged catchment yield fraction, Y =  0.186
Area-averaged low loss fraction, Yb =  0.814
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.267 (hours)
Watershed area =      20.54(Ac.)
Catchment Lag time =   0.213 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 39.0869
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.217(In/Hr)
Average low loss rate fraction (Yb) = 0.814 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.260(In)
Computed peak 30-minute rainfall =  0.590(In)
Specified peak 1-hour rainfall =  0.780(In)
Computed peak 3-hour rainfall =  1.310(In)
Specified peak 6-hour rainfall =  1.810(In)
Specified peak 24-hour rainfall =  3.030(In)


Rainfall depth area reduction factors:
Using a total area of      20.54(Ac.) (Ref: fig. E-4)
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5-minute factor = 0.999     Adjusted rainfall =  0.260(In)
30-minute factor = 0.999    Adjusted rainfall =  0.589(In)
1-hour factor = 0.999       Adjusted rainfall =  0.779(In)
3-hour factor = 1.000       Adjusted rainfall =  1.310(In)
6-hour factor = 1.000       Adjusted rainfall =  1.810(In)
24-hour factor = 1.000 Adjusted rainfall =  3.030(In)
--------------------------------------------------------------------

                     U n i t  H y d r o g r a p h
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Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------
               (K =       248.41 (CFS))

  1                3.036                   7.541
  2               14.254                  27.866
  3               44.151                  74.266
  4               67.584                  58.209
  5               77.733                  25.210
  6               84.518                  16.856
  7               89.317                  11.919
  8               92.819                   8.699
  9               95.316                   6.204
 10               97.014                   4.218
 11               98.008                   2.468
 12               98.485                   1.184
 13               98.882                   0.988
 14               99.166                   0.704
 15               99.434                   0.666
 16               99.714                   0.694
 17               99.874                   0.399
 18              100.000                   0.312
--------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.2597              0.2597
  2              0.3566              0.0969
  3              0.4293              0.0727
  4              0.4897              0.0604
  5              0.5423              0.0526
  6              0.5894              0.0472
  7              0.6272              0.0378
  8              0.6618              0.0347
  9              0.6940              0.0322
 10              0.7241              0.0301
 11              0.7524              0.0283
 12              0.7792              0.0268
 13              0.8093              0.0300
 14              0.8382              0.0289
 15              0.8659              0.0278
 16              0.8928              0.0268
 17              0.9187              0.0260
 18              0.9439              0.0252
 19              0.9683              0.0244
 20              0.9921              0.0238
 21              1.0152              0.0231
 22              1.0378              0.0226
 23              1.0598              0.0220
 24              1.0814              0.0215
 25              1.1024              0.0211
 26              1.1231              0.0206
 27              1.1433              0.0202
 28              1.1631              0.0198
 29              1.1826              0.0195
 30              1.2017              0.0191
 31              1.2204              0.0188
 32              1.2389              0.0185
 33              1.2571              0.0182
 34              1.2749              0.0179
```

35	1.2925	0.0176
36	1.3098	0.0173
37	1.3267	0.0168
38	1.3433	0.0166
39	1.3597	0.0164
40	1.3758	0.0162
41	1.3918	0.0159
42	1.4075	0.0157
43	1.4230	0.0155
44	1.4384	0.0153
45	1.4535	0.0152
46	1.4685	0.0150
47	1.4833	0.0148
48	1.4980	0.0146
49	1.5124	0.0145
50	1.5268	0.0143
51	1.5409	0.0142
52	1.5550	0.0140
53	1.5688	0.0139
54	1.5826	0.0137
55	1.5962	0.0136
56	1.6097	0.0135
57	1.6230	0.0133
58	1.6362	0.0132
59	1.6493	0.0131
60	1.6623	0.0130
61	1.6752	0.0129
62	1.6879	0.0128
63	1.7006	0.0126
64	1.7131	0.0125
65	1.7256	0.0124
66	1.7379	0.0123
67	1.7501	0.0122
68	1.7623	0.0121
69	1.7743	0.0120
70	1.7863	0.0119
71	1.7981	0.0119
72	1.8099	0.0118
73	1.8192	0.0093
74	1.8284	0.0092
75	1.8376	0.0091
76	1.8466	0.0091
77	1.8556	0.0090
78	1.8645	0.0089
79	1.8734	0.0088
80	1.8822	0.0088
81	1.8909	0.0087
82	1.8995	0.0086
83	1.9081	0.0086
84	1.9166	0.0085
85	1.9251	0.0084
86	1.9334	0.0084
87	1.9418	0.0083
88	1.9500	0.0083
89	1.9582	0.0082
90	1.9664	0.0081
91	1.9745	0.0081
92	1.9825	0.0080
93	1.9905	0.0080
94	1.9984	0.0079
95	2.0063	0.0079
96	2.0141	0.0078
97	2.0219	0.0078
98	2.0296	0.0077
99	2.0373	0.0077
100	2.0449	0.0076
101	2.0525	0.0076
102	2.0600	0.0075
103	2.0675	0.0075
104	2.0750	0.0074
105	2.0824	0.0074

106	2.0897	0.0073
107	2.0970	0.0073
108	2.1043	0.0073
109	2.1115	0.0072
110	2.1187	0.0072
111	2.1258	0.0071
112	2.1329	0.0071
113	2.1400	0.0071
114	2.1470	0.0070
115	2.1540	0.0070
116	2.1609	0.0069
117	2.1678	0.0069
118	2.1747	0.0069
119	2.1815	0.0068
120	2.1883	0.0068
121	2.1951	0.0068
122	2.2018	0.0067
123	2.2085	0.0067
124	2.2151	0.0067
125	2.2218	0.0066
126	2.2284	0.0066
127	2.2349	0.0066
128	2.2414	0.0065
129	2.2479	0.0065
130	2.2544	0.0065
131	2.2608	0.0064
132	2.2672	0.0064
133	2.2736	0.0064
134	2.2799	0.0063
135	2.2862	0.0063
136	2.2925	0.0063
137	2.2988	0.0063
138	2.3050	0.0062
139	2.3112	0.0062
140	2.3174	0.0062
141	2.3235	0.0061
142	2.3296	0.0061
143	2.3357	0.0061
144	2.3418	0.0061
145	2.3478	0.0060
146	2.3538	0.0060
147	2.3598	0.0060
148	2.3657	0.0060
149	2.3717	0.0059
150	2.3776	0.0059
151	2.3834	0.0059
152	2.3893	0.0059
153	2.3951	0.0058
154	2.4009	0.0058
155	2.4067	0.0058
156	2.4125	0.0058
157	2.4182	0.0057
158	2.4239	0.0057
159	2.4296	0.0057
160	2.4353	0.0057
161	2.4409	0.0056
162	2.4465	0.0056
163	2.4522	0.0056
164	2.4577	0.0056
165	2.4633	0.0056
166	2.4688	0.0055
167	2.4743	0.0055
168	2.4798	0.0055
169	2.4853	0.0055
170	2.4908	0.0055
171	2.4962	0.0054
172	2.5016	0.0054
173	2.5070	0.0054
174	2.5124	0.0054
175	2.5178	0.0054
176	2.5231	0.0053

177	2.5284	0.0053
178	2.5337	0.0053
179	2.5390	0.0053
180	2.5443	0.0053
181	2.5495	0.0052
182	2.5547	0.0052
183	2.5599	0.0052
184	2.5651	0.0052
185	2.5703	0.0052
186	2.5755	0.0052
187	2.5806	0.0051
188	2.5857	0.0051
189	2.5908	0.0051
190	2.5959	0.0051
191	2.6010	0.0051
192	2.6060	0.0051
193	2.6111	0.0050
194	2.6161	0.0050
195	2.6211	0.0050
196	2.6261	0.0050
197	2.6311	0.0050
198	2.6360	0.0050
199	2.6410	0.0049
200	2.6459	0.0049
201	2.6508	0.0049
202	2.6557	0.0049
203	2.6606	0.0049
204	2.6654	0.0049
205	2.6703	0.0048
206	2.6751	0.0048
207	2.6799	0.0048
208	2.6847	0.0048
209	2.6895	0.0048
210	2.6943	0.0048
211	2.6991	0.0048
212	2.7038	0.0047
213	2.7085	0.0047
214	2.7133	0.0047
215	2.7180	0.0047
216	2.7227	0.0047
217	2.7273	0.0047
218	2.7320	0.0047
219	2.7367	0.0047
220	2.7413	0.0046
221	2.7459	0.0046
222	2.7505	0.0046
223	2.7551	0.0046
224	2.7597	0.0046
225	2.7643	0.0046
226	2.7688	0.0046
227	2.7734	0.0045
228	2.7779	0.0045
229	2.7824	0.0045
230	2.7870	0.0045
231	2.7915	0.0045
232	2.7959	0.0045
233	2.8004	0.0045
234	2.8049	0.0045
235	2.8093	0.0044
236	2.8138	0.0044
237	2.8182	0.0044
238	2.8226	0.0044
239	2.8270	0.0044
240	2.8314	0.0044
241	2.8358	0.0044
242	2.8401	0.0044
243	2.8445	0.0044
244	2.8488	0.0043
245	2.8532	0.0043
246	2.8575	0.0043
247	2.8618	0.0043

248	2.8661	0.0043
249	2.8704	0.0043
250	2.8747	0.0043
251	2.8790	0.0043
252	2.8832	0.0043
253	2.8875	0.0042
254	2.8917	0.0042
255	2.8959	0.0042
256	2.9001	0.0042
257	2.9043	0.0042
258	2.9085	0.0042
259	2.9127	0.0042
260	2.9169	0.0042
261	2.9211	0.0042
262	2.9252	0.0042
263	2.9294	0.0041
264	2.9335	0.0041
265	2.9376	0.0041
266	2.9417	0.0041
267	2.9458	0.0041
268	2.9499	0.0041
269	2.9540	0.0041
270	2.9581	0.0041
271	2.9622	0.0041
272	2.9662	0.0041
273	2.9703	0.0040
274	2.9743	0.0040
275	2.9783	0.0040
276	2.9824	0.0040
277	2.9864	0.0040
278	2.9904	0.0040
279	2.9944	0.0040
280	2.9984	0.0040
281	3.0023	0.0040
282	3.0063	0.0040
283	3.0103	0.0040
284	3.0142	0.0039
285	3.0182	0.0039
286	3.0221	0.0039
287	3.0260	0.0039
288	3.0299	0.0039

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0039	0.0032	0.0007
2	0.0039	0.0032	0.0007
3	0.0039	0.0032	0.0007
4	0.0039	0.0032	0.0007
5	0.0040	0.0032	0.0007
6	0.0040	0.0032	0.0007
7	0.0040	0.0033	0.0007
8	0.0040	0.0033	0.0007
9	0.0040	0.0033	0.0007
10	0.0040	0.0033	0.0007
11	0.0040	0.0033	0.0008
12	0.0041	0.0033	0.0008
13	0.0041	0.0033	0.0008
14	0.0041	0.0033	0.0008
15	0.0041	0.0033	0.0008
16	0.0041	0.0034	0.0008
17	0.0041	0.0034	0.0008
18	0.0041	0.0034	0.0008
19	0.0042	0.0034	0.0008
20	0.0042	0.0034	0.0008
21	0.0042	0.0034	0.0008
22	0.0042	0.0034	0.0008
23	0.0042	0.0034	0.0008
24	0.0042	0.0035	0.0008
25	0.0043	0.0035	0.0008

26	0.0043	0.0035	0.0008
27	0.0043	0.0035	0.0008
28	0.0043	0.0035	0.0008
29	0.0043	0.0035	0.0008
30	0.0043	0.0035	0.0008
31	0.0044	0.0035	0.0008
32	0.0044	0.0036	0.0008
33	0.0044	0.0036	0.0008
34	0.0044	0.0036	0.0008
35	0.0044	0.0036	0.0008
36	0.0044	0.0036	0.0008
37	0.0045	0.0036	0.0008
38	0.0045	0.0036	0.0008
39	0.0045	0.0037	0.0008
40	0.0045	0.0037	0.0008
41	0.0045	0.0037	0.0008
42	0.0045	0.0037	0.0008
43	0.0046	0.0037	0.0008
44	0.0046	0.0037	0.0009
45	0.0046	0.0038	0.0009
46	0.0046	0.0038	0.0009
47	0.0047	0.0038	0.0009
48	0.0047	0.0038	0.0009
49	0.0047	0.0038	0.0009
50	0.0047	0.0038	0.0009
51	0.0047	0.0039	0.0009
52	0.0047	0.0039	0.0009
53	0.0048	0.0039	0.0009
54	0.0048	0.0039	0.0009
55	0.0048	0.0039	0.0009
56	0.0048	0.0039	0.0009
57	0.0049	0.0040	0.0009
58	0.0049	0.0040	0.0009
59	0.0049	0.0040	0.0009
60	0.0049	0.0040	0.0009
61	0.0050	0.0040	0.0009
62	0.0050	0.0040	0.0009
63	0.0050	0.0041	0.0009
64	0.0050	0.0041	0.0009
65	0.0051	0.0041	0.0009
66	0.0051	0.0041	0.0009
67	0.0051	0.0042	0.0009
68	0.0051	0.0042	0.0010
69	0.0052	0.0042	0.0010
70	0.0052	0.0042	0.0010
71	0.0052	0.0042	0.0010
72	0.0052	0.0043	0.0010
73	0.0053	0.0043	0.0010
74	0.0053	0.0043	0.0010
75	0.0053	0.0043	0.0010
76	0.0053	0.0043	0.0010
77	0.0054	0.0044	0.0010
78	0.0054	0.0044	0.0010
79	0.0054	0.0044	0.0010
80	0.0055	0.0044	0.0010
81	0.0055	0.0045	0.0010
82	0.0055	0.0045	0.0010
83	0.0056	0.0045	0.0010
84	0.0056	0.0045	0.0010
85	0.0056	0.0046	0.0010
86	0.0056	0.0046	0.0010
87	0.0057	0.0046	0.0011
88	0.0057	0.0047	0.0011
89	0.0058	0.0047	0.0011
90	0.0058	0.0047	0.0011
91	0.0058	0.0047	0.0011
92	0.0059	0.0048	0.0011
93	0.0059	0.0048	0.0011
94	0.0059	0.0048	0.0011
95	0.0060	0.0049	0.0011
96	0.0060	0.0049	0.0011

97	0.0061	0.0049	0.0011
98	0.0061	0.0050	0.0011
99	0.0061	0.0050	0.0011
100	0.0062	0.0050	0.0011
101	0.0062	0.0051	0.0012
102	0.0063	0.0051	0.0012
103	0.0063	0.0051	0.0012
104	0.0063	0.0052	0.0012
105	0.0064	0.0052	0.0012
106	0.0064	0.0052	0.0012
107	0.0065	0.0053	0.0012
108	0.0065	0.0053	0.0012
109	0.0066	0.0054	0.0012
110	0.0066	0.0054	0.0012
111	0.0067	0.0054	0.0012
112	0.0067	0.0055	0.0012
113	0.0068	0.0055	0.0013
114	0.0068	0.0056	0.0013
115	0.0069	0.0056	0.0013
116	0.0069	0.0057	0.0013
117	0.0070	0.0057	0.0013
118	0.0071	0.0057	0.0013
119	0.0071	0.0058	0.0013
120	0.0072	0.0058	0.0013
121	0.0073	0.0059	0.0013
122	0.0073	0.0059	0.0014
123	0.0074	0.0060	0.0014
124	0.0074	0.0061	0.0014
125	0.0075	0.0061	0.0014
126	0.0076	0.0062	0.0014
127	0.0077	0.0062	0.0014
128	0.0077	0.0063	0.0014
129	0.0078	0.0064	0.0015
130	0.0079	0.0064	0.0015
131	0.0080	0.0065	0.0015
132	0.0080	0.0065	0.0015
133	0.0081	0.0066	0.0015
134	0.0082	0.0067	0.0015
135	0.0083	0.0068	0.0015
136	0.0084	0.0068	0.0016
137	0.0085	0.0069	0.0016
138	0.0086	0.0070	0.0016
139	0.0087	0.0071	0.0016
140	0.0088	0.0071	0.0016
141	0.0089	0.0073	0.0017
142	0.0090	0.0073	0.0017
143	0.0091	0.0074	0.0017
144	0.0092	0.0075	0.0017
145	0.0118	0.0096	0.0022
146	0.0119	0.0097	0.0022
147	0.0120	0.0098	0.0022
148	0.0121	0.0099	0.0023
149	0.0123	0.0100	0.0023
150	0.0124	0.0101	0.0023
151	0.0126	0.0103	0.0023
152	0.0128	0.0104	0.0024
153	0.0130	0.0106	0.0024
154	0.0131	0.0107	0.0024
155	0.0133	0.0109	0.0025
156	0.0135	0.0110	0.0025
157	0.0137	0.0112	0.0026
158	0.0139	0.0113	0.0026
159	0.0142	0.0115	0.0026
160	0.0143	0.0117	0.0027
161	0.0146	0.0119	0.0027
162	0.0148	0.0121	0.0027
163	0.0152	0.0123	0.0028
164	0.0153	0.0125	0.0028
165	0.0157	0.0128	0.0029
166	0.0159	0.0130	0.0030
167	0.0164	0.0133	0.0030

168	0.0166	0.0135	0.0031
169	0.0173	0.0141	0.0032
170	0.0176	0.0143	0.0033
171	0.0182	0.0148	0.0034
172	0.0185	0.0150	0.0034
173	0.0191	0.0156	0.0035
174	0.0195	0.0158	0.0036
175	0.0202	0.0165	0.0038
176	0.0206	0.0168	0.0038
177	0.0215	0.0175	0.0040
178	0.0220	0.0179	0.0041
179	0.0231	0.0181	0.0051
180	0.0238	0.0181	0.0057
181	0.0252	0.0181	0.0071
182	0.0260	0.0181	0.0079
183	0.0278	0.0181	0.0097
184	0.0289	0.0181	0.0108
185	0.0268	0.0181	0.0088
186	0.0283	0.0181	0.0103
187	0.0322	0.0181	0.0141
188	0.0347	0.0181	0.0166
189	0.0472	0.0181	0.0291
190	0.0526	0.0181	0.0346
191	0.0727	0.0181	0.0546
192	0.0969	0.0181	0.0788
193	0.2597	0.0181	0.2417
194	0.0604	0.0181	0.0423
195	0.0378	0.0181	0.0197
196	0.0301	0.0181	0.0120
197	0.0300	0.0181	0.0120
198	0.0268	0.0181	0.0088
199	0.0244	0.0181	0.0064
200	0.0226	0.0181	0.0045
201	0.0211	0.0172	0.0039
202	0.0198	0.0161	0.0037
203	0.0188	0.0153	0.0035
204	0.0179	0.0145	0.0033
205	0.0168	0.0137	0.0031
206	0.0162	0.0132	0.0030
207	0.0155	0.0127	0.0029
208	0.0150	0.0122	0.0028
209	0.0145	0.0118	0.0027
210	0.0140	0.0114	0.0026
211	0.0136	0.0111	0.0025
212	0.0132	0.0108	0.0025
213	0.0129	0.0105	0.0024
214	0.0125	0.0102	0.0023
215	0.0122	0.0100	0.0023
216	0.0119	0.0097	0.0022
217	0.0093	0.0076	0.0017
218	0.0091	0.0074	0.0017
219	0.0088	0.0072	0.0016
220	0.0086	0.0070	0.0016
221	0.0084	0.0069	0.0016
222	0.0083	0.0067	0.0015
223	0.0081	0.0066	0.0015
224	0.0079	0.0065	0.0015
225	0.0078	0.0063	0.0014
226	0.0076	0.0062	0.0014
227	0.0075	0.0061	0.0014
228	0.0073	0.0060	0.0014
229	0.0072	0.0059	0.0013
230	0.0071	0.0058	0.0013
231	0.0070	0.0057	0.0013
232	0.0069	0.0056	0.0013
233	0.0068	0.0055	0.0013
234	0.0067	0.0054	0.0012
235	0.0066	0.0053	0.0012
236	0.0065	0.0053	0.0012
237	0.0064	0.0052	0.0012
238	0.0063	0.0051	0.0012

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      239              0.0062          0.0050              0.0011
      240              0.0061          0.0050              0.0011
      241              0.0060          0.0049              0.0011
      242              0.0060          0.0048              0.0011
      243              0.0059          0.0048              0.0011
      244              0.0058          0.0047              0.0011
      245              0.0057          0.0047              0.0011
      246              0.0057          0.0046              0.0011
      247              0.0056          0.0046              0.0010
      248              0.0055          0.0045              0.0010
      249              0.0055          0.0045              0.0010
      250              0.0054          0.0044              0.0010
      251              0.0054          0.0044              0.0010
      252              0.0053          0.0043              0.0010
      253              0.0052          0.0043              0.0010
      254              0.0052          0.0042              0.0010
      255              0.0051          0.0042              0.0010
      256              0.0051          0.0041              0.0009
      257              0.0050          0.0041              0.0009
      258              0.0050          0.0041              0.0009
      259              0.0049          0.0040              0.0009
      260              0.0049          0.0040              0.0009
      261              0.0048          0.0039              0.0009
      262              0.0048          0.0039              0.0009
      263              0.0048          0.0039              0.0009
      264              0.0047          0.0038              0.0009
      265              0.0047          0.0038              0.0009
      266              0.0046          0.0038              0.0009
      267              0.0046          0.0037              0.0009
      268              0.0046          0.0037              0.0008
      269              0.0045          0.0037              0.0008
      270              0.0045          0.0037              0.0008
      271              0.0044          0.0036              0.0008
      272              0.0044          0.0036              0.0008
      273              0.0044          0.0036              0.0008
      274              0.0043          0.0035              0.0008
      275              0.0043          0.0035              0.0008
      276              0.0043          0.0035              0.0008
      277              0.0042          0.0035              0.0008
      278              0.0042          0.0034              0.0008
      279              0.0042          0.0034              0.0008
      280              0.0042          0.0034              0.0008
      281              0.0041          0.0034              0.0008
      282              0.0041          0.0033              0.0008
      283              0.0041          0.0033              0.0008
      284              0.0040          0.0033              0.0007
      285              0.0040          0.0033              0.0007
      286              0.0040          0.0032              0.0007
      287              0.0040          0.0032              0.0007
      288              0.0039          0.0032              0.0007
      ------------------------------------------------------------------------
      ------------------------------------------------------------------------
      Total soil rain loss =      2.02(In)
      Total effective rainfall =      1.01(In)
      Peak flow rate in flood hydrograph =     26.51(CFS)
      ------------------------------------------------------------------------
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          24 - H O U R    S T O R M
                     R u n o f f      H y d r o g r a p h
      ------------------------------------------------------------------------
                  Hydrograph in   5   Minute intervals ((CFS))

      ------------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0        7.5      15.0      22.5      30.0
------------------------------------------------------------------------
  0+ 5       0.0000      0.01  Q         |         |         |         |
  0+10       0.0002      0.03  Q         |         |         |         |
  0+15       0.0008      0.08  Q         |         |         |         |
  0+20       0.0016      0.12  Q         |         |         |         |
  0+25       0.0026      0.14  Q         |         |         |         |
  0+30       0.0036      0.15  Q         |         |         |         |
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0+35      0.0048      0.16  Q          |          |          |          |
0+40      0.0059      0.17  Q          |          |          |          |
0+45      0.0071      0.17  Q          |          |          |          |
0+50      0.0084      0.18  Q          |          |          |          |
0+55      0.0096      0.18  Q          |          |          |          |
1+ 0      0.0109      0.18  Q          |          |          |          |
1+ 5      0.0121      0.18  Q          |          |          |          |
1+10      0.0134      0.18  Q          |          |          |          |
1+15      0.0147      0.19  Q          |          |          |          |
1+20      0.0160      0.19  Q          |          |          |          |
1+25      0.0173      0.19  Q          |          |          |          |
1+30      0.0186      0.19  Q          |          |          |          |
1+35      0.0199      0.19  Q          |          |          |          |
1+40      0.0212      0.19  Q          |          |          |          |
1+45      0.0225      0.19  Q          |          |          |          |
1+50      0.0238      0.19  Q          |          |          |          |
1+55      0.0251      0.19  Q          |          |          |          |
2+ 0      0.0265      0.19  Q          |          |          |          |
2+ 5      0.0278      0.19  Q          |          |          |          |
2+10      0.0291      0.19  Q          |          |          |          |
2+15      0.0305      0.20  Q          |          |          |          |
2+20      0.0318      0.20  Q          |          |          |          |
2+25      0.0332      0.20  Q          |          |          |          |
2+30      0.0346      0.20  Q          |          |          |          |
2+35      0.0359      0.20  Q          |          |          |          |
2+40      0.0373      0.20  Q          |          |          |          |
2+45      0.0387      0.20  Q          |          |          |          |
2+50      0.0400      0.20  Q          |          |          |          |
2+55      0.0414      0.20  Q          |          |          |          |
3+ 0      0.0428      0.20  Q          |          |          |          |
3+ 5      0.0442      0.20  QV         |          |          |          |
3+10      0.0456      0.20  QV         |          |          |          |
3+15      0.0470      0.20  QV         |          |          |          |
3+20      0.0484      0.21  QV         |          |          |          |
3+25      0.0499      0.21  QV         |          |          |          |
3+30      0.0513      0.21  QV         |          |          |          |
3+35      0.0527      0.21  QV         |          |          |          |
3+40      0.0542      0.21  QV         |          |          |          |
3+45      0.0556      0.21  QV         |          |          |          |
3+50      0.0570      0.21  QV         |          |          |          |
3+55      0.0585      0.21  QV         |          |          |          |
4+ 0      0.0600      0.21  QV         |          |          |          |
4+ 5      0.0614      0.21  QV         |          |          |          |
4+10      0.0629      0.21  QV         |          |          |          |
4+15      0.0644      0.21  QV         |          |          |          |
4+20      0.0659      0.22  QV         |          |          |          |
4+25      0.0674      0.22  QV         |          |          |          |
4+30      0.0689      0.22  QV         |          |          |          |
4+35      0.0704      0.22  QV         |          |          |          |
4+40      0.0719      0.22  QV         |          |          |          |
4+45      0.0734      0.22  QV         |          |          |          |
4+50      0.0749      0.22  QV         |          |          |          |
4+55      0.0765      0.22  QV         |          |          |          |
5+ 0      0.0780      0.22  QV         |          |          |          |
5+ 5      0.0795      0.22  QV         |          |          |          |
5+10      0.0811      0.23  QV         |          |          |          |
5+15      0.0827      0.23  QV         |          |          |          |
5+20      0.0842      0.23  QV         |          |          |          |
5+25      0.0858      0.23  QV         |          |          |          |
5+30      0.0874      0.23  Q V        |          |          |          |
5+35      0.0890      0.23  Q V        |          |          |          |
5+40      0.0906      0.23  Q V        |          |          |          |
5+45      0.0922      0.23  Q V        |          |          |          |
5+50      0.0938      0.23  Q V        |          |          |          |
5+55      0.0954      0.24  Q V        |          |          |          |
6+ 0      0.0971      0.24  Q V        |          |          |          |
6+ 5      0.0987      0.24  Q V        |          |          |          |
6+10      0.1004      0.24  Q V        |          |          |          |
6+15      0.1020      0.24  Q V        |          |          |          |
6+20      0.1037      0.24  Q V        |          |          |          |
6+25      0.1054      0.24  Q V        |          |          |          |
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 6+30       0.1070      0.24  Q V       |          |          |          |
 6+35       0.1087      0.25  Q V       |          |          |          |
 6+40       0.1104      0.25  Q V       |          |          |          |
 6+45       0.1121      0.25  Q V       |          |          |          |
 6+50       0.1139      0.25  Q V       |          |          |          |
 6+55       0.1156      0.25  Q V       |          |          |          |
 7+ 0       0.1173      0.25  Q V       |          |          |          |
 7+ 5       0.1191      0.25  Q V       |          |          |          |
 7+10       0.1208      0.26  Q V       |          |          |          |
 7+15       0.1226      0.26  Q V       |          |          |          |
 7+20       0.1244      0.26  Q V       |          |          |          |
 7+25       0.1262      0.26  Q V       |          |          |          |
 7+30       0.1280      0.26  Q V       |          |          |          |
 7+35       0.1298      0.26  Q  V       |          |          |          |
 7+40       0.1316      0.26  Q  V       |          |          |          |
 7+45       0.1335      0.27  Q  V       |          |          |          |
 7+50       0.1353      0.27  Q  V       |          |          |          |
 7+55       0.1372      0.27  Q  V       |          |          |          |
 8+ 0       0.1390      0.27  Q  V       |          |          |          |
 8+ 5       0.1409      0.27  Q  V       |          |          |          |
 8+10       0.1428      0.27  Q  V       |          |          |          |
 8+15       0.1447      0.28  Q  V       |          |          |          |
 8+20       0.1466      0.28  Q  V       |          |          |          |
 8+25       0.1486      0.28  Q  V       |          |          |          |
 8+30       0.1505      0.28  Q  V       |          |          |          |
 8+35       0.1525      0.28  Q  V       |          |          |          |
 8+40       0.1544      0.29  Q  V       |          |          |          |
 8+45       0.1564      0.29  Q  V       |          |          |          |
 8+50       0.1584      0.29  Q  V       |          |          |          |
 8+55       0.1604      0.29  Q  V       |          |          |          |
 9+ 0       0.1624      0.29  Q  V       |          |          |          |
 9+ 5       0.1645      0.30  Q  V       |          |          |          |
 9+10       0.1665      0.30  Q  V       |          |          |          |
 9+15       0.1686      0.30  Q  V       |          |          |          |
 9+20       0.1707      0.30  Q  V       |          |          |          |
 9+25       0.1728      0.30  Q  V       |          |          |          |
 9+30       0.1749      0.31  Q   V       |          |          |          |
 9+35       0.1770      0.31  Q   V       |          |          |          |
 9+40       0.1792      0.31  Q   V       |          |          |          |
 9+45       0.1813      0.31  Q   V       |          |          |          |
 9+50       0.1835      0.32  Q   V       |          |          |          |
 9+55       0.1857      0.32  Q   V       |          |          |          |
10+ 0       0.1880      0.32  Q   V       |          |          |          |
10+ 5       0.1902      0.32  Q   V       |          |          |          |
10+10       0.1924      0.33  Q   V       |          |          |          |
10+15       0.1947      0.33  Q   V       |          |          |          |
10+20       0.1970      0.33  Q   V       |          |          |          |
10+25       0.1993      0.34  Q   V       |          |          |          |
10+30       0.2017      0.34  Q   V       |          |          |          |
10+35       0.2040      0.34  Q   V       |          |          |          |
10+40       0.2064      0.35  Q   V       |          |          |          |
10+45       0.2088      0.35  Q   V       |          |          |          |
10+50       0.2112      0.35  Q   V       |          |          |          |
10+55       0.2137      0.36  Q   V       |          |          |          |
11+ 0       0.2162      0.36  Q    V       |          |          |          |
11+ 5       0.2187      0.36  Q    V       |          |          |          |
11+10       0.2212      0.37  Q    V       |          |          |          |
11+15       0.2237      0.37  Q    V       |          |          |          |
11+20       0.2263      0.37  Q    V       |          |          |          |
11+25       0.2289      0.38  Q    V       |          |          |          |
11+30       0.2315      0.38  Q    V       |          |          |          |
11+35       0.2342      0.39  Q    V       |          |          |          |
11+40       0.2369      0.39  Q    V       |          |          |          |
11+45       0.2396      0.39  Q    V       |          |          |          |
11+50       0.2423      0.40  Q    V       |          |          |          |
11+55       0.2451      0.40  Q    V       |          |          |          |
12+ 0       0.2479      0.41  Q    V       |          |          |          |
12+ 5       0.2508      0.42  Q    V       |          |          |          |
12+10       0.2538      0.43  Q    V       |          |          |          |
12+15       0.2571      0.47  Q    V       |          |          |          |
12+20       0.2605      0.50  Q     V       |          |          |          |
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12+25       0.2641      0.52  Q     V   |          |          |          |
12+30       0.2678      0.54  Q     V   |          |          |          |
12+35       0.2716      0.55  Q     V   |          |          |          |
12+40       0.2754      0.56  Q     V   |          |          |          |
12+45       0.2793      0.57  Q     V   |          |          |          |
12+50       0.2833      0.58  Q     V   |          |          |          |
12+55       0.2873      0.58  Q     V   |          |          |          |
13+ 0       0.2914      0.59  Q     V   |          |          |          |
13+ 5       0.2956      0.60  Q     V   |          |          |          |
13+10       0.2998      0.61  Q     V   |          |          |          |
13+15       0.3040      0.62  Q      V  |          |          |          |
13+20       0.3084      0.63  Q      V  |          |          |          |
13+25       0.3128      0.64  Q      V  |          |          |          |
13+30       0.3172      0.65  Q      V  |          |          |          |
13+35       0.3218      0.66  Q      V  |          |          |          |
13+40       0.3264      0.67  Q      V  |          |          |          |
13+45       0.3311      0.68  Q      V  |          |          |          |
13+50       0.3359      0.69  Q      V  |          |          |          |
13+55       0.3407      0.71  Q      V  |          |          |          |
14+ 0       0.3457      0.72  Q      V  |          |          |          |
14+ 5       0.3507      0.73  Q       V |          |          |          |
14+10       0.3559      0.75  Q       V |          |          |          |
14+15       0.3612      0.77  |Q      V |          |          |          |
14+20       0.3666      0.79  |Q      V |          |          |          |
14+25       0.3722      0.81  |Q      V |          |          |          |
14+30       0.3779      0.83  |Q      V |          |          |          |
14+35       0.3837      0.85  |Q      V |          |          |          |
14+40       0.3897      0.87  |Q       V|          |          |          |
14+45       0.3959      0.90  |Q       V|          |          |          |
14+50       0.4022      0.92  |Q       V|          |          |          |
14+55       0.4088      0.96  |Q       V|          |          |          |
15+ 0       0.4158      1.01  |Q       V|          |          |          |
15+ 5       0.4236      1.13  |Q       V|          |          |          |
15+10       0.4325      1.29  |Q        V          |          |          |
15+15       0.4428      1.50  |Q        V          |          |          |
15+20       0.4547      1.73  | Q       V          |          |          |
15+25       0.4684      1.99  | Q       V          |          |          |
15+30       0.4835      2.19  | Q       |V         |          |          |
15+35       0.4991      2.26  |  Q      |V         |          |          |
15+40       0.5161      2.47  |  Q      |V         |          |          |
15+45       0.5369      3.02  |   Q     | V        |          |          |
15+50       0.5634      3.86  |    Q    |  V       |          |          |
15+55       0.6004      5.36  |      Q  |  V       |          |          |
16+ 0       0.6512      7.38  |        Q|    V     |          |          |
16+ 5       0.7305     11.51  |         |    QV    |          |          |
16+10       0.8540     17.93  |         |        V|  Q       |          |
16+15       1.0366     26.51  |         |         |  V       |    Q     |
16+20       1.1857     21.65  |         |         |      VQ  |          |
16+25       1.2756     13.06  |         |      Q  |        V |          |
16+30       1.3405      9.43  |         | Q       |          |V         |
16+35       1.3907      7.28  |        Q|         |          | V        |
16+40       1.4299      5.69  |      Q  |         |          |  V       |
16+45       1.4596      4.32  |    Q    |         |          |  V       |
16+50       1.4817      3.21  |   Q     |         |          |   V      |
16+55       1.4978      2.35  |  Q      |         |          |   V      |
17+ 0       1.5100      1.77  | Q       |         |          |   V      |
17+ 5       1.5205      1.51  | Q       |         |          |    V     |
17+10       1.5295      1.31  |Q        |         |          |    V     |
17+15       1.5376      1.18  |Q        |         |          |    V     |
17+20       1.5451      1.09  |Q        |         |          |    V     |
17+25       1.5517      0.95  |Q        |         |          |    V     |
17+30       1.5576      0.86  |Q        |         |          |     V    |
17+35       1.5627      0.74  Q         |         |          |     V    |
17+40       1.5675      0.70  Q         |         |          |     V    |
17+45       1.5722      0.67  Q         |         |          |     V    |
17+50       1.5766      0.65  Q         |         |          |     V    |
17+55       1.5809      0.63  Q         |         |          |     V    |
18+ 0       1.5851      0.61  Q         |         |          |     V    |
18+ 5       1.5891      0.59  Q         |         |          |     V    |
18+10       1.5930      0.56  Q         |         |          |     V    |
18+15       1.5965      0.51  Q         |         |          |     V    |
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18+20	1.5997	0.47	Q	|	|	|	V |
18+25	1.6028	0.45	Q	|	|	|	V |
18+30	1.6058	0.43	Q	|	|	|	V |
18+35	1.6087	0.42	Q	|	|	|	V |
18+40	1.6115	0.40	Q	|	|	|	V |
18+45	1.6142	0.39	Q	|	|	|	V |
18+50	1.6168	0.38	Q	|	|	|	V |
18+55	1.6194	0.37	Q	|	|	|	V |
19+ 0	1.6219	0.36	Q	|	|	|	V |
19+ 5	1.6243	0.36	Q	|	|	|	V |
19+10	1.6267	0.35	Q	|	|	|	V |
19+15	1.6291	0.34	Q	|	|	|	V |
19+20	1.6314	0.34	Q	|	|	|	V |
19+25	1.6337	0.33	Q	|	|	|	V |
19+30	1.6359	0.32	Q	|	|	|	V |
19+35	1.6381	0.32	Q	|	|	|	V |
19+40	1.6403	0.31	Q	|	|	|	V |
19+45	1.6424	0.31	Q	|	|	|	V |
19+50	1.6445	0.30	Q	|	|	|	V |
19+55	1.6466	0.30	Q	|	|	|	V |
20+ 0	1.6486	0.30	Q	|	|	|	V |
20+ 5	1.6506	0.29	Q	|	|	|	V |
20+10	1.6526	0.29	Q	|	|	|	V |
20+15	1.6546	0.28	Q	|	|	|	V |
20+20	1.6565	0.28	Q	|	|	|	V |
20+25	1.6584	0.28	Q	|	|	|	V |
20+30	1.6603	0.27	Q	|	|	|	V |
20+35	1.6621	0.27	Q	|	|	|	V |
20+40	1.6640	0.27	Q	|	|	|	V |
20+45	1.6658	0.26	Q	|	|	|	V |
20+50	1.6676	0.26	Q	|	|	|	V |
20+55	1.6693	0.26	Q	|	|	|	V |
21+ 0	1.6711	0.25	Q	|	|	|	V |
21+ 5	1.6728	0.25	Q	|	|	|	V |
21+10	1.6745	0.25	Q	|	|	|	V |
21+15	1.6762	0.25	Q	|	|	|	V |
21+20	1.6779	0.24	Q	|	|	|	V |
21+25	1.6795	0.24	Q	|	|	|	V |
21+30	1.6812	0.24	Q	|	|	|	V |
21+35	1.6828	0.24	Q	|	|	|	V |
21+40	1.6844	0.23	Q	|	|	|	V |
21+45	1.6860	0.23	Q	|	|	|	V|
21+50	1.6876	0.23	Q	|	|	|	V|
21+55	1.6891	0.23	Q	|	|	|	V|
22+ 0	1.6907	0.22	Q	|	|	|	V|
22+ 5	1.6922	0.22	Q	|	|	|	V|
22+10	1.6937	0.22	Q	|	|	|	V|
22+15	1.6952	0.22	Q	|	|	|	V|
22+20	1.6967	0.22	Q	|	|	|	V|
22+25	1.6982	0.21	Q	|	|	|	V|
22+30	1.6997	0.21	Q	|	|	|	V|
22+35	1.7011	0.21	Q	|	|	|	V|
22+40	1.7026	0.21	Q	|	|	|	V|
22+45	1.7040	0.21	Q	|	|	|	V|
22+50	1.7054	0.21	Q	|	|	|	V|
22+55	1.7068	0.20	Q	|	|	|	V|
23+ 0	1.7082	0.20	Q	|	|	|	V|
23+ 5	1.7096	0.20	Q	|	|	|	V|
23+10	1.7110	0.20	Q	|	|	|	V|
23+15	1.7124	0.20	Q	|	|	|	V|
23+20	1.7137	0.20	Q	|	|	|	V|
23+25	1.7150	0.20	Q	|	|	|	V|
23+30	1.7164	0.19	Q	|	|	|	V|
23+35	1.7177	0.19	Q	|	|	|	V|
23+40	1.7190	0.19	Q	|	|	|	V|
23+45	1.7203	0.19	Q	|	|	|	V|
23+50	1.7216	0.19	Q	|	|	|	V|
23+55	1.7229	0.19	Q	|	|	|	V|
24+ 0	1.7242	0.19	Q	|	|	|	V|
24+ 5	1.7254	0.18	Q	|	|	|	V|
24+10	1.7265	0.16	Q	|	|	|	V|

```
   24+15       1.7272      0.10  Q         |         |         |         V|
   24+20       1.7276      0.06  Q         |         |         |         V|
   24+25       1.7279      0.04  Q         |         |         |         V|
   24+30       1.7281      0.03  Q         |         |         |         V|
   24+35       1.7282      0.02  Q         |         |         |         V|
   24+40       1.7283      0.01  Q         |         |         |         V|
   24+45       1.7284      0.01  Q         |         |         |         V|
   24+50       1.7284      0.01  Q         |         |         |         V|
   24+55       1.7284      0.00  Q         |         |         |         V|
   25+ 0       1.7285      0.00  Q         |         |         |         V|
   25+ 5       1.7285      0.00  Q         |         |         |         V|
   25+10       1.7285      0.00  Q         |         |         |         V|
   25+15       1.7285      0.00  Q         |         |         |         V|
   25+20       1.7285      0.00  Q         |         |         |         V|
   25+25       1.7285      0.00  Q         |         |         |         V|
-------------------------------------------------------------------------
```

- 25 Year 3 Hour Post-Development Unit Hydrograph – Area 'D'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/11/16   File Name PRD02503.out


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------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'D' - 25 YEAR 3 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 25

       Antecedent Moisture Condition = 2

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 82.2       6.8          0.33     C     0.250     1.000    0.250
 82.2      13.7          0.67     D     0.200     1.000    0.200

Area-averaged adjusted loss rate Fm (In/Hr) =  0.217

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC2)          Yield Fr
     6.84   0.333         82.2      82.2       2.17     0.589

    13.70   0.667         82.2      82.2       2.17     0.589

Area-averaged catchment yield fraction, Y =  0.589
Area-averaged low loss fraction, Yb =  0.411
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.253 (hours)
Watershed area =      20.54(Ac.)
Catchment Lag time =   0.203 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 41.1238
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.217(In/Hr)
Average low loss rate fraction (Yb) = 0.411 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.400(In)
Computed peak 30-minute rainfall =  0.870(In)
Specified peak 1-hour rainfall =  1.150(In)
Computed peak 3-hour rainfall =  1.940(In)
Specified peak 6-hour rainfall =  2.710(In)
Specified peak 24-hour rainfall =  4.490(In)


Rainfall depth area reduction factors:
Using a total area of      20.54(Ac.) (Ref: fig. E-4)
```

```
5-minute factor = 0.999     Adjusted rainfall =  0.400(In)
30-minute factor = 0.999    Adjusted rainfall =  0.869(In)
1-hour factor = 0.999       Adjusted rainfall =  1.149(In)
3-hour factor = 1.000       Adjusted rainfall =  1.940(In)
6-hour factor = 1.000       Adjusted rainfall =  2.710(In)
24-hour factor = 1.000 Adjusted rainfall =  4.490(In)
--------------------------------------------------------------------

                     U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------
               (K =       248.41 (CFS))

  1                3.255                   8.086
  2               15.704                  30.925
  3               48.597                  81.708
  4               69.809                  52.690
  5               79.565                  24.237
  6               86.032                  16.064
  7               90.626                  11.411
  8               93.908                   8.152
  9               96.139                   5.543
 10               97.611                   3.656
 11               98.281                   1.666
 12               98.729                   1.112
 13               99.082                   0.877
 14               99.347                   0.658
 15               99.657                   0.769
 16               99.848                   0.476
 17               99.957                   0.271
 18              100.000                   0.107
--------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.3996              0.3996
  2              0.5397              0.1401
  3              0.6435              0.1038
  4              0.7290              0.0855
  5              0.8031              0.0741
  6              0.8692              0.0661
  7              0.9248              0.0556
  8              0.9759              0.0511
  9              1.0233              0.0474
 10              1.0676              0.0443
 11              1.1093              0.0418
 12              1.1489              0.0395
 13              1.1936              0.0447
 14              1.2365              0.0429
 15              1.2779              0.0413
 16              1.3178              0.0399
 17              1.3564              0.0386
 18              1.3939              0.0375
 19              1.4303              0.0364
 20              1.4657              0.0354
 21              1.5002              0.0345
 22              1.5338              0.0336
 23              1.5667              0.0329
 24              1.5988              0.0321
 25              1.6302              0.0314
 26              1.6610              0.0308
 27              1.6912              0.0302
 28              1.7207              0.0296
 29              1.7498              0.0290
 30              1.7783              0.0285
 31              1.8063              0.0280
 32              1.8338              0.0275
 33              1.8609              0.0271
 34              1.8876              0.0267
```

```
 35              1.9139              0.0263
 36              1.9398              0.0259
-------------------------------------------------------------------
Unit              Unit            Unit              Effective
Period            Rainfall        Soil-Loss         Rainfall
(number)            (In)          (In)                (In)
-------------------------------------------------------------------
  1               0.0259          0.0106              0.0152
  2               0.0263          0.0108              0.0155
  3               0.0271          0.0111              0.0160
  4               0.0275          0.0113              0.0162
  5               0.0285          0.0117              0.0168
  6               0.0290          0.0119              0.0171
  7               0.0302          0.0124              0.0178
  8               0.0308          0.0126              0.0181
  9               0.0321          0.0132              0.0189
 10               0.0329          0.0135              0.0194
 11               0.0345          0.0142              0.0203
 12               0.0354          0.0145              0.0209
 13               0.0375          0.0154              0.0221
 14               0.0386          0.0159              0.0228
 15               0.0413          0.0170              0.0244
 16               0.0429          0.0176              0.0253
 17               0.0395          0.0162              0.0233
 18               0.0418          0.0172              0.0246
 19               0.0474          0.0181              0.0293
 20               0.0511          0.0181              0.0330
 21               0.0661          0.0181              0.0480
 22               0.0741          0.0181              0.0560
 23               0.1038          0.0181              0.0857
 24               0.1401          0.0181              0.1221
 25               0.3996          0.0181              0.3816
 26               0.0855          0.0181              0.0675
 27               0.0556          0.0181              0.0376
 28               0.0443          0.0181              0.0263
 29               0.0447          0.0181              0.0266
 30               0.0399          0.0164              0.0235
 31               0.0364          0.0150              0.0214
 32               0.0336          0.0138              0.0198
 33               0.0314          0.0129              0.0185
 34               0.0296          0.0122              0.0174
 35               0.0280          0.0115              0.0165
 36               0.0267          0.0110              0.0157
-------------------------------------------------------------------
-------------------------------------------------------------------
Total soil rain loss =      0.54(In)
Total effective rainfall =      1.40(In)
Peak flow rate in flood hydrograph =     44.18(CFS)
-------------------------------------------------------------------
+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                    3 - H O U R    S T O R M
                R u n o f f      H y d r o g r a p h
-------------------------------------------------------------------
            Hydrograph in   5   Minute intervals ((CFS))

-------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0       12.5      25.0      37.5      50.0
-------------------------------------------------------------------
  0+ 5       0.0008      0.12  Q         |         |         |         |
  0+10       0.0050      0.60  Q         |         |         |         |
  0+15       0.0177      1.85  VQ        |         |         |         |
  0+20       0.0363      2.69  V Q       |         |         |         |
  0+25       0.0578      3.13  V Q       |         |         |         |
  0+30       0.0815      3.44  |VQ       |         |         |         |
  0+35       0.1071      3.71  |VQ       |         |         |         |
  0+40       0.1341      3.93  | VQ      |         |         |         |
  0+45       0.1626      4.13  | VQ      |         |         |         |
  0+50       0.1922      4.30  |  Q      |         |         |         |
  0+55       0.2229      4.46  |  Q      |         |         |         |
  1+ 0       0.2547      4.62  |  QV     |         |         |         |
  1+ 5       0.2878      4.81  |  QV     |         |         |         |
```

```
   1+10       0.3222      4.99  |  Q V    |         |         |         |
   1+15       0.3581      5.21  |   QV    |         |         |         |
   1+20       0.3956      5.44  |   Q V   |         |         |         |
   1+25       0.4348      5.69  |   Q  V  |         |         |         |
   1+30       0.4751      5.86  |   Q  V  |         |         |         |
   1+35       0.5158      5.90  |   Q   V |         |         |         |
   1+40       0.5581      6.15  |   Q    V|         |         |         |
   1+45       0.6053      6.85  |    Q   V         |         |         |
   1+50       0.6601      7.96  |     Q  |V        |         |         |
   1+55       0.7290     10.01  |       Q | V       |         |         |
   2+ 0       0.8175     12.84  |         Q  V      |         |         |
   2+ 5       0.9511     19.40  |          |    Q   |         |         |
   2+10       1.1572     29.94  |          |        V|  Q      |         |
   2+15       1.4615     44.18  |          |         |   V     |    Q    |
   2+20       1.6874     32.79  |          |         |     Q V |         |
   2+25       1.8308     20.83  |          |     Q   |         V         |
   2+30       1.9386     15.65  |          | Q       |         | V       |
   2+35       2.0260     12.68  |          Q         |         |  V      |
   2+40       2.0982     10.49  |        Q |         |         |    V    |
   2+45       2.1580      8.67  |     Q    |         |         |     V   |
   2+50       2.2080      7.26  |    Q     |         |         |     V   |
   2+55       2.2496      6.05  |   Q      |         |         |      V  |
   3+ 0       2.2869      5.41  |   Q      |         |         |       V |
   3+ 5       2.3204      4.86  |  Q       |         |         |       V |
   3+10       2.3483      4.05  |  Q       |         |         |        V|
   3+15       2.3663      2.62  | Q        |         |         |        V|
   3+20       2.3771      1.58  |Q         |         |         |        V|
   3+25       2.3843      1.04  Q          |         |         |        V|
   3+30       2.3889      0.67  Q          |         |         |        V|
   3+35       2.3918      0.42  Q          |         |         |        V|
   3+40       2.3937      0.27  Q          |         |         |        V|
   3+45       2.3948      0.17  Q          |         |         |        V|
   3+50       2.3956      0.11  Q          |         |         |        V|
   3+55       2.3961      0.08  Q          |         |         |        V|
   4+ 0       2.3965      0.05  Q          |         |         |        V|
   4+ 5       2.3967      0.04  Q          |         |         |        V|
   4+10       2.3969      0.03  Q          |         |         |        V|
   4+15       2.3970      0.01  Q          |         |         |        V|
   4+20       2.3971      0.01  Q          |         |         |        V|
   4+25       2.3971      0.00  Q          |         |         |         V
-------------------------------------------------------------------------
```

- 25 Year 6 Hour Post-Development Unit Hydrograph – Area 'D'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/11/16   File Name PRD02506.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'D' - 25 YEAR 6 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 25

       Antecedent Moisture Condition = 2

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 82.2       6.8          0.33     C     0.250     1.000    0.250
 82.2      13.7          0.67     D     0.200     1.000    0.200

Area-averaged adjusted loss rate Fm (In/Hr) =  0.217

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC2)          Yield Fr
     6.84   0.333         82.2      82.2       2.17     0.589

    13.70   0.667         82.2      82.2       2.17     0.589

Area-averaged catchment yield fraction, Y =  0.589
Area-averaged low loss fraction, Yb =  0.411
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.255 (hours)
Watershed area =      20.54(Ac.)
Catchment Lag time =   0.204 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 40.8017
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.217(In/Hr)
Average low loss rate fraction (Yb) = 0.411 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.400(In)
Computed peak 30-minute rainfall =  0.870(In)
Specified peak 1-hour rainfall =  1.150(In)
Computed peak 3-hour rainfall =  1.940(In)
Specified peak 6-hour rainfall =  2.710(In)
Specified peak 24-hour rainfall =  4.490(In)


Rainfall depth area reduction factors:
Using a total area of      20.54(Ac.) (Ref: fig. E-4)
```

```
5-minute factor = 0.999     Adjusted rainfall =  0.400(In)
30-minute factor = 0.999    Adjusted rainfall =  0.869(In)
1-hour factor = 0.999       Adjusted rainfall =  1.149(In)
3-hour factor = 1.000       Adjusted rainfall =  1.940(In)
6-hour factor = 1.000       Adjusted rainfall =  2.710(In)
24-hour factor = 1.000 Adjusted rainfall =  4.490(In)
--------------------------------------------------------------------

                    U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------
               (K =       248.41 (CFS))

  1                3.220                   7.999
  2               15.467                  30.422
  3               47.915                  80.604
  4               69.474                  53.553
  5               79.287                  24.377
  6               85.800                  16.177
  7               90.430                  11.503
  8               93.744                   8.231
  9               96.018                   5.649
 10               97.532                   3.760
 11               98.241                   1.762
 12               98.692                   1.121
 13               99.055                   0.901
 14               99.316                   0.649
 15               99.626                   0.770
 16               99.830                   0.506
 17               99.946                   0.291
 18              100.000                   0.133
--------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.3996              0.3996
  2              0.5397              0.1401
  3              0.6435              0.1038
  4              0.7290              0.0855
  5              0.8031              0.0741
  6              0.8692              0.0661
  7              0.9248              0.0556
  8              0.9759              0.0511
  9              1.0233              0.0474
 10              1.0676              0.0443
 11              1.1093              0.0418
 12              1.1489              0.0395
 13              1.1936              0.0447
 14              1.2365              0.0429
 15              1.2779              0.0413
 16              1.3178              0.0399
 17              1.3564              0.0386
 18              1.3939              0.0375
 19              1.4303              0.0364
 20              1.4657              0.0354
 21              1.5002              0.0345
 22              1.5338              0.0336
 23              1.5667              0.0329
 24              1.5988              0.0321
 25              1.6302              0.0314
 26              1.6610              0.0308
 27              1.6912              0.0302
 28              1.7207              0.0296
 29              1.7498              0.0290
 30              1.7783              0.0285
 31              1.8063              0.0280
 32              1.8338              0.0275
 33              1.8609              0.0271
 34              1.8876              0.0267
```

35	1.9139	0.0263
36	1.9398	0.0259
37	1.9656	0.0258
38	1.9910	0.0254
39	2.0161	0.0251
40	2.0409	0.0248
41	2.0653	0.0245
42	2.0895	0.0241
43	2.1133	0.0238
44	2.1369	0.0236
45	2.1602	0.0233
46	2.1832	0.0230
47	2.2060	0.0228
48	2.2285	0.0225
49	2.2508	0.0223
50	2.2728	0.0220
51	2.2946	0.0218
52	2.3162	0.0216
53	2.3376	0.0214
54	2.3587	0.0212
55	2.3797	0.0210
56	2.4005	0.0208
57	2.4211	0.0206
58	2.4415	0.0204
59	2.4617	0.0202
60	2.4817	0.0200
61	2.5016	0.0199
62	2.5213	0.0197
63	2.5408	0.0195
64	2.5602	0.0194
65	2.5794	0.0192
66	2.5985	0.0191
67	2.6174	0.0189
68	2.6361	0.0188
69	2.6548	0.0186
70	2.6733	0.0185
71	2.6916	0.0184
72	2.7098	0.0182

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0182	0.0075	0.0107
2	0.0184	0.0075	0.0108
3	0.0186	0.0077	0.0110
4	0.0188	0.0077	0.0111
5	0.0191	0.0078	0.0112
6	0.0192	0.0079	0.0113
7	0.0195	0.0080	0.0115
8	0.0197	0.0081	0.0116
9	0.0200	0.0082	0.0118
10	0.0202	0.0083	0.0119
11	0.0206	0.0085	0.0121
12	0.0208	0.0085	0.0122
13	0.0212	0.0087	0.0125
14	0.0214	0.0088	0.0126
15	0.0218	0.0090	0.0128
16	0.0220	0.0091	0.0130
17	0.0225	0.0093	0.0133
18	0.0228	0.0094	0.0134
19	0.0233	0.0096	0.0137
20	0.0236	0.0097	0.0139
21	0.0241	0.0099	0.0142
22	0.0245	0.0100	0.0144
23	0.0251	0.0103	0.0148
24	0.0254	0.0105	0.0150
25	0.0259	0.0106	0.0152
26	0.0263	0.0108	0.0155
27	0.0271	0.0111	0.0160
28	0.0275	0.0113	0.0162

```
       29              0.0285          0.0117              0.0168
       30              0.0290          0.0119              0.0171
       31              0.0302          0.0124              0.0178
       32              0.0308          0.0126              0.0181
       33              0.0321          0.0132              0.0189
       34              0.0329          0.0135              0.0194
       35              0.0345          0.0142              0.0203
       36              0.0354          0.0145              0.0209
       37              0.0375          0.0154              0.0221
       38              0.0386          0.0159              0.0228
       39              0.0413          0.0170              0.0244
       40              0.0429          0.0176              0.0253
       41              0.0395          0.0162              0.0233
       42              0.0418          0.0172              0.0246
       43              0.0474          0.0181              0.0293
       44              0.0511          0.0181              0.0330
       45              0.0661          0.0181              0.0480
       46              0.0741          0.0181              0.0560
       47              0.1038          0.0181              0.0857
       48              0.1401          0.0181              0.1221
       49              0.3996          0.0181              0.3816
       50              0.0855          0.0181              0.0675
       51              0.0556          0.0181              0.0376
       52              0.0443          0.0181              0.0263
       53              0.0447          0.0181              0.0266
       54              0.0399          0.0164              0.0235
       55              0.0364          0.0150              0.0214
       56              0.0336          0.0138              0.0198
       57              0.0314          0.0129              0.0185
       58              0.0296          0.0122              0.0174
       59              0.0280          0.0115              0.0165
       60              0.0267          0.0110              0.0157
       61              0.0258          0.0106              0.0152
       62              0.0248          0.0102              0.0146
       63              0.0238          0.0098              0.0140
       64              0.0230          0.0095              0.0136
       65              0.0223          0.0092              0.0131
       66              0.0216          0.0089              0.0127
       67              0.0210          0.0086              0.0124
       68              0.0204          0.0084              0.0120
       69              0.0199          0.0082              0.0117
       70              0.0194          0.0080              0.0114
       71              0.0189          0.0078              0.0111
       72              0.0185          0.0076              0.0109
     ---------------------------------------------------------------------
     ---------------------------------------------------------------------
     Total soil rain loss =      0.86(In)
     Total effective rainfall =      1.85(In)
     Peak flow rate in flood hydrograph =     43.87(CFS)
     ---------------------------------------------------------------------
     +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                       6 - H O U R    S T O R M
                  R u n o f f      H y d r o g r a p h
     ---------------------------------------------------------------------
                Hydrograph in   5   Minute intervals ((CFS))

     ---------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0       12.5      25.0      37.5      50.0
---------------------------------------------------------------------------
  0+ 5       0.0006      0.09  Q         |         |         |         |
  0+10       0.0034      0.41  Q         |         |         |         |
  0+15       0.0123      1.28  VQ        |         |         |         |
  0+20       0.0251      1.87  VQ        |         |         |         |
  0+25       0.0399      2.15  VQ        |         |         |         |
  0+30       0.0561      2.35  VQ        |         |         |         |
  0+35       0.0733      2.50  VQ        |         |         |         |
  0+40       0.0914      2.62  |VQ       |         |         |         |
  0+45       0.1100      2.71  |VQ       |         |         |         |
  0+50       0.1292      2.78  |VQ       |         |         |         |
  0+55       0.1487      2.84  |VQ       |         |         |         |
  1+ 0       0.1686      2.89  | Q       |         |         |         |
```

```
1+ 5       0.1888      2.93  | Q       |         |         |         |
1+10       0.2093      2.98  | Q       |         |         |         |
1+15       0.2302      3.03  | Q       |         |         |         |
1+20       0.2514      3.08  | QV      |         |         |         |
1+25       0.2729      3.13  | QV      |         |         |         |
1+30       0.2948      3.18  | QV      |         |         |         |
1+35       0.3170      3.23  | QV      |         |         |         |
1+40       0.3396      3.28  | Q V     |         |         |         |
1+45       0.3626      3.33  | Q V     |         |         |         |
1+50       0.3859      3.39  | Q V     |         |         |         |
1+55       0.4097      3.45  | Q  V    |         |         |         |
2+ 0       0.4339      3.51  | Q  V    |         |         |         |
2+ 5       0.4585      3.58  | Q  V    |         |         |         |
2+10       0.4836      3.64  | Q   V   |         |         |         |
2+15       0.5092      3.71  | Q   V   |         |         |         |
2+20       0.5352      3.78  |  Q  V   |         |         |         |
2+25       0.5618      3.86  |  Q   V  |         |         |         |
2+30       0.5889      3.95  |  Q   V  |         |         |         |
2+35       0.6168      4.05  |  Q   V  |         |         |         |
2+40       0.6453      4.15  |  Q    V |         |         |         |
2+45       0.6747      4.26  |  Q    V |         |         |         |
2+50       0.7049      4.38  |  Q    V |         |         |         |
2+55       0.7360      4.52  |  Q     V|         |         |         |
3+ 0       0.7682      4.67  |  Q     V|         |         |         |
3+ 5       0.8015      4.83  |  Q      V         |         |         |
3+10       0.8360      5.01  |   Q     V         |         |         |
3+15       0.8719      5.22  |   Q     V         |         |         |
3+20       0.9094      5.44  |   Q     |V        |         |         |
3+25       0.9486      5.68  |   Q     |V        |         |         |
3+30       0.9889      5.85  |   Q     | V       |         |         |
3+35       1.0295      5.90  |   Q     | V       |         |         |
3+40       1.0718      6.15  |   Q     |  V      |         |         |
3+45       1.1189      6.83  |    Q    |   V     |         |         |
3+50       1.1736      7.94  |     Q   |   V     |         |         |
3+55       1.2422      9.97  |      Q  |    V    |         |         |
4+ 0       1.3303     12.79  |         Q     V   |         |         |
4+ 5       1.4631     19.28  |         |    Q  V |         |         |
4+10       1.6677     29.71  |         |         |V Q      |         |
4+15       1.9698     43.87  |         |         |   V     |    Q    |
4+20       2.1975     33.07  |         |         |     QV  |         |
4+25       2.3417     20.93  |         |     Q   |        V|         |
4+30       2.4499     15.72  |         | Q       |         V         |
4+35       2.5377     12.74  |         Q         |         |V        |
4+40       2.6104     10.55  |       Q |         |         | V       |
4+45       2.6706      8.74  |     Q   |         |         |  V      |
4+50       2.7210      7.32  |    Q    |         |         |   V     |
4+55       2.7630      6.10  |   Q     |         |         |   V     |
5+ 0       2.8004      5.43  |   Q     |         |         |    V    |
5+ 5       2.8348      5.00  |   Q     |         |         |    V    |
5+10       2.8668      4.65  |  Q      |         |         |     V   |
5+15       2.8974      4.43  |  Q      |         |         |     V   |
5+20       2.9258      4.13  |  Q      |         |         |     V   |
5+25       2.9524      3.86  |  Q      |         |         |      V  |
5+30       2.9775      3.64  | Q       |         |         |      V  |
5+35       3.0013      3.45  | Q       |         |         |      V  |
5+40       3.0242      3.33  | Q       |         |         |       V |
5+45       3.0464      3.22  | Q       |         |         |       V |
5+50       3.0679      3.12  | Q       |         |         |       V |
5+55       3.0888      3.03  | Q       |         |         |       V |
6+ 0       3.1091      2.95  | Q       |         |         |        V|
6+ 5       3.1283      2.79  | Q       |         |         |        V|
6+10       3.1447      2.39  |Q        |         |         |        V|
6+15       3.1549      1.48  |Q        |         |         |        V|
6+20       3.1609      0.87  Q         |         |         |        V|
6+25       3.1650      0.59  Q         |         |         |        V|
6+30       3.1678      0.40  Q         |         |         |        V|
6+35       3.1696      0.27  Q         |         |         |        V|
6+40       3.1709      0.18  Q         |         |         |        V|
6+45       3.1716      0.11  Q         |         |         |        V|
6+50       3.1721      0.07  Q         |         |         |        V|
6+55       3.1725      0.05  Q         |         |         |        V|
```

```
    7+ 0       3.1727      0.04  Q         |         |         |        V|
    7+ 5       3.1729      0.03  Q         |         |         |        V|
    7+10       3.1730      0.02  Q         |         |         |        V|
    7+15       3.1731      0.01  Q         |         |         |        V|
    7+20       3.1731      0.00  Q         |         |         |        V|
    7+25       3.1732      0.00  Q         |         |         |        V|
--------------------------------------------------------------------------
```

- 25 Year 12 Hour Post-Development Unit Hydrograph – Area 'D'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989-2012, Version 7.2

       Study date  10/11/16   File Name PRD02512.out


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'D' - 25 YEAR 12 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 25

       Antecedent Moisture Condition = 2

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 82.2       6.8          0.33     C     0.250     1.000    0.250
 82.2      13.7          0.67     D     0.200     1.000    0.200

Area-averaged adjusted loss rate Fm (In/Hr) =  0.217

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC2)          Yield Fr
     6.84   0.333         82.2      82.2       2.17     0.589

    13.70   0.667         82.2      82.2       2.17     0.589

Area-averaged catchment yield fraction, Y =  0.589
Area-averaged low loss fraction, Yb =  0.411
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.255 (hours)
Watershed area =      20.54(Ac.)
Catchment Lag time =   0.204 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 40.8017
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.217(In/Hr)
Average low loss rate fraction (Yb) = 0.411 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.400(In)
Computed peak 30-minute rainfall =  0.870(In)
Specified peak 1-hour rainfall =  1.150(In)
Computed peak 3-hour rainfall =  1.940(In)
Specified peak 6-hour rainfall =  2.710(In)
Specified peak 24-hour rainfall =  4.490(In)


Rainfall depth area reduction factors:
Using a total area of      20.54(Ac.) (Ref: fig. E-4)
```

```
5-minute factor = 0.999     Adjusted rainfall =  0.400(In)
30-minute factor = 0.999    Adjusted rainfall =  0.869(In)
1-hour factor = 0.999       Adjusted rainfall =  1.149(In)
3-hour factor = 1.000       Adjusted rainfall =  1.940(In)
6-hour factor = 1.000       Adjusted rainfall =  2.710(In)
24-hour factor = 1.000 Adjusted rainfall =  4.490(In)
--------------------------------------------------------------------

                    U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------
               (K =       248.41 (CFS))

  1                3.220                   7.999
  2               15.467                  30.422
  3               47.915                  80.604
  4               69.474                  53.553
  5               79.287                  24.377
  6               85.800                  16.177
  7               90.430                  11.503
  8               93.744                   8.231
  9               96.018                   5.649
 10               97.532                   3.760
 11               98.241                   1.762
 12               98.692                   1.121
 13               99.055                   0.901
 14               99.316                   0.649
 15               99.626                   0.770
 16               99.830                   0.506
 17               99.946                   0.291
 18              100.000                   0.133
--------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.3996              0.3996
  2              0.5397              0.1401
  3              0.6435              0.1038
  4              0.7290              0.0855
  5              0.8031              0.0741
  6              0.8692              0.0661
  7              0.9248              0.0556
  8              0.9759              0.0511
  9              1.0233              0.0474
 10              1.0676              0.0443
 11              1.1093              0.0418
 12              1.1489              0.0395
 13              1.1936              0.0447
 14              1.2365              0.0429
 15              1.2779              0.0413
 16              1.3178              0.0399
 17              1.3564              0.0386
 18              1.3939              0.0375
 19              1.4303              0.0364
 20              1.4657              0.0354
 21              1.5002              0.0345
 22              1.5338              0.0336
 23              1.5667              0.0329
 24              1.5988              0.0321
 25              1.6302              0.0314
 26              1.6610              0.0308
 27              1.6912              0.0302
 28              1.7207              0.0296
 29              1.7498              0.0290
 30              1.7783              0.0285
 31              1.8063              0.0280
 32              1.8338              0.0275
 33              1.8609              0.0271
 34              1.8876              0.0267
```

35	1.9139	0.0263
36	1.9398	0.0259
37	1.9656	0.0258
38	1.9910	0.0254
39	2.0161	0.0251
40	2.0409	0.0248
41	2.0653	0.0245
42	2.0895	0.0241
43	2.1133	0.0238
44	2.1369	0.0236
45	2.1602	0.0233
46	2.1832	0.0230
47	2.2060	0.0228
48	2.2285	0.0225
49	2.2508	0.0223
50	2.2728	0.0220
51	2.2946	0.0218
52	2.3162	0.0216
53	2.3376	0.0214
54	2.3587	0.0212
55	2.3797	0.0210
56	2.4005	0.0208
57	2.4211	0.0206
58	2.4415	0.0204
59	2.4617	0.0202
60	2.4817	0.0200
61	2.5016	0.0199
62	2.5213	0.0197
63	2.5408	0.0195
64	2.5602	0.0194
65	2.5794	0.0192
66	2.5985	0.0191
67	2.6174	0.0189
68	2.6361	0.0188
69	2.6548	0.0186
70	2.6733	0.0185
71	2.6916	0.0184
72	2.7098	0.0182
73	2.7235	0.0136
74	2.7370	0.0135
75	2.7504	0.0134
76	2.7637	0.0133
77	2.7769	0.0132
78	2.7900	0.0131
79	2.8030	0.0130
80	2.8158	0.0129
81	2.8286	0.0128
82	2.8413	0.0127
83	2.8539	0.0126
84	2.8663	0.0125
85	2.8787	0.0124
86	2.8910	0.0123
87	2.9032	0.0122
88	2.9153	0.0121
89	2.9273	0.0120
90	2.9393	0.0119
91	2.9511	0.0119
92	2.9629	0.0118
93	2.9746	0.0117
94	2.9862	0.0116
95	2.9977	0.0115
96	3.0092	0.0115
97	3.0206	0.0114
98	3.0319	0.0113
99	3.0431	0.0112
100	3.0543	0.0112
101	3.0654	0.0111
102	3.0764	0.0110
103	3.0873	0.0110
104	3.0982	0.0109
105	3.1090	0.0108

106	3.1198	0.0108
107	3.1305	0.0107
108	3.1411	0.0106
109	3.1517	0.0106
110	3.1622	0.0105
111	3.1726	0.0104
112	3.1830	0.0104
113	3.1933	0.0103
114	3.2036	0.0103
115	3.2138	0.0102
116	3.2239	0.0102
117	3.2340	0.0101
118	3.2441	0.0100
119	3.2540	0.0100
120	3.2640	0.0099
121	3.2739	0.0099
122	3.2837	0.0098
123	3.2935	0.0098
124	3.3032	0.0097
125	3.3129	0.0097
126	3.3225	0.0096
127	3.3321	0.0096
128	3.3416	0.0095
129	3.3511	0.0095
130	3.3605	0.0094
131	3.3699	0.0094
132	3.3793	0.0093
133	3.3886	0.0093
134	3.3978	0.0093
135	3.4071	0.0092
136	3.4162	0.0092
137	3.4254	0.0091
138	3.4344	0.0091
139	3.4435	0.0090
140	3.4525	0.0090
141	3.4614	0.0090
142	3.4704	0.0089
143	3.4793	0.0089
144	3.4881	0.0088

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0088	0.0036	0.0052
2	0.0089	0.0036	0.0052
3	0.0090	0.0037	0.0053
4	0.0090	0.0037	0.0053
5	0.0091	0.0037	0.0054
6	0.0091	0.0038	0.0054
7	0.0092	0.0038	0.0054
8	0.0093	0.0038	0.0055
9	0.0093	0.0038	0.0055
10	0.0094	0.0039	0.0055
11	0.0095	0.0039	0.0056
12	0.0095	0.0039	0.0056
13	0.0096	0.0040	0.0057
14	0.0097	0.0040	0.0057
15	0.0098	0.0040	0.0058
16	0.0098	0.0040	0.0058
17	0.0099	0.0041	0.0059
18	0.0100	0.0041	0.0059
19	0.0101	0.0041	0.0059
20	0.0102	0.0042	0.0060
21	0.0103	0.0042	0.0060
22	0.0103	0.0042	0.0061
23	0.0104	0.0043	0.0062
24	0.0105	0.0043	0.0062
25	0.0106	0.0044	0.0063
26	0.0107	0.0044	0.0063
27	0.0108	0.0044	0.0064

28	0.0109	0.0045	0.0064
29	0.0110	0.0045	0.0065
30	0.0111	0.0046	0.0065
31	0.0112	0.0046	0.0066
32	0.0113	0.0046	0.0067
33	0.0115	0.0047	0.0067
34	0.0115	0.0047	0.0068
35	0.0117	0.0048	0.0069
36	0.0118	0.0048	0.0069
37	0.0119	0.0049	0.0070
38	0.0120	0.0049	0.0071
39	0.0122	0.0050	0.0072
40	0.0123	0.0050	0.0072
41	0.0125	0.0051	0.0073
42	0.0126	0.0052	0.0074
43	0.0128	0.0052	0.0075
44	0.0129	0.0053	0.0076
45	0.0131	0.0054	0.0077
46	0.0132	0.0054	0.0078
47	0.0134	0.0055	0.0079
48	0.0135	0.0056	0.0080
49	0.0182	0.0075	0.0107
50	0.0184	0.0075	0.0108
51	0.0186	0.0077	0.0110
52	0.0188	0.0077	0.0111
53	0.0191	0.0078	0.0112
54	0.0192	0.0079	0.0113
55	0.0195	0.0080	0.0115
56	0.0197	0.0081	0.0116
57	0.0200	0.0082	0.0118
58	0.0202	0.0083	0.0119
59	0.0206	0.0085	0.0121
60	0.0208	0.0085	0.0122
61	0.0212	0.0087	0.0125
62	0.0214	0.0088	0.0126
63	0.0218	0.0090	0.0128
64	0.0220	0.0091	0.0130
65	0.0225	0.0093	0.0133
66	0.0228	0.0094	0.0134
67	0.0233	0.0096	0.0137
68	0.0236	0.0097	0.0139
69	0.0241	0.0099	0.0142
70	0.0245	0.0100	0.0144
71	0.0251	0.0103	0.0148
72	0.0254	0.0105	0.0150
73	0.0259	0.0106	0.0152
74	0.0263	0.0108	0.0155
75	0.0271	0.0111	0.0160
76	0.0275	0.0113	0.0162
77	0.0285	0.0117	0.0168
78	0.0290	0.0119	0.0171
79	0.0302	0.0124	0.0178
80	0.0308	0.0126	0.0181
81	0.0321	0.0132	0.0189
82	0.0329	0.0135	0.0194
83	0.0345	0.0142	0.0203
84	0.0354	0.0145	0.0209
85	0.0375	0.0154	0.0221
86	0.0386	0.0159	0.0228
87	0.0413	0.0170	0.0244
88	0.0429	0.0176	0.0253
89	0.0395	0.0162	0.0233
90	0.0418	0.0172	0.0246
91	0.0474	0.0181	0.0293
92	0.0511	0.0181	0.0330
93	0.0661	0.0181	0.0480
94	0.0741	0.0181	0.0560
95	0.1038	0.0181	0.0857
96	0.1401	0.0181	0.1221
97	0.3996	0.0181	0.3816
98	0.0855	0.0181	0.0675

```
 99              0.0556          0.0181              0.0376
100              0.0443          0.0181              0.0263
101              0.0447          0.0181              0.0266
102              0.0399          0.0164              0.0235
103              0.0364          0.0150              0.0214
104              0.0336          0.0138              0.0198
105              0.0314          0.0129              0.0185
106              0.0296          0.0122              0.0174
107              0.0280          0.0115              0.0165
108              0.0267          0.0110              0.0157
109              0.0258          0.0106              0.0152
110              0.0248          0.0102              0.0146
111              0.0238          0.0098              0.0140
112              0.0230          0.0095              0.0136
113              0.0223          0.0092              0.0131
114              0.0216          0.0089              0.0127
115              0.0210          0.0086              0.0124
116              0.0204          0.0084              0.0120
117              0.0199          0.0082              0.0117
118              0.0194          0.0080              0.0114
119              0.0189          0.0078              0.0111
120              0.0185          0.0076              0.0109
121              0.0136          0.0056              0.0080
122              0.0133          0.0055              0.0078
123              0.0130          0.0053              0.0076
124              0.0127          0.0052              0.0075
125              0.0124          0.0051              0.0073
126              0.0121          0.0050              0.0071
127              0.0119          0.0049              0.0070
128              0.0116          0.0048              0.0068
129              0.0114          0.0047              0.0067
130              0.0112          0.0046              0.0066
131              0.0110          0.0045              0.0065
132              0.0108          0.0044              0.0063
133              0.0106          0.0043              0.0062
134              0.0104          0.0043              0.0061
135              0.0102          0.0042              0.0060
136              0.0100          0.0041              0.0059
137              0.0099          0.0041              0.0058
138              0.0097          0.0040              0.0057
139              0.0096          0.0039              0.0056
140              0.0094          0.0039              0.0056
141              0.0093          0.0038              0.0055
142              0.0092          0.0038              0.0054
143              0.0090          0.0037              0.0053
144              0.0089          0.0037              0.0053
-------------------------------------------------------------------
-------------------------------------------------------------------
Total soil rain loss =      1.17(In)
Total effective rainfall =      2.31(In)
Peak flow rate in flood hydrograph =     43.87(CFS)
-------------------------------------------------------------------
+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                    12 - H O U R    S T O R M
                R u n o f f      H y d r o g r a p h
-------------------------------------------------------------------
            Hydrograph in   5   Minute intervals ((CFS))

-------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0       12.5      25.0      37.5      50.0
-------------------------------------------------------------------
  0+ 5       0.0003      0.04  Q         |         |         |         |
  0+10       0.0017      0.20  Q         |         |         |         |
  0+15       0.0059      0.62  Q         |         |         |         |
  0+20       0.0122      0.90  Q         |         |         |         |
  0+25       0.0193      1.04  Q         |         |         |         |
  0+30       0.0271      1.13  Q         |         |         |         |
  0+35       0.0353      1.20  Q         |         |         |         |
  0+40       0.0439      1.25  Q         |         |         |         |
  0+45       0.0527      1.28  VQ        |         |         |         |
  0+50       0.0618      1.31  VQ        |         |         |         |
```

```
0+55      0.0710      1.33  VQ        |         |         |         |
1+ 0      0.0802      1.35  VQ        |         |         |         |
1+ 5      0.0896      1.36  VQ        |         |         |         |
1+10      0.0991      1.38  |Q        |         |         |         |
1+15      0.1087      1.39  |Q        |         |         |         |
1+20      0.1183      1.40  |Q        |         |         |         |
1+25      0.1281      1.42  |Q        |         |         |         |
1+30      0.1379      1.43  |Q        |         |         |         |
1+35      0.1478      1.44  |Q        |         |         |         |
1+40      0.1578      1.45  |Q        |         |         |         |
1+45      0.1679      1.46  |Q        |         |         |         |
1+50      0.1780      1.47  |Q        |         |         |         |
1+55      0.1882      1.49  |Q        |         |         |         |
2+ 0      0.1985      1.50  |QV       |         |         |         |
2+ 5      0.2089      1.51  |QV       |         |         |         |
2+10      0.2194      1.52  |QV       |         |         |         |
2+15      0.2300      1.54  |QV       |         |         |         |
2+20      0.2407      1.55  |QV       |         |         |         |
2+25      0.2514      1.56  |QV       |         |         |         |
2+30      0.2623      1.58  |QV       |         |         |         |
2+35      0.2733      1.59  |QV       |         |         |         |
2+40      0.2843      1.61  |QV       |         |         |         |
2+45      0.2955      1.62  |QV       |         |         |         |
2+50      0.3068      1.64  |Q V      |         |         |         |
2+55      0.3182      1.65  |Q V      |         |         |         |
3+ 0      0.3297      1.67  |Q V      |         |         |         |
3+ 5      0.3413      1.69  |Q V      |         |         |         |
3+10      0.3530      1.70  |Q V      |         |         |         |
3+15      0.3649      1.72  |Q V      |         |         |         |
3+20      0.3769      1.74  |Q V      |         |         |         |
3+25      0.3890      1.76  |Q V      |         |         |         |
3+30      0.4013      1.78  |Q  V     |         |         |         |
3+35      0.4136      1.80  |Q  V     |         |         |         |
3+40      0.4262      1.82  |Q  V     |         |         |         |
3+45      0.4388      1.84  |Q  V     |         |         |         |
3+50      0.4516      1.86  |Q  V     |         |         |         |
3+55      0.4646      1.88  |Q  V     |         |         |         |
4+ 0      0.4777      1.91  |Q  V     |         |         |         |
4+ 5      0.4912      1.95  |Q  V     |         |         |         |
4+10      0.5053      2.05  |Q   V    |         |         |         |
4+15      0.5211      2.29  |Q   V    |         |         |         |
4+20      0.5381      2.46  |Q   V    |         |         |         |
4+25      0.5556      2.55  | Q  V    |         |         |         |
4+30      0.5737      2.62  | Q  V    |         |         |         |
4+35      0.5922      2.69  | Q  V    |         |         |         |
4+40      0.6110      2.74  | Q   V   |         |         |         |
4+45      0.6302      2.79  | Q   V   |         |         |         |
4+50      0.6497      2.83  | Q   V   |         |         |         |
4+55      0.6695      2.87  | Q   V   |         |         |         |
5+ 0      0.6895      2.91  | Q   V   |         |         |         |
5+ 5      0.7099      2.95  | Q    V  |         |         |         |
5+10      0.7305      2.99  | Q    V  |         |         |         |
5+15      0.7514      3.04  | Q    V  |         |         |         |
5+20      0.7726      3.08  | Q    V  |         |         |         |
5+25      0.7942      3.13  | Q     V |         |         |         |
5+30      0.8161      3.18  | Q     V |         |         |         |
5+35      0.8383      3.23  | Q     V |         |         |         |
5+40      0.8609      3.28  | Q     V |         |         |         |
5+45      0.8838      3.33  | Q     V |         |         |         |
5+50      0.9072      3.39  | Q      V|         |         |         |
5+55      0.9309      3.45  | Q      V|         |         |         |
6+ 0      0.9551      3.51  | Q      V|         |         |         |
6+ 5      0.9798      3.58  | Q      V|         |         |         |
6+10      1.0049      3.64  | Q       V         |         |         |
6+15      1.0304      3.71  | Q       V         |         |         |
6+20      1.0564      3.78  |  Q      V         |         |         |
6+25      1.0830      3.86  |  Q      V         |         |         |
6+30      1.1102      3.95  |  Q      |V        |         |         |
6+35      1.1380      4.05  |  Q      |V        |         |         |
6+40      1.1666      4.15  |  Q      |V        |         |         |
6+45      1.1960      4.26  |  Q      | V       |         |         |
```

```
 6+50      1.2261     4.38  |  Q      | V       |         |         |
 6+55      1.2573     4.52  |  Q      | V       |         |         |
 7+ 0      1.2894     4.67  |  Q      |  V      |         |         |
 7+ 5      1.3227     4.83  |  Q      |  V      |         |         |
 7+10      1.3572     5.01  |   Q     |  V      |         |         |
 7+15      1.3932     5.22  |   Q     |   V     |         |         |
 7+20      1.4307     5.44  |   Q     |   V     |         |         |
 7+25      1.4698     5.68  |   Q     |   V     |         |         |
 7+30      1.5101     5.85  |   Q     |    V    |         |         |
 7+35      1.5508     5.90  |   Q     |    V    |         |         |
 7+40      1.5931     6.15  |   Q     |     V   |         |         |
 7+45      1.6402     6.83  |    Q    |     V   |         |         |
 7+50      1.6948     7.94  |     Q   |      V  |         |         |
 7+55      1.7635     9.97  |      Q  |      V  |         |         |
 8+ 0      1.8515    12.79  |         Q       V |         |         |
 8+ 5      1.9843    19.28  |         |    Q    V         |         |
 8+10      2.1889    29.71  |         |         | VQ      |         |
 8+15      2.4910    43.87  |         |         |   V     |    Q    |
 8+20      2.7188    33.07  |         |         |    QV   |         |
 8+25      2.8629    20.93  |         |    Q    |      V  |         |
 8+30      2.9712    15.72  |         | Q       |         V         |
 8+35      3.0590    12.74  |         Q         |         V         |
 8+40      3.1316    10.55  |        Q  |       |         |V        |
 8+45      3.1918     8.74  |     Q     |       |         | V       |
 8+50      3.2423     7.32  |    Q      |       |         | V       |
 8+55      3.2842     6.10  |   Q       |       |         |  V      |
 9+ 0      3.3216     5.43  |   Q       |       |         |  V      |
 9+ 5      3.3561     5.00  |   Q       |       |         |  V      |
 9+10      3.3881     4.65  |  Q        |       |         |   V     |
 9+15      3.4186     4.43  |  Q        |       |         |   V     |
 9+20      3.4471     4.13  |  Q        |       |         |   V     |
 9+25      3.4737     3.86  |  Q        |       |         |    V    |
 9+30      3.4988     3.64  | Q         |       |         |    V    |
 9+35      3.5225     3.45  | Q         |       |         |    V    |
 9+40      3.5455     3.33  | Q         |       |         |    V    |
 9+45      3.5676     3.22  | Q         |       |         |     V   |
 9+50      3.5891     3.12  | Q         |       |         |     V   |
 9+55      3.6100     3.03  | Q         |       |         |     V   |
10+ 0      3.6303     2.95  | Q         |       |         |     V   |
10+ 5      3.6500     2.85  | Q         |       |         |     V   |
10+10      3.6686     2.70  | Q         |       |         |      V  |
10+15      3.6853     2.43  |Q          |       |         |      V  |
10+20      3.7006     2.23  |Q          |       |         |      V  |
10+25      3.7151     2.11  |Q          |       |         |      V  |
10+30      3.7290     2.02  |Q          |       |         |      V  |
10+35      3.7423     1.94  |Q          |       |         |      V  |
10+40      3.7552     1.87  |Q          |       |         |      V  |
10+45      3.7677     1.82  |Q          |       |         |       V |
10+50      3.7799     1.77  |Q          |       |         |       V |
10+55      3.7918     1.73  |Q          |       |         |       V |
11+ 0      3.8034     1.69  |Q          |       |         |       V |
11+ 5      3.8148     1.65  |Q          |       |         |       V |
11+10      3.8260     1.62  |Q          |       |         |       V |
11+15      3.8369     1.59  |Q          |       |         |       V |
11+20      3.8476     1.56  |Q          |       |         |       V |
11+25      3.8582     1.53  |Q          |       |         |       V |
11+30      3.8685     1.50  |Q          |       |         |        V|
11+35      3.8787     1.48  |Q          |       |         |        V|
11+40      3.8887     1.46  |Q          |       |         |        V|
11+45      3.8986     1.43  |Q          |       |         |        V|
11+50      3.9083     1.41  |Q          |       |         |        V|
11+55      3.9179     1.39  |Q          |       |         |        V|
12+ 0      3.9273     1.37  |Q          |       |         |        V|
12+ 5      3.9363     1.31  |Q          |       |         |        V|
12+10      3.9441     1.13  Q           |       |         |        V|
12+15      3.9489     0.70  Q           |       |         |        V|
12+20      3.9517     0.41  Q           |       |         |        V|
12+25      3.9537     0.28  Q           |       |         |        V|
12+30      3.9550     0.19  Q           |       |         |        V|
12+35      3.9559     0.13  Q           |       |         |        V|
12+40      3.9564     0.08  Q           |       |         |        V|
```

```
   12+45       3.9568      0.05  Q         |         |         |         V|
   12+50       3.9570      0.03  Q         |         |         |         V|
   12+55       3.9572      0.02  Q         |         |         |         V|
   13+ 0       3.9573      0.02  Q         |         |         |         V|
   13+ 5       3.9574      0.01  Q         |         |         |         V|
   13+10       3.9575      0.01  Q         |         |         |         V|
   13+15       3.9575      0.00  Q         |         |         |         V|
   13+20       3.9575      0.00  Q         |         |         |         V|
   13+25       3.9575      0.00  Q         |         |         |         V|
-------------------------------------------------------------------------
```

- 25 Year 24 Hour Post-Development Unit Hydrograph – Area 'D'

```
        U n i t   H y d r o g r a p h   A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989-2012, Version 7.2

        Study date  10/11/16   File Name PRD02524.out


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'D' - 25 YEAR 24 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

        Storm Event Year = 25

        Antecedent Moisture Condition = 2

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 82.2       6.8          0.33     C     0.250     1.000    0.250
 82.2      13.7          0.67     D     0.200     1.000    0.200

Area-averaged adjusted loss rate Fm (In/Hr) =  0.217

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC2)          Yield Fr
     6.84   0.333         82.2      82.2       2.17     0.589

    13.70   0.667         82.2      82.2       2.17     0.589

Area-averaged catchment yield fraction, Y =  0.589
Area-averaged low loss fraction, Yb =  0.411
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.255 (hours)
Watershed area =      20.54(Ac.)
Catchment Lag time =   0.204 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 40.8017
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.217(In/Hr)
Average low loss rate fraction (Yb) = 0.411 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.400(In)
Computed peak 30-minute rainfall =  0.870(In)
Specified peak 1-hour rainfall =  1.150(In)
Computed peak 3-hour rainfall =  1.940(In)
Specified peak 6-hour rainfall =  2.710(In)
Specified peak 24-hour rainfall =  4.490(In)


Rainfall depth area reduction factors:
Using a total area of      20.54(Ac.) (Ref: fig. E-4)
```

```
5-minute factor = 0.999     Adjusted rainfall =  0.400(In)
30-minute factor = 0.999    Adjusted rainfall =  0.869(In)
1-hour factor = 0.999       Adjusted rainfall =  1.149(In)
3-hour factor = 1.000       Adjusted rainfall =  1.940(In)
6-hour factor = 1.000       Adjusted rainfall =  2.710(In)
24-hour factor = 1.000 Adjusted rainfall =  4.490(In)
--------------------------------------------------------------------

                     U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------
               (K =       248.41 (CFS))

  1                3.220                   7.999
  2               15.467                  30.422
  3               47.915                  80.604
  4               69.474                  53.553
  5               79.287                  24.377
  6               85.800                  16.177
  7               90.430                  11.503
  8               93.744                   8.231
  9               96.018                   5.649
 10               97.532                   3.760
 11               98.241                   1.762
 12               98.692                   1.121
 13               99.055                   0.901
 14               99.316                   0.649
 15               99.626                   0.770
 16               99.830                   0.506
 17               99.946                   0.291
 18              100.000                   0.133
--------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.3996              0.3996
  2              0.5397              0.1401
  3              0.6435              0.1038
  4              0.7290              0.0855
  5              0.8031              0.0741
  6              0.8692              0.0661
  7              0.9248              0.0556
  8              0.9759              0.0511
  9              1.0233              0.0474
 10              1.0676              0.0443
 11              1.1093              0.0418
 12              1.1489              0.0395
 13              1.1936              0.0447
 14              1.2365              0.0429
 15              1.2779              0.0413
 16              1.3178              0.0399
 17              1.3564              0.0386
 18              1.3939              0.0375
 19              1.4303              0.0364
 20              1.4657              0.0354
 21              1.5002              0.0345
 22              1.5338              0.0336
 23              1.5667              0.0329
 24              1.5988              0.0321
 25              1.6302              0.0314
 26              1.6610              0.0308
 27              1.6912              0.0302
 28              1.7207              0.0296
 29              1.7498              0.0290
 30              1.7783              0.0285
 31              1.8063              0.0280
 32              1.8338              0.0275
 33              1.8609              0.0271
 34              1.8876              0.0267
```

35	1.9139	0.0263
36	1.9398	0.0259
37	1.9656	0.0258
38	1.9910	0.0254
39	2.0161	0.0251
40	2.0409	0.0248
41	2.0653	0.0245
42	2.0895	0.0241
43	2.1133	0.0238
44	2.1369	0.0236
45	2.1602	0.0233
46	2.1832	0.0230
47	2.2060	0.0228
48	2.2285	0.0225
49	2.2508	0.0223
50	2.2728	0.0220
51	2.2946	0.0218
52	2.3162	0.0216
53	2.3376	0.0214
54	2.3587	0.0212
55	2.3797	0.0210
56	2.4005	0.0208
57	2.4211	0.0206
58	2.4415	0.0204
59	2.4617	0.0202
60	2.4817	0.0200
61	2.5016	0.0199
62	2.5213	0.0197
63	2.5408	0.0195
64	2.5602	0.0194
65	2.5794	0.0192
66	2.5985	0.0191
67	2.6174	0.0189
68	2.6361	0.0188
69	2.6548	0.0186
70	2.6733	0.0185
71	2.6916	0.0184
72	2.7098	0.0182
73	2.7235	0.0136
74	2.7370	0.0135
75	2.7504	0.0134
76	2.7637	0.0133
77	2.7769	0.0132
78	2.7900	0.0131
79	2.8030	0.0130
80	2.8158	0.0129
81	2.8286	0.0128
82	2.8413	0.0127
83	2.8539	0.0126
84	2.8663	0.0125
85	2.8787	0.0124
86	2.8910	0.0123
87	2.9032	0.0122
88	2.9153	0.0121
89	2.9273	0.0120
90	2.9393	0.0119
91	2.9511	0.0119
92	2.9629	0.0118
93	2.9746	0.0117
94	2.9862	0.0116
95	2.9977	0.0115
96	3.0092	0.0115
97	3.0206	0.0114
98	3.0319	0.0113
99	3.0431	0.0112
100	3.0543	0.0112
101	3.0654	0.0111
102	3.0764	0.0110
103	3.0873	0.0110
104	3.0982	0.0109
105	3.1090	0.0108

106	3.1198	0.0108
107	3.1305	0.0107
108	3.1411	0.0106
109	3.1517	0.0106
110	3.1622	0.0105
111	3.1726	0.0104
112	3.1830	0.0104
113	3.1933	0.0103
114	3.2036	0.0103
115	3.2138	0.0102
116	3.2239	0.0102
117	3.2340	0.0101
118	3.2441	0.0100
119	3.2540	0.0100
120	3.2640	0.0099
121	3.2739	0.0099
122	3.2837	0.0098
123	3.2935	0.0098
124	3.3032	0.0097
125	3.3129	0.0097
126	3.3225	0.0096
127	3.3321	0.0096
128	3.3416	0.0095
129	3.3511	0.0095
130	3.3605	0.0094
131	3.3699	0.0094
132	3.3793	0.0093
133	3.3886	0.0093
134	3.3978	0.0093
135	3.4071	0.0092
136	3.4162	0.0092
137	3.4254	0.0091
138	3.4344	0.0091
139	3.4435	0.0090
140	3.4525	0.0090
141	3.4614	0.0090
142	3.4704	0.0089
143	3.4793	0.0089
144	3.4881	0.0088
145	3.4969	0.0088
146	3.5057	0.0088
147	3.5144	0.0087
148	3.5231	0.0087
149	3.5317	0.0087
150	3.5403	0.0086
151	3.5489	0.0086
152	3.5575	0.0085
153	3.5660	0.0085
154	3.5744	0.0085
155	3.5829	0.0084
156	3.5913	0.0084
157	3.5997	0.0084
158	3.6080	0.0083
159	3.6163	0.0083
160	3.6246	0.0083
161	3.6328	0.0082
162	3.6410	0.0082
163	3.6492	0.0082
164	3.6573	0.0081
165	3.6654	0.0081
166	3.6735	0.0081
167	3.6815	0.0080
168	3.6895	0.0080
169	3.6975	0.0080
170	3.7055	0.0080
171	3.7134	0.0079
172	3.7213	0.0079
173	3.7292	0.0079
174	3.7370	0.0078
175	3.7448	0.0078
176	3.7526	0.0078

177	3.7603	0.0078
178	3.7681	0.0077
179	3.7758	0.0077
180	3.7834	0.0077
181	3.7911	0.0076
182	3.7987	0.0076
183	3.8063	0.0076
184	3.8138	0.0076
185	3.8214	0.0075
186	3.8289	0.0075
187	3.8364	0.0075
188	3.8438	0.0075
189	3.8513	0.0074
190	3.8587	0.0074
191	3.8661	0.0074
192	3.8734	0.0074
193	3.8808	0.0073
194	3.8881	0.0073
195	3.8954	0.0073
196	3.9026	0.0073
197	3.9099	0.0072
198	3.9171	0.0072
199	3.9243	0.0072
200	3.9315	0.0072
201	3.9386	0.0071
202	3.9457	0.0071
203	3.9528	0.0071
204	3.9599	0.0071
205	3.9670	0.0071
206	3.9740	0.0070
207	3.9810	0.0070
208	3.9880	0.0070
209	3.9950	0.0070
210	4.0019	0.0070
211	4.0089	0.0069
212	4.0158	0.0069
213	4.0227	0.0069
214	4.0295	0.0069
215	4.0364	0.0068
216	4.0432	0.0068
217	4.0500	0.0068
218	4.0568	0.0068
219	4.0636	0.0068
220	4.0703	0.0067
221	4.0771	0.0067
222	4.0838	0.0067
223	4.0905	0.0067
224	4.0971	0.0067
225	4.1038	0.0067
226	4.1104	0.0066
227	4.1170	0.0066
228	4.1236	0.0066
229	4.1302	0.0066
230	4.1368	0.0066
231	4.1433	0.0065
232	4.1498	0.0065
233	4.1563	0.0065
234	4.1628	0.0065
235	4.1693	0.0065
236	4.1758	0.0065
237	4.1822	0.0064
238	4.1886	0.0064
239	4.1950	0.0064
240	4.2014	0.0064
241	4.2078	0.0064
242	4.2141	0.0064
243	4.2205	0.0063
244	4.2268	0.0063
245	4.2331	0.0063
246	4.2394	0.0063
247	4.2456	0.0063

248	4.2519	0.0063
249	4.2581	0.0062
250	4.2643	0.0062
251	4.2705	0.0062
252	4.2767	0.0062
253	4.2829	0.0062
254	4.2891	0.0062
255	4.2952	0.0061
256	4.3013	0.0061
257	4.3074	0.0061
258	4.3135	0.0061
259	4.3196	0.0061
260	4.3257	0.0061
261	4.3317	0.0061
262	4.3378	0.0060
263	4.3438	0.0060
264	4.3498	0.0060
265	4.3558	0.0060
266	4.3618	0.0060
267	4.3678	0.0060
268	4.3737	0.0060
269	4.3796	0.0059
270	4.3856	0.0059
271	4.3915	0.0059
272	4.3974	0.0059
273	4.4033	0.0059
274	4.4091	0.0059
275	4.4150	0.0059
276	4.4208	0.0058
277	4.4266	0.0058
278	4.4325	0.0058
279	4.4383	0.0058
280	4.4440	0.0058
281	4.4498	0.0058
282	4.4556	0.0058
283	4.4613	0.0057
284	4.4671	0.0057
285	4.4728	0.0057
286	4.4785	0.0057
287	4.4842	0.0057
288	4.4899	0.0057

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0057	0.0023	0.0033
2	0.0057	0.0023	0.0034
3	0.0057	0.0024	0.0034
4	0.0057	0.0024	0.0034
5	0.0058	0.0024	0.0034
6	0.0058	0.0024	0.0034
7	0.0058	0.0024	0.0034
8	0.0058	0.0024	0.0034
9	0.0058	0.0024	0.0034
10	0.0059	0.0024	0.0034
11	0.0059	0.0024	0.0035
12	0.0059	0.0024	0.0035
13	0.0059	0.0024	0.0035
14	0.0059	0.0024	0.0035
15	0.0060	0.0025	0.0035
16	0.0060	0.0025	0.0035
17	0.0060	0.0025	0.0035
18	0.0060	0.0025	0.0035
19	0.0061	0.0025	0.0036
20	0.0061	0.0025	0.0036
21	0.0061	0.0025	0.0036
22	0.0061	0.0025	0.0036
23	0.0061	0.0025	0.0036
24	0.0062	0.0025	0.0036
25	0.0062	0.0025	0.0036

26	0.0062	0.0025	0.0037
27	0.0062	0.0026	0.0037
28	0.0063	0.0026	0.0037
29	0.0063	0.0026	0.0037
30	0.0063	0.0026	0.0037
31	0.0063	0.0026	0.0037
32	0.0064	0.0026	0.0037
33	0.0064	0.0026	0.0038
34	0.0064	0.0026	0.0038
35	0.0064	0.0026	0.0038
36	0.0065	0.0027	0.0038
37	0.0065	0.0027	0.0038
38	0.0065	0.0027	0.0038
39	0.0065	0.0027	0.0039
40	0.0066	0.0027	0.0039
41	0.0066	0.0027	0.0039
42	0.0066	0.0027	0.0039
43	0.0067	0.0027	0.0039
44	0.0067	0.0027	0.0039
45	0.0067	0.0028	0.0040
46	0.0067	0.0028	0.0040
47	0.0068	0.0028	0.0040
48	0.0068	0.0028	0.0040
49	0.0068	0.0028	0.0040
50	0.0068	0.0028	0.0040
51	0.0069	0.0028	0.0041
52	0.0069	0.0028	0.0041
53	0.0070	0.0029	0.0041
54	0.0070	0.0029	0.0041
55	0.0070	0.0029	0.0041
56	0.0070	0.0029	0.0041
57	0.0071	0.0029	0.0042
58	0.0071	0.0029	0.0042
59	0.0071	0.0029	0.0042
60	0.0072	0.0029	0.0042
61	0.0072	0.0030	0.0043
62	0.0072	0.0030	0.0043
63	0.0073	0.0030	0.0043
64	0.0073	0.0030	0.0043
65	0.0074	0.0030	0.0043
66	0.0074	0.0030	0.0044
67	0.0074	0.0031	0.0044
68	0.0075	0.0031	0.0044
69	0.0075	0.0031	0.0044
70	0.0075	0.0031	0.0044
71	0.0076	0.0031	0.0045
72	0.0076	0.0031	0.0045
73	0.0077	0.0032	0.0045
74	0.0077	0.0032	0.0045
75	0.0078	0.0032	0.0046
76	0.0078	0.0032	0.0046
77	0.0078	0.0032	0.0046
78	0.0079	0.0032	0.0046
79	0.0079	0.0033	0.0047
80	0.0080	0.0033	0.0047
81	0.0080	0.0033	0.0047
82	0.0080	0.0033	0.0047
83	0.0081	0.0033	0.0048
84	0.0081	0.0033	0.0048
85	0.0082	0.0034	0.0048
86	0.0082	0.0034	0.0049
87	0.0083	0.0034	0.0049
88	0.0083	0.0034	0.0049
89	0.0084	0.0035	0.0049
90	0.0084	0.0035	0.0050
91	0.0085	0.0035	0.0050
92	0.0085	0.0035	0.0050
93	0.0086	0.0035	0.0051
94	0.0087	0.0036	0.0051
95	0.0087	0.0036	0.0051
96	0.0088	0.0036	0.0052

97	0.0088	0.0036	0.0052
98	0.0089	0.0036	0.0052
99	0.0090	0.0037	0.0053
100	0.0090	0.0037	0.0053
101	0.0091	0.0037	0.0054
102	0.0091	0.0038	0.0054
103	0.0092	0.0038	0.0054
104	0.0093	0.0038	0.0055
105	0.0093	0.0038	0.0055
106	0.0094	0.0039	0.0055
107	0.0095	0.0039	0.0056
108	0.0095	0.0039	0.0056
109	0.0096	0.0040	0.0057
110	0.0097	0.0040	0.0057
111	0.0098	0.0040	0.0058
112	0.0098	0.0040	0.0058
113	0.0099	0.0041	0.0059
114	0.0100	0.0041	0.0059
115	0.0101	0.0041	0.0059
116	0.0102	0.0042	0.0060
117	0.0103	0.0042	0.0060
118	0.0103	0.0042	0.0061
119	0.0104	0.0043	0.0062
120	0.0105	0.0043	0.0062
121	0.0106	0.0044	0.0063
122	0.0107	0.0044	0.0063
123	0.0108	0.0044	0.0064
124	0.0109	0.0045	0.0064
125	0.0110	0.0045	0.0065
126	0.0111	0.0046	0.0065
127	0.0112	0.0046	0.0066
128	0.0113	0.0046	0.0067
129	0.0115	0.0047	0.0067
130	0.0115	0.0047	0.0068
131	0.0117	0.0048	0.0069
132	0.0118	0.0048	0.0069
133	0.0119	0.0049	0.0070
134	0.0120	0.0049	0.0071
135	0.0122	0.0050	0.0072
136	0.0123	0.0050	0.0072
137	0.0125	0.0051	0.0073
138	0.0126	0.0052	0.0074
139	0.0128	0.0052	0.0075
140	0.0129	0.0053	0.0076
141	0.0131	0.0054	0.0077
142	0.0132	0.0054	0.0078
143	0.0134	0.0055	0.0079
144	0.0135	0.0056	0.0080
145	0.0182	0.0075	0.0107
146	0.0184	0.0075	0.0108
147	0.0186	0.0077	0.0110
148	0.0188	0.0077	0.0111
149	0.0191	0.0078	0.0112
150	0.0192	0.0079	0.0113
151	0.0195	0.0080	0.0115
152	0.0197	0.0081	0.0116
153	0.0200	0.0082	0.0118
154	0.0202	0.0083	0.0119
155	0.0206	0.0085	0.0121
156	0.0208	0.0085	0.0122
157	0.0212	0.0087	0.0125
158	0.0214	0.0088	0.0126
159	0.0218	0.0090	0.0128
160	0.0220	0.0091	0.0130
161	0.0225	0.0093	0.0133
162	0.0228	0.0094	0.0134
163	0.0233	0.0096	0.0137
164	0.0236	0.0097	0.0139
165	0.0241	0.0099	0.0142
166	0.0245	0.0100	0.0144
167	0.0251	0.0103	0.0148

168	0.0254	0.0105	0.0150
169	0.0259	0.0106	0.0152
170	0.0263	0.0108	0.0155
171	0.0271	0.0111	0.0160
172	0.0275	0.0113	0.0162
173	0.0285	0.0117	0.0168
174	0.0290	0.0119	0.0171
175	0.0302	0.0124	0.0178
176	0.0308	0.0126	0.0181
177	0.0321	0.0132	0.0189
178	0.0329	0.0135	0.0194
179	0.0345	0.0142	0.0203
180	0.0354	0.0145	0.0209
181	0.0375	0.0154	0.0221
182	0.0386	0.0159	0.0228
183	0.0413	0.0170	0.0244
184	0.0429	0.0176	0.0253
185	0.0395	0.0162	0.0233
186	0.0418	0.0172	0.0246
187	0.0474	0.0181	0.0293
188	0.0511	0.0181	0.0330
189	0.0661	0.0181	0.0480
190	0.0741	0.0181	0.0560
191	0.1038	0.0181	0.0857
192	0.1401	0.0181	0.1221
193	0.3996	0.0181	0.3816
194	0.0855	0.0181	0.0675
195	0.0556	0.0181	0.0376
196	0.0443	0.0181	0.0263
197	0.0447	0.0181	0.0266
198	0.0399	0.0164	0.0235
199	0.0364	0.0150	0.0214
200	0.0336	0.0138	0.0198
201	0.0314	0.0129	0.0185
202	0.0296	0.0122	0.0174
203	0.0280	0.0115	0.0165
204	0.0267	0.0110	0.0157
205	0.0258	0.0106	0.0152
206	0.0248	0.0102	0.0146
207	0.0238	0.0098	0.0140
208	0.0230	0.0095	0.0136
209	0.0223	0.0092	0.0131
210	0.0216	0.0089	0.0127
211	0.0210	0.0086	0.0124
212	0.0204	0.0084	0.0120
213	0.0199	0.0082	0.0117
214	0.0194	0.0080	0.0114
215	0.0189	0.0078	0.0111
216	0.0185	0.0076	0.0109
217	0.0136	0.0056	0.0080
218	0.0133	0.0055	0.0078
219	0.0130	0.0053	0.0076
220	0.0127	0.0052	0.0075
221	0.0124	0.0051	0.0073
222	0.0121	0.0050	0.0071
223	0.0119	0.0049	0.0070
224	0.0116	0.0048	0.0068
225	0.0114	0.0047	0.0067
226	0.0112	0.0046	0.0066
227	0.0110	0.0045	0.0065
228	0.0108	0.0044	0.0063
229	0.0106	0.0043	0.0062
230	0.0104	0.0043	0.0061
231	0.0102	0.0042	0.0060
232	0.0100	0.0041	0.0059
233	0.0099	0.0041	0.0058
234	0.0097	0.0040	0.0057
235	0.0096	0.0039	0.0056
236	0.0094	0.0039	0.0056
237	0.0093	0.0038	0.0055
238	0.0092	0.0038	0.0054

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      239              0.0090           0.0037              0.0053
      240              0.0089           0.0037              0.0053
      241              0.0088           0.0036              0.0052
      242              0.0087           0.0036              0.0051
      243              0.0086           0.0035              0.0051
      244              0.0085           0.0035              0.0050
      245              0.0084           0.0034              0.0049
      246              0.0083           0.0034              0.0049
      247              0.0082           0.0034              0.0048
      248              0.0081           0.0033              0.0048
      249              0.0080           0.0033              0.0047
      250              0.0079           0.0032              0.0047
      251              0.0078           0.0032              0.0046
      252              0.0077           0.0032              0.0046
      253              0.0076           0.0031              0.0045
      254              0.0076           0.0031              0.0045
      255              0.0075           0.0031              0.0044
      256              0.0074           0.0030              0.0044
      257              0.0073           0.0030              0.0043
      258              0.0073           0.0030              0.0043
      259              0.0072           0.0030              0.0042
      260              0.0071           0.0029              0.0042
      261              0.0071           0.0029              0.0042
      262              0.0070           0.0029              0.0041
      263              0.0069           0.0028              0.0041
      264              0.0069           0.0028              0.0040
      265              0.0068           0.0028              0.0040
      266              0.0067           0.0028              0.0040
      267              0.0067           0.0027              0.0039
      268              0.0066           0.0027              0.0039
      269              0.0066           0.0027              0.0039
      270              0.0065           0.0027              0.0038
      271              0.0065           0.0027              0.0038
      272              0.0064           0.0026              0.0038
      273              0.0064           0.0026              0.0038
      274              0.0063           0.0026              0.0037
      275              0.0063           0.0026              0.0037
      276              0.0062           0.0026              0.0037
      277              0.0062           0.0025              0.0036
      278              0.0061           0.0025              0.0036
      279              0.0061           0.0025              0.0036
      280              0.0060           0.0025              0.0036
      281              0.0060           0.0025              0.0035
      282              0.0060           0.0024              0.0035
      283              0.0059           0.0024              0.0035
      284              0.0059           0.0024              0.0035
      285              0.0058           0.0024              0.0034
      286              0.0058           0.0024              0.0034
      287              0.0057           0.0024              0.0034
      288              0.0057           0.0023              0.0034
      ------------------------------------------------------------------------
      ------------------------------------------------------------------------
      Total soil rain loss =      1.59(In)
      Total effective rainfall =      2.90(In)
      Peak flow rate in flood hydrograph =     43.87(CFS)
      ------------------------------------------------------------------------
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          24 - H O U R    S T O R M
                    R u n o f f      H y d r o g r a p h
      ------------------------------------------------------------------------
                 Hydrograph in   5   Minute intervals ((CFS))

      ------------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0       12.5      25.0      37.5      50.0
-------------------------------------------------------------------------
  0+ 5       0.0002      0.03  Q         |         |         |         |
  0+10       0.0011      0.13  Q         |         |         |         |
  0+15       0.0038      0.40  Q         |         |         |         |
  0+20       0.0078      0.58  Q         |         |         |         |
  0+25       0.0124      0.66  Q         |         |         |         |
  0+30       0.0173      0.72  Q         |         |         |         |
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0+35      0.0226      0.76  Q          |          |          |          |
0+40      0.0280      0.79  Q          |          |          |          |
0+45      0.0336      0.81  Q          |          |          |          |
0+50      0.0393      0.83  Q          |          |          |          |
0+55      0.0451      0.84  Q          |          |          |          |
1+ 0      0.0509      0.84  Q          |          |          |          |
1+ 5      0.0567      0.85  Q          |          |          |          |
1+10      0.0626      0.85  Q          |          |          |          |
1+15      0.0685      0.86  Q          |          |          |          |
1+20      0.0745      0.86  Q          |          |          |          |
1+25      0.0804      0.87  Q          |          |          |          |
1+30      0.0864      0.87  Q          |          |          |          |
1+35      0.0925      0.87  Q          |          |          |          |
1+40      0.0985      0.88  Q          |          |          |          |
1+45      0.1046      0.88  Q          |          |          |          |
1+50      0.1107      0.88  Q          |          |          |          |
1+55      0.1168      0.89  Q          |          |          |          |
2+ 0      0.1229      0.89  Q          |          |          |          |
2+ 5      0.1291      0.89  QV         |          |          |          |
2+10      0.1353      0.90  QV         |          |          |          |
2+15      0.1415      0.90  QV         |          |          |          |
2+20      0.1477      0.90  QV         |          |          |          |
2+25      0.1539      0.91  QV         |          |          |          |
2+30      0.1602      0.91  QV         |          |          |          |
2+35      0.1665      0.91  QV         |          |          |          |
2+40      0.1728      0.92  QV         |          |          |          |
2+45      0.1792      0.92  QV         |          |          |          |
2+50      0.1856      0.93  QV         |          |          |          |
2+55      0.1920      0.93  QV         |          |          |          |
3+ 0      0.1984      0.93  QV         |          |          |          |
3+ 5      0.2048      0.94  QV         |          |          |          |
3+10      0.2113      0.94  QV         |          |          |          |
3+15      0.2178      0.94  QV         |          |          |          |
3+20      0.2244      0.95  QV         |          |          |          |
3+25      0.2309      0.95  QV         |          |          |          |
3+30      0.2375      0.96  QV         |          |          |          |
3+35      0.2441      0.96  QV         |          |          |          |
3+40      0.2507      0.96  Q V        |          |          |          |
3+45      0.2574      0.97  Q V        |          |          |          |
3+50      0.2641      0.97  Q V        |          |          |          |
3+55      0.2708      0.98  Q V        |          |          |          |
4+ 0      0.2776      0.98  Q V        |          |          |          |
4+ 5      0.2843      0.98  Q V        |          |          |          |
4+10      0.2912      0.99  Q V        |          |          |          |
4+15      0.2980      0.99  Q V        |          |          |          |
4+20      0.3049      1.00  Q V        |          |          |          |
4+25      0.3118      1.00  Q V        |          |          |          |
4+30      0.3187      1.01  Q V        |          |          |          |
4+35      0.3257      1.01  Q V        |          |          |          |
4+40      0.3327      1.02  Q V        |          |          |          |
4+45      0.3397      1.02  Q V        |          |          |          |
4+50      0.3467      1.02  Q V        |          |          |          |
4+55      0.3538      1.03  Q V        |          |          |          |
5+ 0      0.3609      1.03  Q V        |          |          |          |
5+ 5      0.3681      1.04  Q V        |          |          |          |
5+10      0.3753      1.04  Q  V       |          |          |          |
5+15      0.3825      1.05  Q  V       |          |          |          |
5+20      0.3898      1.05  Q  V       |          |          |          |
5+25      0.3971      1.06  Q  V       |          |          |          |
5+30      0.4044      1.06  Q  V       |          |          |          |
5+35      0.4118      1.07  Q  V       |          |          |          |
5+40      0.4192      1.07  Q  V       |          |          |          |
5+45      0.4266      1.08  Q  V       |          |          |          |
5+50      0.4341      1.09  Q  V       |          |          |          |
5+55      0.4416      1.09  Q  V       |          |          |          |
6+ 0      0.4492      1.10  Q  V       |          |          |          |
6+ 5      0.4568      1.10  Q  V       |          |          |          |
6+10      0.4644      1.11  Q  V       |          |          |          |
6+15      0.4721      1.11  Q  V       |          |          |          |
6+20      0.4798      1.12  Q  V       |          |          |          |
6+25      0.4875      1.13  Q  V       |          |          |          |
```

```
 6+30      0.4953      1.13  Q  V      |         |         |         |
 6+35      0.5032      1.14  Q   V     |         |         |         |
 6+40      0.5110      1.14  Q   V     |         |         |         |
 6+45      0.5190      1.15  Q   V     |         |         |         |
 6+50      0.5269      1.16  Q   V     |         |         |         |
 6+55      0.5350      1.16  Q   V     |         |         |         |
 7+ 0      0.5430      1.17  Q   V     |         |         |         |
 7+ 5      0.5511      1.18  Q   V     |         |         |         |
 7+10      0.5593      1.18  Q   V     |         |         |         |
 7+15      0.5675      1.19  Q   V     |         |         |         |
 7+20      0.5757      1.20  Q   V     |         |         |         |
 7+25      0.5840      1.20  Q   V     |         |         |         |
 7+30      0.5924      1.21  Q   V     |         |         |         |
 7+35      0.6008      1.22  Q   V     |         |         |         |
 7+40      0.6092      1.23  Q   V     |         |         |         |
 7+45      0.6177      1.23  Q   V     |         |         |         |
 7+50      0.6263      1.24  Q    V    |         |         |         |
 7+55      0.6349      1.25  Q    V    |         |         |         |
 8+ 0      0.6435      1.26  |Q   V    |         |         |         |
 8+ 5      0.6522      1.27  |Q   V    |         |         |         |
 8+10      0.6610      1.27  |Q   V    |         |         |         |
 8+15      0.6699      1.28  |Q   V    |         |         |         |
 8+20      0.6787      1.29  |Q   V    |         |         |         |
 8+25      0.6877      1.30  |Q   V    |         |         |         |
 8+30      0.6967      1.31  |Q   V    |         |         |         |
 8+35      0.7058      1.32  |Q   V    |         |         |         |
 8+40      0.7149      1.33  |Q   V    |         |         |         |
 8+45      0.7241      1.34  |Q   V    |         |         |         |
 8+50      0.7334      1.34  |Q   V    |         |         |         |
 8+55      0.7427      1.35  |Q   V    |         |         |         |
 9+ 0      0.7521      1.36  |Q    V   |         |         |         |
 9+ 5      0.7615      1.37  |Q    V   |         |         |         |
 9+10      0.7711      1.38  |Q    V   |         |         |         |
 9+15      0.7807      1.39  |Q    V   |         |         |         |
 9+20      0.7904      1.40  |Q    V   |         |         |         |
 9+25      0.8001      1.42  |Q    V   |         |         |         |
 9+30      0.8099      1.43  |Q    V   |         |         |         |
 9+35      0.8198      1.44  |Q    V   |         |         |         |
 9+40      0.8298      1.45  |Q    V   |         |         |         |
 9+45      0.8399      1.46  |Q    V   |         |         |         |
 9+50      0.8500      1.47  |Q    V   |         |         |         |
 9+55      0.8602      1.49  |Q    V   |         |         |         |
10+ 0      0.8706      1.50  |Q     V  |         |         |         |
10+ 5      0.8810      1.51  |Q     V  |         |         |         |
10+10      0.8914      1.52  |Q     V  |         |         |         |
10+15      0.9020      1.54  |Q     V  |         |         |         |
10+20      0.9127      1.55  |Q     V  |         |         |         |
10+25      0.9235      1.56  |Q     V  |         |         |         |
10+30      0.9343      1.58  |Q     V  |         |         |         |
10+35      0.9453      1.59  |Q     V  |         |         |         |
10+40      0.9564      1.61  |Q     V  |         |         |         |
10+45      0.9675      1.62  |Q     V  |         |         |         |
10+50      0.9788      1.64  |Q     V  |         |         |         |
10+55      0.9902      1.65  |Q     V  |         |         |         |
11+ 0      1.0017      1.67  |Q      V |         |         |         |
11+ 5      1.0133      1.69  |Q      V |         |         |         |
11+10      1.0251      1.70  |Q      V |         |         |         |
11+15      1.0369      1.72  |Q      V |         |         |         |
11+20      1.0489      1.74  |Q      V |         |         |         |
11+25      1.0610      1.76  |Q      V |         |         |         |
11+30      1.0733      1.78  |Q      V |         |         |         |
11+35      1.0857      1.80  |Q      V |         |         |         |
11+40      1.0982      1.82  |Q      V |         |         |         |
11+45      1.1109      1.84  |Q      V |         |         |         |
11+50      1.1237      1.86  |Q       V|         |         |         |
11+55      1.1366      1.88  |Q       V|         |         |         |
12+ 0      1.1498      1.91  |Q       V|         |         |         |
12+ 5      1.1632      1.95  |Q       V|         |         |         |
12+10      1.1774      2.05  |Q       V|         |         |         |
12+15      1.1931      2.29  |Q       V|         |         |         |
12+20      1.2101      2.46  |Q       V|         |         |         |
```

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12+25      1.2277      2.55  | Q      V|         |         |         |
12+30      1.2457      2.62  | Q       V         |         |         |
12+35      1.2642      2.69  | Q       V         |         |         |
12+40      1.2831      2.74  | Q       V         |         |         |
12+45      1.3023      2.79  | Q       V         |         |         |
12+50      1.3218      2.83  | Q       V         |         |         |
12+55      1.3415      2.87  | Q       V         |         |         |
13+ 0      1.3616      2.91  | Q       V         |         |         |
13+ 5      1.3819      2.95  | Q       |V        |         |         |
13+10      1.4025      2.99  | Q       |V        |         |         |
13+15      1.4234      3.04  | Q       |V        |         |         |
13+20      1.4447      3.08  | Q       |V        |         |         |
13+25      1.4662      3.13  | Q       |V        |         |         |
13+30      1.4881      3.18  | Q       |V        |         |         |
13+35      1.5103      3.23  | Q       | V       |         |         |
13+40      1.5329      3.28  | Q       | V       |         |         |
13+45      1.5558      3.33  | Q       | V       |         |         |
13+50      1.5792      3.39  | Q       | V       |         |         |
13+55      1.6030      3.45  | Q       | V       |         |         |
14+ 0      1.6272      3.51  | Q       |  V      |         |         |
14+ 5      1.6518      3.58  | Q       |  V      |         |         |
14+10      1.6769      3.64  | Q       |  V      |         |         |
14+15      1.7024      3.71  | Q       |  V      |         |         |
14+20      1.7285      3.78  |  Q      |  V      |         |         |
14+25      1.7550      3.86  |  Q      |   V     |         |         |
14+30      1.7822      3.95  |  Q      |   V     |         |         |
14+35      1.8101      4.05  |  Q      |   V     |         |         |
14+40      1.8386      4.15  |  Q      |   V     |         |         |
14+45      1.8680      4.26  |  Q      |    V    |         |         |
14+50      1.8982      4.38  |  Q      |    V    |         |         |
14+55      1.9293      4.52  |  Q      |    V    |         |         |
15+ 0      1.9614      4.67  |  Q      |    V    |         |         |
15+ 5      1.9947      4.83  |  Q      |     V   |         |         |
15+10      2.0293      5.01  |   Q     |     V   |         |         |
15+15      2.0652      5.22  |   Q     |     V   |         |         |
15+20      2.1027      5.44  |   Q     |     V   |         |         |
15+25      2.1419      5.68  |   Q     |      V  |         |         |
15+30      2.1822      5.85  |   Q     |      V  |         |         |
15+35      2.2228      5.90  |   Q     |      V  |         |         |
15+40      2.2651      6.15  |   Q     |       V |         |         |
15+45      2.3122      6.83  |    Q    |       V |         |         |
15+50      2.3669      7.94  |     Q   |        V|         |         |
15+55      2.4355      9.97  |      Q  |        V|         |         |
16+ 0      2.5236     12.79  |         Q         V         |         |
16+ 5      2.6564     19.28  |         |    Q    |V        |         |
16+10      2.8610     29.71  |         |         |  Q      |         |
16+15      3.1631     43.87  |         |         |    V    |    Q    |
16+20      3.3908     33.07  |         |         |     QV  |         |
16+25      3.5349     20.93  |         |     Q   |       V |         |
16+30      3.6432     15.72  |         | Q       |        V|         |
16+35      3.7310     12.74  |         Q         |         V         |
16+40      3.8037     10.55  |       Q |         |         V         |
16+45      3.8639      8.74  |     Q   |         |         |V        |
16+50      3.9143      7.32  |    Q    |         |         |V        |
16+55      3.9563      6.10  |   Q     |         |         |V        |
17+ 0      3.9936      5.43  |   Q     |         |         | V       |
17+ 5      4.0281      5.00  |   Q     |         |         | V       |
17+10      4.0601      4.65  |  Q      |         |         | V       |
17+15      4.0906      4.43  |  Q      |         |         | V       |
17+20      4.1191      4.13  |  Q      |         |         |  V      |
17+25      4.1457      3.86  |  Q      |         |         |  V      |
17+30      4.1708      3.64  | Q       |         |         |  V      |
17+35      4.1946      3.45  | Q       |         |         |  V      |
17+40      4.2175      3.33  | Q       |         |         |  V      |
17+45      4.2397      3.22  | Q       |         |         |   V     |
17+50      4.2612      3.12  | Q       |         |         |   V     |
17+55      4.2820      3.03  | Q       |         |         |   V     |
18+ 0      4.3023      2.95  | Q       |         |         |   V     |
18+ 5      4.3220      2.85  | Q       |         |         |   V     |
18+10      4.3406      2.70  | Q       |         |         |   V     |
18+15      4.3573      2.43  |Q        |         |         |    V    |
```

18+20	4.3726	2.23	|Q	|	|	|	V |
18+25	4.3871	2.11	|Q	|	|	|	V |
18+30	4.4010	2.02	|Q	|	|	|	V |
18+35	4.4144	1.94	|Q	|	|	|	V |
18+40	4.4273	1.87	|Q	|	|	|	V |
18+45	4.4398	1.82	|Q	|	|	|	V |
18+50	4.4519	1.77	|Q	|	|	|	V |
18+55	4.4638	1.73	|Q	|	|	|	V |
19+ 0	4.4755	1.69	|Q	|	|	|	V |
19+ 5	4.4868	1.65	|Q	|	|	|	V |
19+10	4.4980	1.62	|Q	|	|	|	V |
19+15	4.5089	1.59	|Q	|	|	|	V |
19+20	4.5197	1.56	|Q	|	|	|	V |
19+25	4.5302	1.53	|Q	|	|	|	V |
19+30	4.5406	1.50	|Q	|	|	|	V |
19+35	4.5507	1.48	|Q	|	|	|	V |
19+40	4.5608	1.46	|Q	|	|	|	V |
19+45	4.5706	1.43	|Q	|	|	|	V |
19+50	4.5803	1.41	|Q	|	|	|	V |
19+55	4.5899	1.39	|Q	|	|	|	V |
20+ 0	4.5993	1.37	|Q	|	|	|	V |
20+ 5	4.6086	1.35	|Q	|	|	|	V |
20+10	4.6178	1.33	|Q	|	|	|	V |
20+15	4.6268	1.31	|Q	|	|	|	V |
20+20	4.6357	1.29	|Q	|	|	|	V |
20+25	4.6445	1.28	|Q	|	|	|	V |
20+30	4.6532	1.26	|Q	|	|	|	V |
20+35	4.6618	1.25	Q	|	|	|	V |
20+40	4.6703	1.23	Q	|	|	|	V |
20+45	4.6786	1.22	Q	|	|	|	V |
20+50	4.6869	1.20	Q	|	|	|	V |
20+55	4.6951	1.19	Q	|	|	|	V |
21+ 0	4.7032	1.17	Q	|	|	|	V |
21+ 5	4.7111	1.16	Q	|	|	|	V |
21+10	4.7190	1.15	Q	|	|	|	V |
21+15	4.7269	1.13	Q	|	|	|	V |
21+20	4.7346	1.12	Q	|	|	|	V |
21+25	4.7422	1.11	Q	|	|	|	V |
21+30	4.7498	1.10	Q	|	|	|	V |
21+35	4.7573	1.09	Q	|	|	|	V |
21+40	4.7647	1.08	Q	|	|	|	V |
21+45	4.7721	1.07	Q	|	|	|	V |
21+50	4.7793	1.06	Q	|	|	|	V |
21+55	4.7865	1.05	Q	|	|	|	V |
22+ 0	4.7937	1.04	Q	|	|	|	V |
22+ 5	4.8008	1.03	Q	|	|	|	V |
22+10	4.8078	1.02	Q	|	|	|	V |
22+15	4.8147	1.01	Q	|	|	|	V |
22+20	4.8216	1.00	Q	|	|	|	V |
22+25	4.8284	0.99	Q	|	|	|	V |
22+30	4.8352	0.98	Q	|	|	|	V |
22+35	4.8419	0.97	Q	|	|	|	V |
22+40	4.8485	0.97	Q	|	|	|	V|
22+45	4.8551	0.96	Q	|	|	|	V|
22+50	4.8617	0.95	Q	|	|	|	V|
22+55	4.8681	0.94	Q	|	|	|	V|
23+ 0	4.8746	0.93	Q	|	|	|	V|
23+ 5	4.8810	0.93	Q	|	|	|	V|
23+10	4.8873	0.92	Q	|	|	|	V|
23+15	4.8936	0.91	Q	|	|	|	V|
23+20	4.8998	0.91	Q	|	|	|	V|
23+25	4.9060	0.90	Q	|	|	|	V|
23+30	4.9121	0.89	Q	|	|	|	V|
23+35	4.9182	0.89	Q	|	|	|	V|
23+40	4.9243	0.88	Q	|	|	|	V|
23+45	4.9303	0.87	Q	|	|	|	V|
23+50	4.9363	0.87	Q	|	|	|	V|
23+55	4.9422	0.86	Q	|	|	|	V|
24+ 0	4.9481	0.85	Q	|	|	|	V|
24+ 5	4.9538	0.82	Q	|	|	|	V|
24+10	4.9587	0.71	Q	|	|	|	V|

```
   24+15       4.9617      0.44  Q         |         |         |         V|
   24+20       4.9635      0.26  Q         |         |         |         V|
   24+25       4.9647      0.18  Q         |         |         |         V|
   24+30       4.9655      0.12  Q         |         |         |         V|
   24+35       4.9661      0.08  Q         |         |         |         V|
   24+40       4.9665      0.05  Q         |         |         |         V|
   24+45       4.9667      0.03  Q         |         |         |         V|
   24+50       4.9668      0.02  Q         |         |         |         V|
   24+55       4.9669      0.01  Q         |         |         |         V|
   25+ 0       4.9670      0.01  Q         |         |         |         V|
   25+ 5       4.9671      0.01  Q         |         |         |         V|
   25+10       4.9671      0.01  Q         |         |         |         V|
   25+15       4.9671      0.00  Q         |         |         |         V|
   25+20       4.9671      0.00  Q         |         |         |         V|
   25+25       4.9671      0.00  Q         |         |         |         V|
-------------------------------------------------------------------------
```

- 100 Year 3 Hour Post-Development Unit Hydrograph – Area 'D'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989-2012, Version 7.2

       Study date  10/11/16   File Name PRD10003.out


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------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'D' - 100 YEAR 3 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 100

       Antecedent Moisture Condition = 3

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 82.2       6.8          0.33     C     0.250     1.000    0.250
 82.2      13.7          0.67     D     0.200     1.000    0.200

Area-averaged adjusted loss rate Fm (In/Hr) =  0.217

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC3)           Yield Fr
     6.84   0.333         82.2      95.3       0.49     0.902

    13.70   0.667         82.2      95.3       0.49     0.902

Area-averaged catchment yield fraction, Y =  0.902
Area-averaged low loss fraction, Yb =  0.098
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.250 (hours)
Watershed area =      20.54(Ac.)
Catchment Lag time =   0.200 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 41.7502
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.217(In/Hr)
Average low loss rate fraction (Yb) = 0.098 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.520(In)
Computed peak 30-minute rainfall =  1.090(In)
Specified peak 1-hour rainfall =  1.450(In)
Computed peak 3-hour rainfall =  2.430(In)
Specified peak 6-hour rainfall =  3.360(In)
Specified peak 24-hour rainfall =  5.630(In)


Rainfall depth area reduction factors:
Using a total area of      20.54(Ac.) (Ref: fig. E-4)
```

```
5-minute factor = 0.999     Adjusted rainfall =  0.519(In)
30-minute factor = 0.999    Adjusted rainfall =  1.089(In)
1-hour factor = 0.999       Adjusted rainfall =  1.449(In)
3-hour factor = 1.000       Adjusted rainfall =  2.430(In)
6-hour factor = 1.000       Adjusted rainfall =  3.360(In)
24-hour factor = 1.000 Adjusted rainfall =  5.630(In)
--------------------------------------------------------------------

                     U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------
               (K =       248.41 (CFS))

  1                3.324                   8.257
  2               16.175                  31.922
  3               49.902                  83.780
  4               70.442                  51.022
  5               80.093                  23.973
  6               86.479                  15.865
  7               90.995                  11.218
  8               94.213                   7.994
  9               96.370                   5.359
 10               97.747                   3.419
 11               98.358                   1.519
 12               98.801                   1.100
 13               99.131                   0.820
 14               99.410                   0.693
 15               99.710                   0.745
 16               99.881                   0.424
 17              100.000                   0.296
--------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.5195              0.5195
  2              0.6917              0.1722
  3              0.8178              0.1261
  4              0.9210              0.1032
  5              1.0100              0.0889
  6              1.0890              0.0790
  7              1.1603              0.0714
  8              1.2259              0.0656
  9              1.2868              0.0609
 10              1.3438              0.0570
 11              1.3976              0.0538
 12              1.4486              0.0510
 13              1.5042              0.0556
 14              1.5576              0.0534
 15              1.6091              0.0514
 16              1.6587              0.0496
 17              1.7067              0.0480
 18              1.7533              0.0465
 19              1.7984              0.0452
 20              1.8424              0.0440
 21              1.8852              0.0428
 22              1.9269              0.0417
 23              1.9677              0.0407
 24              2.0075              0.0398
 25              2.0465              0.0390
 26              2.0846              0.0381
 27              2.1220              0.0374
 28              2.1586              0.0366
 29              2.1946              0.0360
 30              2.2299              0.0353
 31              2.2646              0.0347
 32              2.2987              0.0341
 33              2.3322              0.0335
 34              2.3652              0.0330
 35              2.3977              0.0325
```

```
 36              2.4297              0.0320
-------------------------------------------------------------------------
Unit              Unit            Unit              Effective
Period            Rainfall        Soil-Loss         Rainfall
(number)            (In)          (In)                 (In)
-------------------------------------------------------------------------
  1               0.0320          0.0031              0.0289
  2               0.0325          0.0032              0.0293
  3               0.0335          0.0033              0.0303
  4               0.0341          0.0033              0.0308
  5               0.0353          0.0034              0.0319
  6               0.0360          0.0035              0.0324
  7               0.0374          0.0036              0.0337
  8               0.0381          0.0037              0.0344
  9               0.0398          0.0039              0.0359
 10               0.0407          0.0040              0.0368
 11               0.0428          0.0042              0.0386
 12               0.0440          0.0043              0.0397
 13               0.0465          0.0045              0.0420
 14               0.0480          0.0047              0.0433
 15               0.0514          0.0050              0.0464
 16               0.0534          0.0052              0.0482
 17               0.0510          0.0050              0.0460
 18               0.0538          0.0052              0.0485
 19               0.0609          0.0059              0.0550
 20               0.0656          0.0064              0.0592
 21               0.0790          0.0077              0.0713
 22               0.0889          0.0087              0.0803
 23               0.1261          0.0123              0.1138
 24               0.1722          0.0168              0.1554
 25               0.5195          0.0181              0.5014
 26               0.1032          0.0101              0.0931
 27               0.0714          0.0070              0.0644
 28               0.0570          0.0056              0.0515
 29               0.0556          0.0054              0.0502
 30               0.0496          0.0048              0.0448
 31               0.0452          0.0044              0.0408
 32               0.0417          0.0041              0.0377
 33               0.0390          0.0038              0.0352
 34               0.0366          0.0036              0.0331
 35               0.0347          0.0034              0.0313
 36               0.0330          0.0032              0.0298
-------------------------------------------------------------------------
-------------------------------------------------------------------------
Total soil rain loss =      0.20(In)
Total effective rainfall =      2.23(In)
Peak flow rate in flood hydrograph =     59.43(CFS)
-------------------------------------------------------------------------
+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                    3 - H O U R    S T O R M
                R u n o f f      H y d r o g r a p h
-------------------------------------------------------------------------
            Hydrograph in   5   Minute intervals ((CFS))

-------------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0       15.0      30.0      45.0      60.0
-------------------------------------------------------------------------
  0+ 5       0.0016      0.24  Q         |         |         |         |
  0+10       0.0097      1.16  Q         |         |         |         |
  0+15       0.0345      3.61  V Q       |         |         |         |
  0+20       0.0700      5.15  V  Q      |         |         |         |
  0+25       0.1111      5.97  |V Q      |         |         |         |
  0+30       0.1563      6.57  |V  Q     |         |         |         |
  0+35       0.2050      7.07  | V Q     |         |         |         |
  0+40       0.2565      7.48  | V Q     |         |         |         |
  0+45       0.3107      7.86  |  V Q    |         |         |         |
  0+50       0.3670      8.18  |  V Q    |         |         |         |
  0+55       0.4255      8.49  |   VQ    |         |         |         |
  1+ 0       0.4861      8.80  |    Q    |         |         |         |
  1+ 5       0.5491      9.15  |    VQ   |         |         |         |
  1+10       0.6146      9.51  |     Q   |         |         |         |
```

```
   1+15       0.6830      9.94  |     QV  |         |         |         |
   1+20       0.7545     10.38  |     QV  |         |         |         |
   1+25       0.8294     10.87  |      QV |         |         |         |
   1+30       0.9067     11.24  |      Q V|         |         |         |
   1+35       0.9854     11.43  |      Q  V         |         |         |
   1+40       1.0675     11.91  |      Q  |V        |         |         |
   1+45       1.1560     12.86  |       Q | V       |         |         |
   1+50       1.2530     14.09  |        Q|  V      |         |         |
   1+55       1.3639     16.10  |         Q   V     |         |         |
   2+ 0       1.4956     19.12  |          | Q  V   |         |         |
   2+ 5       1.6817     27.03  |          |      VQ |         |         |
   2+10       1.9601     40.43  |          |         V     Q   |         |
   2+15       2.3695     59.43  |          |          |   V     |        Q|
   2+20       2.6700     43.63  |          |          |       VQ|         |
   2+25       2.8729     29.47  |          |         Q|         V         |
   2+30       3.0339     23.38  |          |    Q     |         |V        |
   2+35       3.1695     19.69  |          |  Q       |         |  V      |
   2+40       3.2853     16.81  |          |Q         |         |   V     |
   2+45       3.3841     14.34  |         Q|          |         |    V    |
   2+50       3.4692     12.37  |        Q |          |         |     V   |
   2+55       3.5428     10.68  |       Q  |          |         |      V  |
   3+ 0       3.6101      9.77  |     Q    |          |         |      V  |
   3+ 5       3.6708      8.82  |    Q     |          |         |       V |
   3+10       3.7215      7.36  |   Q      |          |         |        V|
   3+15       3.7531      4.59  |  Q       |          |         |        V|
   3+20       3.7720      2.74  |Q         |          |         |        V|
   3+25       3.7846      1.83  |Q         |          |         |        V|
   3+30       3.7925      1.15  Q          |          |         |        V|
   3+35       3.7977      0.76  Q          |          |         |        V|
   3+40       3.8011      0.48  Q          |          |         |        V|
   3+45       3.8032      0.30  Q          |          |         |        V|
   3+50       3.8045      0.19  Q          |          |         |        V|
   3+55       3.8054      0.14  Q          |          |         |        V|
   4+ 0       3.8061      0.10  Q          |          |         |        V|
   4+ 5       3.8065      0.07  Q          |          |         |        V|
   4+10       3.8068      0.05  Q          |          |         |        V|
   4+15       3.8070      0.02  Q          |          |         |        V|
   4+20       3.8071      0.01  Q          |          |         |        V|
-------------------------------------------------------------------------
```

- 100 Year 6 Hour Post-Development Unit Hydrograph – Area 'D'

```
        U n i t   H y d r o g r a p h   A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989-2012, Version 7.2

        Study date  10/11/16   File Name PRD10006.out


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'D' - 100 YEAR 6 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

        Storm Event Year = 100

        Antecedent Moisture Condition = 3

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 82.2       6.8          0.33     C     0.250     1.000    0.250
 82.2      13.7          0.67     D     0.200     1.000    0.200

Area-averaged adjusted loss rate Fm (In/Hr) =  0.217

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC3)           Yield Fr
     6.84   0.333         82.2      95.3       0.49     0.902

    13.70   0.667         82.2      95.3       0.49     0.902

Area-averaged catchment yield fraction, Y =  0.902
Area-averaged low loss fraction, Yb =  0.098
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.250 (hours)
Watershed area =      20.54(Ac.)
Catchment Lag time =   0.200 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 41.7502
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.217(In/Hr)
Average low loss rate fraction (Yb) = 0.098 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.520(In)
Computed peak 30-minute rainfall =  1.090(In)
Specified peak 1-hour rainfall =  1.450(In)
Computed peak 3-hour rainfall =  2.430(In)
Specified peak 6-hour rainfall =  3.360(In)
Specified peak 24-hour rainfall =  5.630(In)


Rainfall depth area reduction factors:
Using a total area of      20.54(Ac.) (Ref: fig. E-4)
```

```
5-minute factor = 0.999     Adjusted rainfall =  0.519(In)
30-minute factor = 0.999    Adjusted rainfall =  1.089(In)
1-hour factor = 0.999       Adjusted rainfall =  1.449(In)
3-hour factor = 1.000       Adjusted rainfall =  2.430(In)
6-hour factor = 1.000       Adjusted rainfall =  3.360(In)
24-hour factor = 1.000 Adjusted rainfall =  5.630(In)
--------------------------------------------------------------------

                     U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------
               (K =       248.41 (CFS))

  1                3.324                   8.257
  2               16.175                  31.922
  3               49.902                  83.780
  4               70.442                  51.022
  5               80.093                  23.973
  6               86.479                  15.865
  7               90.995                  11.218
  8               94.213                   7.994
  9               96.370                   5.359
 10               97.747                   3.419
 11               98.358                   1.519
 12               98.801                   1.100
 13               99.131                   0.820
 14               99.410                   0.693
 15               99.710                   0.745
 16               99.881                   0.424
 17              100.000                   0.296
--------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.5195              0.5195
  2              0.6917              0.1722
  3              0.8178              0.1261
  4              0.9210              0.1032
  5              1.0100              0.0889
  6              1.0890              0.0790
  7              1.1603              0.0714
  8              1.2259              0.0656
  9              1.2868              0.0609
 10              1.3438              0.0570
 11              1.3976              0.0538
 12              1.4486              0.0510
 13              1.5042              0.0556
 14              1.5576              0.0534
 15              1.6091              0.0514
 16              1.6587              0.0496
 17              1.7067              0.0480
 18              1.7533              0.0465
 19              1.7984              0.0452
 20              1.8424              0.0440
 21              1.8852              0.0428
 22              1.9269              0.0417
 23              1.9677              0.0407
 24              2.0075              0.0398
 25              2.0465              0.0390
 26              2.0846              0.0381
 27              2.1220              0.0374
 28              2.1586              0.0366
 29              2.1946              0.0360
 30              2.2299              0.0353
 31              2.2646              0.0347
 32              2.2987              0.0341
 33              2.3322              0.0335
 34              2.3652              0.0330
 35              2.3977              0.0325
```

36	2.4297	0.0320
37	2.4610	0.0313
38	2.4919	0.0309
39	2.5224	0.0305
40	2.5524	0.0300
41	2.5820	0.0296
42	2.6113	0.0293
43	2.6402	0.0289
44	2.6687	0.0285
45	2.6969	0.0282
46	2.7248	0.0279
47	2.7523	0.0275
48	2.7795	0.0272
49	2.8065	0.0269
50	2.8331	0.0266
51	2.8595	0.0264
52	2.8855	0.0261
53	2.9114	0.0258
54	2.9369	0.0256
55	2.9622	0.0253
56	2.9873	0.0251
57	3.0121	0.0248
58	3.0367	0.0246
59	3.0611	0.0244
60	3.0852	0.0242
61	3.1092	0.0239
62	3.1329	0.0237
63	3.1564	0.0235
64	3.1798	0.0233
65	3.2029	0.0231
66	3.2258	0.0229
67	3.2486	0.0228
68	3.2712	0.0226
69	3.2936	0.0224
70	3.3158	0.0222
71	3.3379	0.0221
72	3.3598	0.0219

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0219	0.0021	0.0198
2	0.0221	0.0022	0.0199
3	0.0224	0.0022	0.0202
4	0.0226	0.0022	0.0204
5	0.0229	0.0022	0.0207
6	0.0231	0.0023	0.0209
7	0.0235	0.0023	0.0212
8	0.0237	0.0023	0.0214
9	0.0242	0.0024	0.0218
10	0.0244	0.0024	0.0220
11	0.0248	0.0024	0.0224
12	0.0251	0.0024	0.0226
13	0.0256	0.0025	0.0231
14	0.0258	0.0025	0.0233
15	0.0264	0.0026	0.0238
16	0.0266	0.0026	0.0240
17	0.0272	0.0027	0.0246
18	0.0275	0.0027	0.0249
19	0.0282	0.0027	0.0254
20	0.0285	0.0028	0.0258
21	0.0293	0.0029	0.0264
22	0.0296	0.0029	0.0267
23	0.0305	0.0030	0.0275
24	0.0309	0.0030	0.0279
25	0.0320	0.0031	0.0289
26	0.0325	0.0032	0.0293
27	0.0335	0.0033	0.0303
28	0.0341	0.0033	0.0308
29	0.0353	0.0034	0.0319

```
 30              0.0360          0.0035              0.0324
 31              0.0374          0.0036              0.0337
 32              0.0381          0.0037              0.0344
 33              0.0398          0.0039              0.0359
 34              0.0407          0.0040              0.0368
 35              0.0428          0.0042              0.0386
 36              0.0440          0.0043              0.0397
 37              0.0465          0.0045              0.0420
 38              0.0480          0.0047              0.0433
 39              0.0514          0.0050              0.0464
 40              0.0534          0.0052              0.0482
 41              0.0510          0.0050              0.0460
 42              0.0538          0.0052              0.0485
 43              0.0609          0.0059              0.0550
 44              0.0656          0.0064              0.0592
 45              0.0790          0.0077              0.0713
 46              0.0889          0.0087              0.0803
 47              0.1261          0.0123              0.1138
 48              0.1722          0.0168              0.1554
 49              0.5195          0.0181              0.5014
 50              0.1032          0.0101              0.0931
 51              0.0714          0.0070              0.0644
 52              0.0570          0.0056              0.0515
 53              0.0556          0.0054              0.0502
 54              0.0496          0.0048              0.0448
 55              0.0452          0.0044              0.0408
 56              0.0417          0.0041              0.0377
 57              0.0390          0.0038              0.0352
 58              0.0366          0.0036              0.0331
 59              0.0347          0.0034              0.0313
 60              0.0330          0.0032              0.0298
 61              0.0313          0.0031              0.0283
 62              0.0300          0.0029              0.0271
 63              0.0289          0.0028              0.0261
 64              0.0279          0.0027              0.0251
 65              0.0269          0.0026              0.0243
 66              0.0261          0.0025              0.0235
 67              0.0253          0.0025              0.0228
 68              0.0246          0.0024              0.0222
 69              0.0239          0.0023              0.0216
 70              0.0233          0.0023              0.0211
 71              0.0228          0.0022              0.0205
 72              0.0222          0.0022              0.0201
-------------------------------------------------------------------------
-------------------------------------------------------------------------
Total soil rain loss =      0.30(In)
Total effective rainfall =      3.06(In)
Peak flow rate in flood hydrograph =     59.43(CFS)
-------------------------------------------------------------------------
+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                    6 - H O U R    S T O R M
                R u n o f f      H y d r o g r a p h
-------------------------------------------------------------------------
            Hydrograph in   5   Minute intervals ((CFS))

-------------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0       15.0      30.0      45.0      60.0
-------------------------------------------------------------------------
  0+ 5       0.0011      0.16  Q         |         |         |         |
  0+10       0.0066      0.80  Q         |         |         |         |
  0+15       0.0235      2.46  VQ        |         |         |         |
  0+20       0.0476      3.49  V Q       |         |         |         |
  0+25       0.0752      4.01  V Q       |         |         |         |
  0+30       0.1052      4.36  V Q       |         |         |         |
  0+35       0.1372      4.64  |V Q      |         |         |         |
  0+40       0.1706      4.85  |V Q      |         |         |         |
  0+45       0.2051      5.02  |V Q      |         |         |         |
  0+50       0.2406      5.15  |V Q      |         |         |         |
  0+55       0.2767      5.25  | VQ      |         |         |         |
  1+ 0       0.3135      5.34  | VQ      |         |         |         |
  1+ 5       0.3509      5.43  | VQ      |         |         |         |
```

```
1+10       0.3889      5.52  | VQ      |         |         |         |
1+15       0.4275      5.61  |  Q      |         |         |         |
1+20       0.4668      5.70  |  Q      |         |         |         |
1+25       0.5067      5.80  |  Q      |         |         |         |
1+30       0.5472      5.88  |  QV     |         |         |         |
1+35       0.5884      5.98  |  QV     |         |         |         |
1+40       0.6303      6.08  |   Q     |         |         |         |
1+45       0.6729      6.19  |   QV    |         |         |         |
1+50       0.7162      6.29  |   QV    |         |         |         |
1+55       0.7604      6.41  |   QV    |         |         |         |
2+ 0       0.8053      6.53  |   Q V   |         |         |         |
2+ 5       0.8512      6.66  |   Q V   |         |         |         |
2+10       0.8981      6.80  |   Q V   |         |         |         |
2+15       0.9460      6.97  |   Q  V  |         |         |         |
2+20       0.9951      7.13  |   Q  V  |         |         |         |
2+25       1.0454      7.30  |   Q  V  |         |         |         |
2+30       1.0969      7.47  |   Q   V |         |         |         |
2+35       1.1497      7.67  |    Q  V |         |         |         |
2+40       1.2039      7.87  |    Q   V|         |         |         |
2+45       1.2597      8.10  |    Q   V|         |         |         |
2+50       1.3171      8.33  |    Q    V         |         |         |
2+55       1.3763      8.60  |    Q    V         |         |         |
3+ 0       1.4375      8.88  |    Q    V         |         |         |
3+ 5       1.5009      9.21  |     Q   |V        |         |         |
3+10       1.5666      9.55  |     Q   |V        |         |         |
3+15       1.6352      9.96  |     Q   | V       |         |         |
3+20       1.7068     10.39  |     Q   |  V      |         |         |
3+25       1.7816     10.87  |      Q  |  V      |         |         |
3+30       1.8590     11.24  |      Q  |   V     |         |         |
3+35       1.9377     11.43  |      Q  |   V     |         |         |
3+40       2.0197     11.91  |      Q  |    V    |         |         |
3+45       2.1083     12.86  |       Q |     V   |         |         |
3+50       2.2053     14.09  |        Q|     V   |         |         |
3+55       2.3162     16.10  |         Q      V  |         |         |
4+ 0       2.4478     19.12  |          | Q     V |         |         |
4+ 5       2.6340     27.03  |          |       Q V         |         |
4+10       2.9124     40.43  |          |          | V   Q  |         |
4+15       3.3217     59.43  |          |          |    V   |        Q|
4+20       3.6222     43.63  |          |          |      V Q|         |
4+25       3.8252     29.47  |          |        Q|        V|         |
4+30       3.9862     23.38  |          |    Q    |         V         |
4+35       4.1218     19.69  |          |  Q      |          |V       |
4+40       4.2376     16.81  |          |Q        |          | V      |
4+45       4.3363     14.34  |        Q|         |          |  V      |
4+50       4.4215     12.37  |       Q |         |          |  V      |
4+55       4.4951     10.68  |      Q  |         |          |   V     |
5+ 0       4.5623      9.77  |     Q   |         |          |   V     |
5+ 5       4.6247      9.05  |     Q   |         |          |    V    |
5+10       4.6832      8.49  |    Q    |         |          |    V    |
5+15       4.7385      8.03  |    Q    |         |          |     V   |
5+20       4.7901      7.50  |   Q     |         |          |     V   |
5+25       4.8389      7.08  |   Q     |         |          |     V   |
5+30       4.8847      6.65  |   Q     |         |          |      V  |
5+35       4.9287      6.39  |   Q     |         |          |      V  |
5+40       4.9711      6.16  |   Q     |         |          |      V  |
5+45       5.0120      5.95  |  Q      |         |          |       V |
5+50       5.0517      5.76  |  Q      |         |          |       V |
5+55       5.0902      5.59  |  Q      |         |          |       V |
6+ 0       5.1276      5.43  |  Q      |         |          |        V|
6+ 5       5.1629      5.13  |  Q      |         |          |        V|
6+10       5.1930      4.37  | Q       |         |          |        V|
6+15       5.2111      2.62  |Q        |         |          |        V|
6+20       5.2218      1.55  |Q        |         |          |        V|
6+25       5.2290      1.05  Q         |         |          |        V|
6+30       5.2339      0.71  Q         |         |          |        V|
6+35       5.2371      0.47  Q         |         |          |        V|
6+40       5.2392      0.30  Q         |         |          |        V|
6+45       5.2405      0.19  Q         |         |          |        V|
6+50       5.2413      0.12  Q         |         |          |        V|
6+55       5.2419      0.09  Q         |         |          |        V|
7+ 0       5.2424      0.06  Q         |         |          |        V|
```

```
    7+ 5       5.2427      0.04  Q         |         |         |        V|
    7+10       5.2429      0.03  Q         |         |         |        V|
    7+15       5.2430      0.01  Q         |         |         |        V|
    7+20       5.2430      0.01  Q         |         |         |         V
-------------------------------------------------------------------------
```

- 100 Year 12 Hour Post-Development Unit Hydrograph – Area 'D'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/11/16   File Name PRD10012.out


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'D' - 100 YEAR 12 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 100

       Antecedent Moisture Condition = 3

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 82.2       6.8          0.33     C     0.250     1.000    0.250
 82.2      13.7          0.67     D     0.200     1.000    0.200

Area-averaged adjusted loss rate Fm (In/Hr) =  0.217

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC3)           Yield Fr
     6.84   0.333         82.2      95.3       0.49     0.902

    13.70   0.667         82.2      95.3       0.49     0.902

Area-averaged catchment yield fraction, Y =  0.902
Area-averaged low loss fraction, Yb =  0.098
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.250 (hours)
Watershed area =      20.54(Ac.)
Catchment Lag time =   0.200 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 41.7502
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.217(In/Hr)
Average low loss rate fraction (Yb) = 0.098 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.520(In)
Computed peak 30-minute rainfall =  1.090(In)
Specified peak 1-hour rainfall =  1.450(In)
Computed peak 3-hour rainfall =  2.430(In)
Specified peak 6-hour rainfall =  3.360(In)
Specified peak 24-hour rainfall =  5.630(In)


Rainfall depth area reduction factors:
Using a total area of      20.54(Ac.) (Ref: fig. E-4)
```

```
5-minute factor = 0.999     Adjusted rainfall =  0.519(In)
30-minute factor = 0.999    Adjusted rainfall =  1.089(In)
1-hour factor = 0.999       Adjusted rainfall =  1.449(In)
3-hour factor = 1.000       Adjusted rainfall =  2.430(In)
6-hour factor = 1.000       Adjusted rainfall =  3.360(In)
24-hour factor = 1.000 Adjusted rainfall =  5.630(In)
--------------------------------------------------------------------

                     U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------
               (K =       248.41 (CFS))

  1                3.324                   8.257
  2               16.175                  31.922
  3               49.902                  83.780
  4               70.442                  51.022
  5               80.093                  23.973
  6               86.479                  15.865
  7               90.995                  11.218
  8               94.213                   7.994
  9               96.370                   5.359
 10               97.747                   3.419
 11               98.358                   1.519
 12               98.801                   1.100
 13               99.131                   0.820
 14               99.410                   0.693
 15               99.710                   0.745
 16               99.881                   0.424
 17              100.000                   0.296
--------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.5195              0.5195
  2              0.6917              0.1722
  3              0.8178              0.1261
  4              0.9210              0.1032
  5              1.0100              0.0889
  6              1.0890              0.0790
  7              1.1603              0.0714
  8              1.2259              0.0656
  9              1.2868              0.0609
 10              1.3438              0.0570
 11              1.3976              0.0538
 12              1.4486              0.0510
 13              1.5042              0.0556
 14              1.5576              0.0534
 15              1.6091              0.0514
 16              1.6587              0.0496
 17              1.7067              0.0480
 18              1.7533              0.0465
 19              1.7984              0.0452
 20              1.8424              0.0440
 21              1.8852              0.0428
 22              1.9269              0.0417
 23              1.9677              0.0407
 24              2.0075              0.0398
 25              2.0465              0.0390
 26              2.0846              0.0381
 27              2.1220              0.0374
 28              2.1586              0.0366
 29              2.1946              0.0360
 30              2.2299              0.0353
 31              2.2646              0.0347
 32              2.2987              0.0341
 33              2.3322              0.0335
 34              2.3652              0.0330
 35              2.3977              0.0325
```

36	2.4297	0.0320
37	2.4610	0.0313
38	2.4919	0.0309
39	2.5224	0.0305
40	2.5524	0.0300
41	2.5820	0.0296
42	2.6113	0.0293
43	2.6402	0.0289
44	2.6687	0.0285
45	2.6969	0.0282
46	2.7248	0.0279
47	2.7523	0.0275
48	2.7795	0.0272
49	2.8065	0.0269
50	2.8331	0.0266
51	2.8595	0.0264
52	2.8855	0.0261
53	2.9114	0.0258
54	2.9369	0.0256
55	2.9622	0.0253
56	2.9873	0.0251
57	3.0121	0.0248
58	3.0367	0.0246
59	3.0611	0.0244
60	3.0852	0.0242
61	3.1092	0.0239
62	3.1329	0.0237
63	3.1564	0.0235
64	3.1798	0.0233
65	3.2029	0.0231
66	3.2258	0.0229
67	3.2486	0.0228
68	3.2712	0.0226
69	3.2936	0.0224
70	3.3158	0.0222
71	3.3379	0.0221
72	3.3598	0.0219
73	3.3771	0.0173
74	3.3942	0.0172
75	3.4112	0.0170
76	3.4281	0.0169
77	3.4448	0.0167
78	3.4614	0.0166
79	3.4779	0.0165
80	3.4942	0.0163
81	3.5104	0.0162
82	3.5265	0.0161
83	3.5424	0.0160
84	3.5583	0.0158
85	3.5740	0.0157
86	3.5896	0.0156
87	3.6051	0.0155
88	3.6205	0.0154
89	3.6357	0.0153
90	3.6509	0.0152
91	3.6659	0.0151
92	3.6809	0.0149
93	3.6957	0.0148
94	3.7105	0.0147
95	3.7251	0.0146
96	3.7397	0.0146
97	3.7541	0.0145
98	3.7685	0.0144
99	3.7828	0.0143
100	3.7970	0.0142
101	3.8111	0.0141
102	3.8251	0.0140
103	3.8390	0.0139
104	3.8528	0.0138
105	3.8666	0.0138
106	3.8802	0.0137

107	3.8938	0.0136
108	3.9073	0.0135
109	3.9208	0.0134
110	3.9341	0.0134
111	3.9474	0.0133
112	3.9606	0.0132
113	3.9737	0.0131
114	3.9868	0.0131
115	3.9998	0.0130
116	4.0127	0.0129
117	4.0256	0.0128
118	4.0383	0.0128
119	4.0510	0.0127
120	4.0637	0.0126
121	4.0763	0.0126
122	4.0888	0.0125
123	4.1012	0.0124
124	4.1136	0.0124
125	4.1259	0.0123
126	4.1382	0.0123
127	4.1504	0.0122
128	4.1625	0.0121
129	4.1746	0.0121
130	4.1866	0.0120
131	4.1986	0.0120
132	4.2105	0.0119
133	4.2223	0.0118
134	4.2341	0.0118
135	4.2459	0.0117
136	4.2576	0.0117
137	4.2692	0.0116
138	4.2808	0.0116
139	4.2923	0.0115
140	4.3038	0.0115
141	4.3152	0.0114
142	4.3266	0.0114
143	4.3379	0.0113
144	4.3491	0.0113

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0113	0.0011	0.0102
2	0.0113	0.0011	0.0102
3	0.0114	0.0011	0.0103
4	0.0115	0.0011	0.0104
5	0.0116	0.0011	0.0104
6	0.0116	0.0011	0.0105
7	0.0117	0.0011	0.0106
8	0.0118	0.0012	0.0106
9	0.0119	0.0012	0.0107
10	0.0120	0.0012	0.0108
11	0.0121	0.0012	0.0109
12	0.0121	0.0012	0.0110
13	0.0123	0.0012	0.0111
14	0.0123	0.0012	0.0111
15	0.0124	0.0012	0.0112
16	0.0125	0.0012	0.0113
17	0.0126	0.0012	0.0114
18	0.0127	0.0012	0.0115
19	0.0128	0.0013	0.0116
20	0.0129	0.0013	0.0117
21	0.0131	0.0013	0.0118
22	0.0131	0.0013	0.0119
23	0.0133	0.0013	0.0120
24	0.0134	0.0013	0.0121
25	0.0135	0.0013	0.0122
26	0.0136	0.0013	0.0123
27	0.0138	0.0013	0.0124
28	0.0138	0.0013	0.0125

29	0.0140	0.0014	0.0126
30	0.0141	0.0014	0.0127
31	0.0143	0.0014	0.0129
32	0.0144	0.0014	0.0130
33	0.0146	0.0014	0.0131
34	0.0146	0.0014	0.0132
35	0.0148	0.0014	0.0134
36	0.0149	0.0015	0.0135
37	0.0152	0.0015	0.0137
38	0.0153	0.0015	0.0138
39	0.0155	0.0015	0.0140
40	0.0156	0.0015	0.0141
41	0.0158	0.0015	0.0143
42	0.0160	0.0016	0.0144
43	0.0162	0.0016	0.0146
44	0.0163	0.0016	0.0147
45	0.0166	0.0016	0.0150
46	0.0167	0.0016	0.0151
47	0.0170	0.0017	0.0153
48	0.0172	0.0017	0.0155
49	0.0219	0.0021	0.0198
50	0.0221	0.0022	0.0199
51	0.0224	0.0022	0.0202
52	0.0226	0.0022	0.0204
53	0.0229	0.0022	0.0207
54	0.0231	0.0023	0.0209
55	0.0235	0.0023	0.0212
56	0.0237	0.0023	0.0214
57	0.0242	0.0024	0.0218
58	0.0244	0.0024	0.0220
59	0.0248	0.0024	0.0224
60	0.0251	0.0024	0.0226
61	0.0256	0.0025	0.0231
62	0.0258	0.0025	0.0233
63	0.0264	0.0026	0.0238
64	0.0266	0.0026	0.0240
65	0.0272	0.0027	0.0246
66	0.0275	0.0027	0.0249
67	0.0282	0.0027	0.0254
68	0.0285	0.0028	0.0258
69	0.0293	0.0029	0.0264
70	0.0296	0.0029	0.0267
71	0.0305	0.0030	0.0275
72	0.0309	0.0030	0.0279
73	0.0320	0.0031	0.0289
74	0.0325	0.0032	0.0293
75	0.0335	0.0033	0.0303
76	0.0341	0.0033	0.0308
77	0.0353	0.0034	0.0319
78	0.0360	0.0035	0.0324
79	0.0374	0.0036	0.0337
80	0.0381	0.0037	0.0344
81	0.0398	0.0039	0.0359
82	0.0407	0.0040	0.0368
83	0.0428	0.0042	0.0386
84	0.0440	0.0043	0.0397
85	0.0465	0.0045	0.0420
86	0.0480	0.0047	0.0433
87	0.0514	0.0050	0.0464
88	0.0534	0.0052	0.0482
89	0.0510	0.0050	0.0460
90	0.0538	0.0052	0.0485
91	0.0609	0.0059	0.0550
92	0.0656	0.0064	0.0592
93	0.0790	0.0077	0.0713
94	0.0889	0.0087	0.0803
95	0.1261	0.0123	0.1138
96	0.1722	0.0168	0.1554
97	0.5195	0.0181	0.5014
98	0.1032	0.0101	0.0931
99	0.0714	0.0070	0.0644

```
      100              0.0570          0.0056              0.0515
      101              0.0556          0.0054              0.0502
      102              0.0496          0.0048              0.0448
      103              0.0452          0.0044              0.0408
      104              0.0417          0.0041              0.0377
      105              0.0390          0.0038              0.0352
      106              0.0366          0.0036              0.0331
      107              0.0347          0.0034              0.0313
      108              0.0330          0.0032              0.0298
      109              0.0313          0.0031              0.0283
      110              0.0300          0.0029              0.0271
      111              0.0289          0.0028              0.0261
      112              0.0279          0.0027              0.0251
      113              0.0269          0.0026              0.0243
      114              0.0261          0.0025              0.0235
      115              0.0253          0.0025              0.0228
      116              0.0246          0.0024              0.0222
      117              0.0239          0.0023              0.0216
      118              0.0233          0.0023              0.0211
      119              0.0228          0.0022              0.0205
      120              0.0222          0.0022              0.0201
      121              0.0173          0.0017              0.0156
      122              0.0169          0.0016              0.0152
      123              0.0165          0.0016              0.0149
      124              0.0161          0.0016              0.0145
      125              0.0157          0.0015              0.0142
      126              0.0154          0.0015              0.0139
      127              0.0151          0.0015              0.0136
      128              0.0147          0.0014              0.0133
      129              0.0145          0.0014              0.0130
      130              0.0142          0.0014              0.0128
      131              0.0139          0.0014              0.0126
      132              0.0137          0.0013              0.0123
      133              0.0134          0.0013              0.0121
      134              0.0132          0.0013              0.0119
      135              0.0130          0.0013              0.0117
      136              0.0128          0.0012              0.0115
      137              0.0126          0.0012              0.0114
      138              0.0124          0.0012              0.0112
      139              0.0122          0.0012              0.0110
      140              0.0120          0.0012              0.0108
      141              0.0118          0.0012              0.0107
      142              0.0117          0.0011              0.0105
      143              0.0115          0.0011              0.0104
      144              0.0114          0.0011              0.0103
      ------------------------------------------------------------------
      ------------------------------------------------------------------
      Total soil rain loss =      0.39(In)
      Total effective rainfall =      3.96(In)
      Peak flow rate in flood hydrograph =     59.43(CFS)
      ------------------------------------------------------------------
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                        12 - H O U R    S T O R M
                    R u n o f f      H y d r o g r a p h
      ------------------------------------------------------------------
                 Hydrograph in   5   Minute intervals ((CFS))

      ------------------------------------------------------------------
 Time(h+m) Volume Ac.Ft   Q(CFS)  0       15.0      30.0      45.0      60.0
 ------------------------------------------------------------------------
   0+ 5       0.0006      0.08  Q         |         |         |         |
   0+10       0.0034      0.41  Q         |         |         |         |
   0+15       0.0121      1.26  Q         |         |         |         |
   0+20       0.0244      1.79  VQ        |         |         |         |
   0+25       0.0385      2.05  VQ        |         |         |         |
   0+30       0.0538      2.22  VQ        |         |         |         |
   0+35       0.0700      2.35  VQ        |         |         |         |
   0+40       0.0868      2.45  VQ        |         |         |         |
   0+45       0.1042      2.52  VQ        |         |         |         |
   0+50       0.1219      2.57  VQ        |         |         |         |
   0+55       0.1398      2.60  VQ        |         |         |         |
```

```
1+ 0       0.1579      2.63  VQ        |         |         |         |
1+ 5       0.1763      2.66  |Q        |         |         |         |
1+10       0.1948      2.69  |Q        |         |         |         |
1+15       0.2135      2.71  |Q        |         |         |         |
1+20       0.2323      2.74  |Q        |         |         |         |
1+25       0.2514      2.76  |Q        |         |         |         |
1+30       0.2705      2.78  |Q        |         |         |         |
1+35       0.2898      2.81  |Q        |         |         |         |
1+40       0.3093      2.83  |Q        |         |         |         |
1+45       0.3289      2.85  |Q        |         |         |         |
1+50       0.3487      2.87  |QV       |         |         |         |
1+55       0.3687      2.90  |QV       |         |         |         |
2+ 0       0.3888      2.92  |QV       |         |         |         |
2+ 5       0.4091      2.94  |QV       |         |         |         |
2+10       0.4295      2.97  |QV       |         |         |         |
2+15       0.4501      3.00  |QV       |         |         |         |
2+20       0.4709      3.02  | Q       |         |         |         |
2+25       0.4919      3.05  | Q       |         |         |         |
2+30       0.5131      3.07  | QV      |         |         |         |
2+35       0.5345      3.10  | QV      |         |         |         |
2+40       0.5561      3.13  | QV      |         |         |         |
2+45       0.5778      3.16  | QV      |         |         |         |
2+50       0.5998      3.19  | QV      |         |         |         |
2+55       0.6220      3.22  | QV      |         |         |         |
3+ 0       0.6444      3.25  | QV      |         |         |         |
3+ 5       0.6670      3.29  | QV      |         |         |         |
3+10       0.6899      3.32  | Q V     |         |         |         |
3+15       0.7130      3.35  | Q V     |         |         |         |
3+20       0.7363      3.39  | Q V     |         |         |         |
3+25       0.7599      3.42  | Q V     |         |         |         |
3+30       0.7837      3.46  | Q V     |         |         |         |
3+35       0.8078      3.50  | Q V     |         |         |         |
3+40       0.8322      3.54  | Q V     |         |         |         |
3+45       0.8568      3.58  | Q  V    |         |         |         |
3+50       0.8817      3.62  | Q  V    |         |         |         |
3+55       0.9070      3.66  | Q  V    |         |         |         |
4+ 0       0.9325      3.71  | Q  V    |         |         |         |
4+ 5       0.9586      3.79  | Q  V    |         |         |         |
4+10       0.9859      3.96  | Q  V    |         |         |         |
4+15       1.0158      4.35  | Q   V   |         |         |         |
4+20       1.0475      4.60  |  Q  V   |         |         |         |
4+25       1.0802      4.75  |  Q  V   |         |         |         |
4+30       1.1138      4.87  |  Q  V   |         |         |         |
4+35       1.1481      4.98  |  Q  V   |         |         |         |
4+40       1.1830      5.07  |  Q  V   |         |         |         |
4+45       1.2185      5.16  |  Q   V  |         |         |         |
4+50       1.2545      5.23  |  Q   V  |         |         |         |
4+55       1.2911      5.31  |  Q   V  |         |         |         |
5+ 0       1.3282      5.38  |  Q   V  |         |         |         |
5+ 5       1.3658      5.46  |  Q    V |         |         |         |
5+10       1.4039      5.54  |  Q    V |         |         |         |
5+15       1.4427      5.62  |  Q    V |         |         |         |
5+20       1.4819      5.71  |  Q    V |         |         |         |
5+25       1.5219      5.80  |  Q    V |         |         |         |
5+30       1.5624      5.88  |  Q     V|         |         |         |
5+35       1.6036      5.98  |  Q     V|         |         |         |
5+40       1.6454      6.08  |   Q    V|         |         |         |
5+45       1.6880      6.19  |   Q    V|         |         |         |
5+50       1.7314      6.29  |   Q     V         |         |         |
5+55       1.7755      6.41  |   Q     V         |         |         |
6+ 0       1.8205      6.53  |   Q     V         |         |         |
6+ 5       1.8664      6.66  |   Q     |V        |         |         |
6+10       1.9132      6.80  |   Q     |V        |         |         |
6+15       1.9612      6.97  |   Q     |V        |         |         |
6+20       2.0103      7.13  |   Q     |V        |         |         |
6+25       2.0606      7.30  |   Q     | V       |         |         |
6+30       2.1120      7.47  |   Q     | V       |         |         |
6+35       2.1649      7.67  |    Q    | V       |         |         |
6+40       2.2191      7.87  |    Q    |  V      |         |         |
6+45       2.2749      8.10  |    Q    |  V      |         |         |
6+50       2.3322      8.33  |    Q    |  V      |         |         |
```

```
 6+55      2.3915      8.60  |    Q    |   V     |         |         |
 7+ 0      2.4526      8.88  |    Q    |   V     |         |         |
 7+ 5      2.5161      9.21  |     Q   |   V     |         |         |
 7+10      2.5818      9.55  |     Q   |    V    |         |         |
 7+15      2.6504      9.96  |     Q   |    V    |         |         |
 7+20      2.7219     10.39  |     Q   |     V   |         |         |
 7+25      2.7968     10.87  |      Q  |     V   |         |         |
 7+30      2.8742     11.24  |      Q  |     V   |         |         |
 7+35      2.9529     11.43  |      Q  |      V  |         |         |
 7+40      3.0349     11.91  |      Q  |      V  |         |         |
 7+45      3.1234     12.86  |       Q |       V |         |         |
 7+50      3.2205     14.09  |        Q|        V|         |         |
 7+55      3.3313     16.10  |         Q        V|         |         |
 8+ 0      3.4630     19.12  |          | Q       V        |         |
 8+ 5      3.6492     27.03  |          |       Q |V        |         |
 8+10      3.9276     40.43  |          |         |  V  Q   |         |
 8+15      4.3369     59.43  |          |         |    V    |        Q|
 8+20      4.6374     43.63  |          |         |      V Q|         |
 8+25      4.8403     29.47  |          |        Q|       V |         |
 8+30      5.0013     23.38  |          |    Q    |        V|         |
 8+35      5.1370     19.69  |          |  Q      |         V         |
 8+40      5.2528     16.81  |          |Q        |         |V        |
 8+45      5.3515     14.34  |        Q|         |         |V        |
 8+50      5.4367     12.37  |       Q |         |         | V       |
 8+55      5.5102     10.68  |      Q  |         |         | V       |
 9+ 0      5.5775      9.77  |     Q   |         |         | V       |
 9+ 5      5.6399      9.05  |     Q   |         |         |  V      |
 9+10      5.6983      8.49  |    Q    |         |         |  V      |
 9+15      5.7537      8.03  |    Q    |         |         |  V      |
 9+20      5.8053      7.50  |   Q     |         |         |   V     |
 9+25      5.8540      7.08  |   Q     |         |         |   V     |
 9+30      5.8999      6.65  |   Q     |         |         |   V     |
 9+35      5.9439      6.39  |   Q     |         |         |    V    |
 9+40      5.9862      6.16  |   Q     |         |         |    V    |
 9+45      6.0272      5.95  |  Q      |         |         |    V    |
 9+50      6.0669      5.76  |  Q      |         |         |    V    |
 9+55      6.1054      5.59  |  Q      |         |         |     V   |
10+ 0      6.1428      5.43  |  Q      |         |         |     V   |
10+ 5      6.1790      5.26  |  Q      |         |         |     V   |
10+10      6.2134      5.00  |  Q      |         |         |     V   |
10+15      6.2446      4.54  |  Q      |         |         |     V   |
10+20      6.2737      4.22  | Q       |         |         |      V  |
10+25      6.3014      4.02  | Q       |         |         |      V  |
10+30      6.3280      3.86  | Q       |         |         |      V  |
10+35      6.3537      3.73  | Q       |         |         |      V  |
10+40      6.3785      3.61  | Q       |         |         |      V  |
10+45      6.4027      3.51  | Q       |         |         |      V  |
10+50      6.4263      3.42  | Q       |         |         |      V  |
10+55      6.4494      3.35  | Q       |         |         |       V |
11+ 0      6.4719      3.28  | Q       |         |         |       V |
11+ 5      6.4940      3.21  | Q       |         |         |       V |
11+10      6.5157      3.15  | Q       |         |         |       V |
11+15      6.5369      3.09  | Q       |         |         |       V |
11+20      6.5578      3.03  | Q       |         |         |       V |
11+25      6.5783      2.98  |Q        |         |         |       V |
11+30      6.5985      2.93  |Q        |         |         |       V |
11+35      6.6183      2.88  |Q        |         |         |        V|
11+40      6.6378      2.83  |Q        |         |         |        V|
11+45      6.6570      2.79  |Q        |         |         |        V|
11+50      6.6759      2.75  |Q        |         |         |        V|
11+55      6.6946      2.71  |Q        |         |         |        V|
12+ 0      6.7129      2.67  |Q        |         |         |        V|
12+ 5      6.7305      2.55  |Q        |         |         |        V|
12+10      6.7455      2.19  |Q        |         |         |        V|
12+15      6.7546      1.31  Q         |         |         |        V|
12+20      6.7599      0.78  Q         |         |         |        V|
12+25      6.7635      0.52  Q         |         |         |        V|
12+30      6.7659      0.35  Q         |         |         |        V|
12+35      6.7676      0.24  Q         |         |         |        V|
12+40      6.7686      0.15  Q         |         |         |        V|
12+45      6.7693      0.10  Q         |         |         |        V|
```

```
   12+50       6.7697      0.06  Q         |         |         |        V|
   12+55       6.7700      0.04  Q         |         |         |        V|
   13+ 0       6.7702      0.03  Q         |         |         |        V|
   13+ 5       6.7703      0.02  Q         |         |         |        V|
   13+10       6.7704      0.02  Q         |         |         |        V|
   13+15       6.7705      0.01  Q         |         |         |        V|
   13+20       6.7705      0.00  Q         |         |         |        V|
-------------------------------------------------------------------------
```

- 100 Year 24 Hour Post-Development Unit Hydrograph – Area 'D'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/11/16   File Name PRD10024.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'D' - 100 YEAR 24 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 100

       Antecedent Moisture Condition = 3

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 82.2       6.8          0.33     C     0.250     1.000    0.250
 82.2      13.7          0.67     D     0.200     1.000    0.200

Area-averaged adjusted loss rate Fm (In/Hr) =  0.217

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC3)           Yield Fr
     6.84   0.333         82.2      95.3       0.49     0.902

    13.70   0.667         82.2      95.3       0.49     0.902

Area-averaged catchment yield fraction, Y =  0.902
Area-averaged low loss fraction, Yb =  0.098
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.250 (hours)
Watershed area =      20.54(Ac.)
Catchment Lag time =   0.200 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 41.7502
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.217(In/Hr)
Average low loss rate fraction (Yb) = 0.098 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.520(In)
Computed peak 30-minute rainfall =  1.090(In)
Specified peak 1-hour rainfall =  1.450(In)
Computed peak 3-hour rainfall =  2.430(In)
Specified peak 6-hour rainfall =  3.360(In)
Specified peak 24-hour rainfall =  5.630(In)


Rainfall depth area reduction factors:
Using a total area of      20.54(Ac.) (Ref: fig. E-4)
```

```
5-minute factor = 0.999     Adjusted rainfall =  0.519(In)
30-minute factor = 0.999    Adjusted rainfall =  1.089(In)
1-hour factor = 0.999       Adjusted rainfall =  1.449(In)
3-hour factor = 1.000       Adjusted rainfall =  2.430(In)
6-hour factor = 1.000       Adjusted rainfall =  3.360(In)
24-hour factor = 1.000 Adjusted rainfall =  5.630(In)
--------------------------------------------------------------------

                     U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------
               (K =       248.41 (CFS))

  1                3.324                   8.257
  2               16.175                  31.922
  3               49.902                  83.780
  4               70.442                  51.022
  5               80.093                  23.973
  6               86.479                  15.865
  7               90.995                  11.218
  8               94.213                   7.994
  9               96.370                   5.359
 10               97.747                   3.419
 11               98.358                   1.519
 12               98.801                   1.100
 13               99.131                   0.820
 14               99.410                   0.693
 15               99.710                   0.745
 16               99.881                   0.424
 17              100.000                   0.296
--------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.5195              0.5195
  2              0.6917              0.1722
  3              0.8178              0.1261
  4              0.9210              0.1032
  5              1.0100              0.0889
  6              1.0890              0.0790
  7              1.1603              0.0714
  8              1.2259              0.0656
  9              1.2868              0.0609
 10              1.3438              0.0570
 11              1.3976              0.0538
 12              1.4486              0.0510
 13              1.5042              0.0556
 14              1.5576              0.0534
 15              1.6091              0.0514
 16              1.6587              0.0496
 17              1.7067              0.0480
 18              1.7533              0.0465
 19              1.7984              0.0452
 20              1.8424              0.0440
 21              1.8852              0.0428
 22              1.9269              0.0417
 23              1.9677              0.0407
 24              2.0075              0.0398
 25              2.0465              0.0390
 26              2.0846              0.0381
 27              2.1220              0.0374
 28              2.1586              0.0366
 29              2.1946              0.0360
 30              2.2299              0.0353
 31              2.2646              0.0347
 32              2.2987              0.0341
 33              2.3322              0.0335
 34              2.3652              0.0330
 35              2.3977              0.0325
```

36	2.4297	0.0320
37	2.4610	0.0313
38	2.4919	0.0309
39	2.5224	0.0305
40	2.5524	0.0300
41	2.5820	0.0296
42	2.6113	0.0293
43	2.6402	0.0289
44	2.6687	0.0285
45	2.6969	0.0282
46	2.7248	0.0279
47	2.7523	0.0275
48	2.7795	0.0272
49	2.8065	0.0269
50	2.8331	0.0266
51	2.8595	0.0264
52	2.8855	0.0261
53	2.9114	0.0258
54	2.9369	0.0256
55	2.9622	0.0253
56	2.9873	0.0251
57	3.0121	0.0248
58	3.0367	0.0246
59	3.0611	0.0244
60	3.0852	0.0242
61	3.1092	0.0239
62	3.1329	0.0237
63	3.1564	0.0235
64	3.1798	0.0233
65	3.2029	0.0231
66	3.2258	0.0229
67	3.2486	0.0228
68	3.2712	0.0226
69	3.2936	0.0224
70	3.3158	0.0222
71	3.3379	0.0221
72	3.3598	0.0219
73	3.3771	0.0173
74	3.3942	0.0172
75	3.4112	0.0170
76	3.4281	0.0169
77	3.4448	0.0167
78	3.4614	0.0166
79	3.4779	0.0165
80	3.4942	0.0163
81	3.5104	0.0162
82	3.5265	0.0161
83	3.5424	0.0160
84	3.5583	0.0158
85	3.5740	0.0157
86	3.5896	0.0156
87	3.6051	0.0155
88	3.6205	0.0154
89	3.6357	0.0153
90	3.6509	0.0152
91	3.6659	0.0151
92	3.6809	0.0149
93	3.6957	0.0148
94	3.7105	0.0147
95	3.7251	0.0146
96	3.7397	0.0146
97	3.7541	0.0145
98	3.7685	0.0144
99	3.7828	0.0143
100	3.7970	0.0142
101	3.8111	0.0141
102	3.8251	0.0140
103	3.8390	0.0139
104	3.8528	0.0138
105	3.8666	0.0138
106	3.8802	0.0137

107	3.8938	0.0136
108	3.9073	0.0135
109	3.9208	0.0134
110	3.9341	0.0134
111	3.9474	0.0133
112	3.9606	0.0132
113	3.9737	0.0131
114	3.9868	0.0131
115	3.9998	0.0130
116	4.0127	0.0129
117	4.0256	0.0128
118	4.0383	0.0128
119	4.0510	0.0127
120	4.0637	0.0126
121	4.0763	0.0126
122	4.0888	0.0125
123	4.1012	0.0124
124	4.1136	0.0124
125	4.1259	0.0123
126	4.1382	0.0123
127	4.1504	0.0122
128	4.1625	0.0121
129	4.1746	0.0121
130	4.1866	0.0120
131	4.1986	0.0120
132	4.2105	0.0119
133	4.2223	0.0118
134	4.2341	0.0118
135	4.2459	0.0117
136	4.2576	0.0117
137	4.2692	0.0116
138	4.2808	0.0116
139	4.2923	0.0115
140	4.3038	0.0115
141	4.3152	0.0114
142	4.3266	0.0114
143	4.3379	0.0113
144	4.3491	0.0113
145	4.3604	0.0112
146	4.3715	0.0112
147	4.3827	0.0111
148	4.3937	0.0111
149	4.4048	0.0110
150	4.4158	0.0110
151	4.4267	0.0109
152	4.4376	0.0109
153	4.4484	0.0108
154	4.4592	0.0108
155	4.4700	0.0108
156	4.4807	0.0107
157	4.4914	0.0107
158	4.5020	0.0106
159	4.5126	0.0106
160	4.5232	0.0105
161	4.5337	0.0105
162	4.5441	0.0105
163	4.5546	0.0104
164	4.5649	0.0104
165	4.5753	0.0103
166	4.5856	0.0103
167	4.5959	0.0103
168	4.6061	0.0102
169	4.6163	0.0102
170	4.6264	0.0102
171	4.6366	0.0101
172	4.6466	0.0101
173	4.6567	0.0100
174	4.6667	0.0100
175	4.6766	0.0100
176	4.6866	0.0099
177	4.6965	0.0099

178	4.7063	0.0099
179	4.7162	0.0098
180	4.7260	0.0098
181	4.7357	0.0098
182	4.7454	0.0097
183	4.7551	0.0097
184	4.7648	0.0097
185	4.7744	0.0096
186	4.7840	0.0096
187	4.7936	0.0096
188	4.8031	0.0095
189	4.8126	0.0095
190	4.8221	0.0095
191	4.8315	0.0094
192	4.8409	0.0094
193	4.8503	0.0094
194	4.8596	0.0093
195	4.8689	0.0093
196	4.8782	0.0093
197	4.8875	0.0093
198	4.8967	0.0092
199	4.9059	0.0092
200	4.9151	0.0092
201	4.9242	0.0091
202	4.9333	0.0091
203	4.9424	0.0091
204	4.9514	0.0091
205	4.9605	0.0090
206	4.9695	0.0090
207	4.9784	0.0090
208	4.9874	0.0089
209	4.9963	0.0089
210	5.0052	0.0089
211	5.0140	0.0089
212	5.0229	0.0088
213	5.0317	0.0088
214	5.0405	0.0088
215	5.0492	0.0088
216	5.0579	0.0087
217	5.0667	0.0087
218	5.0753	0.0087
219	5.0840	0.0087
220	5.0926	0.0086
221	5.1012	0.0086
222	5.1098	0.0086
223	5.1184	0.0086
224	5.1269	0.0085
225	5.1354	0.0085
226	5.1439	0.0085
227	5.1524	0.0085
228	5.1608	0.0084
229	5.1692	0.0084
230	5.1776	0.0084
231	5.1860	0.0084
232	5.1943	0.0083
233	5.2027	0.0083
234	5.2110	0.0083
235	5.2193	0.0083
236	5.2275	0.0083
237	5.2357	0.0082
238	5.2440	0.0082
239	5.2522	0.0082
240	5.2603	0.0082
241	5.2685	0.0082
242	5.2766	0.0081
243	5.2847	0.0081
244	5.2928	0.0081
245	5.3009	0.0081
246	5.3089	0.0080
247	5.3169	0.0080
248	5.3250	0.0080

249	5.3329	0.0080
250	5.3409	0.0080
251	5.3488	0.0079
252	5.3568	0.0079
253	5.3647	0.0079
254	5.3726	0.0079
255	5.3804	0.0079
256	5.3883	0.0078
257	5.3961	0.0078
258	5.4039	0.0078
259	5.4117	0.0078
260	5.4195	0.0078
261	5.4272	0.0078
262	5.4350	0.0077
263	5.4427	0.0077
264	5.4504	0.0077
265	5.4581	0.0077
266	5.4657	0.0077
267	5.4734	0.0076
268	5.4810	0.0076
269	5.4886	0.0076
270	5.4962	0.0076
271	5.5037	0.0076
272	5.5113	0.0076
273	5.5188	0.0075
274	5.5264	0.0075
275	5.5339	0.0075
276	5.5413	0.0075
277	5.5488	0.0075
278	5.5563	0.0075
279	5.5637	0.0074
280	5.5711	0.0074
281	5.5785	0.0074
282	5.5859	0.0074
283	5.5933	0.0074
284	5.6006	0.0074
285	5.6079	0.0073
286	5.6153	0.0073
287	5.6226	0.0073
288	5.6299	0.0073

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0073	0.0007	0.0066
2	0.0073	0.0007	0.0066
3	0.0073	0.0007	0.0066
4	0.0074	0.0007	0.0066
5	0.0074	0.0007	0.0067
6	0.0074	0.0007	0.0067
7	0.0074	0.0007	0.0067
8	0.0075	0.0007	0.0067
9	0.0075	0.0007	0.0068
10	0.0075	0.0007	0.0068
11	0.0075	0.0007	0.0068
12	0.0076	0.0007	0.0068
13	0.0076	0.0007	0.0068
14	0.0076	0.0007	0.0069
15	0.0076	0.0007	0.0069
16	0.0077	0.0007	0.0069
17	0.0077	0.0008	0.0069
18	0.0077	0.0008	0.0070
19	0.0078	0.0008	0.0070
20	0.0078	0.0008	0.0070
21	0.0078	0.0008	0.0070
22	0.0078	0.0008	0.0071
23	0.0079	0.0008	0.0071
24	0.0079	0.0008	0.0071
25	0.0079	0.0008	0.0072
26	0.0079	0.0008	0.0072

27	0.0080	0.0008	0.0072
28	0.0080	0.0008	0.0072
29	0.0080	0.0008	0.0073
30	0.0081	0.0008	0.0073
31	0.0081	0.0008	0.0073
32	0.0081	0.0008	0.0073
33	0.0082	0.0008	0.0074
34	0.0082	0.0008	0.0074
35	0.0082	0.0008	0.0074
36	0.0083	0.0008	0.0075
37	0.0083	0.0008	0.0075
38	0.0083	0.0008	0.0075
39	0.0084	0.0008	0.0076
40	0.0084	0.0008	0.0076
41	0.0084	0.0008	0.0076
42	0.0085	0.0008	0.0076
43	0.0085	0.0008	0.0077
44	0.0085	0.0008	0.0077
45	0.0086	0.0008	0.0077
46	0.0086	0.0008	0.0078
47	0.0087	0.0008	0.0078
48	0.0087	0.0008	0.0078
49	0.0087	0.0009	0.0079
50	0.0088	0.0009	0.0079
51	0.0088	0.0009	0.0080
52	0.0088	0.0009	0.0080
53	0.0089	0.0009	0.0080
54	0.0089	0.0009	0.0080
55	0.0090	0.0009	0.0081
56	0.0090	0.0009	0.0081
57	0.0091	0.0009	0.0082
58	0.0091	0.0009	0.0082
59	0.0091	0.0009	0.0082
60	0.0092	0.0009	0.0083
61	0.0092	0.0009	0.0083
62	0.0093	0.0009	0.0084
63	0.0093	0.0009	0.0084
64	0.0093	0.0009	0.0084
65	0.0094	0.0009	0.0085
66	0.0094	0.0009	0.0085
67	0.0095	0.0009	0.0086
68	0.0095	0.0009	0.0086
69	0.0096	0.0009	0.0087
70	0.0096	0.0009	0.0087
71	0.0097	0.0009	0.0087
72	0.0097	0.0009	0.0088
73	0.0098	0.0010	0.0088
74	0.0098	0.0010	0.0089
75	0.0099	0.0010	0.0089
76	0.0099	0.0010	0.0090
77	0.0100	0.0010	0.0090
78	0.0100	0.0010	0.0091
79	0.0101	0.0010	0.0091
80	0.0102	0.0010	0.0092
81	0.0102	0.0010	0.0092
82	0.0103	0.0010	0.0093
83	0.0103	0.0010	0.0093
84	0.0104	0.0010	0.0094
85	0.0105	0.0010	0.0094
86	0.0105	0.0010	0.0095
87	0.0106	0.0010	0.0096
88	0.0106	0.0010	0.0096
89	0.0107	0.0010	0.0097
90	0.0108	0.0010	0.0097
91	0.0108	0.0011	0.0098
92	0.0109	0.0011	0.0098
93	0.0110	0.0011	0.0099
94	0.0110	0.0011	0.0100
95	0.0111	0.0011	0.0100
96	0.0112	0.0011	0.0101
97	0.0113	0.0011	0.0102

98	0.0113	0.0011	0.0102
99	0.0114	0.0011	0.0103
100	0.0115	0.0011	0.0104
101	0.0116	0.0011	0.0104
102	0.0116	0.0011	0.0105
103	0.0117	0.0011	0.0106
104	0.0118	0.0012	0.0106
105	0.0119	0.0012	0.0107
106	0.0120	0.0012	0.0108
107	0.0121	0.0012	0.0109
108	0.0121	0.0012	0.0110
109	0.0123	0.0012	0.0111
110	0.0123	0.0012	0.0111
111	0.0124	0.0012	0.0112
112	0.0125	0.0012	0.0113
113	0.0126	0.0012	0.0114
114	0.0127	0.0012	0.0115
115	0.0128	0.0013	0.0116
116	0.0129	0.0013	0.0117
117	0.0131	0.0013	0.0118
118	0.0131	0.0013	0.0119
119	0.0133	0.0013	0.0120
120	0.0134	0.0013	0.0121
121	0.0135	0.0013	0.0122
122	0.0136	0.0013	0.0123
123	0.0138	0.0013	0.0124
124	0.0138	0.0013	0.0125
125	0.0140	0.0014	0.0126
126	0.0141	0.0014	0.0127
127	0.0143	0.0014	0.0129
128	0.0144	0.0014	0.0130
129	0.0146	0.0014	0.0131
130	0.0146	0.0014	0.0132
131	0.0148	0.0014	0.0134
132	0.0149	0.0015	0.0135
133	0.0152	0.0015	0.0137
134	0.0153	0.0015	0.0138
135	0.0155	0.0015	0.0140
136	0.0156	0.0015	0.0141
137	0.0158	0.0015	0.0143
138	0.0160	0.0016	0.0144
139	0.0162	0.0016	0.0146
140	0.0163	0.0016	0.0147
141	0.0166	0.0016	0.0150
142	0.0167	0.0016	0.0151
143	0.0170	0.0017	0.0153
144	0.0172	0.0017	0.0155
145	0.0219	0.0021	0.0198
146	0.0221	0.0022	0.0199
147	0.0224	0.0022	0.0202
148	0.0226	0.0022	0.0204
149	0.0229	0.0022	0.0207
150	0.0231	0.0023	0.0209
151	0.0235	0.0023	0.0212
152	0.0237	0.0023	0.0214
153	0.0242	0.0024	0.0218
154	0.0244	0.0024	0.0220
155	0.0248	0.0024	0.0224
156	0.0251	0.0024	0.0226
157	0.0256	0.0025	0.0231
158	0.0258	0.0025	0.0233
159	0.0264	0.0026	0.0238
160	0.0266	0.0026	0.0240
161	0.0272	0.0027	0.0246
162	0.0275	0.0027	0.0249
163	0.0282	0.0027	0.0254
164	0.0285	0.0028	0.0258
165	0.0293	0.0029	0.0264
166	0.0296	0.0029	0.0267
167	0.0305	0.0030	0.0275
168	0.0309	0.0030	0.0279

169	0.0320	0.0031	0.0289
170	0.0325	0.0032	0.0293
171	0.0335	0.0033	0.0303
172	0.0341	0.0033	0.0308
173	0.0353	0.0034	0.0319
174	0.0360	0.0035	0.0324
175	0.0374	0.0036	0.0337
176	0.0381	0.0037	0.0344
177	0.0398	0.0039	0.0359
178	0.0407	0.0040	0.0368
179	0.0428	0.0042	0.0386
180	0.0440	0.0043	0.0397
181	0.0465	0.0045	0.0420
182	0.0480	0.0047	0.0433
183	0.0514	0.0050	0.0464
184	0.0534	0.0052	0.0482
185	0.0510	0.0050	0.0460
186	0.0538	0.0052	0.0485
187	0.0609	0.0059	0.0550
188	0.0656	0.0064	0.0592
189	0.0790	0.0077	0.0713
190	0.0889	0.0087	0.0803
191	0.1261	0.0123	0.1138
192	0.1722	0.0168	0.1554
193	0.5195	0.0181	0.5014
194	0.1032	0.0101	0.0931
195	0.0714	0.0070	0.0644
196	0.0570	0.0056	0.0515
197	0.0556	0.0054	0.0502
198	0.0496	0.0048	0.0448
199	0.0452	0.0044	0.0408
200	0.0417	0.0041	0.0377
201	0.0390	0.0038	0.0352
202	0.0366	0.0036	0.0331
203	0.0347	0.0034	0.0313
204	0.0330	0.0032	0.0298
205	0.0313	0.0031	0.0283
206	0.0300	0.0029	0.0271
207	0.0289	0.0028	0.0261
208	0.0279	0.0027	0.0251
209	0.0269	0.0026	0.0243
210	0.0261	0.0025	0.0235
211	0.0253	0.0025	0.0228
212	0.0246	0.0024	0.0222
213	0.0239	0.0023	0.0216
214	0.0233	0.0023	0.0211
215	0.0228	0.0022	0.0205
216	0.0222	0.0022	0.0201
217	0.0173	0.0017	0.0156
218	0.0169	0.0016	0.0152
219	0.0165	0.0016	0.0149
220	0.0161	0.0016	0.0145
221	0.0157	0.0015	0.0142
222	0.0154	0.0015	0.0139
223	0.0151	0.0015	0.0136
224	0.0147	0.0014	0.0133
225	0.0145	0.0014	0.0130
226	0.0142	0.0014	0.0128
227	0.0139	0.0014	0.0126
228	0.0137	0.0013	0.0123
229	0.0134	0.0013	0.0121
230	0.0132	0.0013	0.0119
231	0.0130	0.0013	0.0117
232	0.0128	0.0012	0.0115
233	0.0126	0.0012	0.0114
234	0.0124	0.0012	0.0112
235	0.0122	0.0012	0.0110
236	0.0120	0.0012	0.0108
237	0.0118	0.0012	0.0107
238	0.0117	0.0011	0.0105
239	0.0115	0.0011	0.0104

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      240              0.0114          0.0011              0.0103
      241              0.0112          0.0011              0.0101
      242              0.0111          0.0011              0.0100
      243              0.0109          0.0011              0.0099
      244              0.0108          0.0011              0.0098
      245              0.0107          0.0010              0.0096
      246              0.0105          0.0010              0.0095
      247              0.0104          0.0010              0.0094
      248              0.0103          0.0010              0.0093
      249              0.0102          0.0010              0.0092
      250              0.0101          0.0010              0.0091
      251              0.0100          0.0010              0.0090
      252              0.0099          0.0010              0.0089
      253              0.0098          0.0010              0.0088
      254              0.0097          0.0009              0.0087
      255              0.0096          0.0009              0.0086
      256              0.0095          0.0009              0.0085
      257              0.0094          0.0009              0.0085
      258              0.0093          0.0009              0.0084
      259              0.0092          0.0009              0.0083
      260              0.0091          0.0009              0.0082
      261              0.0090          0.0009              0.0081
      262              0.0089          0.0009              0.0081
      263              0.0089          0.0009              0.0080
      264              0.0088          0.0009              0.0079
      265              0.0087          0.0008              0.0079
      266              0.0086          0.0008              0.0078
      267              0.0086          0.0008              0.0077
      268              0.0085          0.0008              0.0077
      269              0.0084          0.0008              0.0076
      270              0.0083          0.0008              0.0075
      271              0.0083          0.0008              0.0075
      272              0.0082          0.0008              0.0074
      273              0.0082          0.0008              0.0074
      274              0.0081          0.0008              0.0073
      275              0.0080          0.0008              0.0072
      276              0.0080          0.0008              0.0072
      277              0.0079          0.0008              0.0071
      278              0.0078          0.0008              0.0071
      279              0.0078          0.0008              0.0070
      280              0.0077          0.0008              0.0070
      281              0.0077          0.0007              0.0069
      282              0.0076          0.0007              0.0069
      283              0.0076          0.0007              0.0068
      284              0.0075          0.0007              0.0068
      285              0.0075          0.0007              0.0067
      286              0.0074          0.0007              0.0067
      287              0.0074          0.0007              0.0066
      288              0.0073          0.0007              0.0066
      ------------------------------------------------------------------------
      ------------------------------------------------------------------------
      Total soil rain loss =      0.52(In)
      Total effective rainfall =      5.11(In)
      Peak flow rate in flood hydrograph =     59.43(CFS)
      ------------------------------------------------------------------------
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          24 - H O U R    S T O R M
                    R u n o f f      H y d r o g r a p h
      ------------------------------------------------------------------------
                  Hydrograph in   5   Minute intervals ((CFS))

      ------------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0       15.0      30.0      45.0      60.0
-------------------------------------------------------------------------
  0+ 5       0.0004      0.05  Q         |         |         |         |
  0+10       0.0022      0.26  Q         |         |         |         |
  0+15       0.0078      0.82  Q         |         |         |         |
  0+20       0.0158      1.15  Q         |         |         |         |
  0+25       0.0248      1.32  Q         |         |         |         |
  0+30       0.0346      1.42  Q         |         |         |         |
  0+35       0.0450      1.50  VQ        |         |         |         |
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0+40       0.0557      1.56  VQ        |         |         |         |
0+45       0.0667      1.60  VQ        |         |         |         |
0+50       0.0779      1.63  VQ        |         |         |         |
0+55       0.0893      1.64  VQ        |         |         |         |
1+ 0       0.1007      1.66  VQ        |         |         |         |
1+ 5       0.1122      1.67  VQ        |         |         |         |
1+10       0.1237      1.68  VQ        |         |         |         |
1+15       0.1353      1.69  VQ        |         |         |         |
1+20       0.1470      1.70  VQ        |         |         |         |
1+25       0.1588      1.71  VQ        |         |         |         |
1+30       0.1706      1.71  VQ        |         |         |         |
1+35       0.1824      1.72  VQ        |         |         |         |
1+40       0.1943      1.72  VQ        |         |         |         |
1+45       0.2062      1.73  VQ        |         |         |         |
1+50       0.2181      1.74  VQ        |         |         |         |
1+55       0.2301      1.74  |Q        |         |         |         |
2+ 0       0.2422      1.75  |Q        |         |         |         |
2+ 5       0.2543      1.75  |Q        |         |         |         |
2+10       0.2664      1.76  |Q        |         |         |         |
2+15       0.2786      1.77  |Q        |         |         |         |
2+20       0.2908      1.77  |Q        |         |         |         |
2+25       0.3030      1.78  |Q        |         |         |         |
2+30       0.3154      1.79  |Q        |         |         |         |
2+35       0.3277      1.79  |Q        |         |         |         |
2+40       0.3401      1.80  |Q        |         |         |         |
2+45       0.3526      1.81  |Q        |         |         |         |
2+50       0.3651      1.82  |Q        |         |         |         |
2+55       0.3776      1.82  |Q        |         |         |         |
3+ 0       0.3902      1.83  |Q        |         |         |         |
3+ 5       0.4029      1.84  |Q        |         |         |         |
3+10       0.4156      1.84  |Q        |         |         |         |
3+15       0.4283      1.85  |Q        |         |         |         |
3+20       0.4411      1.86  |QV       |         |         |         |
3+25       0.4540      1.87  |QV       |         |         |         |
3+30       0.4669      1.87  |QV       |         |         |         |
3+35       0.4799      1.88  |QV       |         |         |         |
3+40       0.4929      1.89  |QV       |         |         |         |
3+45       0.5059      1.90  |QV       |         |         |         |
3+50       0.5191      1.91  |QV       |         |         |         |
3+55       0.5322      1.91  |QV       |         |         |         |
4+ 0       0.5455      1.92  |QV       |         |         |         |
4+ 5       0.5588      1.93  |QV       |         |         |         |
4+10       0.5721      1.94  |QV       |         |         |         |
4+15       0.5855      1.95  |QV       |         |         |         |
4+20       0.5990      1.95  |QV       |         |         |         |
4+25       0.6125      1.96  |QV       |         |         |         |
4+30       0.6261      1.97  |QV       |         |         |         |
4+35       0.6397      1.98  |QV       |         |         |         |
4+40       0.6534      1.99  |QV       |         |         |         |
4+45       0.6672      2.00  |Q V      |         |         |         |
4+50       0.6810      2.01  |Q V      |         |         |         |
4+55       0.6949      2.02  |Q V      |         |         |         |
5+ 0       0.7089      2.03  |Q V      |         |         |         |
5+ 5       0.7229      2.04  |Q V      |         |         |         |
5+10       0.7370      2.04  |Q V      |         |         |         |
5+15       0.7511      2.05  |Q V      |         |         |         |
5+20       0.7653      2.06  |Q V      |         |         |         |
5+25       0.7796      2.07  |Q V      |         |         |         |
5+30       0.7940      2.08  |Q V      |         |         |         |
5+35       0.8084      2.09  |Q V      |         |         |         |
5+40       0.8229      2.10  |Q V      |         |         |         |
5+45       0.8375      2.12  |Q V      |         |         |         |
5+50       0.8521      2.13  |Q V      |         |         |         |
5+55       0.8668      2.14  |Q V      |         |         |         |
6+ 0       0.8816      2.15  |Q  V     |         |         |         |
6+ 5       0.8965      2.16  |Q  V     |         |         |         |
6+10       0.9114      2.17  |Q  V     |         |         |         |
6+15       0.9264      2.18  |Q  V     |         |         |         |
6+20       0.9415      2.19  |Q  V     |         |         |         |
6+25       0.9567      2.20  |Q  V     |         |         |         |
6+30       0.9719      2.21  |Q  V     |         |         |         |
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 6+35      0.9873     2.23  |Q  V     |         |         |         |
 6+40      1.0027     2.24  |Q  V     |         |         |         |
 6+45      1.0182     2.25  |Q  V     |         |         |         |
 6+50      1.0338     2.26  |Q  V     |         |         |         |
 6+55      1.0495     2.28  |Q  V     |         |         |         |
 7+ 0      1.0652     2.29  |Q  V     |         |         |         |
 7+ 5      1.0811     2.30  |Q  V     |         |         |         |
 7+10      1.0970     2.31  |Q   V    |         |         |         |
 7+15      1.1131     2.33  |Q   V    |         |         |         |
 7+20      1.1292     2.34  |Q   V    |         |         |         |
 7+25      1.1454     2.36  |Q   V    |         |         |         |
 7+30      1.1617     2.37  |Q   V    |         |         |         |
 7+35      1.1782     2.38  |Q   V    |         |         |         |
 7+40      1.1947     2.40  |Q   V    |         |         |         |
 7+45      1.2113     2.41  |Q   V    |         |         |         |
 7+50      1.2280     2.43  |Q   V    |         |         |         |
 7+55      1.2448     2.44  |Q   V    |         |         |         |
 8+ 0      1.2617     2.46  |Q   V    |         |         |         |
 8+ 5      1.2788     2.47  |Q   V    |         |         |         |
 8+10      1.2959     2.49  |Q   V    |         |         |         |
 8+15      1.3132     2.51  |Q    V   |         |         |         |
 8+20      1.3305     2.52  |Q    V   |         |         |         |
 8+25      1.3480     2.54  |Q    V   |         |         |         |
 8+30      1.3656     2.55  |Q    V   |         |         |         |
 8+35      1.3833     2.57  |Q    V   |         |         |         |
 8+40      1.4012     2.59  |Q    V   |         |         |         |
 8+45      1.4191     2.61  |Q    V   |         |         |         |
 8+50      1.4372     2.63  |Q    V   |         |         |         |
 8+55      1.4554     2.64  |Q    V   |         |         |         |
 9+ 0      1.4738     2.66  |Q    V   |         |         |         |
 9+ 5      1.4922     2.68  |Q    V   |         |         |         |
 9+10      1.5108     2.70  |Q    V   |         |         |         |
 9+15      1.5296     2.72  |Q    V   |         |         |         |
 9+20      1.5485     2.74  |Q     V  |         |         |         |
 9+25      1.5675     2.76  |Q     V  |         |         |         |
 9+30      1.5867     2.78  |Q     V  |         |         |         |
 9+35      1.6060     2.81  |Q     V  |         |         |         |
 9+40      1.6255     2.83  |Q     V  |         |         |         |
 9+45      1.6451     2.85  |Q     V  |         |         |         |
 9+50      1.6649     2.87  |Q     V  |         |         |         |
 9+55      1.6848     2.90  |Q     V  |         |         |         |
10+ 0      1.7049     2.92  |Q     V  |         |         |         |
10+ 5      1.7252     2.94  |Q     V  |         |         |         |
10+10      1.7457     2.97  |Q     V  |         |         |         |
10+15      1.7663     3.00  |Q      V |         |         |         |
10+20      1.7871     3.02  | Q     V |         |         |         |
10+25      1.8081     3.05  | Q     V |         |         |         |
10+30      1.8293     3.07  | Q     V |         |         |         |
10+35      1.8506     3.10  | Q     V |         |         |         |
10+40      1.8722     3.13  | Q     V |         |         |         |
10+45      1.8940     3.16  | Q     V |         |         |         |
10+50      1.9159     3.19  | Q     V |         |         |         |
10+55      1.9381     3.22  | Q     V |         |         |         |
11+ 0      1.9605     3.25  | Q     V |         |         |         |
11+ 5      1.9832     3.29  | Q      V|         |         |         |
11+10      2.0060     3.32  | Q      V|         |         |         |
11+15      2.0291     3.35  | Q      V|         |         |         |
11+20      2.0524     3.39  | Q      V|         |         |         |
11+25      2.0760     3.42  | Q      V|         |         |         |
11+30      2.0999     3.46  | Q      V|         |         |         |
11+35      2.1240     3.50  | Q      V|         |         |         |
11+40      2.1483     3.54  | Q      V|         |         |         |
11+45      2.1730     3.58  | Q      V|         |         |         |
11+50      2.1979     3.62  | Q       V         |         |         |
11+55      2.2231     3.66  | Q       V         |         |         |
12+ 0      2.2487     3.71  | Q       V         |         |         |
12+ 5      2.2747     3.79  | Q       V         |         |         |
12+10      2.3020     3.96  | Q       V         |         |         |
12+15      2.3319     4.35  | Q       V         |         |         |
12+20      2.3636     4.60  |  Q      V         |         |         |
12+25      2.3964     4.75  |  Q      V         |         |         |
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12+30      2.4299     4.87  |  Q      |V        |         |         |
12+35      2.4642     4.98  |  Q      |V        |         |         |
12+40      2.4991     5.07  |  Q      |V        |         |         |
12+45      2.5346     5.16  |  Q      |V        |         |         |
12+50      2.5707     5.23  |  Q      |V        |         |         |
12+55      2.6073     5.31  |  Q      |V        |         |         |
13+ 0      2.6443     5.38  |  Q      | V       |         |         |
13+ 5      2.6819     5.46  |  Q      | V       |         |         |
13+10      2.7201     5.54  |  Q      | V       |         |         |
13+15      2.7588     5.62  |  Q      | V       |         |         |
13+20      2.7981     5.71  |  Q      | V       |         |         |
13+25      2.8380     5.80  |  Q      | V       |         |         |
13+30      2.8785     5.88  |  Q      |  V      |         |         |
13+35      2.9197     5.98  |  Q      |  V      |         |         |
13+40      2.9616     6.08  |   Q     |  V      |         |         |
13+45      3.0042     6.19  |   Q     |  V      |         |         |
13+50      3.0475     6.29  |   Q     |  V      |         |         |
13+55      3.0917     6.41  |   Q     |   V     |         |         |
14+ 0      3.1366     6.53  |   Q     |   V     |         |         |
14+ 5      3.1825     6.66  |   Q     |   V     |         |         |
14+10      3.2294     6.80  |   Q     |   V     |         |         |
14+15      3.2774     6.97  |   Q     |   V     |         |         |
14+20      3.3264     7.13  |   Q     |    V    |         |         |
14+25      3.3767     7.30  |   Q     |    V    |         |         |
14+30      3.4282     7.47  |   Q     |    V    |         |         |
14+35      3.4810     7.67  |    Q    |    V    |         |         |
14+40      3.5352     7.87  |    Q    |     V   |         |         |
14+45      3.5910     8.10  |    Q    |     V   |         |         |
14+50      3.6484     8.33  |    Q    |     V   |         |         |
14+55      3.7076     8.60  |    Q    |     V   |         |         |
15+ 0      3.7688     8.88  |    Q    |      V  |         |         |
15+ 5      3.8322     9.21  |     Q   |      V  |         |         |
15+10      3.8980     9.55  |     Q   |      V  |         |         |
15+15      3.9665     9.96  |     Q   |       V |         |         |
15+20      4.0381    10.39  |     Q   |       V |         |         |
15+25      4.1130    10.87  |      Q  |       V |         |         |
15+30      4.1903    11.24  |      Q  |        V|         |         |
15+35      4.2690    11.43  |      Q  |        V|         |         |
15+40      4.3510    11.91  |      Q  |        V|         |         |
15+45      4.4396    12.86  |       Q |         V         |         |
15+50      4.5366    14.09  |        Q|         V         |         |
15+55      4.6475    16.10  |         Q         |V        |         |
16+ 0      4.7792    19.12  |          | Q      |V        |         |
16+ 5      4.9653    27.03  |          |       Q | V       |         |
16+10      5.2437    40.43  |          |         |  V  Q   |         |
16+15      5.6530    59.43  |          |         |    V    |        Q|
16+20      5.9535    43.63  |          |         |      V Q|         |
16+25      6.1565    29.47  |          |        Q|       V |         |
16+30      6.3175    23.38  |          |    Q    |       V |         |
16+35      6.4531    19.69  |          |  Q      |        V|         |
16+40      6.5689    16.81  |          |Q        |         V         |
16+45      6.6677    14.34  |        Q|         |         V         |
16+50      6.7528    12.37  |       Q |         |         V         |
16+55      6.8264    10.68  |      Q  |         |         |V        |
17+ 0      6.8937     9.77  |     Q   |         |         |V        |
17+ 5      6.9560     9.05  |     Q   |         |         |V        |
17+10      7.0145     8.49  |    Q    |         |         | V       |
17+15      7.0698     8.03  |    Q    |         |         | V       |
17+20      7.1214     7.50  |   Q     |         |         | V       |
17+25      7.1702     7.08  |   Q     |         |         | V       |
17+30      7.2160     6.65  |   Q     |         |         | V       |
17+35      7.2600     6.39  |   Q     |         |         |  V      |
17+40      7.3024     6.16  |   Q     |         |         |  V      |
17+45      7.3434     5.95  |  Q      |         |         |  V      |
17+50      7.3830     5.76  |  Q      |         |         |  V      |
17+55      7.4215     5.59  |  Q      |         |         |  V      |
18+ 0      7.4589     5.43  |  Q      |         |         |   V     |
18+ 5      7.4951     5.26  |  Q      |         |         |   V     |
18+10      7.5296     5.00  |  Q      |         |         |   V     |
18+15      7.5608     4.54  |  Q      |         |         |   V     |
18+20      7.5899     4.22  | Q       |         |         |   V     |
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18+25       7.6176      4.02  | Q       |         |         |   V     |
18+30       7.6442      3.86  | Q       |         |         |   V     |
18+35       7.6698      3.73  | Q       |         |         |    V    |
18+40       7.6947      3.61  | Q       |         |         |    V    |
18+45       7.7189      3.51  | Q       |         |         |    V    |
18+50       7.7425      3.42  | Q       |         |         |    V    |
18+55       7.7655      3.35  | Q       |         |         |    V    |
19+ 0       7.7881      3.28  | Q       |         |         |    V    |
19+ 5       7.8102      3.21  | Q       |         |         |    V    |
19+10       7.8318      3.15  | Q       |         |         |    V    |
19+15       7.8531      3.09  | Q       |         |         |    V    |
19+20       7.8740      3.03  | Q       |         |         |     V   |
19+25       7.8945      2.98  |Q        |         |         |     V   |
19+30       7.9146      2.93  |Q        |         |         |     V   |
19+35       7.9344      2.88  |Q        |         |         |     V   |
19+40       7.9540      2.83  |Q        |         |         |     V   |
19+45       7.9732      2.79  |Q        |         |         |     V   |
19+50       7.9921      2.75  |Q        |         |         |     V   |
19+55       8.0107      2.71  |Q        |         |         |     V   |
20+ 0       8.0291      2.67  |Q        |         |         |     V   |
20+ 5       8.0472      2.63  |Q        |         |         |     V   |
20+10       8.0651      2.59  |Q        |         |         |     V   |
20+15       8.0827      2.56  |Q        |         |         |     V   |
20+20       8.1001      2.53  |Q        |         |         |      V  |
20+25       8.1173      2.49  |Q        |         |         |      V  |
20+30       8.1342      2.46  |Q        |         |         |      V  |
20+35       8.1509      2.43  |Q        |         |         |      V  |
20+40       8.1675      2.40  |Q        |         |         |      V  |
20+45       8.1838      2.37  |Q        |         |         |      V  |
20+50       8.2000      2.34  |Q        |         |         |      V  |
20+55       8.2159      2.32  |Q        |         |         |      V  |
21+ 0       8.2317      2.29  |Q        |         |         |      V  |
21+ 5       8.2473      2.27  |Q        |         |         |      V  |
21+10       8.2627      2.24  |Q        |         |         |      V  |
21+15       8.2780      2.22  |Q        |         |         |      V  |
21+20       8.2931      2.19  |Q        |         |         |      V  |
21+25       8.3081      2.17  |Q        |         |         |      V  |
21+30       8.3229      2.15  |Q        |         |         |       V |
21+35       8.3375      2.13  |Q        |         |         |       V |
21+40       8.3520      2.11  |Q        |         |         |       V |
21+45       8.3664      2.09  |Q        |         |         |       V |
21+50       8.3806      2.07  |Q        |         |         |       V |
21+55       8.3947      2.05  |Q        |         |         |       V |
22+ 0       8.4087      2.03  |Q        |         |         |       V |
22+ 5       8.4225      2.01  |Q        |         |         |       V |
22+10       8.4363      1.99  |Q        |         |         |       V |
22+15       8.4499      1.97  |Q        |         |         |       V |
22+20       8.4633      1.96  |Q        |         |         |       V |
22+25       8.4767      1.94  |Q        |         |         |       V |
22+30       8.4899      1.92  |Q        |         |         |       V |
22+35       8.5031      1.91  |Q        |         |         |       V |
22+40       8.5161      1.89  |Q        |         |         |       V |
22+45       8.5290      1.88  |Q        |         |         |       V |
22+50       8.5418      1.86  |Q        |         |         |        V|
22+55       8.5545      1.85  |Q        |         |         |        V|
23+ 0       8.5671      1.83  |Q        |         |         |        V|
23+ 5       8.5796      1.82  |Q        |         |         |        V|
23+10       8.5920      1.80  |Q        |         |         |        V|
23+15       8.6044      1.79  |Q        |         |         |        V|
23+20       8.6166      1.78  |Q        |         |         |        V|
23+25       8.6287      1.76  |Q        |         |         |        V|
23+30       8.6408      1.75  |Q        |         |         |        V|
23+35       8.6527      1.74  |Q        |         |         |        V|
23+40       8.6646      1.72  |Q        |         |         |        V|
23+45       8.6764      1.71  |Q        |         |         |        V|
23+50       8.6881      1.70  |Q        |         |         |        V|
23+55       8.6997      1.69  |Q        |         |         |        V|
24+ 0       8.7113      1.68  |Q        |         |         |        V|
24+ 5       8.7224      1.61  |Q        |         |         |        V|
24+10       8.7320      1.39  Q         |         |         |        V|
24+15       8.7377      0.83  Q         |         |         |        V|
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   24+20       8.7411      0.49  Q         |         |         |         V|
   24+25       8.7434      0.33  Q         |         |         |         V|
   24+30       8.7449      0.22  Q         |         |         |         V|
   24+35       8.7459      0.15  Q         |         |         |         V|
   24+40       8.7466      0.10  Q         |         |         |         V|
   24+45       8.7470      0.06  Q         |         |         |         V|
   24+50       8.7473      0.04  Q         |         |         |         V|
   24+55       8.7475      0.03  Q         |         |         |         V|
   25+ 0       8.7476      0.02  Q         |         |         |         V|
   25+ 5       8.7477      0.01  Q         |         |         |         V|
   25+10       8.7478      0.01  Q         |         |         |         V|
   25+15       8.7478      0.00  Q         |         |         |         V|
   25+20       8.7478      0.00  Q         |         |         |         V|
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Area 'E' Calculations

- 2 Year Pre-Development Rational Method – Area 'E'

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                    Orange County Rational Hydrology Program

                (Hydrology Manual Date(s) October 1986 & November 1996)

 CIVILCADD/CIVILDESIGN  Engineering Software, (c) 1989-2012 Version 8.2
       Rational Hydrology Study, Date: 10/11/16  File Name: EXE002.roc
------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION RATIONAL METHOD - AREA 'E' - 2 YEAR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
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Program License Serial Number 4094

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 *********   Hydrology Study Control Information **********

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Rational hydrology study storm event year is     2.0

Decimal fraction of study above 2000 ft., 600M  =     0.0000
English Units Used for input data


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      500.000 to Point/Station      501.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   265.000(Ft.)
Top (of initial area) elevation =   371.000(Ft.)
Bottom (of initial area) elevation =   341.000(Ft.)
Difference in elevation =    30.000(Ft.)
Slope =    0.11321  s(%)=      11.32
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.604 min.
Rainfall intensity =      2.120(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.847
Subarea runoff =      1.149(CFS)
Total initial stream area =        0.640(Ac.)


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Process from Point/Station      501.000 to Point/Station      502.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of street segment elevation =   341.000(Ft.)
End of street segment elevation =   301.000(Ft.)
Length of street segment  =   551.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [2] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
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 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      4.029(CFS)
Depth of flow =   0.236(Ft.), Average velocity =   4.728(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =   5.472(Ft.)
Flow velocity =   4.73(Ft/s)
Travel time =    1.94 min.     TC =    7.55  min.
 Adding area flow to street
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.670
Decimal fraction soil group D = 0.330
SCS curve number for soil(AMC 2)  = 70.98
Pervious ratio(Ap) = 0.1000  Max loss rate(Fp)=     0.234(In/Hr)
Max Catchment Loss (Fm) =     0.023(In/Hr)
Rainfall intensity =      1.787(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.881
Subarea runoff =      5.635(CFS) for    3.670(Ac.)
Total runoff =      6.784(CFS)       Total area =        4.31(Ac.)
Area averaged Fm value =    0.038(In/Hr)
Street flow at end of street =      6.784(CFS)
Half street flow at end of street =      3.392(CFS)
Depth of flow =   0.271(Ft.), Average velocity =   5.221(Ft/s)
Flow width (from curb towards crown)=   7.232(Ft.)


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Process from Point/Station      502.000 to Point/Station      503.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
______________________________________________________________________________
Top of street segment elevation =   301.000(Ft.)
End of street segment elevation =   250.000(Ft.)
Length of street segment  =   730.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [2] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      7.392(CFS)
Depth of flow =   0.279(Ft.), Average velocity =   5.235(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =   7.611(Ft.)
Flow velocity =   5.23(Ft/s)
Travel time =    2.32 min.     TC =    9.87  min.
 Adding area flow to street
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.800
Decimal fraction soil group D = 0.200
SCS curve number for soil(AMC 2)  = 70.20
Pervious ratio(Ap) = 0.1000  Max loss rate(Fp)=     0.240(In/Hr)
Max Catchment Loss (Fm) =     0.024(In/Hr)
Rainfall intensity =      1.532(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.880
Subarea runoff =      1.046(CFS) for    1.500(Ac.)
Total runoff =      7.830(CFS)       Total area =        5.81(Ac.)
Area averaged Fm value =    0.035(In/Hr)
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Street flow at end of street =      7.830(CFS)
Half street flow at end of street =      3.915(CFS)
Depth of flow =   0.283(Ft.), Average velocity =   5.299(Ft/s)
Flow width (from curb towards crown)=   7.824(Ft.)
End of computations, total study area =            5.81 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.144
Area averaged SCS curve number (AMC 2) =  70.6
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- 5 Year Pre-Development Rational Method – Area 'E'

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                    Orange County Rational Hydrology Program

                (Hydrology Manual Date(s) October 1986 & November 1996)

 CIVILCADD/CIVILDESIGN  Engineering Software, (c) 1989-2012 Version 8.2
       Rational Hydrology Study, Date: 10/11/16  File Name: EXE005.roc
------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION RATIONAL METHOD - AREA 'E' - 5 YEAR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
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Program License Serial Number 4094

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 *********   Hydrology Study Control Information **********

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Rational hydrology study storm event year is     5.0

Decimal fraction of study above 2000 ft., 600M  =     0.0000
English Units Used for input data


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      500.000 to Point/Station      501.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   265.000(Ft.)
Top (of initial area) elevation =   371.000(Ft.)
Bottom (of initial area) elevation =   341.000(Ft.)
Difference in elevation =    30.000(Ft.)
Slope =    0.11321  s(%)=      11.32
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.604 min.
Rainfall intensity =      2.988(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.862
Subarea runoff =      1.649(CFS)
Total initial stream area =        0.640(Ac.)


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Process from Point/Station      501.000 to Point/Station      502.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of street segment elevation =   341.000(Ft.)
End of street segment elevation =   301.000(Ft.)
Length of street segment  =   551.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [2] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
```

```
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      5.787(CFS)
Depth of flow =   0.260(Ft.), Average velocity =   5.055(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =   6.676(Ft.)
Flow velocity =   5.06(Ft/s)
Travel time =    1.82 min.     TC =    7.42  min.
 Adding area flow to street
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.670
Decimal fraction soil group D = 0.330
SCS curve number for soil(AMC 2)  = 70.98
Pervious ratio(Ap) = 0.1000  Max loss rate(Fp)=     0.234(In/Hr)
Max Catchment Loss (Fm) =     0.023(In/Hr)
Rainfall intensity =      2.552(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.886
Subarea runoff =      8.099(CFS) for    3.670(Ac.)
Total runoff =      9.748(CFS)       Total area =        4.31(Ac.)
Area averaged Fm value =    0.038(In/Hr)
Street flow at end of street =      9.748(CFS)
Half street flow at end of street =      4.874(CFS)
Depth of flow =   0.298(Ft.), Average velocity =   5.641(Ft/s)
Flow width (from curb towards crown)=   8.587(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      502.000 to Point/Station      503.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
______________________________________________________________________________
Top of street segment elevation =   301.000(Ft.)
End of street segment elevation =   250.000(Ft.)
Length of street segment  =   730.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [2] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =     10.624(CFS)
Depth of flow =   0.307(Ft.), Average velocity =   5.664(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =   9.006(Ft.)
Flow velocity =   5.66(Ft/s)
Travel time =    2.15 min.     TC =    9.57  min.
 Adding area flow to street
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.800
Decimal fraction soil group D = 0.200
SCS curve number for soil(AMC 2)  = 70.20
Pervious ratio(Ap) = 0.1000  Max loss rate(Fp)=     0.240(In/Hr)
Max Catchment Loss (Fm) =     0.024(In/Hr)
Rainfall intensity =      2.212(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.886
Subarea runoff =      1.636(CFS) for    1.500(Ac.)
Total runoff =     11.384(CFS)       Total area =        5.81(Ac.)
Area averaged Fm value =    0.035(In/Hr)
```

```
Street flow at end of street =     11.384(CFS)
Half street flow at end of street =      5.692(CFS)
Depth of flow =   0.312(Ft.), Average velocity =   5.752(Ft/s)
Flow width (from curb towards crown)=   9.289(Ft.)
End of computations, total study area =            5.81 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.144
Area averaged SCS curve number (AMC 2) =  70.6
```

- 25 Year Pre-Development Rational Method – Area 'E'

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                    Orange County Rational Hydrology Program

                (Hydrology Manual Date(s) October 1986 & November 1996)

 CIVILCADD/CIVILDESIGN  Engineering Software, (c) 1989-2012 Version 8.2
       Rational Hydrology Study, Date: 10/11/16  File Name: EXE025.roc
---------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION RATIONAL METHOD - AREA 'E' - 25 YEAR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
---------------------------------------------------------------------------


Program License Serial Number 4094

---------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

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Rational hydrology study storm event year is    25.0

Decimal fraction of study above 2000 ft., 600M  =     0.0000
English Units Used for input data


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      500.000 to Point/Station      501.000
**** INITIAL AREA EVALUATION ****
___________________________________________________________________________
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   265.000(Ft.)
Top (of initial area) elevation =   371.000(Ft.)
Bottom (of initial area) elevation =   341.000(Ft.)
Difference in elevation =    30.000(Ft.)
Slope =    0.11321  s(%)=      11.32
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.604 min.
Rainfall intensity =      4.522(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.875
Subarea runoff =      2.533(CFS)
Total initial stream area =        0.640(Ac.)


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Process from Point/Station      501.000 to Point/Station      502.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
___________________________________________________________________________
Top of street segment elevation =   341.000(Ft.)
End of street segment elevation =   301.000(Ft.)
Length of street segment  =   551.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [2] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
```

```
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      8.832(CFS)
Depth of flow =   0.291(Ft.), Average velocity =   5.521(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =   8.205(Ft.)
Flow velocity =   5.52(Ft/s)
Travel time =    1.66 min.     TC =    7.27  min.
 Adding area flow to street
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.670
Decimal fraction soil group D = 0.330
SCS curve number for soil(AMC 2)  = 70.98
Pervious ratio(Ap) = 0.1000  Max loss rate(Fp)=     0.234(In/Hr)
Max Catchment Loss (Fm) =     0.023(In/Hr)
Rainfall intensity =      3.904(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.891
Subarea runoff =     12.460(CFS) for    3.670(Ac.)
Total runoff =     14.993(CFS)       Total area =        4.31(Ac.)
Area averaged Fm value =    0.038(In/Hr)
Street flow at end of street =     14.993(CFS)
Half street flow at end of street =      7.497(CFS)
Depth of flow =   0.334(Ft.), Average velocity =   6.216(Ft/s)
Flow width (from curb towards crown)=  10.389(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      502.000 to Point/Station      503.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
______________________________________________________________________________
Top of street segment elevation =   301.000(Ft.)
End of street segment elevation =   250.000(Ft.)
Length of street segment  =   730.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [2] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =     16.413(CFS)
Depth of flow =   0.344(Ft.), Average velocity =   6.254(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  10.888(Ft.)
Flow velocity =   6.25(Ft/s)
Travel time =    1.95 min.     TC =    9.21  min.
 Adding area flow to street
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.800
Decimal fraction soil group D = 0.200
SCS curve number for soil(AMC 2)  = 70.20
Pervious ratio(Ap) = 0.1000  Max loss rate(Fp)=     0.240(In/Hr)
Max Catchment Loss (Fm) =     0.024(In/Hr)
Rainfall intensity =      3.413(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.891
Subarea runoff =      2.673(CFS) for    1.500(Ac.)
Total runoff =     17.666(CFS)       Total area =        5.81(Ac.)
Area averaged Fm value =    0.035(In/Hr)
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```
Street flow at end of street =     17.666(CFS)
Half street flow at end of street =      8.833(CFS)
Depth of flow =   0.351(Ft.), Average velocity =   6.362(Ft/s)
Flow width (from curb towards crown)=  11.233(Ft.)
End of computations, total study area =            5.81 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.144
Area averaged SCS curve number (AMC 2) =  70.6
```

- 100 Year Pre-Development Rational Method – Area 'E'

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                    Orange County Rational Hydrology Program

                (Hydrology Manual Date(s) October 1986 & November 1996)

 CIVILCADD/CIVILDESIGN  Engineering Software, (c) 1989-2012 Version 8.2
       Rational Hydrology Study, Date: 10/11/16  File Name: EXE100.roc
---------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION RATIONAL METHOD - AREA 'E' - 100 YEAR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
---------------------------------------------------------------------------


Program License Serial Number 4094

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 *********   Hydrology Study Control Information **********

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Rational hydrology study storm event year is   100.0

Decimal fraction of study above 2000 ft., 600M  =     0.0000
English Units Used for input data


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      500.000 to Point/Station      501.000
**** INITIAL AREA EVALUATION ****
___________________________________________________________________________
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   265.000(Ft.)
Top (of initial area) elevation =   371.000(Ft.)
Bottom (of initial area) elevation =   341.000(Ft.)
Difference in elevation =    30.000(Ft.)
Slope =    0.11321  s(%)=      11.32
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.604 min.
Rainfall intensity =      5.796(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.881
Subarea runoff =      3.267(CFS)
Total initial stream area =        0.640(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      501.000 to Point/Station      502.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
___________________________________________________________________________
Top of street segment elevation =   341.000(Ft.)
End of street segment elevation =   301.000(Ft.)
Length of street segment  =   551.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [2] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
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```
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =     11.403(CFS)
Depth of flow =   0.311(Ft.), Average velocity =   5.841(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =   9.217(Ft.)
Flow velocity =   5.84(Ft/s)
Travel time =    1.57 min.     TC =    7.18  min.
 Adding area flow to street
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.670
Decimal fraction soil group D = 0.330
SCS curve number for soil(AMC 2)  = 70.98
Pervious ratio(Ap) = 0.1000  Max loss rate(Fp)=     0.234(In/Hr)
Max Catchment Loss (Fm) =     0.023(In/Hr)
Rainfall intensity =      5.030(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.893
Subarea runoff =     16.097(CFS) for    3.670(Ac.)
Total runoff =     19.363(CFS)       Total area =        4.31(Ac.)
Area averaged Fm value =    0.038(In/Hr)
Street flow at end of street =     19.363(CFS)
Half street flow at end of street =      9.682(CFS)
Depth of flow =   0.358(Ft.), Average velocity =   6.596(Ft/s)
Flow width (from curb towards crown)=  11.580(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      502.000 to Point/Station      503.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
______________________________________________________________________________
Top of street segment elevation =   301.000(Ft.)
End of street segment elevation =   250.000(Ft.)
Length of street segment  =   730.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [2] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =     21.189(CFS)
Depth of flow =   0.369(Ft.), Average velocity =   6.639(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  12.120(Ft.)
Flow velocity =   6.64(Ft/s)
Travel time =    1.83 min.     TC =    9.01  min.
 Adding area flow to street
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.800
Decimal fraction soil group D = 0.200
SCS curve number for soil(AMC 2)  = 70.20
Pervious ratio(Ap) = 0.1000  Max loss rate(Fp)=     0.240(In/Hr)
Max Catchment Loss (Fm) =     0.024(In/Hr)
Rainfall intensity =      4.416(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.893
Subarea runoff =      3.545(CFS) for    1.500(Ac.)
Total runoff =     22.908(CFS)       Total area =        5.81(Ac.)
Area averaged Fm value =    0.035(In/Hr)
```

```
Street flow at end of street =     22.908(CFS)
Half street flow at end of street =     11.454(CFS)
Depth of flow =   0.377(Ft.), Average velocity =   6.763(Ft/s)
Flow width (from curb towards crown)=  12.518(Ft.)
End of computations, total study area =            5.81 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.144
Area averaged SCS curve number (AMC 2) =  70.6
```

- 2 Year Post-Development Rational Method – Area 'E'

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                  Orange County Rational Hydrology Program

               (Hydrology Manual Date(s) October 1986 & November 1996)

 CIVILCADD/CIVILDESIGN  Engineering Software, (c) 1989-2012 Version 8.2
       Rational Hydrology Study, Date: 10/11/16  File Name: pre002.roc
--------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION RATIONAL METHOD - AREA 'E' - 2 YEAR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
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Program License Serial Number 4094

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 *********   Hydrology Study Control Information **********

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Rational hydrology study storm event year is     2.0

Decimal fraction of study above 2000 ft., 600M  =     0.0000
English Units Used for input data


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      500.000 to Point/Station      501.000
**** INITIAL AREA EVALUATION ****
__________________________________________________________________________
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   265.000(Ft.)
Top (of initial area) elevation =   372.000(Ft.)
Bottom (of initial area) elevation =   341.000(Ft.)
Difference in elevation =    31.000(Ft.)
Slope =    0.11698  s(%)=      11.70
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.567 min.
Rainfall intensity =      2.128(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.847
Subarea runoff =      1.154(CFS)
Total initial stream area =        0.640(Ac.)


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Process from Point/Station      501.000 to Point/Station      502.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
__________________________________________________________________________
Top of street segment elevation =   341.000(Ft.)
End of street segment elevation =   297.000(Ft.)
Length of street segment  =   584.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
```

```
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      2.025(CFS)
Depth of flow =   0.235(Ft.), Average velocity =   4.806(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =   5.428(Ft.)
Flow velocity =   4.81(Ft/s)
Travel time =    2.03 min.     TC =    7.59  min.
 Adding area flow to street
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.950
Decimal fraction soil group D = 0.050
SCS curve number for soil(AMC 2)  = 69.30
Pervious ratio(Ap) = 0.1000  Max loss rate(Fp)=     0.248(In/Hr)
Max Catchment Loss (Fm) =     0.025(In/Hr)
Rainfall intensity =      1.781(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.870
Subarea runoff =      1.681(CFS) for    1.190(Ac.)
Total runoff =      2.835(CFS)       Total area =        1.83(Ac.)
Area averaged Fm value =    0.060(In/Hr)
Street flow at end of street =      2.835(CFS)
Half street flow at end of street =      2.835(CFS)
Depth of flow =   0.258(Ft.), Average velocity =   5.111(Ft/s)
Flow width (from curb towards crown)=   6.542(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      502.000 to Point/Station      503.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
____________________________________________________________________________
Top of street segment elevation =   297.000(Ft.)
End of street segment elevation =   256.000(Ft.)
Length of street segment  =   608.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      3.028(CFS)
Depth of flow =   0.266(Ft.), Average velocity =   4.953(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =   6.961(Ft.)
Flow velocity =   4.95(Ft/s)
Travel time =    2.05 min.     TC =    9.64  min.
 Adding area flow to street
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.850
Decimal fraction soil group D = 0.150
SCS curve number for soil(AMC 2)  = 69.90
Pervious ratio(Ap) = 0.1000  Max loss rate(Fp)=     0.242(In/Hr)
Max Catchment Loss (Fm) =     0.024(In/Hr)
Rainfall intensity =      1.553(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.870
Subarea runoff =      0.326(CFS) for    0.510(Ac.)
Total runoff =      3.161(CFS)       Total area =        2.34(Ac.)
Area averaged Fm value =    0.052(In/Hr)
```

```
Street flow at end of street =      3.161(CFS)
Half street flow at end of street =      3.161(CFS)
Depth of flow =   0.269(Ft.), Average velocity =   4.997(Ft/s)
Flow width (from curb towards crown)=   7.113(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      503.000 to Point/Station      504.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =   250.000(Ft.)
Downstream point/station elevation =   249.000(Ft.)
Pipe length  =    17.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     3.161(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =     3.161(CFS)
Normal flow depth in pipe =    4.28(In.)
Flow top width inside pipe =   15.33(In.)
Critical Depth =    8.11(In.)
Pipe flow velocity =      9.82(Ft/s)
Travel time through pipe =    0.03 min.
Time of concentration (TC) =     9.67 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      503.000 to Point/Station      504.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      2.340(Ac.)
Runoff from this stream =      3.161(CFS)
Time of concentration =    9.67 min.
Rainfall intensity =     1.550(In/Hr)
Area averaged loss rate (Fm) =    0.0521(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2094


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      505.000 to Point/Station      506.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.300
Decimal fraction soil group D = 0.700
SCS curve number for soil(AMC 2)  = 73.20
Pervious ratio(Ap) = 0.1000  Max loss rate(Fp)=     0.215(In/Hr)
Max Catchment Loss (Fm) =     0.021(In/Hr)
Initial subarea data:
Initial area flow distance =   250.000(Ft.)
Top (of initial area) elevation =   340.000(Ft.)
Bottom (of initial area) elevation =   308.000(Ft.)
Difference in elevation =    32.000(Ft.)
Slope =    0.12800  s(%)=      12.80
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    4.175 min.
Rainfall intensity =      2.511(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.892
Subarea runoff =      1.344(CFS)
Total initial stream area =        0.600(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      506.000 to Point/Station      507.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
------------------------------------------------------------------------------
Estimated mean flow rate at midpoint of channel =      3.148(CFS)
Depth of flow =   0.139(Ft.), Average velocity =   3.265(Ft/s)
       ******* Irregular Channel Data ***********
--------------------------------------------------------------
```

```
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2             50.00              0.00
       3            100.00              1.00
Manning's 'N' friction factor =   0.015
-----------------------------------------------------------------
Sub-Channel flow  =      3.148(CFS)
  '     '       flow top width =     13.887(Ft.)
  '     '    velocity=    3.265(Ft/s)
  '     '       area =      0.964(Sq.Ft)
  '     '       Froude number =     2.183

Upstream point elevation =   308.000(Ft.)
Downstream point elevation =   297.000(Ft.)
Flow length =   289.000(Ft.)
Travel time  =    1.48 min.
Time of concentration =    5.65 min.
Depth of flow =   0.139(Ft.)
Average velocity =   3.265(Ft/s)
Total irregular channel flow =     3.148(CFS)
Irregular channel normal depth above invert elev. =   0.139(Ft.)
Average velocity of channel(s) =   3.265(Ft/s)
 Adding area flow to channel
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.300
Decimal fraction soil group D = 0.700
SCS curve number for soil(AMC 2)  = 73.20
Pervious ratio(Ap) = 0.1000  Max loss rate(Fp)=     0.215(In/Hr)
Max Catchment Loss (Fm) =     0.021(In/Hr)
Rainfall intensity =      2.110(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.891
Subarea runoff =      3.544(CFS) for    2.000(Ac.)
Total runoff =      4.888(CFS)       Total area =        2.60(Ac.)
Area averaged Fm value =    0.021(In/Hr)
Depth of flow =   0.164(Ft.), Average velocity =   3.644(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      507.000 to Point/Station      508.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of street segment elevation =   297.000(Ft.)
End of street segment elevation =   255.000(Ft.)
Length of street segment  =   560.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      5.277(CFS)
Depth of flow =   0.303(Ft.), Average velocity =   5.814(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =   8.837(Ft.)
Flow velocity =   5.81(Ft/s)
Travel time =    1.61 min.     TC =    7.26  min.
 Adding area flow to street
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
```

```
Decimal fraction soil group C = 0.750
Decimal fraction soil group D = 0.250
SCS curve number for soil(AMC 2)  = 70.50
Pervious ratio(Ap) = 0.1000  Max loss rate(Fp)=     0.237(In/Hr)
Max Catchment Loss (Fm) =     0.024(In/Hr)
Rainfall intensity =      1.828(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.889
Subarea runoff =      0.720(CFS) for    0.850(Ac.)
Total runoff =      5.608(CFS)       Total area =        3.45(Ac.)
Area averaged Fm value =    0.022(In/Hr)
Street flow at end of street =      5.608(CFS)
Half street flow at end of street =      5.608(CFS)
Depth of flow =   0.308(Ft.), Average velocity =   5.893(Ft/s)
Flow width (from curb towards crown)=   9.082(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      508.000 to Point/Station      504.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   250.000(Ft.)
Downstream point/station elevation =   249.000(Ft.)
Pipe length  =    40.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     5.608(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =     5.608(CFS)
Normal flow depth in pipe =    7.21(In.)
Flow top width inside pipe =   17.64(In.)
Critical Depth =   10.95(In.)
Pipe flow velocity =      8.48(Ft/s)
Travel time through pipe =    0.08 min.
Time of concentration (TC) =     7.33 min.


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Process from Point/Station      508.000 to Point/Station      504.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      3.450(Ac.)
Runoff from this stream =      5.608(CFS)
Time of concentration =    7.33 min.
Rainfall intensity =     1.817(In/Hr)
Area averaged loss rate (Fm) =    0.0221(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1      2.34     3.161      9.67    0.052      1.550
2      3.45     5.608      7.33    0.022      1.817
Qmax(1) =
          1.000 *    1.000 *     3.161) +
          0.852 *    1.000 *     5.608) + =       7.937
Qmax(2) =
          1.178 *    0.759 *     3.161) +
          1.000 *    1.000 *     5.608) + =       8.433

Total of 2 streams to confluence:
Flow rates before confluence point:
       3.161       5.608
Maximum flow rates at confluence using above data:
        7.937        8.433
Area of streams before confluence:
        2.340        3.450
Effective area values after confluence:
        5.790        5.225
Results of confluence:
```

```
Total flow rate =      8.433(CFS)
Time of concentration =     7.334 min.
Effective stream area after confluence =      5.225(Ac.)
Study area average Pervious fraction(Ap) =  0.144
Study area average soil loss rate(Fm) =    0.034(In/Hr)
Study area total (this main stream) =       5.79(Ac.)
End of computations, total study area =            5.79 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.144
Area averaged SCS curve number (AMC 2) =  71.2
```

- 5 Year Post-Development Rational Method – Area 'E'

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                    Orange County Rational Hydrology Program

                (Hydrology Manual Date(s) October 1986 & November 1996)

 CIVILCADD/CIVILDESIGN  Engineering Software, (c) 1989-2012 Version 8.2
       Rational Hydrology Study, Date: 10/11/16  File Name: pre005.roc
---------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION RATIONAL METHOD - AREA 'E' - 5 YEAR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
---------------------------------------------------------------------------


Program License Serial Number 4094

---------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

---------------------------------------------------------------------------

Rational hydrology study storm event year is     5.0

Decimal fraction of study above 2000 ft., 600M  =     0.0000
English Units Used for input data


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      500.000 to Point/Station      501.000
**** INITIAL AREA EVALUATION ****
___________________________________________________________________________
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   265.000(Ft.)
Top (of initial area) elevation =   372.000(Ft.)
Bottom (of initial area) elevation =   341.000(Ft.)
Difference in elevation =    31.000(Ft.)
Slope =    0.11698  s(%)=      11.70
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.567 min.
Rainfall intensity =      2.999(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.862
Subarea runoff =      1.655(CFS)
Total initial stream area =        0.640(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      501.000 to Point/Station      502.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
___________________________________________________________________________
Top of street segment elevation =   341.000(Ft.)
End of street segment elevation =   297.000(Ft.)
Length of street segment  =   584.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
```

```
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      2.915(CFS)
Depth of flow =   0.259(Ft.), Average velocity =   5.139(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =   6.638(Ft.)
Flow velocity =   5.14(Ft/s)
Travel time =    1.89 min.     TC =    7.46  min.
 Adding area flow to street
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.950
Decimal fraction soil group D = 0.050
SCS curve number for soil(AMC 2)  = 69.30
Pervious ratio(Ap) = 0.1000  Max loss rate(Fp)=     0.248(In/Hr)
Max Catchment Loss (Fm) =     0.025(In/Hr)
Rainfall intensity =      2.544(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.879
Subarea runoff =      2.436(CFS) for    1.190(Ac.)
Total runoff =      4.091(CFS)       Total area =        1.83(Ac.)
Area averaged Fm value =    0.060(In/Hr)
Street flow at end of street =      4.091(CFS)
Half street flow at end of street =      4.091(CFS)
Depth of flow =   0.284(Ft.), Average velocity =   5.510(Ft/s)
Flow width (from curb towards crown)=   7.847(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      502.000 to Point/Station      503.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
______________________________________________________________________________
Top of street segment elevation =   297.000(Ft.)
End of street segment elevation =   256.000(Ft.)
Length of street segment  =   608.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      4.390(CFS)
Depth of flow =   0.293(Ft.), Average velocity =   5.357(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =   8.323(Ft.)
Flow velocity =   5.36(Ft/s)
Travel time =    1.89 min.     TC =    9.35  min.
 Adding area flow to street
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.850
Decimal fraction soil group D = 0.150
SCS curve number for soil(AMC 2)  = 69.90
Pervious ratio(Ap) = 0.1000  Max loss rate(Fp)=     0.242(In/Hr)
Max Catchment Loss (Fm) =     0.024(In/Hr)
Rainfall intensity =      2.240(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.879
Subarea runoff =      0.518(CFS) for    0.510(Ac.)
Total runoff =      4.608(CFS)       Total area =        2.34(Ac.)
Area averaged Fm value =    0.052(In/Hr)
```

```
Street flow at end of street =      4.608(CFS)
Half street flow at end of street =      4.608(CFS)
Depth of flow =   0.297(Ft.), Average velocity =   5.414(Ft/s)
Flow width (from curb towards crown)=   8.512(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      503.000 to Point/Station      504.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
------------------------------------------------------------------------
Upstream point/station elevation =   250.000(Ft.)
Downstream point/station elevation =   249.000(Ft.)
Pipe length  =    17.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     4.608(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =     4.608(CFS)
Normal flow depth in pipe =    5.18(In.)
Flow top width inside pipe =   16.30(In.)
Critical Depth =    9.89(In.)
Pipe flow velocity =     10.94(Ft/s)
Travel time through pipe =    0.03 min.
Time of concentration (TC) =     9.38 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      503.000 to Point/Station      504.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      2.340(Ac.)
Runoff from this stream =      4.608(CFS)
Time of concentration =    9.38 min.
Rainfall intensity =     2.237(In/Hr)
Area averaged loss rate (Fm) =    0.0521(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2094


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      505.000 to Point/Station      506.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.300
Decimal fraction soil group D = 0.700
SCS curve number for soil(AMC 2)  = 73.20
Pervious ratio(Ap) = 0.1000  Max loss rate(Fp)=     0.215(In/Hr)
Max Catchment Loss (Fm) =     0.021(In/Hr)
Initial subarea data:
Initial area flow distance =   250.000(Ft.)
Top (of initial area) elevation =   340.000(Ft.)
Bottom (of initial area) elevation =   308.000(Ft.)
Difference in elevation =    32.000(Ft.)
Slope =    0.12800  s(%)=      12.80
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    4.175 min.
Rainfall intensity =      3.525(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.895
Subarea runoff =      1.892(CFS)
Total initial stream area =        0.600(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      506.000 to Point/Station      507.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
------------------------------------------------------------------------
Estimated mean flow rate at midpoint of channel =      4.485(CFS)
Depth of flow =   0.159(Ft.), Average velocity =   3.567(Ft/s)
       ******* Irregular Channel Data ***********
---------------------------------------------------------------
```

```
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2             50.00              0.00
       3            100.00              1.00
Manning's 'N' friction factor =   0.015
-----------------------------------------------------------------
Sub-Channel flow  =      4.485(CFS)
  '     '       flow top width =     15.858(Ft.)
  '     '    velocity=    3.567(Ft/s)
  '     '       area =      1.257(Sq.Ft)
  '     '       Froude number =     2.232

Upstream point elevation =   308.000(Ft.)
Downstream point elevation =   297.000(Ft.)
Flow length =   289.000(Ft.)
Travel time  =    1.35 min.
Time of concentration =    5.52 min.
Depth of flow =   0.159(Ft.)
Average velocity =   3.567(Ft/s)
Total irregular channel flow =     4.485(CFS)
Irregular channel normal depth above invert elev. =   0.159(Ft.)
Average velocity of channel(s) =   3.567(Ft/s)
 Adding area flow to channel
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.300
Decimal fraction soil group D = 0.700
SCS curve number for soil(AMC 2)  = 73.20
Pervious ratio(Ap) = 0.1000  Max loss rate(Fp)=     0.215(In/Hr)
Max Catchment Loss (Fm) =     0.021(In/Hr)
Rainfall intensity =      3.012(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.894
Subarea runoff =      5.105(CFS) for    2.000(Ac.)
Total runoff =      6.997(CFS)       Total area =        2.60(Ac.)
Area averaged Fm value =    0.021(In/Hr)
Depth of flow =   0.187(Ft.), Average velocity =   3.986(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      507.000 to Point/Station      508.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
_________________________________________________________________________
Top of street segment elevation =   297.000(Ft.)
End of street segment elevation =   255.000(Ft.)
Length of street segment  =   560.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      7.594(CFS)
Depth of flow =   0.334(Ft.), Average velocity =   6.313(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  10.374(Ft.)
Flow velocity =   6.31(Ft/s)
Travel time =    1.48 min.     TC =    7.00  min.
 Adding area flow to street
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
```

```
Decimal fraction soil group C = 0.750
Decimal fraction soil group D = 0.250
SCS curve number for soil(AMC 2)  = 70.50
Pervious ratio(Ap) = 0.1000  Max loss rate(Fp)=     0.237(In/Hr)
Max Catchment Loss (Fm) =     0.024(In/Hr)
Rainfall intensity =      2.636(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.892
Subarea runoff =      1.119(CFS) for    0.850(Ac.)
Total runoff =      8.116(CFS)       Total area =        3.45(Ac.)
Area averaged Fm value =    0.022(In/Hr)
Street flow at end of street =      8.116(CFS)
Half street flow at end of street =      8.116(CFS)
Depth of flow =   0.340(Ft.), Average velocity =   6.410(Ft/s)
Flow width (from curb towards crown)=  10.674(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      508.000 to Point/Station      504.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
________________________________________________________________________
Upstream point/station elevation =   250.000(Ft.)
Downstream point/station elevation =   249.000(Ft.)
Pipe length  =    40.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     8.116(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =     8.116(CFS)
Normal flow depth in pipe =    8.88(In.)
Flow top width inside pipe =   18.00(In.)
Critical Depth =   13.23(In.)
Pipe flow velocity =      9.34(Ft/s)
Travel time through pipe =    0.07 min.
Time of concentration (TC) =     7.07 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      508.000 to Point/Station      504.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      3.450(Ac.)
Runoff from this stream =      8.116(CFS)
Time of concentration =    7.07 min.
Rainfall intensity =     2.621(In/Hr)
Area averaged loss rate (Fm) =    0.0221(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1      2.34     4.608      9.38    0.052      2.237
2      3.45     8.116      7.07    0.022      2.621
Qmax(1) =
          1.000 *    1.000 *     4.608) +
          0.852 *    1.000 *     8.116) + =      11.525
Qmax(2) =
          1.176 *    0.754 *     4.608) +
          1.000 *    1.000 *     8.116) + =      12.203

Total of 2 streams to confluence:
Flow rates before confluence point:
       4.608       8.116
Maximum flow rates at confluence using above data:
       11.525       12.203
Area of streams before confluence:
        2.340        3.450
Effective area values after confluence:
        5.790        5.215
Results of confluence:
```

```
Total flow rate =     12.203(CFS)
Time of concentration =     7.075 min.
Effective stream area after confluence =      5.215(Ac.)
Study area average Pervious fraction(Ap) =  0.144
Study area average soil loss rate(Fm) =    0.034(In/Hr)
Study area total (this main stream) =       5.79(Ac.)
End of computations, total study area =            5.79 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.144
Area averaged SCS curve number (AMC 2) =  71.2
```

- 25 Year Post-Development Rational Method – Area 'E'

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                    Orange County Rational Hydrology Program

                (Hydrology Manual Date(s) October 1986 & November 1996)

 CIVILCADD/CIVILDESIGN  Engineering Software, (c) 1989-2012 Version 8.2
       Rational Hydrology Study, Date: 10/11/16  File Name: pre025.roc
------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION RATIONAL METHOD - AREA 'E' - 25 YEAR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------


Program License Serial Number 4094

------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

------------------------------------------------------------------------

Rational hydrology study storm event year is    25.0

Decimal fraction of study above 2000 ft., 600M  =     0.0000
English Units Used for input data


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      500.000 to Point/Station      501.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   265.000(Ft.)
Top (of initial area) elevation =   372.000(Ft.)
Bottom (of initial area) elevation =   341.000(Ft.)
Difference in elevation =    31.000(Ft.)
Slope =    0.11698  s(%)=      11.70
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.567 min.
Rainfall intensity =      4.539(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.875
Subarea runoff =      2.543(CFS)
Total initial stream area =        0.640(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      501.000 to Point/Station      502.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of street segment elevation =   341.000(Ft.)
End of street segment elevation =   297.000(Ft.)
Length of street segment  =   584.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
```

```
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      4.460(CFS)
Depth of flow =   0.290(Ft.), Average velocity =   5.614(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =   8.172(Ft.)
Flow velocity =   5.61(Ft/s)
Travel time =    1.73 min.     TC =    7.30  min.
 Adding area flow to street
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.950
Decimal fraction soil group D = 0.050
SCS curve number for soil(AMC 2)  = 69.30
Pervious ratio(Ap) = 0.1000  Max loss rate(Fp)=     0.248(In/Hr)
Max Catchment Loss (Fm) =     0.025(In/Hr)
Rainfall intensity =      3.893(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.886
Subarea runoff =      3.771(CFS) for    1.190(Ac.)
Total runoff =      6.314(CFS)       Total area =        1.83(Ac.)
Area averaged Fm value =    0.060(In/Hr)
Street flow at end of street =      6.314(CFS)
Half street flow at end of street =      6.314(CFS)
Depth of flow =   0.318(Ft.), Average velocity =   6.063(Ft/s)
Flow width (from curb towards crown)=   9.564(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      502.000 to Point/Station      503.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
______________________________________________________________________________
Top of street segment elevation =   297.000(Ft.)
End of street segment elevation =   256.000(Ft.)
Length of street segment  =   608.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      6.769(CFS)
Depth of flow =   0.329(Ft.), Average velocity =   5.902(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  10.101(Ft.)
Flow velocity =   5.90(Ft/s)
Travel time =    1.72 min.     TC =    9.02  min.
 Adding area flow to street
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.850
Decimal fraction soil group D = 0.150
SCS curve number for soil(AMC 2)  = 69.90
Pervious ratio(Ap) = 0.1000  Max loss rate(Fp)=     0.242(In/Hr)
Max Catchment Loss (Fm) =     0.024(In/Hr)
Rainfall intensity =      3.455(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.886
Subarea runoff =      0.852(CFS) for    0.510(Ac.)
Total runoff =      7.166(CFS)       Total area =        2.34(Ac.)
Area averaged Fm value =    0.052(In/Hr)
```

```
Street flow at end of street =      7.166(CFS)
Half street flow at end of street =      7.166(CFS)
Depth of flow =   0.334(Ft.), Average velocity =   5.979(Ft/s)
Flow width (from curb towards crown)=  10.353(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      503.000 to Point/Station      504.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =   250.000(Ft.)
Downstream point/station elevation =   249.000(Ft.)
Pipe length  =    17.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     7.166(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =     7.166(CFS)
Normal flow depth in pipe =    6.53(In.)
Flow top width inside pipe =   17.31(In.)
Critical Depth =   12.45(In.)
Pipe flow velocity =     12.38(Ft/s)
Travel time through pipe =    0.02 min.
Time of concentration (TC) =     9.04 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      503.000 to Point/Station      504.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      2.340(Ac.)
Runoff from this stream =      7.166(CFS)
Time of concentration =    9.04 min.
Rainfall intensity =     3.450(In/Hr)
Area averaged loss rate (Fm) =    0.0521(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2094


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      505.000 to Point/Station      506.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.300
Decimal fraction soil group D = 0.700
SCS curve number for soil(AMC 2)  = 73.20
Pervious ratio(Ap) = 0.1000  Max loss rate(Fp)=     0.215(In/Hr)
Max Catchment Loss (Fm) =     0.021(In/Hr)
Initial subarea data:
Initial area flow distance =   250.000(Ft.)
Top (of initial area) elevation =   340.000(Ft.)
Bottom (of initial area) elevation =   308.000(Ft.)
Difference in elevation =    32.000(Ft.)
Slope =    0.12800  s(%)=      12.80
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    4.175 min.
Rainfall intensity =      5.342(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.896
Subarea runoff =      2.873(CFS)
Total initial stream area =        0.600(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      506.000 to Point/Station      507.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
------------------------------------------------------------------------------
Estimated mean flow rate at midpoint of channel =      6.850(CFS)
Depth of flow =   0.186(Ft.), Average velocity =   3.965(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
```

```
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2             50.00              0.00
       3            100.00              1.00
Manning's 'N' friction factor =   0.015
-----------------------------------------------------------------
Sub-Channel flow  =      6.850(CFS)
  '     '       flow top width =     18.588(Ft.)
  '     '    velocity=    3.965(Ft/s)
  '     '       area =      1.728(Sq.Ft)
  '     '       Froude number =     2.292

Upstream point elevation =   308.000(Ft.)
Downstream point elevation =   297.000(Ft.)
Flow length =   289.000(Ft.)
Travel time  =    1.21 min.
Time of concentration =    5.39 min.
Depth of flow =   0.186(Ft.)
Average velocity =   3.965(Ft/s)
Total irregular channel flow =     6.850(CFS)
Irregular channel normal depth above invert elev. =   0.186(Ft.)
Average velocity of channel(s) =   3.965(Ft/s)
 Adding area flow to channel
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.300
Decimal fraction soil group D = 0.700
SCS curve number for soil(AMC 2)  = 73.20
Pervious ratio(Ap) = 0.1000  Max loss rate(Fp)=     0.215(In/Hr)
Max Catchment Loss (Fm) =     0.021(In/Hr)
Rainfall intensity =      4.623(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.896
Subarea runoff =      7.895(CFS) for    2.000(Ac.)
Total runoff =     10.768(CFS)       Total area =        2.60(Ac.)
Area averaged Fm value =    0.021(In/Hr)
Depth of flow =   0.220(Ft.), Average velocity =   4.440(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      507.000 to Point/Station      508.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
_________________________________________________________________________
Top of street segment elevation =   297.000(Ft.)
End of street segment elevation =   255.000(Ft.)
Length of street segment  =   560.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =     11.710(CFS)
Depth of flow =   0.376(Ft.), Average velocity =   6.985(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  12.449(Ft.)
Flow velocity =   6.98(Ft/s)
Travel time =    1.34 min.     TC =    6.73  min.
 Adding area flow to street
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
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Decimal fraction soil group C = 0.750
Decimal fraction soil group D = 0.250
SCS curve number for soil(AMC 2)  = 70.50
Pervious ratio(Ap) = 0.1000  Max loss rate(Fp)=     0.237(In/Hr)
Max Catchment Loss (Fm) =     0.024(In/Hr)
Rainfall intensity =      4.079(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.895
Subarea runoff =      1.827(CFS) for    0.850(Ac.)
Total runoff =     12.595(CFS)       Total area =        3.45(Ac.)
Area averaged Fm value =    0.022(In/Hr)
Street flow at end of street =     12.595(CFS)
Half street flow at end of street =     12.595(CFS)
Depth of flow =   0.383(Ft.), Average velocity =   7.107(Ft/s)
Flow width (from curb towards crown)=  12.828(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      508.000 to Point/Station      504.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   250.000(Ft.)
Downstream point/station elevation =   249.000(Ft.)
Pipe length  =    40.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    12.595(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =    12.595(CFS)
Normal flow depth in pipe =   11.72(In.)
Flow top width inside pipe =   17.16(In.)
Critical Depth =   16.05(In.)
Pipe flow velocity =     10.34(Ft/s)
Travel time through pipe =    0.06 min.
Time of concentration (TC) =     6.79 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      508.000 to Point/Station      504.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      3.450(Ac.)
Runoff from this stream =     12.595(CFS)
Time of concentration =    6.79 min.
Rainfall intensity =     4.057(In/Hr)
Area averaged loss rate (Fm) =    0.0221(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1      2.34     7.166      9.04    0.052      3.450
2      3.45    12.595      6.79    0.022      4.057
Qmax(1) =
          1.000 *    1.000 *     7.166) +
          0.850 *    1.000 *    12.595) + =      17.867
Qmax(2) =
          1.179 *    0.751 *     7.166) +
          1.000 *    1.000 *    12.595) + =      18.939

Total of 2 streams to confluence:
Flow rates before confluence point:
       7.166      12.595
Maximum flow rates at confluence using above data:
       17.867       18.939
Area of streams before confluence:
        2.340        3.450
Effective area values after confluence:
        5.790        5.207
Results of confluence:
```

```
Total flow rate =     18.939(CFS)
Time of concentration =     6.790 min.
Effective stream area after confluence =      5.207(Ac.)
Study area average Pervious fraction(Ap) =  0.144
Study area average soil loss rate(Fm) =    0.034(In/Hr)
Study area total (this main stream) =       5.79(Ac.)
End of computations, total study area =            5.79 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.144
Area averaged SCS curve number (AMC 2) =  71.2
```

- 100 Year Post-Development Rational Method – Area 'E'

```
                    Orange County Rational Hydrology Program

                (Hydrology Manual Date(s) October 1986 & November 1996)

 CIVILCADD/CIVILDESIGN  Engineering Software, (c) 1989-2012 Version 8.2
       Rational Hydrology Study, Date: 10/11/16  File Name: pre100.roc
---------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION RATIONAL METHOD - AREA 'E' - 100 YEAR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
---------------------------------------------------------------------------


Program License Serial Number 4094

---------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

---------------------------------------------------------------------------

Rational hydrology study storm event year is   100.0

Decimal fraction of study above 2000 ft., 600M  =     0.0000
English Units Used for input data


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      500.000 to Point/Station      501.000
**** INITIAL AREA EVALUATION ****
___________________________________________________________________________
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.5000  Max loss rate(Fp)=     0.250(In/Hr)
Max Catchment Loss (Fm) =     0.125(In/Hr)
Initial subarea data:
Initial area flow distance =   265.000(Ft.)
Top (of initial area) elevation =   372.000(Ft.)
Bottom (of initial area) elevation =   341.000(Ft.)
Difference in elevation =    31.000(Ft.)
Slope =    0.11698  s(%)=      11.70
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.567 min.
Rainfall intensity =      5.818(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.881
Subarea runoff =      3.279(CFS)
Total initial stream area =        0.640(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      501.000 to Point/Station      502.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
___________________________________________________________________________
Top of street segment elevation =   341.000(Ft.)
End of street segment elevation =   297.000(Ft.)
Length of street segment  =   584.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
```

```
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      5.763(CFS)
Depth of flow =   0.310(Ft.), Average velocity =   5.940(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =   9.185(Ft.)
Flow velocity =   5.94(Ft/s)
Travel time =    1.64 min.     TC =    7.21  min.
 Adding area flow to street
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.950
Decimal fraction soil group D = 0.050
SCS curve number for soil(AMC 2)  = 69.30
Pervious ratio(Ap) = 0.1000  Max loss rate(Fp)=     0.248(In/Hr)
Max Catchment Loss (Fm) =     0.025(In/Hr)
Rainfall intensity =      5.018(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.889
Subarea runoff =      4.888(CFS) for    1.190(Ac.)
Total runoff =      8.167(CFS)       Total area =        1.83(Ac.)
Area averaged Fm value =    0.060(In/Hr)
Street flow at end of street =      8.167(CFS)
Half street flow at end of street =      8.167(CFS)
Depth of flow =   0.341(Ft.), Average velocity =   6.431(Ft/s)
Flow width (from curb towards crown)=  10.692(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      502.000 to Point/Station      503.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
______________________________________________________________________________
Top of street segment elevation =   297.000(Ft.)
End of street segment elevation =   256.000(Ft.)
Length of street segment  =   608.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      8.771(CFS)
Depth of flow =   0.352(Ft.), Average velocity =   6.266(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  11.283(Ft.)
Flow velocity =   6.27(Ft/s)
Travel time =    1.62 min.     TC =    8.82  min.
 Adding area flow to street
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.850
Decimal fraction soil group D = 0.150
SCS curve number for soil(AMC 2)  = 69.90
Pervious ratio(Ap) = 0.1000  Max loss rate(Fp)=     0.242(In/Hr)
Max Catchment Loss (Fm) =     0.024(In/Hr)
Rainfall intensity =      4.469(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.890
Subarea runoff =      1.135(CFS) for    0.510(Ac.)
Total runoff =      9.301(CFS)       Total area =        2.34(Ac.)
Area averaged Fm value =    0.052(In/Hr)
```

```
Street flow at end of street =      9.301(CFS)
Half street flow at end of street =      9.301(CFS)
Depth of flow =   0.358(Ft.), Average velocity =   6.353(Ft/s)
Flow width (from curb towards crown)=  11.565(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      503.000 to Point/Station      504.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =   250.000(Ft.)
Downstream point/station elevation =   249.000(Ft.)
Pipe length  =    17.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     9.301(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =     9.301(CFS)
Normal flow depth in pipe =    7.52(In.)
Flow top width inside pipe =   17.76(In.)
Critical Depth =   14.15(In.)
Pipe flow velocity =     13.29(Ft/s)
Travel time through pipe =    0.02 min.
Time of concentration (TC) =     8.84 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      503.000 to Point/Station      504.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      2.340(Ac.)
Runoff from this stream =      9.301(CFS)
Time of concentration =    8.84 min.
Rainfall intensity =     4.462(In/Hr)
Area averaged loss rate (Fm) =    0.0521(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2094


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      505.000 to Point/Station      506.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.300
Decimal fraction soil group D = 0.700
SCS curve number for soil(AMC 2)  = 73.20
Pervious ratio(Ap) = 0.1000  Max loss rate(Fp)=     0.215(In/Hr)
Max Catchment Loss (Fm) =     0.021(In/Hr)
Initial subarea data:
Initial area flow distance =   250.000(Ft.)
Top (of initial area) elevation =   340.000(Ft.)
Bottom (of initial area) elevation =   308.000(Ft.)
Difference in elevation =    32.000(Ft.)
Slope =    0.12800  s(%)=      12.80
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    4.175 min.
Rainfall intensity =      6.861(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.897
Subarea runoff =      3.693(CFS)
Total initial stream area =        0.600(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      506.000 to Point/Station      507.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
------------------------------------------------------------------------------
Estimated mean flow rate at midpoint of channel =      8.848(CFS)
Depth of flow =   0.205(Ft.), Average velocity =   4.227(Ft/s)
       ******* Irregular Channel Data ***********
---------------------------------------------------------------
```

```
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              1.00
       2             50.00              0.00
       3            100.00              1.00
Manning's 'N' friction factor =   0.015
-----------------------------------------------------------------
Sub-Channel flow  =      8.848(CFS)
  '     '       flow top width =     20.461(Ft.)
  '     '    velocity=    4.227(Ft/s)
  '     '       area =      2.093(Sq.Ft)
  '     '       Froude number =     2.329

Upstream point elevation =   308.000(Ft.)
Downstream point elevation =   297.000(Ft.)
Flow length =   289.000(Ft.)
Travel time  =    1.14 min.
Time of concentration =    5.31 min.
Depth of flow =   0.205(Ft.)
Average velocity =   4.227(Ft/s)
Total irregular channel flow =     8.848(CFS)
Irregular channel normal depth above invert elev. =   0.205(Ft.)
Average velocity of channel(s) =   4.227(Ft/s)
 Adding area flow to channel
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.300
Decimal fraction soil group D = 0.700
SCS curve number for soil(AMC 2)  = 73.20
Pervious ratio(Ap) = 0.1000  Max loss rate(Fp)=     0.215(In/Hr)
Max Catchment Loss (Fm) =     0.021(In/Hr)
Rainfall intensity =      5.975(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.897
Subarea runoff =     10.238(CFS) for    2.000(Ac.)
Total runoff =     13.931(CFS)       Total area =        2.60(Ac.)
Area averaged Fm value =    0.021(In/Hr)
Depth of flow =   0.243(Ft.), Average velocity =   4.735(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      507.000 to Point/Station      508.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
_________________________________________________________________________
Top of street segment elevation =   297.000(Ft.)
End of street segment elevation =   255.000(Ft.)
Length of street segment  =   560.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =   9.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =     15.181(CFS)
Depth of flow =   0.404(Ft.), Average velocity =   7.430(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  13.844(Ft.)
Flow velocity =   7.43(Ft/s)
Travel time =    1.26 min.     TC =    6.57  min.
 Adding area flow to street
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
```

```
Decimal fraction soil group C = 0.750
Decimal fraction soil group D = 0.250
SCS curve number for soil(AMC 2)  = 70.50
Pervious ratio(Ap) = 0.1000  Max loss rate(Fp)=     0.237(In/Hr)
Max Catchment Loss (Fm) =     0.024(In/Hr)
Rainfall intensity =      5.291(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.896
Subarea runoff =      2.429(CFS) for    0.850(Ac.)
Total runoff =     16.360(CFS)       Total area =        3.45(Ac.)
Area averaged Fm value =    0.022(In/Hr)
Street flow at end of street =     16.360(CFS)
Half street flow at end of street =     16.360(CFS)
Depth of flow =   0.412(Ft.), Average velocity =   7.564(Ft/s)
Flow width (from curb towards crown)=  14.269(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      508.000 to Point/Station      504.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
______________________________________________________________________________
Upstream point/station elevation =   250.000(Ft.)
Downstream point/station elevation =   249.000(Ft.)
Pipe length  =    40.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    16.360(CFS)
Given pipe size =     18.00(In.)
Calculated individual pipe flow  =    16.360(CFS)
Normal flow depth in pipe =   14.51(In.)
Flow top width inside pipe =   14.22(In.)
Critical depth could not be calculated.
Pipe flow velocity =     10.71(Ft/s)
Travel time through pipe =    0.06 min.
Time of concentration (TC) =     6.63 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      508.000 to Point/Station      504.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      3.450(Ac.)
Runoff from this stream =     16.360(CFS)
Time of concentration =    6.63 min.
Rainfall intensity =     5.262(In/Hr)
Area averaged loss rate (Fm) =    0.0221(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream  Area  Flow rate      TC     Fm       Rainfall Intensity
 No.    (Ac.)   (CFS)       (min) (In/Hr)     (In/Hr)


1      2.34     9.301      8.84    0.052      4.462
2      3.45    16.360      6.63    0.022      5.262
Qmax(1) =
          1.000 *    1.000 *     9.301) +
          0.847 *    1.000 *    16.360) + =      23.164
Qmax(2) =
          1.181 *    0.750 *     9.301) +
          1.000 *    1.000 *    16.360) + =      24.601

Total of 2 streams to confluence:
Flow rates before confluence point:
       9.301      16.360
Maximum flow rates at confluence using above data:
       23.164       24.601
Area of streams before confluence:
        2.340        3.450
Effective area values after confluence:
        5.790        5.205
Results of confluence:
```

```
Total flow rate =     24.601(CFS)
Time of concentration =     6.632 min.
Effective stream area after confluence =      5.205(Ac.)
Study area average Pervious fraction(Ap) =  0.144
Study area average soil loss rate(Fm) =    0.034(In/Hr)
Study area total (this main stream) =       5.79(Ac.)
End of computations, total study area =            5.79 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.144
Area averaged SCS curve number (AMC 2) =  71.2
```

- 2 Year 3 Hour Pre-Development Unit Hydrograph – Area 'E'

```
        U n i t   H y d r o g r a p h   A n a l y s i s

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        Study date  10/11/16   File Name EXE00203.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

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RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'E' - 2 YEAR 3 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

        Storm Event Year = 2

        Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 70.6       3.6          0.61     C     0.250     0.144    0.036
 70.6       2.3          0.39     D     0.200     0.144    0.029

Area-averaged adjusted loss rate Fm (In/Hr) =  0.033

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
     0.51   0.088         70.6      51.7       9.33     0.002
     3.05   0.525         98.0      98.0       0.20     0.890

     0.32   0.056         70.6      51.7       9.33     0.002
     1.93   0.331         98.0      98.0       0.20     0.890

Area-averaged catchment yield fraction, Y =  0.762
Area-averaged low loss fraction, Yb =  0.238
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.165 (hours)
Watershed area =       5.81(Ac.)
Catchment Lag time =   0.132 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 63.3232
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.033(In/Hr)
Average low loss rate fraction (Yb) = 0.238 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.190(In)
Computed peak 30-minute rainfall =  0.400(In)
Specified peak 1-hour rainfall =  0.530(In)
Computed peak 3-hour rainfall =  0.890(In)
Specified peak 6-hour rainfall =  1.220(In)
Specified peak 24-hour rainfall =  2.050(In)
```

```
Rainfall depth area reduction factors:
Using a total area of       5.81(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000     Adjusted rainfall =  0.190(In)
30-minute factor = 1.000    Adjusted rainfall =  0.400(In)
1-hour factor = 1.000       Adjusted rainfall =  0.530(In)
3-hour factor = 1.000       Adjusted rainfall =  0.890(In)
6-hour factor = 1.000       Adjusted rainfall =  1.220(In)
24-hour factor = 1.000 Adjusted rainfall =  2.050(In)
```

U n i t H y d r o g r a p h

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 70.26 (CFS))	
1	6.078	4.270
2	41.093	24.604
3	73.456	22.740
4	85.329	8.343
5	92.102	4.759
6	96.050	2.774
7	97.988	1.362
8	98.747	0.533
9	99.236	0.343
10	99.678	0.311
11	99.925	0.174
12	100.000	0.052

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.1899	0.1899
2	0.2533	0.0634
3	0.2998	0.0465
4	0.3379	0.0381
5	0.3707	0.0328
6	0.3999	0.0292
7	0.4257	0.0258
8	0.4494	0.0237
9	0.4714	0.0220
10	0.4921	0.0206
11	0.5115	0.0194
12	0.5299	0.0184
13	0.5503	0.0204
14	0.5698	0.0196
15	0.5887	0.0189
16	0.6069	0.0182
17	0.6245	0.0176
18	0.6416	0.0171
19	0.6582	0.0166
20	0.6743	0.0161
21	0.6900	0.0157
22	0.7054	0.0153
23	0.7203	0.0150
24	0.7349	0.0146
25	0.7492	0.0143
26	0.7632	0.0140
27	0.7770	0.0137
28	0.7904	0.0135
29	0.8036	0.0132
30	0.8166	0.0130
31	0.8293	0.0127
32	0.8418	0.0125
33	0.8542	0.0123
34	0.8663	0.0121
35	0.8782	0.0119
36	0.8900	0.0118

Unit	Unit	Unit	Effective

Period (number)	Rainfall (In)	Soil-Loss (In)	Rainfall (In)
1	0.0118	0.0028	0.0090
2	0.0119	0.0028	0.0092
3	0.0123	0.0028	0.0095
4	0.0125	0.0028	0.0098
5	0.0130	0.0028	0.0102
6	0.0132	0.0028	0.0104
7	0.0137	0.0028	0.0110
8	0.0140	0.0028	0.0112
9	0.0146	0.0028	0.0118
10	0.0150	0.0028	0.0122
11	0.0157	0.0028	0.0129
12	0.0161	0.0028	0.0134
13	0.0171	0.0028	0.0143
14	0.0176	0.0028	0.0149
15	0.0189	0.0028	0.0161
16	0.0196	0.0028	0.0168
17	0.0184	0.0028	0.0156
18	0.0194	0.0028	0.0166
19	0.0220	0.0028	0.0192
20	0.0237	0.0028	0.0209
21	0.0292	0.0028	0.0264
22	0.0328	0.0028	0.0301
23	0.0465	0.0028	0.0437
24	0.0634	0.0028	0.0606
25	0.1899	0.0028	0.1872
26	0.0381	0.0028	0.0353
27	0.0258	0.0028	0.0231
28	0.0206	0.0028	0.0178
29	0.0204	0.0028	0.0176
30	0.0182	0.0028	0.0154
31	0.0166	0.0028	0.0138
32	0.0153	0.0028	0.0126
33	0.0143	0.0028	0.0115
34	0.0135	0.0028	0.0107
35	0.0127	0.0028	0.0100
36	0.0121	0.0028	0.0094

Total soil rain loss = 0.10(In)
Total effective rainfall = 0.79(In)
Peak flow rate in flood hydrograph = 6.77(CFS)

3 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0003	0.04	Q				
0+10	0.0021	0.26	VQ				
0+15	0.0053	0.47	VQ				
0+20	0.0092	0.56	V Q				
0+25	0.0134	0.62	|VQ				
0+30	0.0180	0.67	|VQ				
0+35	0.0228	0.70	| Q				
0+40	0.0279	0.73	| Q				
0+45	0.0331	0.76	| Q				
0+50	0.0385	0.79	| QV				
0+55	0.0442	0.83	| QV				
1+ 0	0.0502	0.86	| Q V				
1+ 5	0.0564	0.90	| Q V				
1+10	0.0629	0.95	| Q V				
1+15	0.0698	1.00	| Q V				
1+20	0.0771	1.06	| Q V				
1+25	0.0847	1.11	| Q V				

```
   1+30       0.0924      1.12  |   Q    V|         |         |         |
   1+35       0.1003      1.14  |   Q     V         |         |         |
   1+40       0.1088      1.24  |   Q     |V        |         |         |
   1+45       0.1182      1.37  |    Q    | V       |         |         |
   1+50       0.1291      1.58  |     Q   |  V      |         |         |
   1+55       0.1421      1.88  |      Q  |   V     |         |         |
   2+ 0       0.1589      2.44  |         Q|     V  |         |         |
   2+ 5       0.1848      3.77  |          |    Q   V|         |         |
   2+10       0.2314      6.77  |          |         |   V  Q  |         |
   2+15       0.2733      6.08  |          |         |   Q   V |         |
   2+20       0.2974      3.49  |          |  Q      |         |V        |
   2+25       0.3145      2.49  |         Q|         |         | V       |
   2+30       0.3277      1.91  |      Q   |         |         |   V     |
   2+35       0.3381      1.51  |     Q    |         |         |    V    |
   2+40       0.3466      1.23  |   Q      |         |         |     V   |
   2+45       0.3540      1.08  |   Q      |         |         |      V  |
   2+50       0.3607      0.97  |  Q       |         |         |      V  |
   2+55       0.3667      0.87  |  Q       |         |         |       V |
   3+ 0       0.3721      0.78  |  Q       |         |         |       V |
   3+ 5       0.3767      0.68  | Q        |         |         |        V|
   3+10       0.3796      0.42  |Q         |         |         |        V|
   3+15       0.3809      0.19  Q          |         |         |        V|
   3+20       0.3817      0.11  Q          |         |         |        V|
   3+25       0.3820      0.06  Q          |         |         |        V|
   3+30       0.3822      0.03  Q          |         |         |        V|
   3+35       0.3823      0.01  Q          |         |         |        V|
   3+40       0.3824      0.01  Q          |         |         |        V|
   3+45       0.3824      0.01  Q          |         |         |        V|
   3+50       0.3825      0.00  Q          |         |         |        V|
   3+55       0.3825      0.00  Q          |         |         |        V|
-------------------------------------------------------------------------
```

- 2 Year 6 Hour Pre-Development Unit Hydrograph – Area 'E'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/11/16   File Name EXE00206.out

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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996

Program License Serial Number 4094

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RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'E' - 2 YEAR 6 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------
       Storm Event Year = 2

       Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********

SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 70.6       3.6          0.61     C     0.250     0.144    0.036
 70.6       2.3          0.39     D     0.200     0.144    0.029

Area-averaged adjusted loss rate Fm (In/Hr) =  0.033

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)           Yield Fr
     0.51   0.088         70.6      51.7       9.33     0.002
     3.05   0.525         98.0      98.0       0.20     0.890

     0.32   0.056         70.6      51.7       9.33     0.002
     1.93   0.331         98.0      98.0       0.20     0.890

Area-averaged catchment yield fraction, Y =  0.762
Area-averaged low loss fraction, Yb =  0.238
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.165 (hours)
Watershed area =       5.81(Ac.)
Catchment Lag time =   0.132 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 63.3232
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.033(In/Hr)
Average low loss rate fraction (Yb) = 0.238 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.190(In)
Computed peak 30-minute rainfall =  0.400(In)
Specified peak 1-hour rainfall =  0.530(In)
Computed peak 3-hour rainfall =  0.890(In)
Specified peak 6-hour rainfall =  1.220(In)
Specified peak 24-hour rainfall =  2.050(In)


Rainfall depth area reduction factors:
Using a total area of       5.81(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000     Adjusted rainfall =  0.190(In)
30-minute factor = 1.000    Adjusted rainfall =  0.400(In)
```

1-hour factor = 1.000 Adjusted rainfall = 0.530(In)
3-hour factor = 1.000 Adjusted rainfall = 0.890(In)
6-hour factor = 1.000 Adjusted rainfall = 1.220(In)
24-hour factor = 1.000 Adjusted rainfall = 2.050(In)

U n i t H y d r o g r a p h

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 70.26 (CFS))	
1	6.078	4.270
2	41.093	24.604
3	73.456	22.740
4	85.329	8.343
5	92.102	4.759
6	96.050	2.774
7	97.988	1.362
8	98.747	0.533
9	99.236	0.343
10	99.678	0.311
11	99.925	0.174
12	100.000	0.052

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.1899	0.1899
2	0.2533	0.0634
3	0.2998	0.0465
4	0.3379	0.0381
5	0.3707	0.0328
6	0.3999	0.0292
7	0.4257	0.0258
8	0.4494	0.0237
9	0.4714	0.0220
10	0.4921	0.0206
11	0.5115	0.0194
12	0.5299	0.0184
13	0.5503	0.0204
14	0.5698	0.0196
15	0.5887	0.0189
16	0.6069	0.0182
17	0.6245	0.0176
18	0.6416	0.0171
19	0.6582	0.0166
20	0.6743	0.0161
21	0.6900	0.0157
22	0.7054	0.0153
23	0.7203	0.0150
24	0.7349	0.0146
25	0.7492	0.0143
26	0.7632	0.0140
27	0.7770	0.0137
28	0.7904	0.0135
29	0.8036	0.0132
30	0.8166	0.0130
31	0.8293	0.0127
32	0.8418	0.0125
33	0.8542	0.0123
34	0.8663	0.0121
35	0.8782	0.0119
36	0.8900	0.0118
37	0.9011	0.0112
38	0.9121	0.0110
39	0.9230	0.0108
40	0.9337	0.0107
41	0.9442	0.0105
42	0.9546	0.0104
43	0.9649	0.0103

44	0.9751	0.0101
45	0.9851	0.0100
46	0.9950	0.0099
47	1.0048	0.0098
48	1.0144	0.0097
49	1.0240	0.0096
50	1.0335	0.0095
51	1.0428	0.0094
52	1.0521	0.0093
53	1.0612	0.0092
54	1.0703	0.0091
55	1.0793	0.0090
56	1.0881	0.0089
57	1.0969	0.0088
58	1.1057	0.0087
59	1.1143	0.0086
60	1.1229	0.0086
61	1.1313	0.0085
62	1.1397	0.0084
63	1.1481	0.0083
64	1.1563	0.0083
65	1.1645	0.0082
66	1.1726	0.0081
67	1.1807	0.0081
68	1.1887	0.0080
69	1.1966	0.0079
70	1.2044	0.0079
71	1.2122	0.0078
72	1.2200	0.0077

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0077	0.0018	0.0059
2	0.0078	0.0019	0.0059
3	0.0079	0.0019	0.0060
4	0.0080	0.0019	0.0061
5	0.0081	0.0019	0.0062
6	0.0082	0.0019	0.0062
7	0.0083	0.0020	0.0063
8	0.0084	0.0020	0.0064
9	0.0086	0.0020	0.0065
10	0.0086	0.0021	0.0066
11	0.0088	0.0021	0.0067
12	0.0089	0.0021	0.0068
13	0.0091	0.0022	0.0069
14	0.0092	0.0022	0.0070
15	0.0094	0.0022	0.0071
16	0.0095	0.0023	0.0072
17	0.0097	0.0023	0.0074
18	0.0098	0.0023	0.0075
19	0.0100	0.0024	0.0076
20	0.0101	0.0024	0.0077
21	0.0104	0.0025	0.0079
22	0.0105	0.0025	0.0080
23	0.0108	0.0026	0.0083
24	0.0110	0.0026	0.0084
25	0.0118	0.0028	0.0090
26	0.0119	0.0028	0.0092
27	0.0123	0.0028	0.0095
28	0.0125	0.0028	0.0098
29	0.0130	0.0028	0.0102
30	0.0132	0.0028	0.0104
31	0.0137	0.0028	0.0110
32	0.0140	0.0028	0.0112
33	0.0146	0.0028	0.0118
34	0.0150	0.0028	0.0122
35	0.0157	0.0028	0.0129
36	0.0161	0.0028	0.0134
37	0.0171	0.0028	0.0143

38	0.0176	0.0028	0.0149
39	0.0189	0.0028	0.0161
40	0.0196	0.0028	0.0168
41	0.0184	0.0028	0.0156
42	0.0194	0.0028	0.0166
43	0.0220	0.0028	0.0192
44	0.0237	0.0028	0.0209
45	0.0292	0.0028	0.0264
46	0.0328	0.0028	0.0301
47	0.0465	0.0028	0.0437
48	0.0634	0.0028	0.0606
49	0.1899	0.0028	0.1872
50	0.0381	0.0028	0.0353
51	0.0258	0.0028	0.0231
52	0.0206	0.0028	0.0178
53	0.0204	0.0028	0.0176
54	0.0182	0.0028	0.0154
55	0.0166	0.0028	0.0138
56	0.0153	0.0028	0.0126
57	0.0143	0.0028	0.0115
58	0.0135	0.0028	0.0107
59	0.0127	0.0028	0.0100
60	0.0121	0.0028	0.0094
61	0.0112	0.0027	0.0085
62	0.0107	0.0025	0.0081
63	0.0103	0.0024	0.0078
64	0.0099	0.0024	0.0075
65	0.0096	0.0023	0.0073
66	0.0093	0.0022	0.0071
67	0.0090	0.0021	0.0068
68	0.0087	0.0021	0.0066
69	0.0085	0.0020	0.0065
70	0.0083	0.0020	0.0063
71	0.0081	0.0019	0.0061
72	0.0079	0.0019	0.0060

Total soil rain loss = 0.18(In)
Total effective rainfall = 1.04(In)
Peak flow rate in flood hydrograph = 6.77(CFS)

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6 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0002	0.03	Q				
0+10	0.0013	0.17	Q				
0+15	0.0035	0.31	VQ				
0+20	0.0059	0.36	VQ				
0+25	0.0086	0.39	VQ				
0+30	0.0115	0.41	VQ				
0+35	0.0144	0.43	|Q				
0+40	0.0174	0.43	|Q				
0+45	0.0204	0.44	|Q				
0+50	0.0235	0.45	|Q				
0+55	0.0266	0.46	|QV				
1+ 0	0.0298	0.46	|QV				
1+ 5	0.0331	0.47	|QV				
1+10	0.0364	0.48	|QV				
1+15	0.0397	0.48	|Q V				
1+20	0.0431	0.49	|Q V				
1+25	0.0465	0.50	|Q V				
1+30	0.0500	0.51	| QV				
1+35	0.0535	0.52	| Q V				
1+40	0.0572	0.52	| Q V				
1+45	0.0608	0.53	| Q V				

```
   1+50       0.0646      0.54  | Q  V    |         |         |         |
   1+55       0.0684      0.55  | Q  V    |         |         |         |
   2+ 0       0.0723      0.57  | Q  V    |         |         |         |
   2+ 5       0.0763      0.58  | Q   V   |         |         |         |
   2+10       0.0804      0.60  | Q   V   |         |         |         |
   2+15       0.0847      0.62  | Q   V   |         |         |         |
   2+20       0.0892      0.64  | Q    V  |         |         |         |
   2+25       0.0938      0.67  | Q    V  |         |         |         |
   2+30       0.0985      0.69  | Q    V  |         |         |         |
   2+35       0.1034      0.71  | Q     V |         |         |         |
   2+40       0.1085      0.74  | Q     V |         |         |         |
   2+45       0.1137      0.76  |  Q     V|         |         |         |
   2+50       0.1192      0.79  |  Q     V|         |         |         |
   2+55       0.1249      0.83  |  Q     V|         |         |         |
   3+ 0       0.1309      0.86  |  Q      V         |         |         |
   3+ 5       0.1371      0.90  |  Q      V         |         |         |
   3+10       0.1436      0.95  |  Q       |V       |         |         |
   3+15       0.1505      1.00  |  Q       |V       |         |         |
   3+20       0.1578      1.06  |   Q      | V      |         |         |
   3+25       0.1654      1.11  |   Q      |  V     |         |         |
   3+30       0.1731      1.12  |   Q      |  V     |         |         |
   3+35       0.1810      1.14  |   Q      |   V    |         |         |
   3+40       0.1895      1.24  |   Q      |    V   |         |         |
   3+45       0.1989      1.37  |    Q     |    V   |         |         |
   3+50       0.2098      1.58  |     Q    |     V  |         |         |
   3+55       0.2228      1.88  |      Q   |      V |         |         |
   4+ 0       0.2395      2.44  |        Q |        V|        |         |
   4+ 5       0.2655      3.77  |          |    Q    |V       |         |
   4+10       0.3121      6.77  |          |         |   V  Q |         |
   4+15       0.3540      6.08  |          |         |   Q   V|         |
   4+20       0.3780      3.49  |          |  Q      |       V|         |
   4+25       0.3952      2.49  |        Q |         |        |V        |
   4+30       0.4083      1.91  |      Q   |         |        | V       |
   4+35       0.4188      1.51  |     Q    |         |        |  V      |
   4+40       0.4272      1.23  |   Q      |         |        |  V      |
   4+45       0.4347      1.08  |   Q      |         |        |   V     |
   4+50       0.4414      0.97  |  Q       |         |        |    V    |
   4+55       0.4473      0.87  |  Q       |         |        |    V    |
   5+ 0       0.4527      0.78  |  Q       |         |        |    V    |
   5+ 5       0.4577      0.72  | Q        |         |        |     V   |
   5+10       0.4622      0.66  | Q        |         |        |     V   |
   5+15       0.4665      0.62  | Q        |         |        |      V  |
   5+20       0.4705      0.59  | Q        |         |        |      V  |
   5+25       0.4744      0.56  | Q        |         |        |      V  |
   5+30       0.4781      0.54  | Q        |         |        |      V  |
   5+35       0.4816      0.52  | Q        |         |        |       V |
   5+40       0.4851      0.50  |Q         |         |        |       V |
   5+45       0.4884      0.48  |Q         |         |        |       V |
   5+50       0.4916      0.47  |Q         |         |        |        V|
   5+55       0.4948      0.46  |Q         |         |        |        V|
   6+ 0       0.4978      0.44  |Q         |         |        |        V|
   6+ 5       0.5007      0.41  |Q         |         |        |        V|
   6+10       0.5024      0.25  |Q         |         |        |        V|
   6+15       0.5032      0.12  Q          |         |        |        V|
   6+20       0.5036      0.06  Q          |         |        |        V|
   6+25       0.5039      0.03  Q          |         |        |        V|
   6+30       0.5040      0.02  Q          |         |        |        V|
   6+35       0.5040      0.01  Q          |         |        |        V|
   6+40       0.5041      0.01  Q          |         |        |        V|
   6+45       0.5041      0.00  Q          |         |        |        V|
   6+50       0.5041      0.00  Q          |         |        |        V|
   6+55       0.5041      0.00  Q          |         |        |        V|
-------------------------------------------------------------------------
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- 2 Year 12 Hour Pre-Development Unit Hydrograph – Area 'E'

```
        U n i t   H y d r o g r a p h   A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989-2012, Version 7.2

        Study date  10/11/16   File Name EXE00212.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

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RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'E' - 2 YEAR 12 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

        Storm Event Year = 2

        Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 70.6       3.6          0.61     C     0.250     0.144    0.036
 70.6       2.3          0.39     D     0.200     0.144    0.029

Area-averaged adjusted loss rate Fm (In/Hr) =  0.033

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
     0.51   0.088         70.6      51.7       9.33     0.002
     3.05   0.525         98.0      98.0       0.20     0.890

     0.32   0.056         70.6      51.7       9.33     0.002
     1.93   0.331         98.0      98.0       0.20     0.890

Area-averaged catchment yield fraction, Y =  0.762
Area-averaged low loss fraction, Yb =  0.238
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.165 (hours)
Watershed area =       5.81(Ac.)
Catchment Lag time =   0.132 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 63.3232
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.033(In/Hr)
Average low loss rate fraction (Yb) = 0.238 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.190(In)
Computed peak 30-minute rainfall =  0.400(In)
Specified peak 1-hour rainfall =  0.530(In)
Computed peak 3-hour rainfall =  0.890(In)
Specified peak 6-hour rainfall =  1.220(In)
Specified peak 24-hour rainfall =  2.050(In)
```

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Rainfall depth area reduction factors:
Using a total area of       5.81(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000     Adjusted rainfall =  0.190(In)
30-minute factor = 1.000    Adjusted rainfall =  0.400(In)
1-hour factor = 1.000       Adjusted rainfall =  0.530(In)
3-hour factor = 1.000       Adjusted rainfall =  0.890(In)
6-hour factor = 1.000       Adjusted rainfall =  1.220(In)
24-hour factor = 1.000 Adjusted rainfall =  2.050(In)
```

U n i t H y d r o g r a p h

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 70.26 (CFS))	
1	6.078	4.270
2	41.093	24.604
3	73.456	22.740
4	85.329	8.343
5	92.102	4.759
6	96.050	2.774
7	97.988	1.362
8	98.747	0.533
9	99.236	0.343
10	99.678	0.311
11	99.925	0.174
12	100.000	0.052

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.1899	0.1899
2	0.2533	0.0634
3	0.2998	0.0465
4	0.3379	0.0381
5	0.3707	0.0328
6	0.3999	0.0292
7	0.4257	0.0258
8	0.4494	0.0237
9	0.4714	0.0220
10	0.4921	0.0206
11	0.5115	0.0194
12	0.5299	0.0184
13	0.5503	0.0204
14	0.5698	0.0196
15	0.5887	0.0189
16	0.6069	0.0182
17	0.6245	0.0176
18	0.6416	0.0171
19	0.6582	0.0166
20	0.6743	0.0161
21	0.6900	0.0157
22	0.7054	0.0153
23	0.7203	0.0150
24	0.7349	0.0146
25	0.7492	0.0143
26	0.7632	0.0140
27	0.7770	0.0137
28	0.7904	0.0135
29	0.8036	0.0132
30	0.8166	0.0130
31	0.8293	0.0127
32	0.8418	0.0125
33	0.8542	0.0123
34	0.8663	0.0121
35	0.8782	0.0119
36	0.8900	0.0118
37	0.9011	0.0112
38	0.9121	0.0110

39	0.9230	0.0108
40	0.9337	0.0107
41	0.9442	0.0105
42	0.9546	0.0104
43	0.9649	0.0103
44	0.9751	0.0101
45	0.9851	0.0100
46	0.9950	0.0099
47	1.0048	0.0098
48	1.0144	0.0097
49	1.0240	0.0096
50	1.0335	0.0095
51	1.0428	0.0094
52	1.0521	0.0093
53	1.0612	0.0092
54	1.0703	0.0091
55	1.0793	0.0090
56	1.0881	0.0089
57	1.0969	0.0088
58	1.1057	0.0087
59	1.1143	0.0086
60	1.1229	0.0086
61	1.1313	0.0085
62	1.1397	0.0084
63	1.1481	0.0083
64	1.1563	0.0083
65	1.1645	0.0082
66	1.1726	0.0081
67	1.1807	0.0081
68	1.1887	0.0080
69	1.1966	0.0079
70	1.2044	0.0079
71	1.2122	0.0078
72	1.2200	0.0077
73	1.2263	0.0063
74	1.2326	0.0063
75	1.2388	0.0062
76	1.2449	0.0062
77	1.2510	0.0061
78	1.2571	0.0061
79	1.2631	0.0060
80	1.2691	0.0060
81	1.2750	0.0059
82	1.2808	0.0059
83	1.2867	0.0058
84	1.2925	0.0058
85	1.2982	0.0057
86	1.3039	0.0057
87	1.3095	0.0057
88	1.3152	0.0056
89	1.3207	0.0056
90	1.3263	0.0055
91	1.3318	0.0055
92	1.3372	0.0055
93	1.3427	0.0054
94	1.3480	0.0054
95	1.3534	0.0054
96	1.3587	0.0053
97	1.3640	0.0053
98	1.3692	0.0052
99	1.3745	0.0052
100	1.3796	0.0052
101	1.3848	0.0051
102	1.3899	0.0051
103	1.3950	0.0051
104	1.4000	0.0051
105	1.4051	0.0050
106	1.4101	0.0050
107	1.4150	0.0050
108	1.4200	0.0049
109	1.4249	0.0049

110	1.4298	0.0049
111	1.4346	0.0049
112	1.4394	0.0048
113	1.4442	0.0048
114	1.4490	0.0048
115	1.4537	0.0047
116	1.4585	0.0047
117	1.4632	0.0047
118	1.4678	0.0047
119	1.4725	0.0046
120	1.4771	0.0046
121	1.4817	0.0046
122	1.4863	0.0046
123	1.4908	0.0045
124	1.4953	0.0045
125	1.4998	0.0045
126	1.5043	0.0045
127	1.5088	0.0045
128	1.5132	0.0044
129	1.5176	0.0044
130	1.5220	0.0044
131	1.5264	0.0044
132	1.5307	0.0044
133	1.5351	0.0043
134	1.5394	0.0043
135	1.5437	0.0043
136	1.5480	0.0043
137	1.5522	0.0043
138	1.5564	0.0042
139	1.5606	0.0042
140	1.5648	0.0042
141	1.5690	0.0042
142	1.5732	0.0042
143	1.5773	0.0041
144	1.5814	0.0041

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0041	0.0010	0.0031
2	0.0041	0.0010	0.0032
3	0.0042	0.0010	0.0032
4	0.0042	0.0010	0.0032
5	0.0042	0.0010	0.0032
6	0.0043	0.0010	0.0032
7	0.0043	0.0010	0.0033
8	0.0043	0.0010	0.0033
9	0.0044	0.0010	0.0033
10	0.0044	0.0010	0.0033
11	0.0044	0.0011	0.0034
12	0.0044	0.0011	0.0034
13	0.0045	0.0011	0.0034
14	0.0045	0.0011	0.0034
15	0.0045	0.0011	0.0035
16	0.0046	0.0011	0.0035
17	0.0046	0.0011	0.0035
18	0.0046	0.0011	0.0035
19	0.0047	0.0011	0.0036
20	0.0047	0.0011	0.0036
21	0.0048	0.0011	0.0036
22	0.0048	0.0011	0.0037
23	0.0049	0.0012	0.0037
24	0.0049	0.0012	0.0037
25	0.0049	0.0012	0.0038
26	0.0050	0.0012	0.0038
27	0.0050	0.0012	0.0038
28	0.0051	0.0012	0.0039
29	0.0051	0.0012	0.0039
30	0.0051	0.0012	0.0039
31	0.0052	0.0012	0.0040

32	0.0052	0.0012	0.0040
33	0.0053	0.0013	0.0040
34	0.0054	0.0013	0.0041
35	0.0054	0.0013	0.0041
36	0.0055	0.0013	0.0042
37	0.0055	0.0013	0.0042
38	0.0056	0.0013	0.0042
39	0.0057	0.0013	0.0043
40	0.0057	0.0014	0.0043
41	0.0058	0.0014	0.0044
42	0.0058	0.0014	0.0044
43	0.0059	0.0014	0.0045
44	0.0060	0.0014	0.0045
45	0.0061	0.0014	0.0046
46	0.0061	0.0015	0.0047
47	0.0062	0.0015	0.0047
48	0.0063	0.0015	0.0048
49	0.0077	0.0018	0.0059
50	0.0078	0.0019	0.0059
51	0.0079	0.0019	0.0060
52	0.0080	0.0019	0.0061
53	0.0081	0.0019	0.0062
54	0.0082	0.0019	0.0062
55	0.0083	0.0020	0.0063
56	0.0084	0.0020	0.0064
57	0.0086	0.0020	0.0065
58	0.0086	0.0021	0.0066
59	0.0088	0.0021	0.0067
60	0.0089	0.0021	0.0068
61	0.0091	0.0022	0.0069
62	0.0092	0.0022	0.0070
63	0.0094	0.0022	0.0071
64	0.0095	0.0023	0.0072
65	0.0097	0.0023	0.0074
66	0.0098	0.0023	0.0075
67	0.0100	0.0024	0.0076
68	0.0101	0.0024	0.0077
69	0.0104	0.0025	0.0079
70	0.0105	0.0025	0.0080
71	0.0108	0.0026	0.0083
72	0.0110	0.0026	0.0084
73	0.0118	0.0028	0.0090
74	0.0119	0.0028	0.0092
75	0.0123	0.0028	0.0095
76	0.0125	0.0028	0.0098
77	0.0130	0.0028	0.0102
78	0.0132	0.0028	0.0104
79	0.0137	0.0028	0.0110
80	0.0140	0.0028	0.0112
81	0.0146	0.0028	0.0118
82	0.0150	0.0028	0.0122
83	0.0157	0.0028	0.0129
84	0.0161	0.0028	0.0134
85	0.0171	0.0028	0.0143
86	0.0176	0.0028	0.0149
87	0.0189	0.0028	0.0161
88	0.0196	0.0028	0.0168
89	0.0184	0.0028	0.0156
90	0.0194	0.0028	0.0166
91	0.0220	0.0028	0.0192
92	0.0237	0.0028	0.0209
93	0.0292	0.0028	0.0264
94	0.0328	0.0028	0.0301
95	0.0465	0.0028	0.0437
96	0.0634	0.0028	0.0606
97	0.1899	0.0028	0.1872
98	0.0381	0.0028	0.0353
99	0.0258	0.0028	0.0231
100	0.0206	0.0028	0.0178
101	0.0204	0.0028	0.0176
102	0.0182	0.0028	0.0154

```
      103              0.0166           0.0028              0.0138
      104              0.0153           0.0028              0.0126
      105              0.0143           0.0028              0.0115
      106              0.0135           0.0028              0.0107
      107              0.0127           0.0028              0.0100
      108              0.0121           0.0028              0.0094
      109              0.0112           0.0027              0.0085
      110              0.0107           0.0025              0.0081
      111              0.0103           0.0024              0.0078
      112              0.0099           0.0024              0.0075
      113              0.0096           0.0023              0.0073
      114              0.0093           0.0022              0.0071
      115              0.0090           0.0021              0.0068
      116              0.0087           0.0021              0.0066
      117              0.0085           0.0020              0.0065
      118              0.0083           0.0020              0.0063
      119              0.0081           0.0019              0.0061
      120              0.0079           0.0019              0.0060
      121              0.0063           0.0015              0.0048
      122              0.0062           0.0015              0.0047
      123              0.0060           0.0014              0.0046
      124              0.0059           0.0014              0.0045
      125              0.0057           0.0014              0.0044
      126              0.0056           0.0013              0.0043
      127              0.0055           0.0013              0.0042
      128              0.0054           0.0013              0.0041
      129              0.0053           0.0013              0.0040
      130              0.0052           0.0012              0.0039
      131              0.0051           0.0012              0.0039
      132              0.0050           0.0012              0.0038
      133              0.0049           0.0012              0.0037
      134              0.0048           0.0011              0.0037
      135              0.0047           0.0011              0.0036
      136              0.0047           0.0011              0.0036
      137              0.0046           0.0011              0.0035
      138              0.0045           0.0011              0.0034
      139              0.0045           0.0011              0.0034
      140              0.0044           0.0010              0.0033
      141              0.0043           0.0010              0.0033
      142              0.0043           0.0010              0.0033
      143              0.0042           0.0010              0.0032
      144              0.0042           0.0010              0.0032
      ------------------------------------------------------------------------
      ------------------------------------------------------------------------
      Total soil rain loss =      0.26(In)
      Total effective rainfall =      1.32(In)
      Peak flow rate in flood hydrograph =      6.77(CFS)
      ------------------------------------------------------------------------
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          12 - H O U R    S T O R M
                     R u n o f f      H y d r o g r a p h
      ------------------------------------------------------------------------
                  Hydrograph in   5   Minute intervals ((CFS))

      ------------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0        2.5       5.0       7.5      10.0
------------------------------------------------------------------------
  0+ 5       0.0001      0.01  Q         |         |         |         |
  0+10       0.0007      0.09  Q         |         |         |         |
  0+15       0.0018      0.16  Q         |         |         |         |
  0+20       0.0031      0.19  Q         |         |         |         |
  0+25       0.0046      0.21  Q         |         |         |         |
  0+30       0.0060      0.22  Q         |         |         |         |
  0+35       0.0076      0.22  Q         |         |         |         |
  0+40       0.0091      0.23  Q         |         |         |         |
  0+45       0.0107      0.23  Q         |         |         |         |
  0+50       0.0123      0.23  Q         |         |         |         |
  0+55       0.0139      0.23  Q         |         |         |         |
  1+ 0       0.0155      0.23  Q         |         |         |         |
  1+ 5       0.0171      0.24  QV        |         |         |         |
  1+10       0.0188      0.24  QV        |         |         |         |
```

```
1+15      0.0204      0.24  QV        |         |         |         |
1+20      0.0221      0.24  QV        |         |         |         |
1+25      0.0237      0.24  QV        |         |         |         |
1+30      0.0254      0.24  QV        |         |         |         |
1+35      0.0271      0.25  QV        |         |         |         |
1+40      0.0288      0.25  QV        |         |         |         |
1+45      0.0306      0.25  |Q        |         |         |         |
1+50      0.0323      0.25  |QV       |         |         |         |
1+55      0.0341      0.25  |QV       |         |         |         |
2+ 0      0.0358      0.26  |QV       |         |         |         |
2+ 5      0.0376      0.26  |QV       |         |         |         |
2+10      0.0394      0.26  |QV       |         |         |         |
2+15      0.0412      0.26  |QV       |         |         |         |
2+20      0.0431      0.27  |QV       |         |         |         |
2+25      0.0449      0.27  |QV       |         |         |         |
2+30      0.0468      0.27  |QV       |         |         |         |
2+35      0.0487      0.27  |Q V      |         |         |         |
2+40      0.0506      0.28  |Q V      |         |         |         |
2+45      0.0525      0.28  |Q V      |         |         |         |
2+50      0.0544      0.28  |Q V      |         |         |         |
2+55      0.0564      0.28  |Q V      |         |         |         |
3+ 0      0.0583      0.29  |Q V      |         |         |         |
3+ 5      0.0603      0.29  |Q V      |         |         |         |
3+10      0.0624      0.29  |Q V      |         |         |         |
3+15      0.0644      0.30  |Q  V     |         |         |         |
3+20      0.0665      0.30  |Q  V     |         |         |         |
3+25      0.0685      0.30  |Q  V     |         |         |         |
3+30      0.0706      0.31  |Q  V     |         |         |         |
3+35      0.0728      0.31  |Q  V     |         |         |         |
3+40      0.0749      0.31  |Q  V     |         |         |         |
3+45      0.0771      0.32  |Q  V     |         |         |         |
3+50      0.0793      0.32  |Q  V     |         |         |         |
3+55      0.0815      0.32  |Q   V    |         |         |         |
4+ 0      0.0838      0.33  |Q   V    |         |         |         |
4+ 5      0.0861      0.34  |Q   V    |         |         |         |
4+10      0.0886      0.37  |Q   V    |         |         |         |
4+15      0.0913      0.39  |Q   V    |         |         |         |
4+20      0.0941      0.41  |Q   V    |         |         |         |
4+25      0.0970      0.42  |Q    V   |         |         |         |
4+30      0.0999      0.43  |Q    V   |         |         |         |
4+35      0.1029      0.43  |Q    V   |         |         |         |
4+40      0.1059      0.44  |Q    V   |         |         |         |
4+45      0.1090      0.44  |Q    V   |         |         |         |
4+50      0.1121      0.45  |Q     V  |         |         |         |
4+55      0.1152      0.46  |Q     V  |         |         |         |
5+ 0      0.1184      0.46  |Q     V  |         |         |         |
5+ 5      0.1216      0.47  |Q     V  |         |         |         |
5+10      0.1249      0.48  |Q     V  |         |         |         |
5+15      0.1282      0.48  |Q      V |         |         |         |
5+20      0.1316      0.49  |Q      V |         |         |         |
5+25      0.1351      0.50  |Q      V |         |         |         |
5+30      0.1386      0.51  | Q     V |         |         |         |
5+35      0.1421      0.52  | Q     V |         |         |         |
5+40      0.1457      0.52  | Q      V|         |         |         |
5+45      0.1494      0.53  | Q      V|         |         |         |
5+50      0.1532      0.54  | Q      V|         |         |         |
5+55      0.1570      0.55  | Q      V|         |         |         |
6+ 0      0.1609      0.57  | Q       V         |         |         |
6+ 5      0.1649      0.58  | Q       V         |         |         |
6+10      0.1690      0.60  | Q       V         |         |         |
6+15      0.1733      0.62  | Q       V         |         |         |
6+20      0.1777      0.64  | Q       |V        |         |         |
6+25      0.1823      0.67  | Q       |V        |         |         |
6+30      0.1871      0.69  | Q       |V        |         |         |
6+35      0.1920      0.71  | Q       | V       |         |         |
6+40      0.1970      0.74  | Q       | V       |         |         |
6+45      0.2023      0.76  |  Q      | V       |         |         |
6+50      0.2078      0.79  |  Q      |  V      |         |         |
6+55      0.2135      0.83  |  Q      |  V      |         |         |
7+ 0      0.2194      0.86  |  Q      |  V      |         |         |
7+ 5      0.2256      0.90  |  Q      |   V     |         |         |
```

```
   7+10       0.2322      0.95  |  Q       |   V      |          |          |
   7+15       0.2390      1.00  |  Q       |    V     |          |          |
   7+20       0.2463      1.06  |   Q      |    V     |          |          |
   7+25       0.2540      1.11  |   Q      |    V     |          |          |
   7+30       0.2617      1.12  |   Q      |     V    |          |          |
   7+35       0.2695      1.14  |   Q      |     V    |          |          |
   7+40       0.2780      1.24  |   Q      |      V   |          |          |
   7+45       0.2875      1.37  |    Q     |       V  |          |          |
   7+50       0.2984      1.58  |     Q    |       V  |          |          |
   7+55       0.3113      1.88  |      Q   |        V |          |          |
   8+ 0       0.3281      2.44  |        Q |         V          |          |
   8+ 5       0.3541      3.77  |          |    Q     | V        |          |
   8+10       0.4007      6.77  |          |          |    V Q   |          |
   8+15       0.4426      6.08  |          |          |   Q  V   |          |
   8+20       0.4666      3.49  |          |  Q       |        V |          |
   8+25       0.4837      2.49  |          |       Q  |          V          |
   8+30       0.4969      1.91  |          |      Q   |          |V         |
   8+35       0.5073      1.51  |          |     Q    |          |V         |
   8+40       0.5158      1.23  |          |   Q      |          | V        |
   8+45       0.5232      1.08  |          |   Q      |          | V        |
   8+50       0.5299      0.97  |          |  Q       |          |  V       |
   8+55       0.5359      0.87  |          |  Q       |          |  V       |
   9+ 0       0.5413      0.78  |          |  Q       |          |  V       |
   9+ 5       0.5462      0.72  |          | Q        |          |   V      |
   9+10       0.5508      0.66  |          | Q        |          |   V      |
   9+15       0.5550      0.62  |          | Q        |          |   V      |
   9+20       0.5591      0.59  |          | Q        |          |    V     |
   9+25       0.5629      0.56  |          | Q        |          |    V     |
   9+30       0.5666      0.54  |          | Q        |          |    V     |
   9+35       0.5702      0.52  |          | Q        |          |    V     |
   9+40       0.5736      0.50  |          |Q         |          |    V     |
   9+45       0.5770      0.48  |          |Q         |          |     V    |
   9+50       0.5802      0.47  |          |Q         |          |     V    |
   9+55       0.5833      0.46  |          |Q         |          |     V    |
  10+ 0       0.5864      0.44  |          |Q         |          |     V    |
  10+ 5       0.5894      0.43  |          |Q         |          |     V    |
  10+10       0.5921      0.39  |          |Q         |          |      V   |
  10+15       0.5945      0.36  |          |Q         |          |      V   |
  10+20       0.5969      0.34  |          |Q         |          |      V   |
  10+25       0.5992      0.33  |          |Q         |          |      V   |
  10+30       0.6014      0.32  |          |Q         |          |      V   |
  10+35       0.6035      0.31  |          |Q         |          |      V   |
  10+40       0.6056      0.30  |          |Q         |          |       V  |
  10+45       0.6076      0.30  |          |Q         |          |       V  |
  10+50       0.6096      0.29  |          |Q         |          |       V  |
  10+55       0.6116      0.28  |          |Q         |          |       V  |
  11+ 0       0.6135      0.28  |          |Q         |          |       V  |
  11+ 5       0.6154      0.27  |          |Q         |          |       V  |
  11+10       0.6172      0.27  |          |Q         |          |       V  |
  11+15       0.6190      0.26  |          |Q         |          |       V  |
  11+20       0.6208      0.26  |          |Q         |          |       V  |
  11+25       0.6226      0.25  |          |Q         |          |        V |
  11+30       0.6243      0.25  |          |Q         |          |        V |
  11+35       0.6260      0.25  |          Q         |          |        V |
  11+40       0.6277      0.24  |          Q         |          |        V |
  11+45       0.6293      0.24  |          Q         |          |        V |
  11+50       0.6309      0.24  |          Q         |          |        V |
  11+55       0.6325      0.23  |          Q         |          |        V |
  12+ 0       0.6341      0.23  |          Q         |          |        V |
  12+ 5       0.6356      0.21  |          Q         |          |        V |
  12+10       0.6365      0.13  |          Q         |          |        V |
  12+15       0.6369      0.06  |          Q         |          |        V |
  12+20       0.6371      0.03  |          Q         |          |        V |
  12+25       0.6372      0.02  |          Q         |          |        V |
  12+30       0.6373      0.01  |          Q         |          |        V |
  12+35       0.6373      0.00  |          Q         |          |        V |
  12+40       0.6374      0.00  |          Q         |          |        V |
  12+45       0.6374      0.00  |          Q         |          |        V |
  12+50       0.6374      0.00  |          Q         |          |        V |
  12+55       0.6374      0.00  |          Q         |          |         V
-------------------------------------------------------------------------
```

- 2 Year 24 Hour Pre-Development Unit Hydrograph – Area 'E'

```
        U n i t   H y d r o g r a p h   A n a l y s i s

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        Study date  10/11/16   File Name EXE00224.out


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'E' - 2 YEAR 24 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

        Storm Event Year = 2

        Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 70.6       3.6          0.61     C     0.250     0.144    0.036
 70.6       2.3          0.39     D     0.200     0.144    0.029

Area-averaged adjusted loss rate Fm (In/Hr) =  0.033

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
     0.51   0.088         70.6      51.7       9.33     0.002
     3.05   0.525         98.0      98.0       0.20     0.890

     0.32   0.056         70.6      51.7       9.33     0.002
     1.93   0.331         98.0      98.0       0.20     0.890

Area-averaged catchment yield fraction, Y =  0.762
Area-averaged low loss fraction, Yb =  0.238
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.165 (hours)
Watershed area =       5.81(Ac.)
Catchment Lag time =   0.132 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 63.3232
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.033(In/Hr)
Average low loss rate fraction (Yb) = 0.238 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.190(In)
Computed peak 30-minute rainfall =  0.400(In)
Specified peak 1-hour rainfall =  0.530(In)
Computed peak 3-hour rainfall =  0.890(In)
Specified peak 6-hour rainfall =  1.220(In)
Specified peak 24-hour rainfall =  2.050(In)
```

Rainfall depth area reduction factors:
Using a total area of 5.81(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000 Adjusted rainfall = 0.190(In)
30-minute factor = 1.000 Adjusted rainfall = 0.400(In)
1-hour factor = 1.000 Adjusted rainfall = 0.530(In)
3-hour factor = 1.000 Adjusted rainfall = 0.890(In)
6-hour factor = 1.000 Adjusted rainfall = 1.220(In)
24-hour factor = 1.000 Adjusted rainfall = 2.050(In)

U n i t H y d r o g r a p h

Interval Number	'S' Graph Mean values (K = 70.26 (CFS))	Unit Hydrograph ((CFS))
1	6.078	4.270
2	41.093	24.604
3	73.456	22.740
4	85.329	8.343
5	92.102	4.759
6	96.050	2.774
7	97.988	1.362
8	98.747	0.533
9	99.236	0.343
10	99.678	0.311
11	99.925	0.174
12	100.000	0.052

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.1899	0.1899
2	0.2533	0.0634
3	0.2998	0.0465
4	0.3379	0.0381
5	0.3707	0.0328
6	0.3999	0.0292
7	0.4257	0.0258
8	0.4494	0.0237
9	0.4714	0.0220
10	0.4921	0.0206
11	0.5115	0.0194
12	0.5299	0.0184
13	0.5503	0.0204
14	0.5698	0.0196
15	0.5887	0.0189
16	0.6069	0.0182
17	0.6245	0.0176
18	0.6416	0.0171
19	0.6582	0.0166
20	0.6743	0.0161
21	0.6900	0.0157
22	0.7054	0.0153
23	0.7203	0.0150
24	0.7349	0.0146
25	0.7492	0.0143
26	0.7632	0.0140
27	0.7770	0.0137
28	0.7904	0.0135
29	0.8036	0.0132
30	0.8166	0.0130
31	0.8293	0.0127
32	0.8418	0.0125
33	0.8542	0.0123
34	0.8663	0.0121
35	0.8782	0.0119
36	0.8900	0.0118
37	0.9011	0.0112
38	0.9121	0.0110

39	0.9230	0.0108
40	0.9337	0.0107
41	0.9442	0.0105
42	0.9546	0.0104
43	0.9649	0.0103
44	0.9751	0.0101
45	0.9851	0.0100
46	0.9950	0.0099
47	1.0048	0.0098
48	1.0144	0.0097
49	1.0240	0.0096
50	1.0335	0.0095
51	1.0428	0.0094
52	1.0521	0.0093
53	1.0612	0.0092
54	1.0703	0.0091
55	1.0793	0.0090
56	1.0881	0.0089
57	1.0969	0.0088
58	1.1057	0.0087
59	1.1143	0.0086
60	1.1229	0.0086
61	1.1313	0.0085
62	1.1397	0.0084
63	1.1481	0.0083
64	1.1563	0.0083
65	1.1645	0.0082
66	1.1726	0.0081
67	1.1807	0.0081
68	1.1887	0.0080
69	1.1966	0.0079
70	1.2044	0.0079
71	1.2122	0.0078
72	1.2200	0.0077
73	1.2263	0.0063
74	1.2326	0.0063
75	1.2388	0.0062
76	1.2449	0.0062
77	1.2510	0.0061
78	1.2571	0.0061
79	1.2631	0.0060
80	1.2691	0.0060
81	1.2750	0.0059
82	1.2808	0.0059
83	1.2867	0.0058
84	1.2925	0.0058
85	1.2982	0.0057
86	1.3039	0.0057
87	1.3095	0.0057
88	1.3152	0.0056
89	1.3207	0.0056
90	1.3263	0.0055
91	1.3318	0.0055
92	1.3372	0.0055
93	1.3427	0.0054
94	1.3480	0.0054
95	1.3534	0.0054
96	1.3587	0.0053
97	1.3640	0.0053
98	1.3692	0.0052
99	1.3745	0.0052
100	1.3796	0.0052
101	1.3848	0.0051
102	1.3899	0.0051
103	1.3950	0.0051
104	1.4000	0.0051
105	1.4051	0.0050
106	1.4101	0.0050
107	1.4150	0.0050
108	1.4200	0.0049
109	1.4249	0.0049

110	1.4298	0.0049
111	1.4346	0.0049
112	1.4394	0.0048
113	1.4442	0.0048
114	1.4490	0.0048
115	1.4537	0.0047
116	1.4585	0.0047
117	1.4632	0.0047
118	1.4678	0.0047
119	1.4725	0.0046
120	1.4771	0.0046
121	1.4817	0.0046
122	1.4863	0.0046
123	1.4908	0.0045
124	1.4953	0.0045
125	1.4998	0.0045
126	1.5043	0.0045
127	1.5088	0.0045
128	1.5132	0.0044
129	1.5176	0.0044
130	1.5220	0.0044
131	1.5264	0.0044
132	1.5307	0.0044
133	1.5351	0.0043
134	1.5394	0.0043
135	1.5437	0.0043
136	1.5480	0.0043
137	1.5522	0.0043
138	1.5564	0.0042
139	1.5606	0.0042
140	1.5648	0.0042
141	1.5690	0.0042
142	1.5732	0.0042
143	1.5773	0.0041
144	1.5814	0.0041
145	1.5855	0.0041
146	1.5896	0.0041
147	1.5937	0.0041
148	1.5977	0.0041
149	1.6018	0.0040
150	1.6058	0.0040
151	1.6098	0.0040
152	1.6138	0.0040
153	1.6177	0.0040
154	1.6217	0.0040
155	1.6256	0.0039
156	1.6295	0.0039
157	1.6334	0.0039
158	1.6373	0.0039
159	1.6412	0.0039
160	1.6451	0.0039
161	1.6489	0.0038
162	1.6527	0.0038
163	1.6565	0.0038
164	1.6603	0.0038
165	1.6641	0.0038
166	1.6679	0.0038
167	1.6716	0.0038
168	1.6754	0.0037
169	1.6791	0.0037
170	1.6828	0.0037
171	1.6865	0.0037
172	1.6902	0.0037
173	1.6939	0.0037
174	1.6975	0.0037
175	1.7012	0.0036
176	1.7048	0.0036
177	1.7084	0.0036
178	1.7120	0.0036
179	1.7156	0.0036
180	1.7192	0.0036

181	1.7228	0.0036
182	1.7264	0.0036
183	1.7299	0.0035
184	1.7334	0.0035
185	1.7369	0.0035
186	1.7405	0.0035
187	1.7440	0.0035
188	1.7474	0.0035
189	1.7509	0.0035
190	1.7544	0.0035
191	1.7578	0.0035
192	1.7613	0.0034
193	1.7647	0.0034
194	1.7681	0.0034
195	1.7715	0.0034
196	1.7749	0.0034
197	1.7783	0.0034
198	1.7817	0.0034
199	1.7850	0.0034
200	1.7884	0.0034
201	1.7917	0.0033
202	1.7951	0.0033
203	1.7984	0.0033
204	1.8017	0.0033
205	1.8050	0.0033
206	1.8083	0.0033
207	1.8116	0.0033
208	1.8148	0.0033
209	1.8181	0.0033
210	1.8214	0.0033
211	1.8246	0.0032
212	1.8278	0.0032
213	1.8311	0.0032
214	1.8343	0.0032
215	1.8375	0.0032
216	1.8407	0.0032
217	1.8439	0.0032
218	1.8470	0.0032
219	1.8502	0.0032
220	1.8534	0.0032
221	1.8565	0.0031
222	1.8596	0.0031
223	1.8628	0.0031
224	1.8659	0.0031
225	1.8690	0.0031
226	1.8721	0.0031
227	1.8752	0.0031
228	1.8783	0.0031
229	1.8814	0.0031
230	1.8845	0.0031
231	1.8875	0.0031
232	1.8906	0.0031
233	1.8936	0.0030
234	1.8967	0.0030
235	1.8997	0.0030
236	1.9027	0.0030
237	1.9057	0.0030
238	1.9087	0.0030
239	1.9117	0.0030
240	1.9147	0.0030
241	1.9177	0.0030
242	1.9207	0.0030
243	1.9237	0.0030
244	1.9266	0.0030
245	1.9296	0.0030
246	1.9325	0.0029
247	1.9354	0.0029
248	1.9384	0.0029
249	1.9413	0.0029
250	1.9442	0.0029
251	1.9471	0.0029

252	1.9500	0.0029
253	1.9529	0.0029
254	1.9558	0.0029
255	1.9587	0.0029
256	1.9616	0.0029
257	1.9644	0.0029
258	1.9673	0.0029
259	1.9701	0.0029
260	1.9730	0.0028
261	1.9758	0.0028
262	1.9786	0.0028
263	1.9815	0.0028
264	1.9843	0.0028
265	1.9871	0.0028
266	1.9899	0.0028
267	1.9927	0.0028
268	1.9955	0.0028
269	1.9983	0.0028
270	2.0010	0.0028
271	2.0038	0.0028
272	2.0066	0.0028
273	2.0093	0.0028
274	2.0121	0.0028
275	2.0148	0.0027
276	2.0176	0.0027
277	2.0203	0.0027
278	2.0230	0.0027
279	2.0258	0.0027
280	2.0285	0.0027
281	2.0312	0.0027
282	2.0339	0.0027
283	2.0366	0.0027
284	2.0393	0.0027
285	2.0420	0.0027
286	2.0446	0.0027
287	2.0473	0.0027
288	2.0500	0.0027

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0027	0.0006	0.0020
2	0.0027	0.0006	0.0020
3	0.0027	0.0006	0.0020
4	0.0027	0.0006	0.0021
5	0.0027	0.0006	0.0021
6	0.0027	0.0006	0.0021
7	0.0027	0.0006	0.0021
8	0.0027	0.0006	0.0021
9	0.0027	0.0007	0.0021
10	0.0027	0.0007	0.0021
11	0.0028	0.0007	0.0021
12	0.0028	0.0007	0.0021
13	0.0028	0.0007	0.0021
14	0.0028	0.0007	0.0021
15	0.0028	0.0007	0.0021
16	0.0028	0.0007	0.0021
17	0.0028	0.0007	0.0021
18	0.0028	0.0007	0.0022
19	0.0028	0.0007	0.0022
20	0.0028	0.0007	0.0022
21	0.0029	0.0007	0.0022
22	0.0029	0.0007	0.0022
23	0.0029	0.0007	0.0022
24	0.0029	0.0007	0.0022
25	0.0029	0.0007	0.0022
26	0.0029	0.0007	0.0022
27	0.0029	0.0007	0.0022
28	0.0029	0.0007	0.0022
29	0.0029	0.0007	0.0022

30	0.0030	0.0007	0.0022
31	0.0030	0.0007	0.0023
32	0.0030	0.0007	0.0023
33	0.0030	0.0007	0.0023
34	0.0030	0.0007	0.0023
35	0.0030	0.0007	0.0023
36	0.0030	0.0007	0.0023
37	0.0030	0.0007	0.0023
38	0.0030	0.0007	0.0023
39	0.0031	0.0007	0.0023
40	0.0031	0.0007	0.0023
41	0.0031	0.0007	0.0024
42	0.0031	0.0007	0.0024
43	0.0031	0.0007	0.0024
44	0.0031	0.0007	0.0024
45	0.0031	0.0007	0.0024
46	0.0031	0.0008	0.0024
47	0.0032	0.0008	0.0024
48	0.0032	0.0008	0.0024
49	0.0032	0.0008	0.0024
50	0.0032	0.0008	0.0024
51	0.0032	0.0008	0.0025
52	0.0032	0.0008	0.0025
53	0.0033	0.0008	0.0025
54	0.0033	0.0008	0.0025
55	0.0033	0.0008	0.0025
56	0.0033	0.0008	0.0025
57	0.0033	0.0008	0.0025
58	0.0033	0.0008	0.0025
59	0.0033	0.0008	0.0025
60	0.0034	0.0008	0.0026
61	0.0034	0.0008	0.0026
62	0.0034	0.0008	0.0026
63	0.0034	0.0008	0.0026
64	0.0034	0.0008	0.0026
65	0.0034	0.0008	0.0026
66	0.0035	0.0008	0.0026
67	0.0035	0.0008	0.0026
68	0.0035	0.0008	0.0027
69	0.0035	0.0008	0.0027
70	0.0035	0.0008	0.0027
71	0.0035	0.0008	0.0027
72	0.0036	0.0008	0.0027
73	0.0036	0.0009	0.0027
74	0.0036	0.0009	0.0027
75	0.0036	0.0009	0.0028
76	0.0036	0.0009	0.0028
77	0.0037	0.0009	0.0028
78	0.0037	0.0009	0.0028
79	0.0037	0.0009	0.0028
80	0.0037	0.0009	0.0028
81	0.0037	0.0009	0.0028
82	0.0038	0.0009	0.0029
83	0.0038	0.0009	0.0029
84	0.0038	0.0009	0.0029
85	0.0038	0.0009	0.0029
86	0.0038	0.0009	0.0029
87	0.0039	0.0009	0.0029
88	0.0039	0.0009	0.0030
89	0.0039	0.0009	0.0030
90	0.0039	0.0009	0.0030
91	0.0040	0.0009	0.0030
92	0.0040	0.0009	0.0030
93	0.0040	0.0010	0.0031
94	0.0040	0.0010	0.0031
95	0.0041	0.0010	0.0031
96	0.0041	0.0010	0.0031
97	0.0041	0.0010	0.0031
98	0.0041	0.0010	0.0032
99	0.0042	0.0010	0.0032
100	0.0042	0.0010	0.0032

101	0.0042	0.0010	0.0032
102	0.0043	0.0010	0.0032
103	0.0043	0.0010	0.0033
104	0.0043	0.0010	0.0033
105	0.0044	0.0010	0.0033
106	0.0044	0.0010	0.0033
107	0.0044	0.0011	0.0034
108	0.0044	0.0011	0.0034
109	0.0045	0.0011	0.0034
110	0.0045	0.0011	0.0034
111	0.0045	0.0011	0.0035
112	0.0046	0.0011	0.0035
113	0.0046	0.0011	0.0035
114	0.0046	0.0011	0.0035
115	0.0047	0.0011	0.0036
116	0.0047	0.0011	0.0036
117	0.0048	0.0011	0.0036
118	0.0048	0.0011	0.0037
119	0.0049	0.0012	0.0037
120	0.0049	0.0012	0.0037
121	0.0049	0.0012	0.0038
122	0.0050	0.0012	0.0038
123	0.0050	0.0012	0.0038
124	0.0051	0.0012	0.0039
125	0.0051	0.0012	0.0039
126	0.0051	0.0012	0.0039
127	0.0052	0.0012	0.0040
128	0.0052	0.0012	0.0040
129	0.0053	0.0013	0.0040
130	0.0054	0.0013	0.0041
131	0.0054	0.0013	0.0041
132	0.0055	0.0013	0.0042
133	0.0055	0.0013	0.0042
134	0.0056	0.0013	0.0042
135	0.0057	0.0013	0.0043
136	0.0057	0.0014	0.0043
137	0.0058	0.0014	0.0044
138	0.0058	0.0014	0.0044
139	0.0059	0.0014	0.0045
140	0.0060	0.0014	0.0045
141	0.0061	0.0014	0.0046
142	0.0061	0.0015	0.0047
143	0.0062	0.0015	0.0047
144	0.0063	0.0015	0.0048
145	0.0077	0.0018	0.0059
146	0.0078	0.0019	0.0059
147	0.0079	0.0019	0.0060
148	0.0080	0.0019	0.0061
149	0.0081	0.0019	0.0062
150	0.0082	0.0019	0.0062
151	0.0083	0.0020	0.0063
152	0.0084	0.0020	0.0064
153	0.0086	0.0020	0.0065
154	0.0086	0.0021	0.0066
155	0.0088	0.0021	0.0067
156	0.0089	0.0021	0.0068
157	0.0091	0.0022	0.0069
158	0.0092	0.0022	0.0070
159	0.0094	0.0022	0.0071
160	0.0095	0.0023	0.0072
161	0.0097	0.0023	0.0074
162	0.0098	0.0023	0.0075
163	0.0100	0.0024	0.0076
164	0.0101	0.0024	0.0077
165	0.0104	0.0025	0.0079
166	0.0105	0.0025	0.0080
167	0.0108	0.0026	0.0083
168	0.0110	0.0026	0.0084
169	0.0118	0.0028	0.0090
170	0.0119	0.0028	0.0092
171	0.0123	0.0028	0.0095

172	0.0125	0.0028	0.0098
173	0.0130	0.0028	0.0102
174	0.0132	0.0028	0.0104
175	0.0137	0.0028	0.0110
176	0.0140	0.0028	0.0112
177	0.0146	0.0028	0.0118
178	0.0150	0.0028	0.0122
179	0.0157	0.0028	0.0129
180	0.0161	0.0028	0.0134
181	0.0171	0.0028	0.0143
182	0.0176	0.0028	0.0149
183	0.0189	0.0028	0.0161
184	0.0196	0.0028	0.0168
185	0.0184	0.0028	0.0156
186	0.0194	0.0028	0.0166
187	0.0220	0.0028	0.0192
188	0.0237	0.0028	0.0209
189	0.0292	0.0028	0.0264
190	0.0328	0.0028	0.0301
191	0.0465	0.0028	0.0437
192	0.0634	0.0028	0.0606
193	0.1899	0.0028	0.1872
194	0.0381	0.0028	0.0353
195	0.0258	0.0028	0.0231
196	0.0206	0.0028	0.0178
197	0.0204	0.0028	0.0176
198	0.0182	0.0028	0.0154
199	0.0166	0.0028	0.0138
200	0.0153	0.0028	0.0126
201	0.0143	0.0028	0.0115
202	0.0135	0.0028	0.0107
203	0.0127	0.0028	0.0100
204	0.0121	0.0028	0.0094
205	0.0112	0.0027	0.0085
206	0.0107	0.0025	0.0081
207	0.0103	0.0024	0.0078
208	0.0099	0.0024	0.0075
209	0.0096	0.0023	0.0073
210	0.0093	0.0022	0.0071
211	0.0090	0.0021	0.0068
212	0.0087	0.0021	0.0066
213	0.0085	0.0020	0.0065
214	0.0083	0.0020	0.0063
215	0.0081	0.0019	0.0061
216	0.0079	0.0019	0.0060
217	0.0063	0.0015	0.0048
218	0.0062	0.0015	0.0047
219	0.0060	0.0014	0.0046
220	0.0059	0.0014	0.0045
221	0.0057	0.0014	0.0044
222	0.0056	0.0013	0.0043
223	0.0055	0.0013	0.0042
224	0.0054	0.0013	0.0041
225	0.0053	0.0013	0.0040
226	0.0052	0.0012	0.0039
227	0.0051	0.0012	0.0039
228	0.0050	0.0012	0.0038
229	0.0049	0.0012	0.0037
230	0.0048	0.0011	0.0037
231	0.0047	0.0011	0.0036
232	0.0047	0.0011	0.0036
233	0.0046	0.0011	0.0035
234	0.0045	0.0011	0.0034
235	0.0045	0.0011	0.0034
236	0.0044	0.0010	0.0033
237	0.0043	0.0010	0.0033
238	0.0043	0.0010	0.0033
239	0.0042	0.0010	0.0032
240	0.0042	0.0010	0.0032
241	0.0041	0.0010	0.0031
242	0.0041	0.0010	0.0031

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      243              0.0040          0.0010              0.0030
      244              0.0040          0.0009              0.0030
      245              0.0039          0.0009              0.0030
      246              0.0039          0.0009              0.0029
      247              0.0038          0.0009              0.0029
      248              0.0038          0.0009              0.0029
      249              0.0037          0.0009              0.0028
      250              0.0037          0.0009              0.0028
      251              0.0036          0.0009              0.0028
      252              0.0036          0.0009              0.0027
      253              0.0036          0.0009              0.0027
      254              0.0035          0.0008              0.0027
      255              0.0035          0.0008              0.0027
      256              0.0035          0.0008              0.0026
      257              0.0034          0.0008              0.0026
      258              0.0034          0.0008              0.0026
      259              0.0034          0.0008              0.0026
      260              0.0033          0.0008              0.0025
      261              0.0033          0.0008              0.0025
      262              0.0033          0.0008              0.0025
      263              0.0032          0.0008              0.0025
      264              0.0032          0.0008              0.0024
      265              0.0032          0.0008              0.0024
      266              0.0032          0.0008              0.0024
      267              0.0031          0.0007              0.0024
      268              0.0031          0.0007              0.0024
      269              0.0031          0.0007              0.0023
      270              0.0031          0.0007              0.0023
      271              0.0030          0.0007              0.0023
      272              0.0030          0.0007              0.0023
      273              0.0030          0.0007              0.0023
      274              0.0030          0.0007              0.0023
      275              0.0029          0.0007              0.0022
      276              0.0029          0.0007              0.0022
      277              0.0029          0.0007              0.0022
      278              0.0029          0.0007              0.0022
      279              0.0029          0.0007              0.0022
      280              0.0028          0.0007              0.0022
      281              0.0028          0.0007              0.0021
      282              0.0028          0.0007              0.0021
      283              0.0028          0.0007              0.0021
      284              0.0028          0.0007              0.0021
      285              0.0027          0.0007              0.0021
      286              0.0027          0.0006              0.0021
      287              0.0027          0.0006              0.0021
      288              0.0027          0.0006              0.0020
      ------------------------------------------------------------------
      ------------------------------------------------------------------
      Total soil rain loss =      0.38(In)
      Total effective rainfall =      1.67(In)
      Peak flow rate in flood hydrograph =      6.77(CFS)
      ------------------------------------------------------------------
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                        24 - H O U R    S T O R M
                   R u n o f f      H y d r o g r a p h
      ------------------------------------------------------------------
                Hydrograph in   5   Minute intervals ((CFS))

      ------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0        2.5       5.0       7.5      10.0
------------------------------------------------------------------------
  0+ 5       0.0001      0.01  Q         |         |         |         |
  0+10       0.0005      0.06  Q         |         |         |         |
  0+15       0.0012      0.11  Q         |         |         |         |
  0+20       0.0020      0.12  Q         |         |         |         |
  0+25       0.0029      0.13  Q         |         |         |         |
  0+30       0.0039      0.14  Q         |         |         |         |
  0+35       0.0049      0.14  Q         |         |         |         |
  0+40       0.0059      0.14  Q         |         |         |         |
  0+45       0.0069      0.14  Q         |         |         |         |
  0+50       0.0079      0.15  Q         |         |         |         |
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0+55       0.0089      0.15  Q          |          |          |          |
1+ 0       0.0099      0.15  Q          |          |          |          |
1+ 5       0.0109      0.15  Q          |          |          |          |
1+10       0.0119      0.15  Q          |          |          |          |
1+15       0.0129      0.15  Q          |          |          |          |
1+20       0.0140      0.15  Q          |          |          |          |
1+25       0.0150      0.15  Q          |          |          |          |
1+30       0.0160      0.15  Q          |          |          |          |
1+35       0.0171      0.15  Q          |          |          |          |
1+40       0.0181      0.15  Q          |          |          |          |
1+45       0.0192      0.15  Q          |          |          |          |
1+50       0.0202      0.15  Q          |          |          |          |
1+55       0.0213      0.15  QV         |          |          |          |
2+ 0       0.0223      0.15  QV         |          |          |          |
2+ 5       0.0234      0.15  QV         |          |          |          |
2+10       0.0244      0.15  QV         |          |          |          |
2+15       0.0255      0.16  QV         |          |          |          |
2+20       0.0266      0.16  QV         |          |          |          |
2+25       0.0277      0.16  QV         |          |          |          |
2+30       0.0287      0.16  QV         |          |          |          |
2+35       0.0298      0.16  QV         |          |          |          |
2+40       0.0309      0.16  QV         |          |          |          |
2+45       0.0320      0.16  QV         |          |          |          |
2+50       0.0331      0.16  QV         |          |          |          |
2+55       0.0342      0.16  QV         |          |          |          |
3+ 0       0.0353      0.16  QV         |          |          |          |
3+ 5       0.0364      0.16  QV         |          |          |          |
3+10       0.0375      0.16  QV         |          |          |          |
3+15       0.0386      0.16  QV         |          |          |          |
3+20       0.0398      0.16  QV         |          |          |          |
3+25       0.0409      0.16  Q V        |          |          |          |
3+30       0.0420      0.16  Q V        |          |          |          |
3+35       0.0432      0.17  Q V        |          |          |          |
3+40       0.0443      0.17  Q V        |          |          |          |
3+45       0.0455      0.17  Q V        |          |          |          |
3+50       0.0466      0.17  Q V        |          |          |          |
3+55       0.0478      0.17  Q V        |          |          |          |
4+ 0       0.0489      0.17  Q V        |          |          |          |
4+ 5       0.0501      0.17  Q V        |          |          |          |
4+10       0.0513      0.17  Q V        |          |          |          |
4+15       0.0524      0.17  Q V        |          |          |          |
4+20       0.0536      0.17  Q V        |          |          |          |
4+25       0.0548      0.17  Q V        |          |          |          |
4+30       0.0560      0.17  Q V        |          |          |          |
4+35       0.0572      0.17  Q V        |          |          |          |
4+40       0.0584      0.17  Q V        |          |          |          |
4+45       0.0596      0.18  Q V        |          |          |          |
4+50       0.0608      0.18  Q  V       |          |          |          |
4+55       0.0620      0.18  Q  V       |          |          |          |
5+ 0       0.0633      0.18  Q  V       |          |          |          |
5+ 5       0.0645      0.18  Q  V       |          |          |          |
5+10       0.0657      0.18  Q  V       |          |          |          |
5+15       0.0670      0.18  Q  V       |          |          |          |
5+20       0.0682      0.18  Q  V       |          |          |          |
5+25       0.0695      0.18  Q  V       |          |          |          |
5+30       0.0707      0.18  Q  V       |          |          |          |
5+35       0.0720      0.18  Q  V       |          |          |          |
5+40       0.0733      0.18  Q  V       |          |          |          |
5+45       0.0746      0.19  Q  V       |          |          |          |
5+50       0.0758      0.19  Q  V       |          |          |          |
5+55       0.0771      0.19  Q  V       |          |          |          |
6+ 0       0.0784      0.19  Q  V       |          |          |          |
6+ 5       0.0797      0.19  Q  V       |          |          |          |
6+10       0.0811      0.19  Q   V      |          |          |          |
6+15       0.0824      0.19  Q   V      |          |          |          |
6+20       0.0837      0.19  Q   V      |          |          |          |
6+25       0.0850      0.19  Q   V      |          |          |          |
6+30       0.0864      0.19  Q   V      |          |          |          |
6+35       0.0877      0.20  Q   V      |          |          |          |
6+40       0.0891      0.20  Q   V      |          |          |          |
6+45       0.0904      0.20  Q   V      |          |          |          |
```

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 6+50       0.0918      0.20  Q   V     |         |         |         |
 6+55       0.0932      0.20  Q   V     |         |         |         |
 7+ 0       0.0946      0.20  Q   V     |         |         |         |
 7+ 5       0.0960      0.20  Q   V     |         |         |         |
 7+10       0.0974      0.20  Q   V     |         |         |         |
 7+15       0.0988      0.20  Q   V     |         |         |         |
 7+20       0.1002      0.21  Q   V     |         |         |         |
 7+25       0.1016      0.21  Q    V    |         |         |         |
 7+30       0.1030      0.21  Q    V    |         |         |         |
 7+35       0.1045      0.21  Q    V    |         |         |         |
 7+40       0.1059      0.21  Q    V    |         |         |         |
 7+45       0.1074      0.21  Q    V    |         |         |         |
 7+50       0.1089      0.21  Q    V    |         |         |         |
 7+55       0.1103      0.21  Q    V    |         |         |         |
 8+ 0       0.1118      0.22  Q    V    |         |         |         |
 8+ 5       0.1133      0.22  Q    V    |         |         |         |
 8+10       0.1148      0.22  Q    V    |         |         |         |
 8+15       0.1164      0.22  Q    V    |         |         |         |
 8+20       0.1179      0.22  Q    V    |         |         |         |
 8+25       0.1194      0.22  Q    V    |         |         |         |
 8+30       0.1210      0.22  Q    V    |         |         |         |
 8+35       0.1225      0.23  Q     V   |         |         |         |
 8+40       0.1241      0.23  Q     V   |         |         |         |
 8+45       0.1257      0.23  Q     V   |         |         |         |
 8+50       0.1273      0.23  Q     V   |         |         |         |
 8+55       0.1289      0.23  Q     V   |         |         |         |
 9+ 0       0.1305      0.23  Q     V   |         |         |         |
 9+ 5       0.1321      0.24  Q     V   |         |         |         |
 9+10       0.1337      0.24  Q     V   |         |         |         |
 9+15       0.1354      0.24  Q     V   |         |         |         |
 9+20       0.1370      0.24  Q     V   |         |         |         |
 9+25       0.1387      0.24  Q     V   |         |         |         |
 9+30       0.1404      0.24  Q     V   |         |         |         |
 9+35       0.1421      0.25  Q      V  |         |         |         |
 9+40       0.1438      0.25  Q      V  |         |         |         |
 9+45       0.1455      0.25  |Q     V  |         |         |         |
 9+50       0.1473      0.25  |Q     V  |         |         |         |
 9+55       0.1490      0.25  |Q     V  |         |         |         |
10+ 0       0.1508      0.26  |Q     V  |         |         |         |
10+ 5       0.1526      0.26  |Q     V  |         |         |         |
10+10       0.1544      0.26  |Q     V  |         |         |         |
10+15       0.1562      0.26  |Q     V  |         |         |         |
10+20       0.1581      0.27  |Q     V  |         |         |         |
10+25       0.1599      0.27  |Q     V  |         |         |         |
10+30       0.1618      0.27  |Q     V  |         |         |         |
10+35       0.1636      0.27  |Q      V |         |         |         |
10+40       0.1655      0.28  |Q      V |         |         |         |
10+45       0.1675      0.28  |Q      V |         |         |         |
10+50       0.1694      0.28  |Q      V |         |         |         |
10+55       0.1714      0.28  |Q      V |         |         |         |
11+ 0       0.1733      0.29  |Q      V |         |         |         |
11+ 5       0.1753      0.29  |Q      V |         |         |         |
11+10       0.1773      0.29  |Q      V |         |         |         |
11+15       0.1794      0.30  |Q      V |         |         |         |
11+20       0.1814      0.30  |Q      V |         |         |         |
11+25       0.1835      0.30  |Q       V|         |         |         |
11+30       0.1856      0.31  |Q       V|         |         |         |
11+35       0.1877      0.31  |Q       V|         |         |         |
11+40       0.1899      0.31  |Q       V|         |         |         |
11+45       0.1921      0.32  |Q       V|         |         |         |
11+50       0.1943      0.32  |Q       V|         |         |         |
11+55       0.1965      0.32  |Q       V|         |         |         |
12+ 0       0.1987      0.33  |Q       V|         |         |         |
12+ 5       0.2011      0.34  |Q       V|         |         |         |
12+10       0.2036      0.37  |Q        V         |         |         |
12+15       0.2063      0.39  |Q        V         |         |         |
12+20       0.2091      0.41  |Q        V         |         |         |
12+25       0.2120      0.42  |Q        V         |         |         |
12+30       0.2149      0.43  |Q        V         |         |         |
12+35       0.2179      0.43  |Q        V         |         |         |
12+40       0.2209      0.44  |Q        V         |         |         |
```

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12+45       0.2239      0.44  |Q        |V        |         |         |
12+50       0.2270      0.45  |Q        |V        |         |         |
12+55       0.2302      0.46  |Q        |V        |         |         |
13+ 0       0.2334      0.46  |Q        |V        |         |         |
13+ 5       0.2366      0.47  |Q        |V        |         |         |
13+10       0.2399      0.48  |Q        |V        |         |         |
13+15       0.2432      0.48  |Q        | V       |         |         |
13+20       0.2466      0.49  |Q        | V       |         |         |
13+25       0.2500      0.50  |Q        | V       |         |         |
13+30       0.2535      0.51  | Q       | V       |         |         |
13+35       0.2571      0.52  | Q       | V       |         |         |
13+40       0.2607      0.52  | Q       | V       |         |         |
13+45       0.2644      0.53  | Q       |  V      |         |         |
13+50       0.2681      0.54  | Q       |  V      |         |         |
13+55       0.2720      0.55  | Q       |  V      |         |         |
14+ 0       0.2759      0.57  | Q       |  V      |         |         |
14+ 5       0.2798      0.58  | Q       |  V      |         |         |
14+10       0.2840      0.60  | Q       |   V     |         |         |
14+15       0.2883      0.62  | Q       |   V     |         |         |
14+20       0.2927      0.64  | Q       |   V     |         |         |
14+25       0.2973      0.67  | Q       |   V     |         |         |
14+30       0.3021      0.69  | Q       |   V     |         |         |
14+35       0.3069      0.71  | Q       |    V    |         |         |
14+40       0.3120      0.74  | Q       |    V    |         |         |
14+45       0.3173      0.76  |  Q      |    V    |         |         |
14+50       0.3228      0.79  |  Q      |    V    |         |         |
14+55       0.3285      0.83  |  Q      |     V   |         |         |
15+ 0       0.3344      0.86  |  Q      |     V   |         |         |
15+ 5       0.3406      0.90  |  Q      |     V   |         |         |
15+10       0.3471      0.95  |  Q      |      V  |         |         |
15+15       0.3540      1.00  |  Q      |      V  |         |         |
15+20       0.3613      1.06  |   Q     |      V  |         |         |
15+25       0.3689      1.11  |   Q     |       V |         |         |
15+30       0.3766      1.12  |   Q     |       V |         |         |
15+35       0.3845      1.14  |   Q     |       V |         |         |
15+40       0.3930      1.24  |   Q     |        V|         |         |
15+45       0.4024      1.37  |    Q    |        V|         |         |
15+50       0.4133      1.58  |     Q   |         V         |         |
15+55       0.4263      1.88  |      Q  |          |V       |         |
16+ 0       0.4431      2.44  |         Q|          |V       |         |
16+ 5       0.4690      3.77  |          |    Q     |  V     |         |
16+10       0.5157      6.77  |          |          |    V Q |         |
16+15       0.5575      6.08  |          |          |   Q  V |         |
16+20       0.5816      3.49  |          |  Q       |       V|         |
16+25       0.5987      2.49  |          |Q         |        V|         |
16+30       0.6119      1.91  |       Q  |          |         V         |
16+35       0.6223      1.51  |      Q   |          |         V         |
16+40       0.6308      1.23  |   Q      |          |          |V       |
16+45       0.6382      1.08  |   Q      |          |          |V       |
16+50       0.6449      0.97  |  Q       |          |          |V       |
16+55       0.6509      0.87  |  Q       |          |          | V      |
17+ 0       0.6563      0.78  |  Q       |          |          | V      |
17+ 5       0.6612      0.72  | Q        |          |          | V      |
17+10       0.6658      0.66  | Q        |          |          | V      |
17+15       0.6700      0.62  | Q        |          |          |  V     |
17+20       0.6741      0.59  | Q        |          |          |  V     |
17+25       0.6779      0.56  | Q        |          |          |  V     |
17+30       0.6816      0.54  | Q        |          |          |  V     |
17+35       0.6852      0.52  | Q        |          |          |  V     |
17+40       0.6886      0.50  |Q         |          |          |   V    |
17+45       0.6920      0.48  |Q         |          |          |   V    |
17+50       0.6952      0.47  |Q         |          |          |   V    |
17+55       0.6983      0.46  |Q         |          |          |   V    |
18+ 0       0.7014      0.44  |Q         |          |          |   V    |
18+ 5       0.7043      0.43  |Q         |          |          |   V    |
18+10       0.7070      0.39  |Q         |          |          |   V    |
18+15       0.7095      0.36  |Q         |          |          |    V   |
18+20       0.7119      0.34  |Q         |          |          |    V   |
18+25       0.7141      0.33  |Q         |          |          |    V   |
18+30       0.7163      0.32  |Q         |          |          |    V   |
18+35       0.7185      0.31  |Q         |          |          |    V   |
```

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18+40       0.7206      0.30  |Q        |         |         |    V    |
18+45       0.7226      0.30  |Q        |         |         |    V    |
18+50       0.7246      0.29  |Q        |         |         |    V    |
18+55       0.7265      0.28  |Q        |         |         |    V    |
19+ 0       0.7285      0.28  |Q        |         |         |    V    |
19+ 5       0.7303      0.27  |Q        |         |         |     V   |
19+10       0.7322      0.27  |Q        |         |         |     V   |
19+15       0.7340      0.26  |Q        |         |         |     V   |
19+20       0.7358      0.26  |Q        |         |         |     V   |
19+25       0.7375      0.25  |Q        |         |         |     V   |
19+30       0.7393      0.25  |Q        |         |         |     V   |
19+35       0.7410      0.25  Q         |         |         |     V   |
19+40       0.7426      0.24  Q         |         |         |     V   |
19+45       0.7443      0.24  Q         |         |         |     V   |
19+50       0.7459      0.24  Q         |         |         |     V   |
19+55       0.7475      0.23  Q         |         |         |     V   |
20+ 0       0.7491      0.23  Q         |         |         |     V   |
20+ 5       0.7506      0.23  Q         |         |         |      V  |
20+10       0.7522      0.22  Q         |         |         |      V  |
20+15       0.7537      0.22  Q         |         |         |      V  |
20+20       0.7552      0.22  Q         |         |         |      V  |
20+25       0.7567      0.21  Q         |         |         |      V  |
20+30       0.7581      0.21  Q         |         |         |      V  |
20+35       0.7596      0.21  Q         |         |         |      V  |
20+40       0.7610      0.21  Q         |         |         |      V  |
20+45       0.7624      0.20  Q         |         |         |      V  |
20+50       0.7638      0.20  Q         |         |         |      V  |
20+55       0.7652      0.20  Q         |         |         |      V  |
21+ 0       0.7665      0.20  Q         |         |         |      V  |
21+ 5       0.7679      0.20  Q         |         |         |      V  |
21+10       0.7692      0.19  Q         |         |         |      V  |
21+15       0.7705      0.19  Q         |         |         |       V |
21+20       0.7718      0.19  Q         |         |         |       V |
21+25       0.7731      0.19  Q         |         |         |       V |
21+30       0.7744      0.19  Q         |         |         |       V |
21+35       0.7757      0.18  Q         |         |         |       V |
21+40       0.7769      0.18  Q         |         |         |       V |
21+45       0.7782      0.18  Q         |         |         |       V |
21+50       0.7794      0.18  Q         |         |         |       V |
21+55       0.7806      0.18  Q         |         |         |       V |
22+ 0       0.7818      0.18  Q         |         |         |       V |
22+ 5       0.7830      0.17  Q         |         |         |       V |
22+10       0.7842      0.17  Q         |         |         |       V |
22+15       0.7854      0.17  Q         |         |         |       V |
22+20       0.7865      0.17  Q         |         |         |       V |
22+25       0.7877      0.17  Q         |         |         |       V |
22+30       0.7888      0.17  Q         |         |         |       V |
22+35       0.7900      0.17  Q         |         |         |        V|
22+40       0.7911      0.16  Q         |         |         |        V|
22+45       0.7922      0.16  Q         |         |         |        V|
22+50       0.7933      0.16  Q         |         |         |        V|
22+55       0.7944      0.16  Q         |         |         |        V|
23+ 0       0.7955      0.16  Q         |         |         |        V|
23+ 5       0.7966      0.16  Q         |         |         |        V|
23+10       0.7977      0.16  Q         |         |         |        V|
23+15       0.7988      0.16  Q         |         |         |        V|
23+20       0.7998      0.15  Q         |         |         |        V|
23+25       0.8009      0.15  Q         |         |         |        V|
23+30       0.8019      0.15  Q         |         |         |        V|
23+35       0.8029      0.15  Q         |         |         |        V|
23+40       0.8040      0.15  Q         |         |         |        V|
23+45       0.8050      0.15  Q         |         |         |        V|
23+50       0.8060      0.15  Q         |         |         |        V|
23+55       0.8070      0.15  Q         |         |         |        V|
24+ 0       0.8080      0.15  Q         |         |         |        V|
24+ 5       0.8090      0.14  Q         |         |         |        V|
24+10       0.8095      0.09  Q         |         |         |        V|
24+15       0.8098      0.04  Q         |         |         |        V|
24+20       0.8100      0.02  Q         |         |         |        V|
24+25       0.8100      0.01  Q         |         |         |        V|
24+30       0.8101      0.01  Q         |         |         |        V|
```

```
   24+35       0.8101      0.00  Q         |         |         |        V|
   24+40       0.8101      0.00  Q         |         |         |        V|
   24+45       0.8101      0.00  Q         |         |         |        V|
   24+50       0.8101      0.00  Q         |         |         |        V|
   24+55       0.8101      0.00  Q         |         |         |         V
------------------------------------------------------------------------
```

- 5 Year 3 Hour Pre-Development Unit Hydrograph – Area 'E'

```
        U n i t   H y d r o g r a p h   A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989-2012, Version 7.2

        Study date  10/11/16   File Name EXE00503.out


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------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'E' - 5 YEAR 3 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

        Storm Event Year = 5

        Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 70.6       3.6          0.61     C     0.250     0.144    0.036
 70.6       2.3          0.39     D     0.200     0.144    0.029

Area-averaged adjusted loss rate Fm (In/Hr) =  0.033

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
     0.51   0.088         70.6      51.7       9.33     0.043
     3.05   0.525         98.0      98.0       0.20     0.923

     0.32   0.056         70.6      51.7       9.33     0.043
     1.93   0.331         98.0      98.0       0.20     0.923

Area-averaged catchment yield fraction, Y =  0.797
Area-averaged low loss fraction, Yb =  0.203
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.160 (hours)
Watershed area =       5.81(Ac.)
Catchment Lag time =   0.128 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 65.3083
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.033(In/Hr)
Average low loss rate fraction (Yb) = 0.203 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.260(In)
Computed peak 30-minute rainfall =  0.590(In)
Specified peak 1-hour rainfall =  0.780(In)
Computed peak 3-hour rainfall =  1.310(In)
Specified peak 6-hour rainfall =  1.810(In)
Specified peak 24-hour rainfall =  3.030(In)
```

```
Rainfall depth area reduction factors:
Using a total area of       5.81(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000     Adjusted rainfall =  0.260(In)
30-minute factor = 1.000    Adjusted rainfall =  0.590(In)
1-hour factor = 1.000       Adjusted rainfall =  0.780(In)
3-hour factor = 1.000       Adjusted rainfall =  1.310(In)
6-hour factor = 1.000       Adjusted rainfall =  1.810(In)
24-hour factor = 1.000 Adjusted rainfall =  3.030(In)
```

U n i t H y d r o g r a p h

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 70.26 (CFS))	
1	6.386	4.487
2	43.306	25.942
3	74.664	22.033
4	86.246	8.138
5	92.801	4.606
6	96.508	2.605
7	98.185	1.178
8	98.883	0.490
9	99.353	0.330
10	99.777	0.298
11	100.000	0.157

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.2599	0.2599
2	0.3569	0.0970
3	0.4296	0.0727
4	0.4900	0.0604
5	0.5427	0.0526
6	0.5898	0.0472
7	0.6276	0.0378
8	0.6623	0.0347
9	0.6945	0.0322
10	0.7246	0.0301
11	0.7529	0.0284
12	0.7798	0.0269
13	0.8098	0.0300
14	0.8387	0.0288
15	0.8664	0.0278
16	0.8932	0.0268
17	0.9192	0.0259
18	0.9443	0.0251
19	0.9687	0.0244
20	0.9925	0.0237
21	1.0156	0.0231
22	1.0382	0.0226
23	1.0602	0.0220
24	1.0817	0.0215
25	1.1028	0.0211
26	1.1234	0.0206
27	1.1436	0.0202
28	1.1634	0.0198
29	1.1828	0.0194
30	1.2019	0.0191
31	1.2207	0.0188
32	1.2391	0.0184
33	1.2572	0.0181
34	1.2751	0.0178
35	1.2926	0.0176
36	1.3100	0.0173

Unit Period	Unit Rainfall	Unit Soil-Loss	Effective Rainfall

```
      (number)           (In)          (In)                (In)
      ---------------------------------------------------------------------
        1              0.0173          0.0028              0.0145
        2              0.0176          0.0028              0.0148
        3              0.0181          0.0028              0.0154
        4              0.0184          0.0028              0.0157
        5              0.0191          0.0028              0.0163
        6              0.0194          0.0028              0.0167
        7              0.0202          0.0028              0.0174
        8              0.0206          0.0028              0.0178
        9              0.0215          0.0028              0.0188
       10              0.0220          0.0028              0.0193
       11              0.0231          0.0028              0.0204
       12              0.0237          0.0028              0.0210
       13              0.0251          0.0028              0.0224
       14              0.0259          0.0028              0.0232
       15              0.0278          0.0028              0.0250
       16              0.0288          0.0028              0.0261
       17              0.0269          0.0028              0.0241
       18              0.0284          0.0028              0.0256
       19              0.0322          0.0028              0.0294
       20              0.0347          0.0028              0.0319
       21              0.0472          0.0028              0.0444
       22              0.0526          0.0028              0.0499
       23              0.0727          0.0028              0.0699
       24              0.0970          0.0028              0.0942
       25              0.2599          0.0028              0.2572
       26              0.0604          0.0028              0.0576
       27              0.0378          0.0028              0.0350
       28              0.0301          0.0028              0.0273
       29              0.0300          0.0028              0.0273
       30              0.0268          0.0028              0.0240
       31              0.0244          0.0028              0.0216
       32              0.0226          0.0028              0.0198
       33              0.0211          0.0028              0.0183
       34              0.0198          0.0028              0.0170
       35              0.0188          0.0028              0.0160
       36              0.0178          0.0028              0.0151
      ---------------------------------------------------------------------
      ---------------------------------------------------------------------
      Total soil rain loss =      0.10(In)
      Total effective rainfall =      1.21(In)
      Peak flow rate in flood hydrograph =      9.99(CFS)
      ---------------------------------------------------------------------
      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                        3 - H O U R    S T O R M
                   R u n o f f      H y d r o g r a p h
      ---------------------------------------------------------------------
                Hydrograph in   5   Minute intervals ((CFS))

      ---------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0        2.5       5.0       7.5      10.0
---------------------------------------------------------------------------
  0+ 5       0.0004      0.07  Q         |         |         |         |
  0+10       0.0035      0.44  VQ        |         |         |         |
  0+15       0.0088      0.77  V  Q      |         |         |         |
  0+20       0.0151      0.91  |V Q      |         |         |         |
  0+25       0.0220      1.01  |V  Q     |         |         |         |
  0+30       0.0294      1.07  | V Q     |         |         |         |
  0+35       0.0372      1.12  | V Q     |         |         |         |
  0+40       0.0452      1.17  |  VQ     |         |         |         |
  0+45       0.0536      1.21  |  VQ     |         |         |         |
  0+50       0.0623      1.26  |   VQ    |         |         |         |
  0+55       0.0713      1.31  |   VQ    |         |         |         |
  1+ 0       0.0807      1.37  |    Q    |         |         |         |
  1+ 5       0.0905      1.42  |    QV   |         |         |         |
  1+10       0.1008      1.49  |    QV   |         |         |         |
  1+15       0.1116      1.57  |     QV  |         |         |         |
  1+20       0.1230      1.65  |     Q V |         |         |         |
  1+25       0.1349      1.73  |     Q  V|         |         |         |
  1+30       0.1468      1.73  |     Q   V         |         |         |
```

```
   1+35       0.1590      1.77  |      Q  V         |          |          |
   1+40       0.1721      1.91  |      Q  |V        |          |          |
   1+45       0.1867      2.12  |       Q | V       |          |          |
   1+50       0.2043      2.56  |         Q  V      |          |          |
   1+55       0.2257      3.11  |          | Q  V   |          |          |
   2+ 0       0.2532      3.98  |          |    Q V |          |          |
   2+ 5       0.2938      5.90  |          |         V  Q       |          |
   2+10       0.3626      9.99  |          |          |   V     |          Q|
   2+15       0.4220      8.63  |          |          |       V |   Q      |
   2+20       0.4572      5.11  |          |          Q         |V         |
   2+25       0.4823      3.64  |          |   Q      |         | V        |
   2+30       0.5017      2.82  |          |Q         |         |   V      |
   2+35       0.5172      2.25  |        Q |          |         |    V     |
   2+40       0.5301      1.87  |       Q  |          |         |     V    |
   2+45       0.5415      1.66  |     Q    |          |         |     V    |
   2+50       0.5519      1.50  |     Q    |          |         |      V   |
   2+55       0.5612      1.35  |    Q     |          |         |       V  |
   3+ 0       0.5696      1.22  |   Q      |          |         |       V  |
   3+ 5       0.5771      1.08  |   Q      |          |         |        V |
   3+10       0.5815      0.64  | Q        |          |         |        V |
   3+15       0.5835      0.29  |Q         |          |         |        V |
   3+20       0.5846      0.16  Q          |          |         |        V |
   3+25       0.5851      0.08  Q          |          |         |        V |
   3+30       0.5854      0.04  Q          |          |         |        V |
   3+35       0.5855      0.02  Q          |          |         |        V |
   3+40       0.5856      0.01  Q          |          |         |        V |
   3+45       0.5857      0.01  Q          |          |         |        V |
   3+50       0.5857      0.00  Q          |          |         |        V |
-------------------------------------------------------------------------
```

- 5 Year 6 Hour Pre-Development Unit Hydrograph – Area 'E'

```
        U n i t   H y d r o g r a p h   A n a l y s i s

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        Study date  10/11/16   File Name EXE00506.out


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'E' - 5 YEAR 6 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

        Storm Event Year = 5

        Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 70.6       3.6          0.61     C     0.250     0.144    0.036
 70.6       2.3          0.39     D     0.200     0.144    0.029

Area-averaged adjusted loss rate Fm (In/Hr) =  0.033

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
     0.51   0.088         70.6      51.7       9.33     0.043
     3.05   0.525         98.0      98.0       0.20     0.923

     0.32   0.056         70.6      51.7       9.33     0.043
     1.93   0.331         98.0      98.0       0.20     0.923

Area-averaged catchment yield fraction, Y =  0.797
Area-averaged low loss fraction, Yb =  0.203
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.160 (hours)
Watershed area =       5.81(Ac.)
Catchment Lag time =   0.128 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 65.3083
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.033(In/Hr)
Average low loss rate fraction (Yb) = 0.203 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.260(In)
Computed peak 30-minute rainfall =  0.590(In)
Specified peak 1-hour rainfall =  0.780(In)
Computed peak 3-hour rainfall =  1.310(In)
Specified peak 6-hour rainfall =  1.810(In)
Specified peak 24-hour rainfall =  3.030(In)
```

Rainfall depth area reduction factors:
Using a total area of 5.81(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000 Adjusted rainfall = 0.260(In)
30-minute factor = 1.000 Adjusted rainfall = 0.590(In)
1-hour factor = 1.000 Adjusted rainfall = 0.780(In)
3-hour factor = 1.000 Adjusted rainfall = 1.310(In)
6-hour factor = 1.000 Adjusted rainfall = 1.810(In)
24-hour factor = 1.000 Adjusted rainfall = 3.030(In)

U n i t H y d r o g r a p h

Interval Number	'S' Graph Mean values (K = 70.26 (CFS))	Unit Hydrograph ((CFS))
1	6.386	4.487
2	43.306	25.942
3	74.664	22.033
4	86.246	8.138
5	92.801	4.606
6	96.508	2.605
7	98.185	1.178
8	98.883	0.490
9	99.353	0.330
10	99.777	0.298
11	100.000	0.157

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.2599	0.2599
2	0.3569	0.0970
3	0.4296	0.0727
4	0.4900	0.0604
5	0.5427	0.0526
6	0.5898	0.0472
7	0.6276	0.0378
8	0.6623	0.0347
9	0.6945	0.0322
10	0.7246	0.0301
11	0.7529	0.0284
12	0.7798	0.0269
13	0.8098	0.0300
14	0.8387	0.0288
15	0.8664	0.0278
16	0.8932	0.0268
17	0.9192	0.0259
18	0.9443	0.0251
19	0.9687	0.0244
20	0.9925	0.0237
21	1.0156	0.0231
22	1.0382	0.0226
23	1.0602	0.0220
24	1.0817	0.0215
25	1.1028	0.0211
26	1.1234	0.0206
27	1.1436	0.0202
28	1.1634	0.0198
29	1.1828	0.0194
30	1.2019	0.0191
31	1.2207	0.0188
32	1.2391	0.0184
33	1.2572	0.0181
34	1.2751	0.0178
35	1.2926	0.0176
36	1.3100	0.0173
37	1.3268	0.0168
38	1.3434	0.0166
39	1.3598	0.0164

40	1.3759	0.0162
41	1.3919	0.0159
42	1.4076	0.0157
43	1.4231	0.0155
44	1.4385	0.0153
45	1.4536	0.0152
46	1.4686	0.0150
47	1.4834	0.0148
48	1.4981	0.0146
49	1.5126	0.0145
50	1.5269	0.0143
51	1.5410	0.0142
52	1.5551	0.0140
53	1.5689	0.0139
54	1.5827	0.0137
55	1.5963	0.0136
56	1.6098	0.0135
57	1.6231	0.0133
58	1.6363	0.0132
59	1.6494	0.0131
60	1.6624	0.0130
61	1.6753	0.0129
62	1.6880	0.0128
63	1.7007	0.0126
64	1.7132	0.0125
65	1.7256	0.0124
66	1.7380	0.0123
67	1.7502	0.0122
68	1.7623	0.0121
69	1.7744	0.0120
70	1.7863	0.0119
71	1.7982	0.0119
72	1.8100	0.0118

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0118	0.0024	0.0094
2	0.0119	0.0024	0.0094
3	0.0120	0.0024	0.0096
4	0.0121	0.0025	0.0097
5	0.0123	0.0025	0.0098
6	0.0124	0.0025	0.0099
7	0.0126	0.0026	0.0101
8	0.0128	0.0026	0.0102
9	0.0130	0.0026	0.0103
10	0.0131	0.0027	0.0104
11	0.0133	0.0027	0.0106
12	0.0135	0.0027	0.0107
13	0.0137	0.0028	0.0110
14	0.0139	0.0028	0.0111
15	0.0142	0.0028	0.0114
16	0.0143	0.0028	0.0116
17	0.0146	0.0028	0.0119
18	0.0148	0.0028	0.0120
19	0.0152	0.0028	0.0124
20	0.0153	0.0028	0.0126
21	0.0157	0.0028	0.0130
22	0.0159	0.0028	0.0132
23	0.0164	0.0028	0.0136
24	0.0166	0.0028	0.0138
25	0.0173	0.0028	0.0145
26	0.0176	0.0028	0.0148
27	0.0181	0.0028	0.0154
28	0.0184	0.0028	0.0157
29	0.0191	0.0028	0.0163
30	0.0194	0.0028	0.0167
31	0.0202	0.0028	0.0174
32	0.0206	0.0028	0.0178
33	0.0215	0.0028	0.0188

34	0.0220	0.0028	0.0193
35	0.0231	0.0028	0.0204
36	0.0237	0.0028	0.0210
37	0.0251	0.0028	0.0224
38	0.0259	0.0028	0.0232
39	0.0278	0.0028	0.0250
40	0.0288	0.0028	0.0261
41	0.0269	0.0028	0.0241
42	0.0284	0.0028	0.0256
43	0.0322	0.0028	0.0294
44	0.0347	0.0028	0.0319
45	0.0472	0.0028	0.0444
46	0.0526	0.0028	0.0499
47	0.0727	0.0028	0.0699
48	0.0970	0.0028	0.0942
49	0.2599	0.0028	0.2572
50	0.0604	0.0028	0.0576
51	0.0378	0.0028	0.0350
52	0.0301	0.0028	0.0273
53	0.0300	0.0028	0.0273
54	0.0268	0.0028	0.0240
55	0.0244	0.0028	0.0216
56	0.0226	0.0028	0.0198
57	0.0211	0.0028	0.0183
58	0.0198	0.0028	0.0170
59	0.0188	0.0028	0.0160
60	0.0178	0.0028	0.0151
61	0.0168	0.0028	0.0141
62	0.0162	0.0028	0.0134
63	0.0155	0.0028	0.0128
64	0.0150	0.0028	0.0122
65	0.0145	0.0028	0.0117
66	0.0140	0.0028	0.0113
67	0.0136	0.0028	0.0108
68	0.0132	0.0027	0.0105
69	0.0129	0.0026	0.0102
70	0.0125	0.0026	0.0100
71	0.0122	0.0025	0.0097
72	0.0119	0.0024	0.0095

Total soil rain loss = 0.20(In)
Total effective rainfall = 1.61(In)
Peak flow rate in flood hydrograph = 9.99(CFS)

6 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0003	0.04	Q				
0+10	0.0023	0.29	VQ				
0+15	0.0057	0.49	VQ				
0+20	0.0096	0.58	V Q				
0+25	0.0139	0.63	V Q				
0+30	0.0185	0.66	V Q				
0+35	0.0231	0.68	|VQ				
0+40	0.0279	0.69	|VQ				
0+45	0.0327	0.70	|VQ				
0+50	0.0377	0.71	|VQ				
0+55	0.0426	0.72	| Q				
1+ 0	0.0477	0.74	| Q				
1+ 5	0.0528	0.75	| Q				
1+10	0.0581	0.76	| VQ				
1+15	0.0634	0.77	| Q				
1+20	0.0688	0.78	| Q				
1+25	0.0743	0.80	| Q				

```
   1+30       0.0799      0.82  |  QV     |         |         |         |
   1+35       0.0856      0.83  |  QV     |         |         |         |
   1+40       0.0914      0.85  |  QV     |         |         |         |
   1+45       0.0974      0.87  |  QV     |         |         |         |
   1+50       0.1035      0.89  |  Q V    |         |         |         |
   1+55       0.1098      0.91  |  Q V    |         |         |         |
   2+ 0       0.1162      0.93  |  Q V    |         |         |         |
   2+ 5       0.1228      0.95  |  Q  V   |         |         |         |
   2+10       0.1295      0.98  |  Q  V   |         |         |         |
   2+15       0.1365      1.01  |   Q V   |         |         |         |
   2+20       0.1437      1.04  |   Q  V  |         |         |         |
   2+25       0.1511      1.07  |   Q  V  |         |         |         |
   2+30       0.1587      1.11  |   Q   V |         |         |         |
   2+35       0.1666      1.14  |   Q   V |         |         |         |
   2+40       0.1747      1.18  |   Q   V |         |         |         |
   2+45       0.1831      1.22  |   Q    V|         |         |         |
   2+50       0.1918      1.26  |    Q   V|         |         |         |
   2+55       0.2009      1.31  |    Q    V         |         |         |
   3+ 0       0.2103      1.37  |    Q    V         |         |         |
   3+ 5       0.2201      1.42  |    Q    |V        |         |         |
   3+10       0.2304      1.49  |    Q    |V        |         |         |
   3+15       0.2411      1.57  |     Q   | V       |         |         |
   3+20       0.2525      1.65  |     Q   | V       |         |         |
   3+25       0.2644      1.73  |     Q   |  V      |         |         |
   3+30       0.2764      1.73  |     Q   |   V     |         |         |
   3+35       0.2885      1.77  |      Q  |   V     |         |         |
   3+40       0.3016      1.91  |      Q  |    V    |         |         |
   3+45       0.3162      2.12  |       Q |     V   |         |         |
   3+50       0.3339      2.56  |         Q      V  |         |         |
   3+55       0.3553      3.11  |         | Q     V |         |         |
   4+ 0       0.3827      3.98  |         |   Q   V |         |         |
   4+ 5       0.4233      5.90  |         |         |V Q      |         |
   4+10       0.4922      9.99  |         |         |    V    |        Q|
   4+15       0.5516      8.63  |         |         |       V |   Q     |
   4+20       0.5868      5.11  |         |         Q         V         |
   4+25       0.6118      3.64  |         |   Q     |         |V        |
   4+30       0.6312      2.82  |         |Q        |         | V       |
   4+35       0.6467      2.25  |       Q |         |         |  V      |
   4+40       0.6596      1.87  |      Q  |         |         |  V      |
   4+45       0.6710      1.66  |     Q   |         |         |   V     |
   4+50       0.6814      1.50  |     Q   |         |         |   V     |
   4+55       0.6907      1.35  |    Q    |         |         |    V    |
   5+ 0       0.6992      1.22  |   Q     |         |         |    V    |
   5+ 5       0.7070      1.14  |   Q     |         |         |     V   |
   5+10       0.7144      1.07  |   Q     |         |         |     V   |
   5+15       0.7213      1.01  |   Q     |         |         |     V   |
   5+20       0.7279      0.95  |  Q      |         |         |      V  |
   5+25       0.7341      0.91  |  Q      |         |         |      V  |
   5+30       0.7401      0.87  |  Q      |         |         |      V  |
   5+35       0.7458      0.83  |  Q      |         |         |       V |
   5+40       0.7513      0.80  |  Q      |         |         |       V |
   5+45       0.7566      0.77  |  Q      |         |         |       V |
   5+50       0.7617      0.74  | Q       |         |         |        V|
   5+55       0.7667      0.72  | Q       |         |         |        V|
   6+ 0       0.7715      0.70  | Q       |         |         |        V|
   6+ 5       0.7760      0.65  | Q       |         |         |        V|
   6+10       0.7786      0.39  |Q        |         |         |        V|
   6+15       0.7798      0.17  Q         |         |         |        V|
   6+20       0.7805      0.09  Q         |         |         |        V|
   6+25       0.7808      0.05  Q         |         |         |        V|
   6+30       0.7810      0.02  Q         |         |         |        V|
   6+35       0.7811      0.01  Q         |         |         |        V|
   6+40       0.7811      0.01  Q         |         |         |        V|
   6+45       0.7812      0.00  Q         |         |         |        V|
   6+50       0.7812      0.00  Q         |         |         |         V
------------------------------------------------------------------------
```

- 5 Year 12 Hour Pre-Development Unit Hydrograph – Area 'E'

```
        U n i t   H y d r o g r a p h   A n a l y s i s

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        Study date  10/11/16   File Name EXE00512.out


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------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'E' - 5 YEAR 12 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

        Storm Event Year = 5

        Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 70.6       3.6          0.61     C     0.250     0.144    0.036
 70.6       2.3          0.39     D     0.200     0.144    0.029

Area-averaged adjusted loss rate Fm (In/Hr) =  0.033

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
     0.51   0.088         70.6      51.7       9.33     0.043
     3.05   0.525         98.0      98.0       0.20     0.923

     0.32   0.056         70.6      51.7       9.33     0.043
     1.93   0.331         98.0      98.0       0.20     0.923

Area-averaged catchment yield fraction, Y =  0.797
Area-averaged low loss fraction, Yb =  0.203
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.160 (hours)
Watershed area =       5.81(Ac.)
Catchment Lag time =   0.128 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 65.3083
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.033(In/Hr)
Average low loss rate fraction (Yb) = 0.203 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.260(In)
Computed peak 30-minute rainfall =  0.590(In)
Specified peak 1-hour rainfall =  0.780(In)
Computed peak 3-hour rainfall =  1.310(In)
Specified peak 6-hour rainfall =  1.810(In)
Specified peak 24-hour rainfall =  3.030(In)
```

Rainfall depth area reduction factors:
Using a total area of 5.81(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000 Adjusted rainfall = 0.260(In)
30-minute factor = 1.000 Adjusted rainfall = 0.590(In)
1-hour factor = 1.000 Adjusted rainfall = 0.780(In)
3-hour factor = 1.000 Adjusted rainfall = 1.310(In)
6-hour factor = 1.000 Adjusted rainfall = 1.810(In)
24-hour factor = 1.000 Adjusted rainfall = 3.030(In)

U n i t H y d r o g r a p h

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 70.26 (CFS))	
1	6.386	4.487
2	43.306	25.942
3	74.664	22.033
4	86.246	8.138
5	92.801	4.606
6	96.508	2.605
7	98.185	1.178
8	98.883	0.490
9	99.353	0.330
10	99.777	0.298
11	100.000	0.157

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.2599	0.2599
2	0.3569	0.0970
3	0.4296	0.0727
4	0.4900	0.0604
5	0.5427	0.0526
6	0.5898	0.0472
7	0.6276	0.0378
8	0.6623	0.0347
9	0.6945	0.0322
10	0.7246	0.0301
11	0.7529	0.0284
12	0.7798	0.0269
13	0.8098	0.0300
14	0.8387	0.0288
15	0.8664	0.0278
16	0.8932	0.0268
17	0.9192	0.0259
18	0.9443	0.0251
19	0.9687	0.0244
20	0.9925	0.0237
21	1.0156	0.0231
22	1.0382	0.0226
23	1.0602	0.0220
24	1.0817	0.0215
25	1.1028	0.0211
26	1.1234	0.0206
27	1.1436	0.0202
28	1.1634	0.0198
29	1.1828	0.0194
30	1.2019	0.0191
31	1.2207	0.0188
32	1.2391	0.0184
33	1.2572	0.0181
34	1.2751	0.0178
35	1.2926	0.0176
36	1.3100	0.0173
37	1.3268	0.0168
38	1.3434	0.0166
39	1.3598	0.0164

40	1.3759	0.0162
41	1.3919	0.0159
42	1.4076	0.0157
43	1.4231	0.0155
44	1.4385	0.0153
45	1.4536	0.0152
46	1.4686	0.0150
47	1.4834	0.0148
48	1.4981	0.0146
49	1.5126	0.0145
50	1.5269	0.0143
51	1.5410	0.0142
52	1.5551	0.0140
53	1.5689	0.0139
54	1.5827	0.0137
55	1.5963	0.0136
56	1.6098	0.0135
57	1.6231	0.0133
58	1.6363	0.0132
59	1.6494	0.0131
60	1.6624	0.0130
61	1.6753	0.0129
62	1.6880	0.0128
63	1.7007	0.0126
64	1.7132	0.0125
65	1.7256	0.0124
66	1.7380	0.0123
67	1.7502	0.0122
68	1.7623	0.0121
69	1.7744	0.0120
70	1.7863	0.0119
71	1.7982	0.0119
72	1.8100	0.0118
73	1.8193	0.0093
74	1.8285	0.0092
75	1.8376	0.0091
76	1.8467	0.0091
77	1.8557	0.0090
78	1.8646	0.0089
79	1.8735	0.0088
80	1.8823	0.0088
81	1.8910	0.0087
82	1.8996	0.0086
83	1.9082	0.0086
84	1.9167	0.0085
85	1.9251	0.0084
86	1.9335	0.0084
87	1.9419	0.0083
88	1.9501	0.0083
89	1.9583	0.0082
90	1.9665	0.0081
91	1.9746	0.0081
92	1.9826	0.0080
93	1.9906	0.0080
94	1.9985	0.0079
95	2.0064	0.0079
96	2.0142	0.0078
97	2.0220	0.0078
98	2.0297	0.0077
99	2.0374	0.0077
100	2.0450	0.0076
101	2.0526	0.0076
102	2.0601	0.0075
103	2.0676	0.0075
104	2.0750	0.0074
105	2.0824	0.0074
106	2.0898	0.0073
107	2.0971	0.0073
108	2.1044	0.0073
109	2.1116	0.0072
110	2.1188	0.0072

111	2.1259	0.0071
112	2.1330	0.0071
113	2.1401	0.0071
114	2.1471	0.0070
115	2.1541	0.0070
116	2.1610	0.0069
117	2.1679	0.0069
118	2.1748	0.0069
119	2.1816	0.0068
120	2.1884	0.0068
121	2.1952	0.0068
122	2.2019	0.0067
123	2.2086	0.0067
124	2.2152	0.0067
125	2.2219	0.0066
126	2.2284	0.0066
127	2.2350	0.0066
128	2.2415	0.0065
129	2.2480	0.0065
130	2.2545	0.0065
131	2.2609	0.0064
132	2.2673	0.0064
133	2.2737	0.0064
134	2.2800	0.0063
135	2.2863	0.0063
136	2.2926	0.0063
137	2.2989	0.0063
138	2.3051	0.0062
139	2.3113	0.0062
140	2.3174	0.0062
141	2.3236	0.0061
142	2.3297	0.0061
143	2.3358	0.0061
144	2.3418	0.0061

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0061	0.0012	0.0048
2	0.0061	0.0012	0.0048
3	0.0061	0.0012	0.0049
4	0.0062	0.0013	0.0049
5	0.0062	0.0013	0.0050
6	0.0063	0.0013	0.0050
7	0.0063	0.0013	0.0050
8	0.0063	0.0013	0.0050
9	0.0064	0.0013	0.0051
10	0.0064	0.0013	0.0051
11	0.0065	0.0013	0.0052
12	0.0065	0.0013	0.0052
13	0.0066	0.0013	0.0052
14	0.0066	0.0013	0.0053
15	0.0067	0.0014	0.0053
16	0.0067	0.0014	0.0054
17	0.0068	0.0014	0.0054
18	0.0068	0.0014	0.0054
19	0.0069	0.0014	0.0055
20	0.0069	0.0014	0.0055
21	0.0070	0.0014	0.0056
22	0.0071	0.0014	0.0056
23	0.0071	0.0015	0.0057
24	0.0072	0.0015	0.0057
25	0.0073	0.0015	0.0058
26	0.0073	0.0015	0.0058
27	0.0074	0.0015	0.0059
28	0.0074	0.0015	0.0059
29	0.0075	0.0015	0.0060
30	0.0076	0.0015	0.0060
31	0.0077	0.0016	0.0061
32	0.0077	0.0016	0.0062

33	0.0078	0.0016	0.0062
34	0.0079	0.0016	0.0063
35	0.0080	0.0016	0.0064
36	0.0080	0.0016	0.0064
37	0.0081	0.0017	0.0065
38	0.0082	0.0017	0.0065
39	0.0083	0.0017	0.0066
40	0.0084	0.0017	0.0067
41	0.0085	0.0017	0.0068
42	0.0086	0.0017	0.0068
43	0.0087	0.0018	0.0069
44	0.0088	0.0018	0.0070
45	0.0089	0.0018	0.0071
46	0.0090	0.0018	0.0072
47	0.0091	0.0019	0.0073
48	0.0092	0.0019	0.0073
49	0.0118	0.0024	0.0094
50	0.0119	0.0024	0.0094
51	0.0120	0.0024	0.0096
52	0.0121	0.0025	0.0097
53	0.0123	0.0025	0.0098
54	0.0124	0.0025	0.0099
55	0.0126	0.0026	0.0101
56	0.0128	0.0026	0.0102
57	0.0130	0.0026	0.0103
58	0.0131	0.0027	0.0104
59	0.0133	0.0027	0.0106
60	0.0135	0.0027	0.0107
61	0.0137	0.0028	0.0110
62	0.0139	0.0028	0.0111
63	0.0142	0.0028	0.0114
64	0.0143	0.0028	0.0116
65	0.0146	0.0028	0.0119
66	0.0148	0.0028	0.0120
67	0.0152	0.0028	0.0124
68	0.0153	0.0028	0.0126
69	0.0157	0.0028	0.0130
70	0.0159	0.0028	0.0132
71	0.0164	0.0028	0.0136
72	0.0166	0.0028	0.0138
73	0.0173	0.0028	0.0145
74	0.0176	0.0028	0.0148
75	0.0181	0.0028	0.0154
76	0.0184	0.0028	0.0157
77	0.0191	0.0028	0.0163
78	0.0194	0.0028	0.0167
79	0.0202	0.0028	0.0174
80	0.0206	0.0028	0.0178
81	0.0215	0.0028	0.0188
82	0.0220	0.0028	0.0193
83	0.0231	0.0028	0.0204
84	0.0237	0.0028	0.0210
85	0.0251	0.0028	0.0224
86	0.0259	0.0028	0.0232
87	0.0278	0.0028	0.0250
88	0.0288	0.0028	0.0261
89	0.0269	0.0028	0.0241
90	0.0284	0.0028	0.0256
91	0.0322	0.0028	0.0294
92	0.0347	0.0028	0.0319
93	0.0472	0.0028	0.0444
94	0.0526	0.0028	0.0499
95	0.0727	0.0028	0.0699
96	0.0970	0.0028	0.0942
97	0.2599	0.0028	0.2572
98	0.0604	0.0028	0.0576
99	0.0378	0.0028	0.0350
100	0.0301	0.0028	0.0273
101	0.0300	0.0028	0.0273
102	0.0268	0.0028	0.0240
103	0.0244	0.0028	0.0216

```
      104              0.0226          0.0028              0.0198
      105              0.0211          0.0028              0.0183
      106              0.0198          0.0028              0.0170
      107              0.0188          0.0028              0.0160
      108              0.0178          0.0028              0.0151
      109              0.0168          0.0028              0.0141
      110              0.0162          0.0028              0.0134
      111              0.0155          0.0028              0.0128
      112              0.0150          0.0028              0.0122
      113              0.0145          0.0028              0.0117
      114              0.0140          0.0028              0.0113
      115              0.0136          0.0028              0.0108
      116              0.0132          0.0027              0.0105
      117              0.0129          0.0026              0.0102
      118              0.0125          0.0026              0.0100
      119              0.0122          0.0025              0.0097
      120              0.0119          0.0024              0.0095
      121              0.0093          0.0019              0.0074
      122              0.0091          0.0018              0.0072
      123              0.0088          0.0018              0.0070
      124              0.0086          0.0018              0.0069
      125              0.0084          0.0017              0.0067
      126              0.0083          0.0017              0.0066
      127              0.0081          0.0016              0.0064
      128              0.0079          0.0016              0.0063
      129              0.0078          0.0016              0.0062
      130              0.0076          0.0016              0.0061
      131              0.0075          0.0015              0.0060
      132              0.0073          0.0015              0.0059
      133              0.0072          0.0015              0.0058
      134              0.0071          0.0014              0.0057
      135              0.0070          0.0014              0.0056
      136              0.0069          0.0014              0.0055
      137              0.0068          0.0014              0.0054
      138              0.0067          0.0014              0.0053
      139              0.0066          0.0013              0.0052
      140              0.0065          0.0013              0.0051
      141              0.0064          0.0013              0.0051
      142              0.0063          0.0013              0.0050
      143              0.0062          0.0013              0.0049
      144              0.0061          0.0012              0.0049
      ------------------------------------------------------------------------
      ------------------------------------------------------------------------
      Total soil rain loss =      0.30(In)
      Total effective rainfall =      2.04(In)
      Peak flow rate in flood hydrograph =      9.99(CFS)
      ------------------------------------------------------------------------
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          12 - H O U R    S T O R M
                     R u n o f f      H y d r o g r a p h
      ------------------------------------------------------------------------
                 Hydrograph in   5   Minute intervals ((CFS))

      ------------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0        2.5       5.0       7.5      10.0
----------------------------------------------------------------------------
  0+ 5       0.0001      0.02  Q         |         |         |         |
  0+10       0.0012      0.15  Q         |         |         |         |
  0+15       0.0029      0.25  VQ        |         |         |         |
  0+20       0.0049      0.29  VQ        |         |         |         |
  0+25       0.0071      0.32  VQ        |         |         |         |
  0+30       0.0094      0.33  VQ        |         |         |         |
  0+35       0.0118      0.34  VQ        |         |         |         |
  0+40       0.0142      0.35  VQ        |         |         |         |
  0+45       0.0166      0.35  VQ        |         |         |         |
  0+50       0.0190      0.35  VQ        |         |         |         |
  0+55       0.0215      0.36  VQ        |         |         |         |
  1+ 0       0.0240      0.36  VQ        |         |         |         |
  1+ 5       0.0265      0.36  |Q        |         |         |         |
  1+10       0.0290      0.37  |Q        |         |         |         |
  1+15       0.0315      0.37  |Q        |         |         |         |
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1+20       0.0341      0.37  |Q        |         |         |         |
1+25       0.0367      0.37  |Q        |         |         |         |
1+30       0.0393      0.38  |Q        |         |         |         |
1+35       0.0419      0.38  |Q        |         |         |         |
1+40       0.0445      0.38  |Q        |         |         |         |
1+45       0.0472      0.39  |Q        |         |         |         |
1+50       0.0499      0.39  |QV       |         |         |         |
1+55       0.0526      0.39  |QV       |         |         |         |
2+ 0       0.0553      0.40  |QV       |         |         |         |
2+ 5       0.0580      0.40  |QV       |         |         |         |
2+10       0.0608      0.40  |QV       |         |         |         |
2+15       0.0636      0.41  |QV       |         |         |         |
2+20       0.0664      0.41  |QV       |         |         |         |
2+25       0.0693      0.41  |QV       |         |         |         |
2+30       0.0721      0.42  |QV       |         |         |         |
2+35       0.0750      0.42  |Q V      |         |         |         |
2+40       0.0780      0.42  |Q V      |         |         |         |
2+45       0.0809      0.43  |Q V      |         |         |         |
2+50       0.0839      0.43  |Q V      |         |         |         |
2+55       0.0869      0.44  |Q V      |         |         |         |
3+ 0       0.0899      0.44  |Q V      |         |         |         |
3+ 5       0.0930      0.45  |Q V      |         |         |         |
3+10       0.0961      0.45  |Q V      |         |         |         |
3+15       0.0993      0.46  |Q  V     |         |         |         |
3+20       0.1024      0.46  |Q  V     |         |         |         |
3+25       0.1056      0.47  |Q  V     |         |         |         |
3+30       0.1089      0.47  |Q  V     |         |         |         |
3+35       0.1121      0.48  |Q  V     |         |         |         |
3+40       0.1155      0.48  |Q  V     |         |         |         |
3+45       0.1188      0.49  |Q  V     |         |         |         |
3+50       0.1222      0.49  |Q  V     |         |         |         |
3+55       0.1256      0.50  |Q   V    |         |         |         |
4+ 0       0.1291      0.50  | Q  V    |         |         |         |
4+ 5       0.1327      0.52  | Q  V    |         |         |         |
4+10       0.1366      0.58  | Q  V    |         |         |         |
4+15       0.1409      0.62  | Q  V    |         |         |         |
4+20       0.1454      0.65  | Q  V    |         |         |         |
4+25       0.1500      0.66  | Q   V   |         |         |         |
4+30       0.1546      0.68  | Q   V   |         |         |         |
4+35       0.1593      0.69  | Q   V   |         |         |         |
4+40       0.1641      0.70  | Q   V   |         |         |         |
4+45       0.1690      0.71  | Q   V   |         |         |         |
4+50       0.1739      0.72  | Q    V  |         |         |         |
4+55       0.1789      0.72  | Q    V  |         |         |         |
5+ 0       0.1840      0.74  | Q    V  |         |         |         |
5+ 5       0.1891      0.75  | Q    V  |         |         |         |
5+10       0.1943      0.76  |  Q   V  |         |         |         |
5+15       0.1996      0.77  |  Q    V |         |         |         |
5+20       0.2050      0.78  |  Q    V |         |         |         |
5+25       0.2105      0.80  |  Q    V |         |         |         |
5+30       0.2161      0.82  |  Q    V |         |         |         |
5+35       0.2219      0.83  |  Q    V |         |         |         |
5+40       0.2277      0.85  |  Q     V|         |         |         |
5+45       0.2337      0.87  |  Q     V|         |         |         |
5+50       0.2398      0.89  |  Q     V|         |         |         |
5+55       0.2460      0.91  |  Q     V|         |         |         |
6+ 0       0.2525      0.93  |  Q      V         |         |         |
6+ 5       0.2590      0.95  |  Q      V         |         |         |
6+10       0.2658      0.98  |  Q      V         |         |         |
6+15       0.2728      1.01  |   Q     |V        |         |         |
6+20       0.2800      1.04  |   Q     |V        |         |         |
6+25       0.2874      1.07  |   Q     |V        |         |         |
6+30       0.2950      1.11  |   Q     |V        |         |         |
6+35       0.3029      1.14  |   Q     | V       |         |         |
6+40       0.3110      1.18  |   Q     | V       |         |         |
6+45       0.3194      1.22  |   Q     | V       |         |         |
6+50       0.3281      1.26  |    Q    |  V      |         |         |
6+55       0.3371      1.31  |    Q    |  V      |         |         |
7+ 0       0.3465      1.37  |    Q    |   V     |         |         |
7+ 5       0.3563      1.42  |    Q    |   V     |         |         |
7+10       0.3666      1.49  |    Q    |   V     |         |         |
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   7+15       0.3774      1.57  |     Q    |    V     |          |          |
   7+20       0.3888      1.65  |     Q    |    V     |          |          |
   7+25       0.4007      1.73  |     Q    |     V    |          |          |
   7+30       0.4126      1.73  |     Q    |     V    |          |          |
   7+35       0.4248      1.77  |      Q   |      V   |          |          |
   7+40       0.4379      1.91  |      Q   |      V   |          |          |
   7+45       0.4525      2.12  |       Q  |       V  |          |          |
   7+50       0.4701      2.56  |         Q|        V |          |          |
   7+55       0.4915      3.11  |          | Q      V |          |          |
   8+ 0       0.5190      3.98  |          |    Q     |V         |          |
   8+ 5       0.5596      5.90  |          |          | VQ       |          |
   8+10       0.6284      9.99  |          |          |    V     |         Q|
   8+15       0.6878      8.63  |          |          |      V   |   Q      |
   8+20       0.7230      5.11  |          |         Q|        V |          |
   8+25       0.7481      3.64  |          |   Q      |          V          |
   8+30       0.7675      2.82  |          |Q         |          |V         |
   8+35       0.7830      2.25  |        Q |          |          |V         |
   8+40       0.7959      1.87  |       Q  |          |          | V        |
   8+45       0.8073      1.66  |     Q    |          |          | V        |
   8+50       0.8177      1.50  |     Q    |          |          |  V       |
   8+55       0.8270      1.35  |    Q     |          |          |  V       |
   9+ 0       0.8354      1.22  |   Q      |          |          |  V       |
   9+ 5       0.8433      1.14  |   Q      |          |          |   V      |
   9+10       0.8506      1.07  |   Q      |          |          |   V      |
   9+15       0.8576      1.01  |   Q      |          |          |   V      |
   9+20       0.8641      0.95  |  Q       |          |          |    V     |
   9+25       0.8704      0.91  |  Q       |          |          |    V     |
   9+30       0.8763      0.87  |  Q       |          |          |    V     |
   9+35       0.8820      0.83  |  Q       |          |          |    V     |
   9+40       0.8875      0.80  |  Q       |          |          |    V     |
   9+45       0.8928      0.77  |  Q       |          |          |     V    |
   9+50       0.8979      0.74  | Q        |          |          |     V    |
   9+55       0.9029      0.72  | Q        |          |          |     V    |
  10+ 0       0.9078      0.70  | Q        |          |          |     V    |
  10+ 5       0.9125      0.68  | Q        |          |          |      V   |
  10+10       0.9167      0.61  | Q        |          |          |      V   |
  10+15       0.9205      0.56  | Q        |          |          |      V   |
  10+20       0.9242      0.53  | Q        |          |          |      V   |
  10+25       0.9276      0.51  | Q        |          |          |      V   |
  10+30       0.9310      0.49  |Q         |          |          |      V   |
  10+35       0.9343      0.48  |Q         |          |          |      V   |
  10+40       0.9375      0.47  |Q         |          |          |       V  |
  10+45       0.9406      0.45  |Q         |          |          |       V  |
  10+50       0.9437      0.45  |Q         |          |          |       V  |
  10+55       0.9467      0.44  |Q         |          |          |       V  |
  11+ 0       0.9496      0.43  |Q         |          |          |       V  |
  11+ 5       0.9525      0.42  |Q         |          |          |       V  |
  11+10       0.9554      0.41  |Q         |          |          |       V  |
  11+15       0.9582      0.40  |Q         |          |          |       V  |
  11+20       0.9609      0.40  |Q         |          |          |       V  |
  11+25       0.9636      0.39  |Q         |          |          |        V|
  11+30       0.9663      0.39  |Q         |          |          |        V|
  11+35       0.9689      0.38  |Q         |          |          |        V|
  11+40       0.9714      0.37  |Q         |          |          |        V|
  11+45       0.9740      0.37  |Q         |          |          |        V|
  11+50       0.9765      0.36  |Q         |          |          |        V|
  11+55       0.9789      0.36  |Q         |          |          |        V|
  12+ 0       0.9813      0.35  |Q         |          |          |        V|
  12+ 5       0.9836      0.33  |Q         |          |          |        V|
  12+10       0.9849      0.20  Q          |          |          |        V|
  12+15       0.9855      0.09  Q          |          |          |        V|
  12+20       0.9859      0.05  Q          |          |          |        V|
  12+25       0.9860      0.02  Q          |          |          |        V|
  12+30       0.9861      0.01  Q          |          |          |        V|
  12+35       0.9862      0.01  Q          |          |          |        V|
  12+40       0.9862      0.00  Q          |          |          |        V|
  12+45       0.9862      0.00  Q          |          |          |        V|
  12+50       0.9862      0.00  Q          |          |          |        V|
-------------------------------------------------------------------------
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- 5 Year 24 Hour Pre-Development Unit Hydrograph – Area 'E'

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        U n i t   H y d r o g r a p h   A n a l y s i s

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        Study date  10/11/16   File Name EXE00524.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

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RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'E' - 5 YEAR 24 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

        Storm Event Year = 5

        Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 70.6       3.6          0.61     C     0.250     0.144    0.036
 70.6       2.3          0.39     D     0.200     0.144    0.029

Area-averaged adjusted loss rate Fm (In/Hr) =  0.033

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
     0.51   0.088         70.6      51.7       9.33     0.043
     3.05   0.525         98.0      98.0       0.20     0.923

     0.32   0.056         70.6      51.7       9.33     0.043
     1.93   0.331         98.0      98.0       0.20     0.923

Area-averaged catchment yield fraction, Y =  0.797
Area-averaged low loss fraction, Yb =  0.203
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.160 (hours)
Watershed area =       5.81(Ac.)
Catchment Lag time =   0.128 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 65.3083
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.033(In/Hr)
Average low loss rate fraction (Yb) = 0.203 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.260(In)
Computed peak 30-minute rainfall =  0.590(In)
Specified peak 1-hour rainfall =  0.780(In)
Computed peak 3-hour rainfall =  1.310(In)
Specified peak 6-hour rainfall =  1.810(In)
Specified peak 24-hour rainfall =  3.030(In)
```

Rainfall depth area reduction factors:
Using a total area of 5.81(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000 Adjusted rainfall = 0.260(In)
30-minute factor = 1.000 Adjusted rainfall = 0.590(In)
1-hour factor = 1.000 Adjusted rainfall = 0.780(In)
3-hour factor = 1.000 Adjusted rainfall = 1.310(In)
6-hour factor = 1.000 Adjusted rainfall = 1.810(In)
24-hour factor = 1.000 Adjusted rainfall = 3.030(In)

U n i t H y d r o g r a p h

Interval Number	'S' Graph Mean values (K = 70.26 (CFS))	Unit Hydrograph ((CFS))
1	6.386	4.487
2	43.306	25.942
3	74.664	22.033
4	86.246	8.138
5	92.801	4.606
6	96.508	2.605
7	98.185	1.178
8	98.883	0.490
9	99.353	0.330
10	99.777	0.298
11	100.000	0.157

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.2599	0.2599
2	0.3569	0.0970
3	0.4296	0.0727
4	0.4900	0.0604
5	0.5427	0.0526
6	0.5898	0.0472
7	0.6276	0.0378
8	0.6623	0.0347
9	0.6945	0.0322
10	0.7246	0.0301
11	0.7529	0.0284
12	0.7798	0.0269
13	0.8098	0.0300
14	0.8387	0.0288
15	0.8664	0.0278
16	0.8932	0.0268
17	0.9192	0.0259
18	0.9443	0.0251
19	0.9687	0.0244
20	0.9925	0.0237
21	1.0156	0.0231
22	1.0382	0.0226
23	1.0602	0.0220
24	1.0817	0.0215
25	1.1028	0.0211
26	1.1234	0.0206
27	1.1436	0.0202
28	1.1634	0.0198
29	1.1828	0.0194
30	1.2019	0.0191
31	1.2207	0.0188
32	1.2391	0.0184
33	1.2572	0.0181
34	1.2751	0.0178
35	1.2926	0.0176
36	1.3100	0.0173
37	1.3268	0.0168
38	1.3434	0.0166
39	1.3598	0.0164

40	1.3759	0.0162
41	1.3919	0.0159
42	1.4076	0.0157
43	1.4231	0.0155
44	1.4385	0.0153
45	1.4536	0.0152
46	1.4686	0.0150
47	1.4834	0.0148
48	1.4981	0.0146
49	1.5126	0.0145
50	1.5269	0.0143
51	1.5410	0.0142
52	1.5551	0.0140
53	1.5689	0.0139
54	1.5827	0.0137
55	1.5963	0.0136
56	1.6098	0.0135
57	1.6231	0.0133
58	1.6363	0.0132
59	1.6494	0.0131
60	1.6624	0.0130
61	1.6753	0.0129
62	1.6880	0.0128
63	1.7007	0.0126
64	1.7132	0.0125
65	1.7256	0.0124
66	1.7380	0.0123
67	1.7502	0.0122
68	1.7623	0.0121
69	1.7744	0.0120
70	1.7863	0.0119
71	1.7982	0.0119
72	1.8100	0.0118
73	1.8193	0.0093
74	1.8285	0.0092
75	1.8376	0.0091
76	1.8467	0.0091
77	1.8557	0.0090
78	1.8646	0.0089
79	1.8735	0.0088
80	1.8823	0.0088
81	1.8910	0.0087
82	1.8996	0.0086
83	1.9082	0.0086
84	1.9167	0.0085
85	1.9251	0.0084
86	1.9335	0.0084
87	1.9419	0.0083
88	1.9501	0.0083
89	1.9583	0.0082
90	1.9665	0.0081
91	1.9746	0.0081
92	1.9826	0.0080
93	1.9906	0.0080
94	1.9985	0.0079
95	2.0064	0.0079
96	2.0142	0.0078
97	2.0220	0.0078
98	2.0297	0.0077
99	2.0374	0.0077
100	2.0450	0.0076
101	2.0526	0.0076
102	2.0601	0.0075
103	2.0676	0.0075
104	2.0750	0.0074
105	2.0824	0.0074
106	2.0898	0.0073
107	2.0971	0.0073
108	2.1044	0.0073
109	2.1116	0.0072
110	2.1188	0.0072

111	2.1259	0.0071
112	2.1330	0.0071
113	2.1401	0.0071
114	2.1471	0.0070
115	2.1541	0.0070
116	2.1610	0.0069
117	2.1679	0.0069
118	2.1748	0.0069
119	2.1816	0.0068
120	2.1884	0.0068
121	2.1952	0.0068
122	2.2019	0.0067
123	2.2086	0.0067
124	2.2152	0.0067
125	2.2219	0.0066
126	2.2284	0.0066
127	2.2350	0.0066
128	2.2415	0.0065
129	2.2480	0.0065
130	2.2545	0.0065
131	2.2609	0.0064
132	2.2673	0.0064
133	2.2737	0.0064
134	2.2800	0.0063
135	2.2863	0.0063
136	2.2926	0.0063
137	2.2989	0.0063
138	2.3051	0.0062
139	2.3113	0.0062
140	2.3174	0.0062
141	2.3236	0.0061
142	2.3297	0.0061
143	2.3358	0.0061
144	2.3418	0.0061
145	2.3479	0.0060
146	2.3539	0.0060
147	2.3598	0.0060
148	2.3658	0.0060
149	2.3717	0.0059
150	2.3776	0.0059
151	2.3835	0.0059
152	2.3894	0.0059
153	2.3952	0.0058
154	2.4010	0.0058
155	2.4068	0.0058
156	2.4125	0.0058
157	2.4183	0.0057
158	2.4240	0.0057
159	2.4297	0.0057
160	2.4354	0.0057
161	2.4410	0.0056
162	2.4466	0.0056
163	2.4522	0.0056
164	2.4578	0.0056
165	2.4634	0.0056
166	2.4689	0.0055
167	2.4744	0.0055
168	2.4799	0.0055
169	2.4854	0.0055
170	2.4909	0.0055
171	2.4963	0.0054
172	2.5017	0.0054
173	2.5071	0.0054
174	2.5125	0.0054
175	2.5178	0.0054
176	2.5232	0.0053
177	2.5285	0.0053
178	2.5338	0.0053
179	2.5391	0.0053
180	2.5443	0.0053
181	2.5496	0.0052

182	2.5548	0.0052
183	2.5600	0.0052
184	2.5652	0.0052
185	2.5704	0.0052
186	2.5755	0.0052
187	2.5807	0.0051
188	2.5858	0.0051
189	2.5909	0.0051
190	2.5960	0.0051
191	2.6010	0.0051
192	2.6061	0.0051
193	2.6111	0.0050
194	2.6162	0.0050
195	2.6212	0.0050
196	2.6262	0.0050
197	2.6311	0.0050
198	2.6361	0.0050
199	2.6410	0.0049
200	2.6459	0.0049
201	2.6509	0.0049
202	2.6557	0.0049
203	2.6606	0.0049
204	2.6655	0.0049
205	2.6703	0.0048
206	2.6752	0.0048
207	2.6800	0.0048
208	2.6848	0.0048
209	2.6896	0.0048
210	2.6944	0.0048
211	2.6991	0.0048
212	2.7039	0.0047
213	2.7086	0.0047
214	2.7133	0.0047
215	2.7180	0.0047
216	2.7227	0.0047
217	2.7274	0.0047
218	2.7321	0.0047
219	2.7367	0.0047
220	2.7414	0.0046
221	2.7460	0.0046
222	2.7506	0.0046
223	2.7552	0.0046
224	2.7598	0.0046
225	2.7643	0.0046
226	2.7689	0.0046
227	2.7735	0.0045
228	2.7780	0.0045
229	2.7825	0.0045
230	2.7870	0.0045
231	2.7915	0.0045
232	2.7960	0.0045
233	2.8005	0.0045
234	2.8049	0.0045
235	2.8094	0.0044
236	2.8138	0.0044
237	2.8183	0.0044
238	2.8227	0.0044
239	2.8271	0.0044
240	2.8315	0.0044
241	2.8358	0.0044
242	2.8402	0.0044
243	2.8446	0.0044
244	2.8489	0.0043
245	2.8532	0.0043
246	2.8576	0.0043
247	2.8619	0.0043
248	2.8662	0.0043
249	2.8705	0.0043
250	2.8747	0.0043
251	2.8790	0.0043
252	2.8833	0.0043

253	2.8875	0.0042
254	2.8918	0.0042
255	2.8960	0.0042
256	2.9002	0.0042
257	2.9044	0.0042
258	2.9086	0.0042
259	2.9128	0.0042
260	2.9170	0.0042
261	2.9211	0.0042
262	2.9253	0.0042
263	2.9294	0.0041
264	2.9336	0.0041
265	2.9377	0.0041
266	2.9418	0.0041
267	2.9459	0.0041
268	2.9500	0.0041
269	2.9541	0.0041
270	2.9582	0.0041
271	2.9622	0.0041
272	2.9663	0.0041
273	2.9703	0.0040
274	2.9744	0.0040
275	2.9784	0.0040
276	2.9824	0.0040
277	2.9864	0.0040
278	2.9904	0.0040
279	2.9944	0.0040
280	2.9984	0.0040
281	3.0024	0.0040
282	3.0064	0.0040
283	3.0103	0.0040
284	3.0143	0.0039
285	3.0182	0.0039
286	3.0221	0.0039
287	3.0261	0.0039
288	3.0300	0.0039

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0039	0.0008	0.0031
2	0.0039	0.0008	0.0031
3	0.0039	0.0008	0.0031
4	0.0039	0.0008	0.0031
5	0.0040	0.0008	0.0032
6	0.0040	0.0008	0.0032
7	0.0040	0.0008	0.0032
8	0.0040	0.0008	0.0032
9	0.0040	0.0008	0.0032
10	0.0040	0.0008	0.0032
11	0.0040	0.0008	0.0032
12	0.0041	0.0008	0.0032
13	0.0041	0.0008	0.0032
14	0.0041	0.0008	0.0033
15	0.0041	0.0008	0.0033
16	0.0041	0.0008	0.0033
17	0.0041	0.0008	0.0033
18	0.0041	0.0008	0.0033
19	0.0042	0.0008	0.0033
20	0.0042	0.0008	0.0033
21	0.0042	0.0009	0.0033
22	0.0042	0.0009	0.0034
23	0.0042	0.0009	0.0034
24	0.0042	0.0009	0.0034
25	0.0043	0.0009	0.0034
26	0.0043	0.0009	0.0034
27	0.0043	0.0009	0.0034
28	0.0043	0.0009	0.0034
29	0.0043	0.0009	0.0034
30	0.0043	0.0009	0.0035

31	0.0044	0.0009	0.0035
32	0.0044	0.0009	0.0035
33	0.0044	0.0009	0.0035
34	0.0044	0.0009	0.0035
35	0.0044	0.0009	0.0035
36	0.0044	0.0009	0.0035
37	0.0045	0.0009	0.0036
38	0.0045	0.0009	0.0036
39	0.0045	0.0009	0.0036
40	0.0045	0.0009	0.0036
41	0.0045	0.0009	0.0036
42	0.0045	0.0009	0.0036
43	0.0046	0.0009	0.0036
44	0.0046	0.0009	0.0037
45	0.0046	0.0009	0.0037
46	0.0046	0.0009	0.0037
47	0.0047	0.0009	0.0037
48	0.0047	0.0009	0.0037
49	0.0047	0.0010	0.0037
50	0.0047	0.0010	0.0037
51	0.0047	0.0010	0.0038
52	0.0047	0.0010	0.0038
53	0.0048	0.0010	0.0038
54	0.0048	0.0010	0.0038
55	0.0048	0.0010	0.0038
56	0.0048	0.0010	0.0039
57	0.0049	0.0010	0.0039
58	0.0049	0.0010	0.0039
59	0.0049	0.0010	0.0039
60	0.0049	0.0010	0.0039
61	0.0050	0.0010	0.0039
62	0.0050	0.0010	0.0040
63	0.0050	0.0010	0.0040
64	0.0050	0.0010	0.0040
65	0.0051	0.0010	0.0040
66	0.0051	0.0010	0.0040
67	0.0051	0.0010	0.0041
68	0.0051	0.0010	0.0041
69	0.0052	0.0010	0.0041
70	0.0052	0.0011	0.0041
71	0.0052	0.0011	0.0041
72	0.0052	0.0011	0.0042
73	0.0053	0.0011	0.0042
74	0.0053	0.0011	0.0042
75	0.0053	0.0011	0.0042
76	0.0053	0.0011	0.0043
77	0.0054	0.0011	0.0043
78	0.0054	0.0011	0.0043
79	0.0054	0.0011	0.0043
80	0.0055	0.0011	0.0043
81	0.0055	0.0011	0.0044
82	0.0055	0.0011	0.0044
83	0.0056	0.0011	0.0044
84	0.0056	0.0011	0.0044
85	0.0056	0.0011	0.0045
86	0.0056	0.0011	0.0045
87	0.0057	0.0012	0.0045
88	0.0057	0.0012	0.0046
89	0.0058	0.0012	0.0046
90	0.0058	0.0012	0.0046
91	0.0058	0.0012	0.0046
92	0.0059	0.0012	0.0047
93	0.0059	0.0012	0.0047
94	0.0059	0.0012	0.0047
95	0.0060	0.0012	0.0048
96	0.0060	0.0012	0.0048
97	0.0061	0.0012	0.0048
98	0.0061	0.0012	0.0048
99	0.0061	0.0012	0.0049
100	0.0062	0.0013	0.0049
101	0.0062	0.0013	0.0050

102	0.0063	0.0013	0.0050
103	0.0063	0.0013	0.0050
104	0.0063	0.0013	0.0050
105	0.0064	0.0013	0.0051
106	0.0064	0.0013	0.0051
107	0.0065	0.0013	0.0052
108	0.0065	0.0013	0.0052
109	0.0066	0.0013	0.0052
110	0.0066	0.0013	0.0053
111	0.0067	0.0014	0.0053
112	0.0067	0.0014	0.0054
113	0.0068	0.0014	0.0054
114	0.0068	0.0014	0.0054
115	0.0069	0.0014	0.0055
116	0.0069	0.0014	0.0055
117	0.0070	0.0014	0.0056
118	0.0071	0.0014	0.0056
119	0.0071	0.0015	0.0057
120	0.0072	0.0015	0.0057
121	0.0073	0.0015	0.0058
122	0.0073	0.0015	0.0058
123	0.0074	0.0015	0.0059
124	0.0074	0.0015	0.0059
125	0.0075	0.0015	0.0060
126	0.0076	0.0015	0.0060
127	0.0077	0.0016	0.0061
128	0.0077	0.0016	0.0062
129	0.0078	0.0016	0.0062
130	0.0079	0.0016	0.0063
131	0.0080	0.0016	0.0064
132	0.0080	0.0016	0.0064
133	0.0081	0.0017	0.0065
134	0.0082	0.0017	0.0065
135	0.0083	0.0017	0.0066
136	0.0084	0.0017	0.0067
137	0.0085	0.0017	0.0068
138	0.0086	0.0017	0.0068
139	0.0087	0.0018	0.0069
140	0.0088	0.0018	0.0070
141	0.0089	0.0018	0.0071
142	0.0090	0.0018	0.0072
143	0.0091	0.0019	0.0073
144	0.0092	0.0019	0.0073
145	0.0118	0.0024	0.0094
146	0.0119	0.0024	0.0094
147	0.0120	0.0024	0.0096
148	0.0121	0.0025	0.0097
149	0.0123	0.0025	0.0098
150	0.0124	0.0025	0.0099
151	0.0126	0.0026	0.0101
152	0.0128	0.0026	0.0102
153	0.0130	0.0026	0.0103
154	0.0131	0.0027	0.0104
155	0.0133	0.0027	0.0106
156	0.0135	0.0027	0.0107
157	0.0137	0.0028	0.0110
158	0.0139	0.0028	0.0111
159	0.0142	0.0028	0.0114
160	0.0143	0.0028	0.0116
161	0.0146	0.0028	0.0119
162	0.0148	0.0028	0.0120
163	0.0152	0.0028	0.0124
164	0.0153	0.0028	0.0126
165	0.0157	0.0028	0.0130
166	0.0159	0.0028	0.0132
167	0.0164	0.0028	0.0136
168	0.0166	0.0028	0.0138
169	0.0173	0.0028	0.0145
170	0.0176	0.0028	0.0148
171	0.0181	0.0028	0.0154
172	0.0184	0.0028	0.0157

173	0.0191	0.0028	0.0163
174	0.0194	0.0028	0.0167
175	0.0202	0.0028	0.0174
176	0.0206	0.0028	0.0178
177	0.0215	0.0028	0.0188
178	0.0220	0.0028	0.0193
179	0.0231	0.0028	0.0204
180	0.0237	0.0028	0.0210
181	0.0251	0.0028	0.0224
182	0.0259	0.0028	0.0232
183	0.0278	0.0028	0.0250
184	0.0288	0.0028	0.0261
185	0.0269	0.0028	0.0241
186	0.0284	0.0028	0.0256
187	0.0322	0.0028	0.0294
188	0.0347	0.0028	0.0319
189	0.0472	0.0028	0.0444
190	0.0526	0.0028	0.0499
191	0.0727	0.0028	0.0699
192	0.0970	0.0028	0.0942
193	0.2599	0.0028	0.2572
194	0.0604	0.0028	0.0576
195	0.0378	0.0028	0.0350
196	0.0301	0.0028	0.0273
197	0.0300	0.0028	0.0273
198	0.0268	0.0028	0.0240
199	0.0244	0.0028	0.0216
200	0.0226	0.0028	0.0198
201	0.0211	0.0028	0.0183
202	0.0198	0.0028	0.0170
203	0.0188	0.0028	0.0160
204	0.0178	0.0028	0.0151
205	0.0168	0.0028	0.0141
206	0.0162	0.0028	0.0134
207	0.0155	0.0028	0.0128
208	0.0150	0.0028	0.0122
209	0.0145	0.0028	0.0117
210	0.0140	0.0028	0.0113
211	0.0136	0.0028	0.0108
212	0.0132	0.0027	0.0105
213	0.0129	0.0026	0.0102
214	0.0125	0.0026	0.0100
215	0.0122	0.0025	0.0097
216	0.0119	0.0024	0.0095
217	0.0093	0.0019	0.0074
218	0.0091	0.0018	0.0072
219	0.0088	0.0018	0.0070
220	0.0086	0.0018	0.0069
221	0.0084	0.0017	0.0067
222	0.0083	0.0017	0.0066
223	0.0081	0.0016	0.0064
224	0.0079	0.0016	0.0063
225	0.0078	0.0016	0.0062
226	0.0076	0.0016	0.0061
227	0.0075	0.0015	0.0060
228	0.0073	0.0015	0.0059
229	0.0072	0.0015	0.0058
230	0.0071	0.0014	0.0057
231	0.0070	0.0014	0.0056
232	0.0069	0.0014	0.0055
233	0.0068	0.0014	0.0054
234	0.0067	0.0014	0.0053
235	0.0066	0.0013	0.0052
236	0.0065	0.0013	0.0051
237	0.0064	0.0013	0.0051
238	0.0063	0.0013	0.0050
239	0.0062	0.0013	0.0049
240	0.0061	0.0012	0.0049
241	0.0060	0.0012	0.0048
242	0.0060	0.0012	0.0047
243	0.0059	0.0012	0.0047

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      244              0.0058          0.0012              0.0046
      245              0.0057          0.0012              0.0046
      246              0.0057          0.0012              0.0045
      247              0.0056          0.0011              0.0045
      248              0.0055          0.0011              0.0044
      249              0.0055          0.0011              0.0044
      250              0.0054          0.0011              0.0043
      251              0.0054          0.0011              0.0043
      252              0.0053          0.0011              0.0042
      253              0.0052          0.0011              0.0042
      254              0.0052          0.0011              0.0041
      255              0.0051          0.0010              0.0041
      256              0.0051          0.0010              0.0041
      257              0.0050          0.0010              0.0040
      258              0.0050          0.0010              0.0040
      259              0.0049          0.0010              0.0039
      260              0.0049          0.0010              0.0039
      261              0.0048          0.0010              0.0039
      262              0.0048          0.0010              0.0038
      263              0.0048          0.0010              0.0038
      264              0.0047          0.0010              0.0038
      265              0.0047          0.0010              0.0037
      266              0.0046          0.0009              0.0037
      267              0.0046          0.0009              0.0037
      268              0.0046          0.0009              0.0036
      269              0.0045          0.0009              0.0036
      270              0.0045          0.0009              0.0036
      271              0.0044          0.0009              0.0035
      272              0.0044          0.0009              0.0035
      273              0.0044          0.0009              0.0035
      274              0.0043          0.0009              0.0035
      275              0.0043          0.0009              0.0034
      276              0.0043          0.0009              0.0034
      277              0.0042          0.0009              0.0034
      278              0.0042          0.0009              0.0034
      279              0.0042          0.0009              0.0033
      280              0.0042          0.0008              0.0033
      281              0.0041          0.0008              0.0033
      282              0.0041          0.0008              0.0033
      283              0.0041          0.0008              0.0032
      284              0.0040          0.0008              0.0032
      285              0.0040          0.0008              0.0032
      286              0.0040          0.0008              0.0032
      287              0.0040          0.0008              0.0032
      288              0.0039          0.0008              0.0031
      ------------------------------------------------------------------
      ------------------------------------------------------------------
      Total soil rain loss =      0.44(In)
      Total effective rainfall =      2.59(In)
      Peak flow rate in flood hydrograph =      9.99(CFS)
      ------------------------------------------------------------------
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                        24 - H O U R    S T O R M
                   R u n o f f      H y d r o g r a p h
      ------------------------------------------------------------------
                Hydrograph in   5   Minute intervals ((CFS))

      ------------------------------------------------------------------
 Time(h+m) Volume Ac.Ft   Q(CFS)  0        2.5       5.0       7.5      10.0
 ------------------------------------------------------------------------
   0+ 5       0.0001      0.01  Q         |         |         |         |
   0+10       0.0008      0.09  Q         |         |         |         |
   0+15       0.0019      0.16  Q         |         |         |         |
   0+20       0.0032      0.19  Q         |         |         |         |
   0+25       0.0046      0.20  Q         |         |         |         |
   0+30       0.0061      0.21  Q         |         |         |         |
   0+35       0.0076      0.22  Q         |         |         |         |
   0+40       0.0091      0.22  Q         |         |         |         |
   0+45       0.0106      0.22  Q         |         |         |         |
   0+50       0.0122      0.22  Q         |         |         |         |
   0+55       0.0137      0.22  Q         |         |         |         |
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1+ 0       0.0153      0.23  Q          |          |          |          |
1+ 5       0.0168      0.23  Q          |          |          |          |
1+10       0.0184      0.23  Q          |          |          |          |
1+15       0.0200      0.23  Q          |          |          |          |
1+20       0.0215      0.23  Q          |          |          |          |
1+25       0.0231      0.23  Q          |          |          |          |
1+30       0.0247      0.23  Q          |          |          |          |
1+35       0.0263      0.23  Q          |          |          |          |
1+40       0.0279      0.23  Q          |          |          |          |
1+45       0.0295      0.23  Q          |          |          |          |
1+50       0.0311      0.23  Q          |          |          |          |
1+55       0.0327      0.23  QV         |          |          |          |
2+ 0       0.0343      0.24  QV         |          |          |          |
2+ 5       0.0360      0.24  QV         |          |          |          |
2+10       0.0376      0.24  QV         |          |          |          |
2+15       0.0392      0.24  QV         |          |          |          |
2+20       0.0409      0.24  QV         |          |          |          |
2+25       0.0425      0.24  QV         |          |          |          |
2+30       0.0442      0.24  QV         |          |          |          |
2+35       0.0459      0.24  QV         |          |          |          |
2+40       0.0475      0.24  QV         |          |          |          |
2+45       0.0492      0.24  QV         |          |          |          |
2+50       0.0509      0.24  QV         |          |          |          |
2+55       0.0526      0.25  QV         |          |          |          |
3+ 0       0.0543      0.25  QV         |          |          |          |
3+ 5       0.0560      0.25  QV         |          |          |          |
3+10       0.0577      0.25  QV         |          |          |          |
3+15       0.0594      0.25  QV         |          |          |          |
3+20       0.0612      0.25  |Q         |          |          |          |
3+25       0.0629      0.25  |QV        |          |          |          |
3+30       0.0646      0.25  |QV        |          |          |          |
3+35       0.0664      0.25  |QV        |          |          |          |
3+40       0.0681      0.25  |QV        |          |          |          |
3+45       0.0699      0.26  |QV        |          |          |          |
3+50       0.0717      0.26  |QV        |          |          |          |
3+55       0.0734      0.26  |QV        |          |          |          |
4+ 0       0.0752      0.26  |QV        |          |          |          |
4+ 5       0.0770      0.26  |QV        |          |          |          |
4+10       0.0788      0.26  |QV        |          |          |          |
4+15       0.0806      0.26  |QV        |          |          |          |
4+20       0.0824      0.26  |QV        |          |          |          |
4+25       0.0842      0.26  |QV        |          |          |          |
4+30       0.0861      0.27  |QV        |          |          |          |
4+35       0.0879      0.27  |QV        |          |          |          |
4+40       0.0898      0.27  |QV        |          |          |          |
4+45       0.0916      0.27  |QV        |          |          |          |
4+50       0.0935      0.27  |QV        |          |          |          |
4+55       0.0954      0.27  |Q V       |          |          |          |
5+ 0       0.0972      0.27  |Q V       |          |          |          |
5+ 5       0.0991      0.27  |Q V       |          |          |          |
5+10       0.1010      0.28  |Q V       |          |          |          |
5+15       0.1029      0.28  |Q V       |          |          |          |
5+20       0.1049      0.28  |Q V       |          |          |          |
5+25       0.1068      0.28  |Q V       |          |          |          |
5+30       0.1087      0.28  |Q V       |          |          |          |
5+35       0.1107      0.28  |Q V       |          |          |          |
5+40       0.1126      0.28  |Q V       |          |          |          |
5+45       0.1146      0.29  |Q V       |          |          |          |
5+50       0.1166      0.29  |Q V       |          |          |          |
5+55       0.1186      0.29  |Q V       |          |          |          |
6+ 0       0.1205      0.29  |Q V       |          |          |          |
6+ 5       0.1226      0.29  |Q V       |          |          |          |
6+10       0.1246      0.29  |Q V       |          |          |          |
6+15       0.1266      0.29  |Q  V      |          |          |          |
6+20       0.1286      0.30  |Q  V      |          |          |          |
6+25       0.1307      0.30  |Q  V      |          |          |          |
6+30       0.1327      0.30  |Q  V      |          |          |          |
6+35       0.1348      0.30  |Q  V      |          |          |          |
6+40       0.1369      0.30  |Q  V      |          |          |          |
6+45       0.1390      0.30  |Q  V      |          |          |          |
6+50       0.1411      0.31  |Q  V      |          |          |          |
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 6+55      0.1432      0.31  |Q  V     |         |         |         |
 7+ 0      0.1453      0.31  |Q  V     |         |         |         |
 7+ 5      0.1475      0.31  |Q  V     |         |         |         |
 7+10      0.1496      0.31  |Q  V     |         |         |         |
 7+15      0.1518      0.31  |Q  V     |         |         |         |
 7+20      0.1540      0.32  |Q  V     |         |         |         |
 7+25      0.1562      0.32  |Q  V     |         |         |         |
 7+30      0.1584      0.32  |Q   V    |         |         |         |
 7+35      0.1606      0.32  |Q   V    |         |         |         |
 7+40      0.1628      0.32  |Q   V    |         |         |         |
 7+45      0.1651      0.33  |Q   V    |         |         |         |
 7+50      0.1673      0.33  |Q   V    |         |         |         |
 7+55      0.1696      0.33  |Q   V    |         |         |         |
 8+ 0      0.1719      0.33  |Q   V    |         |         |         |
 8+ 5      0.1742      0.33  |Q   V    |         |         |         |
 8+10      0.1765      0.34  |Q   V    |         |         |         |
 8+15      0.1788      0.34  |Q   V    |         |         |         |
 8+20      0.1812      0.34  |Q   V    |         |         |         |
 8+25      0.1836      0.34  |Q   V    |         |         |         |
 8+30      0.1859      0.35  |Q   V    |         |         |         |
 8+35      0.1883      0.35  |Q    V   |         |         |         |
 8+40      0.1907      0.35  |Q    V   |         |         |         |
 8+45      0.1932      0.35  |Q    V   |         |         |         |
 8+50      0.1956      0.36  |Q    V   |         |         |         |
 8+55      0.1981      0.36  |Q    V   |         |         |         |
 9+ 0      0.2006      0.36  |Q    V   |         |         |         |
 9+ 5      0.2031      0.36  |Q    V   |         |         |         |
 9+10      0.2056      0.37  |Q    V   |         |         |         |
 9+15      0.2081      0.37  |Q    V   |         |         |         |
 9+20      0.2107      0.37  |Q    V   |         |         |         |
 9+25      0.2132      0.37  |Q    V   |         |         |         |
 9+30      0.2158      0.38  |Q    V   |         |         |         |
 9+35      0.2185      0.38  |Q    V   |         |         |         |
 9+40      0.2211      0.38  |Q     V  |         |         |         |
 9+45      0.2238      0.39  |Q     V  |         |         |         |
 9+50      0.2264      0.39  |Q     V  |         |         |         |
 9+55      0.2291      0.39  |Q     V  |         |         |         |
10+ 0      0.2319      0.40  |Q     V  |         |         |         |
10+ 5      0.2346      0.40  |Q     V  |         |         |         |
10+10      0.2374      0.40  |Q     V  |         |         |         |
10+15      0.2402      0.41  |Q     V  |         |         |         |
10+20      0.2430      0.41  |Q     V  |         |         |         |
10+25      0.2458      0.41  |Q     V  |         |         |         |
10+30      0.2487      0.42  |Q     V  |         |         |         |
10+35      0.2516      0.42  |Q      V |         |         |         |
10+40      0.2545      0.42  |Q      V |         |         |         |
10+45      0.2575      0.43  |Q      V |         |         |         |
10+50      0.2605      0.43  |Q      V |         |         |         |
10+55      0.2635      0.44  |Q      V |         |         |         |
11+ 0      0.2665      0.44  |Q      V |         |         |         |
11+ 5      0.2696      0.45  |Q      V |         |         |         |
11+10      0.2727      0.45  |Q      V |         |         |         |
11+15      0.2758      0.46  |Q      V |         |         |         |
11+20      0.2790      0.46  |Q      V |         |         |         |
11+25      0.2822      0.47  |Q       V|         |         |         |
11+30      0.2854      0.47  |Q       V|         |         |         |
11+35      0.2887      0.48  |Q       V|         |         |         |
11+40      0.2920      0.48  |Q       V|         |         |         |
11+45      0.2954      0.49  |Q       V|         |         |         |
11+50      0.2988      0.49  |Q       V|         |         |         |
11+55      0.3022      0.50  |Q       V|         |         |         |
12+ 0      0.3057      0.50  | Q      V|         |         |         |
12+ 5      0.3093      0.52  | Q      V|         |         |         |
12+10      0.3132      0.58  | Q       V         |         |         |
12+15      0.3175      0.62  | Q       V         |         |         |
12+20      0.3220      0.65  | Q       V         |         |         |
12+25      0.3265      0.66  | Q       V         |         |         |
12+30      0.3312      0.68  | Q       V         |         |         |
12+35      0.3359      0.69  | Q       V         |         |         |
12+40      0.3407      0.70  | Q       V         |         |         |
12+45      0.3456      0.71  | Q       |V        |         |         |
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12+50       0.3505      0.72  | Q       |V        |         |         |
12+55       0.3555      0.72  | Q       |V        |         |         |
13+ 0       0.3606      0.74  | Q       |V        |         |         |
13+ 5       0.3657      0.75  | Q       |V        |         |         |
13+10       0.3709      0.76  |  Q      |V        |         |         |
13+15       0.3762      0.77  |  Q      | V       |         |         |
13+20       0.3816      0.78  |  Q      | V       |         |         |
13+25       0.3871      0.80  |  Q      | V       |         |         |
13+30       0.3927      0.82  |  Q      | V       |         |         |
13+35       0.3984      0.83  |  Q      | V       |         |         |
13+40       0.4043      0.85  |  Q      | V       |         |         |
13+45       0.4103      0.87  |  Q      |  V      |         |         |
13+50       0.4164      0.89  |  Q      |  V      |         |         |
13+55       0.4226      0.91  |  Q      |  V      |         |         |
14+ 0       0.4290      0.93  |  Q      |  V      |         |         |
14+ 5       0.4356      0.95  |  Q      |  V      |         |         |
14+10       0.4424      0.98  |  Q      |   V     |         |         |
14+15       0.4494      1.01  |   Q     |   V     |         |         |
14+20       0.4566      1.04  |   Q     |   V     |         |         |
14+25       0.4640      1.07  |   Q     |   V     |         |         |
14+30       0.4716      1.11  |   Q     |    V    |         |         |
14+35       0.4794      1.14  |   Q     |    V    |         |         |
14+40       0.4876      1.18  |   Q     |    V    |         |         |
14+45       0.4960      1.22  |   Q     |    V    |         |         |
14+50       0.5047      1.26  |    Q    |     V   |         |         |
14+55       0.5137      1.31  |    Q    |     V   |         |         |
15+ 0       0.5231      1.37  |    Q    |     V   |         |         |
15+ 5       0.5329      1.42  |    Q    |      V  |         |         |
15+10       0.5432      1.49  |    Q    |      V  |         |         |
15+15       0.5540      1.57  |     Q   |      V  |         |         |
15+20       0.5654      1.65  |     Q   |       V |         |         |
15+25       0.5773      1.73  |     Q   |       V |         |         |
15+30       0.5892      1.73  |     Q   |       V |         |         |
15+35       0.6014      1.77  |      Q  |        V|         |         |
15+40       0.6145      1.91  |      Q  |        V|         |         |
15+45       0.6291      2.12  |       Q |         V         |         |
15+50       0.6467      2.56  |         Q         V         |         |
15+55       0.6681      3.11  |          | Q      |V        |         |
16+ 0       0.6956      3.98  |          |    Q   | V       |         |
16+ 5       0.7362      5.90  |          |        |  Q      |         |
16+10       0.8050      9.99  |          |        |    V    |        Q|
16+15       0.8644      8.63  |          |        |      V  |   Q     |
16+20       0.8996      5.11  |          |        Q       V |         |
16+25       0.9247      3.64  |          |   Q     |        V|         |
16+30       0.9441      2.82  |          |Q        |         V         |
16+35       0.9596      2.25  |        Q |         |         V         |
16+40       0.9725      1.87  |       Q  |         |         |V        |
16+45       0.9839      1.66  |      Q   |         |         |V        |
16+50       0.9943      1.50  |      Q   |         |         |V        |
16+55       1.0036      1.35  |     Q    |         |         | V       |
17+ 0       1.0120      1.22  |    Q     |         |         | V       |
17+ 5       1.0199      1.14  |    Q     |         |         | V       |
17+10       1.0272      1.07  |    Q     |         |         | V       |
17+15       1.0342      1.01  |    Q     |         |         |  V      |
17+20       1.0407      0.95  |  Q       |         |         |  V      |
17+25       1.0470      0.91  |  Q       |         |         |  V      |
17+30       1.0529      0.87  |  Q       |         |         |  V      |
17+35       1.0586      0.83  |  Q       |         |         |  V      |
17+40       1.0641      0.80  |  Q       |         |         |   V     |
17+45       1.0694      0.77  |  Q       |         |         |   V     |
17+50       1.0745      0.74  | Q        |         |         |   V     |
17+55       1.0795      0.72  | Q        |         |         |   V     |
18+ 0       1.0844      0.70  | Q        |         |         |   V     |
18+ 5       1.0890      0.68  | Q        |         |         |   V     |
18+10       1.0933      0.61  | Q        |         |         |   V     |
18+15       1.0971      0.56  | Q        |         |         |    V    |
18+20       1.1007      0.53  | Q        |         |         |    V    |
18+25       1.1042      0.51  | Q        |         |         |    V    |
18+30       1.1076      0.49  |Q         |         |         |    V    |
18+35       1.1109      0.48  |Q         |         |         |    V    |
18+40       1.1141      0.47  |Q         |         |         |    V    |
```

```
18+45      1.1172      0.45  |Q        |         |         |    V    |
18+50      1.1203      0.45  |Q        |         |         |    V    |
18+55      1.1233      0.44  |Q        |         |         |    V    |
19+ 0      1.1262      0.43  |Q        |         |         |    V    |
19+ 5      1.1291      0.42  |Q        |         |         |     V   |
19+10      1.1320      0.41  |Q        |         |         |     V   |
19+15      1.1347      0.40  |Q        |         |         |     V   |
19+20      1.1375      0.40  |Q        |         |         |     V   |
19+25      1.1402      0.39  |Q        |         |         |     V   |
19+30      1.1428      0.39  |Q        |         |         |     V   |
19+35      1.1454      0.38  |Q        |         |         |     V   |
19+40      1.1480      0.37  |Q        |         |         |     V   |
19+45      1.1505      0.37  |Q        |         |         |     V   |
19+50      1.1530      0.36  |Q        |         |         |     V   |
19+55      1.1555      0.36  |Q        |         |         |     V   |
20+ 0      1.1579      0.35  |Q        |         |         |      V  |
20+ 5      1.1603      0.35  |Q        |         |         |      V  |
20+10      1.1627      0.34  |Q        |         |         |      V  |
20+15      1.1650      0.34  |Q        |         |         |      V  |
20+20      1.1673      0.33  |Q        |         |         |      V  |
20+25      1.1696      0.33  |Q        |         |         |      V  |
20+30      1.1718      0.33  |Q        |         |         |      V  |
20+35      1.1740      0.32  |Q        |         |         |      V  |
20+40      1.1762      0.32  |Q        |         |         |      V  |
20+45      1.1784      0.31  |Q        |         |         |      V  |
20+50      1.1805      0.31  |Q        |         |         |      V  |
20+55      1.1826      0.31  |Q        |         |         |      V  |
21+ 0      1.1847      0.30  |Q        |         |         |      V  |
21+ 5      1.1868      0.30  |Q        |         |         |      V  |
21+10      1.1888      0.30  |Q        |         |         |      V  |
21+15      1.1908      0.29  |Q        |         |         |       V |
21+20      1.1928      0.29  |Q        |         |         |       V |
21+25      1.1948      0.29  |Q        |         |         |       V |
21+30      1.1968      0.28  |Q        |         |         |       V |
21+35      1.1987      0.28  |Q        |         |         |       V |
21+40      1.2006      0.28  |Q        |         |         |       V |
21+45      1.2026      0.28  |Q        |         |         |       V |
21+50      1.2044      0.27  |Q        |         |         |       V |
21+55      1.2063      0.27  |Q        |         |         |       V |
22+ 0      1.2082      0.27  |Q        |         |         |       V |
22+ 5      1.2100      0.27  |Q        |         |         |       V |
22+10      1.2118      0.26  |Q        |         |         |       V |
22+15      1.2136      0.26  |Q        |         |         |       V |
22+20      1.2154      0.26  |Q        |         |         |       V |
22+25      1.2172      0.26  |Q        |         |         |       V |
22+30      1.2189      0.26  |Q        |         |         |       V |
22+35      1.2207      0.25  |Q        |         |         |        V|
22+40      1.2224      0.25  |Q        |         |         |        V|
22+45      1.2241      0.25  Q        |         |         |        V|
22+50      1.2258      0.25  Q        |         |         |        V|
22+55      1.2275      0.25  Q        |         |         |        V|
23+ 0      1.2292      0.24  Q        |         |         |        V|
23+ 5      1.2309      0.24  Q        |         |         |        V|
23+10      1.2325      0.24  Q        |         |         |        V|
23+15      1.2342      0.24  Q        |         |         |        V|
23+20      1.2358      0.24  Q        |         |         |        V|
23+25      1.2374      0.23  Q        |         |         |        V|
23+30      1.2390      0.23  Q        |         |         |        V|
23+35      1.2406      0.23  Q        |         |         |        V|
23+40      1.2422      0.23  Q        |         |         |        V|
23+45      1.2437      0.23  Q        |         |         |        V|
23+50      1.2453      0.23  Q        |         |         |        V|
23+55      1.2468      0.22  Q        |         |         |        V|
24+ 0      1.2484      0.22  Q        |         |         |        V|
24+ 5      1.2498      0.21  Q        |         |         |        V|
24+10      1.2507      0.13  Q        |         |         |        V|
24+15      1.2511      0.06  Q        |         |         |        V|
24+20      1.2513      0.03  Q        |         |         |        V|
24+25      1.2514      0.02  Q        |         |         |        V|
24+30      1.2514      0.01  Q        |         |         |        V|
24+35      1.2515      0.00  Q        |         |         |        V|
```

```
   24+40       1.2515      0.00  Q         |         |         |        V|
   24+45       1.2515      0.00  Q         |         |         |        V|
   24+50       1.2515      0.00  Q         |         |         |        V|
-------------------------------------------------------------------------
```

- 25 Year 3 Hour Pre-Development Unit Hydrograph – Area 'E'

```
        U n i t   H y d r o g r a p h   A n a l y s i s

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        Study date  10/11/16   File Name EXE02503.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

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RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'E' - 25 YEAR 3 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

        Storm Event Year = 25

        Antecedent Moisture Condition = 2

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 70.6       3.6          0.61     C     0.250     0.144    0.036
 70.6       2.3          0.39     D     0.200     0.144    0.029

Area-averaged adjusted loss rate Fm (In/Hr) =  0.033

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC2)          Yield Fr
     0.51   0.088         70.6      70.6       4.16     0.381
     3.05   0.525         98.0      98.0       0.20     0.947

     0.32   0.056         70.6      70.6       4.16     0.381
     1.93   0.331         98.0      98.0       0.20     0.947

Area-averaged catchment yield fraction, Y =  0.866
Area-averaged low loss fraction, Yb =  0.134
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.154 (hours)
Watershed area =       5.81(Ac.)
Catchment Lag time =   0.123 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 67.8610
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.033(In/Hr)
Average low loss rate fraction (Yb) = 0.134 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.400(In)
Computed peak 30-minute rainfall =  0.870(In)
Specified peak 1-hour rainfall =  1.150(In)
Computed peak 3-hour rainfall =  1.940(In)
Specified peak 6-hour rainfall =  2.710(In)
Specified peak 24-hour rainfall =  4.490(In)
```

```
Rainfall depth area reduction factors:
Using a total area of       5.81(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000     Adjusted rainfall =  0.400(In)
30-minute factor = 1.000    Adjusted rainfall =  0.870(In)
1-hour factor = 1.000       Adjusted rainfall =  1.150(In)
3-hour factor = 1.000       Adjusted rainfall =  1.940(In)
6-hour factor = 1.000       Adjusted rainfall =  2.710(In)
24-hour factor = 1.000 Adjusted rainfall =  4.490(In)
```

U n i t H y d r o g r a p h

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 70.26 (CFS))	
1	6.799	4.778
2	46.036	27.570
3	76.132	21.147
4	87.339	7.874
5	93.622	4.415
6	97.025	2.391
7	98.384	0.955
8	99.035	0.458
9	99.512	0.335
10	99.867	0.249
11	100.000	0.094

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.3999	0.3999
2	0.5401	0.1402
3	0.6440	0.1038
4	0.7295	0.0856
5	0.8036	0.0741
6	0.8698	0.0661
7	0.9254	0.0557
8	0.9766	0.0511
9	1.0240	0.0474
10	1.0683	0.0444
11	1.1101	0.0418
12	1.1497	0.0396
13	1.1944	0.0447
14	1.2373	0.0429
15	1.2786	0.0413
16	1.3185	0.0399
17	1.3571	0.0386
18	1.3946	0.0374
19	1.4309	0.0364
20	1.4663	0.0354
21	1.5008	0.0345
22	1.5344	0.0336
23	1.5672	0.0328
24	1.5993	0.0321
25	1.6307	0.0314
26	1.6614	0.0307
27	1.6916	0.0301
28	1.7211	0.0296
29	1.7501	0.0290
30	1.7786	0.0285
31	1.8066	0.0280
32	1.8341	0.0275
33	1.8612	0.0271
34	1.8878	0.0266
35	1.9141	0.0262
36	1.9399	0.0259

Unit Period	Unit Rainfall	Unit Soil-Loss	Effective Rainfall

```
      (number)           (In)          (In)                (In)
      ---------------------------------------------------------------------
        1              0.0259          0.0028              0.0231
        2              0.0262          0.0028              0.0235
        3              0.0271          0.0028              0.0243
        4              0.0275          0.0028              0.0248
        5              0.0285          0.0028              0.0257
        6              0.0290          0.0028              0.0262
        7              0.0301          0.0028              0.0274
        8              0.0307          0.0028              0.0280
        9              0.0321          0.0028              0.0293
       10              0.0328          0.0028              0.0301
       11              0.0345          0.0028              0.0317
       12              0.0354          0.0028              0.0326
       13              0.0374          0.0028              0.0347
       14              0.0386          0.0028              0.0359
       15              0.0413          0.0028              0.0386
       16              0.0429          0.0028              0.0401
       17              0.0396          0.0028              0.0368
       18              0.0418          0.0028              0.0390
       19              0.0474          0.0028              0.0446
       20              0.0511          0.0028              0.0483
       21              0.0661          0.0028              0.0634
       22              0.0741          0.0028              0.0714
       23              0.1038          0.0028              0.1011
       24              0.1402          0.0028              0.1375
       25              0.3999          0.0028              0.3971
       26              0.0856          0.0028              0.0828
       27              0.0557          0.0028              0.0529
       28              0.0444          0.0028              0.0416
       29              0.0447          0.0028              0.0419
       30              0.0399          0.0028              0.0371
       31              0.0364          0.0028              0.0336
       32              0.0336          0.0028              0.0309
       33              0.0314          0.0028              0.0286
       34              0.0296          0.0028              0.0268
       35              0.0280          0.0028              0.0252
       36              0.0266          0.0028              0.0239
      ---------------------------------------------------------------------
      ---------------------------------------------------------------------
      Total soil rain loss =      0.10(In)
      Total effective rainfall =      1.84(In)
      Peak flow rate in flood hydrograph =     15.61(CFS)
      ---------------------------------------------------------------------
      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          3 - H O U R    S T O R M
                     R u n o f f      H y d r o g r a p h
      ---------------------------------------------------------------------
                 Hydrograph in   5   Minute intervals ((CFS))

      ---------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0        5.0      10.0      15.0      20.0
-------------------------------------------------------------------------
  0+ 5       0.0008      0.11  Q         |         |         |         |
  0+10       0.0059      0.75  VQ        |         |         |         |
  0+15       0.0145      1.25  V Q       |         |         |         |
  0+20       0.0246      1.47  |VQ       |         |         |         |
  0+25       0.0357      1.61  |V Q      |         |         |         |
  0+30       0.0475      1.71  | VQ      |         |         |         |
  0+35       0.0597      1.78  | VQ      |         |         |         |
  0+40       0.0724      1.85  |  Q      |         |         |         |
  0+45       0.0856      1.91  |  Q      |         |         |         |
  0+50       0.0992      1.98  |  QV     |         |         |         |
  0+55       0.1134      2.06  |   QV    |         |         |         |
  1+ 0       0.1281      2.14  |   QV    |         |         |         |
  1+ 5       0.1434      2.22  |   Q V   |         |         |         |
  1+10       0.1595      2.33  |   Q  V  |         |         |         |
  1+15       0.1762      2.43  |   Q  V  |         |         |         |
  1+20       0.1939      2.57  |    Q  V |         |         |         |
  1+25       0.2123      2.67  |    Q   V|         |         |         |
  1+30       0.2306      2.66  |    Q    V         |         |         |
```

```
   1+35       0.2493      2.71  |    Q    |V        |         |         |
   1+40       0.2694      2.92  |    Q    | V       |         |         |
   1+45       0.2916      3.22  |     Q   |  V      |         |         |
   1+50       0.3178      3.80  |      Q  |   V     |         |         |
   1+55       0.3490      4.54  |        Q|    V    |         |         |
   2+ 0       0.3893      5.85  |         |Q     V  |         |         |
   2+ 5       0.4504      8.87  |         |      Q  V         |         |
   2+10       0.5579     15.61  |         |         |    V    |Q        |
   2+15       0.6456     12.74  |         |         |    Q  V |         |
   2+20       0.6974      7.51  |         |    Q    |         |V        |
   2+25       0.7343      5.37  |         Q         |         | V       |
   2+30       0.7630      4.17  |        Q|         |         |   V     |
   2+35       0.7859      3.33  |     Q   |         |         |    V    |
   2+40       0.8055      2.84  |    Q    |         |         |     V   |
   2+45       0.8230      2.54  |    Q    |         |         |     V   |
   2+50       0.8388      2.30  |   Q     |         |         |      V  |
   2+55       0.8532      2.08  |   Q     |         |         |       V |
   3+ 0       0.8663      1.91  |  Q      |         |         |       V |
   3+ 5       0.8779      1.68  |  Q      |         |         |        V|
   3+10       0.8845      0.96  |Q        |         |         |        V|
   3+15       0.8875      0.43  Q         |         |         |        V|
   3+20       0.8890      0.23  Q         |         |         |        V|
   3+25       0.8898      0.11  Q         |         |         |        V|
   3+30       0.8902      0.05  Q         |         |         |        V|
   3+35       0.8904      0.03  Q         |         |         |        V|
   3+40       0.8905      0.02  Q         |         |         |        V|
   3+45       0.8905      0.01  Q         |         |         |        V|
   3+50       0.8906      0.00  Q         |         |         |         V
------------------------------------------------------------------------
```

- 25 Year 6 Hour Pre-Development Unit Hydrograph – Area 'E'

```
        U n i t   H y d r o g r a p h   A n a l y s i s

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        Study date  10/11/16   File Name EXE02506.out

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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996

Program License Serial Number 4094

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RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'E' - 25 YEAR 6 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

        Storm Event Year = 25

        Antecedent Moisture Condition = 2

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 70.6       3.6          0.61     C     0.250     0.144    0.036
 70.6       2.3          0.39     D     0.200     0.144    0.029

Area-averaged adjusted loss rate Fm (In/Hr) =  0.033

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC2)           Yield Fr
     0.51   0.088         70.6      70.6       4.16     0.381
     3.05   0.525         98.0      98.0       0.20     0.947

     0.32   0.056         70.6      70.6       4.16     0.381
     1.93   0.331         98.0      98.0       0.20     0.947

Area-averaged catchment yield fraction, Y =  0.866
Area-averaged low loss fraction, Yb =  0.134
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.154 (hours)
Watershed area =       5.81(Ac.)
Catchment Lag time =   0.123 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 67.8610
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.033(In/Hr)
Average low loss rate fraction (Yb) = 0.134 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.400(In)
Computed peak 30-minute rainfall =  0.870(In)
Specified peak 1-hour rainfall =  1.150(In)
Computed peak 3-hour rainfall =  1.940(In)
Specified peak 6-hour rainfall =  2.710(In)
Specified peak 24-hour rainfall =  4.490(In)


Rainfall depth area reduction factors:
Using a total area of       5.81(Ac.) (Ref: fig. E-4)
```

```
5-minute factor = 1.000     Adjusted rainfall =  0.400(In)
30-minute factor = 1.000    Adjusted rainfall =  0.870(In)
1-hour factor = 1.000       Adjusted rainfall =  1.150(In)
3-hour factor = 1.000       Adjusted rainfall =  1.940(In)
6-hour factor = 1.000       Adjusted rainfall =  2.710(In)
24-hour factor = 1.000 Adjusted rainfall =  4.490(In)
--------------------------------------------------------------------------

                      U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------------
               (K =        70.26 (CFS))

  1                6.799                   4.778
  2               46.036                  27.570
  3               76.132                  21.147
  4               87.339                   7.874
  5               93.622                   4.415
  6               97.025                   2.391
  7               98.384                   0.955
  8               99.035                   0.458
  9               99.512                   0.335
 10               99.867                   0.249
 11              100.000                   0.094
--------------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.3999              0.3999
  2              0.5401              0.1402
  3              0.6440              0.1038
  4              0.7295              0.0856
  5              0.8036              0.0741
  6              0.8698              0.0661
  7              0.9254              0.0557
  8              0.9766              0.0511
  9              1.0240              0.0474
 10              1.0683              0.0444
 11              1.1101              0.0418
 12              1.1497              0.0396
 13              1.1944              0.0447
 14              1.2373              0.0429
 15              1.2786              0.0413
 16              1.3185              0.0399
 17              1.3571              0.0386
 18              1.3946              0.0374
 19              1.4309              0.0364
 20              1.4663              0.0354
 21              1.5008              0.0345
 22              1.5344              0.0336
 23              1.5672              0.0328
 24              1.5993              0.0321
 25              1.6307              0.0314
 26              1.6614              0.0307
 27              1.6916              0.0301
 28              1.7211              0.0296
 29              1.7501              0.0290
 30              1.7786              0.0285
 31              1.8066              0.0280
 32              1.8341              0.0275
 33              1.8612              0.0271
 34              1.8878              0.0266
 35              1.9141              0.0262
 36              1.9399              0.0259
 37              1.9657              0.0258
 38              1.9912              0.0254
 39              2.0163              0.0251
 40              2.0411              0.0248
 41              2.0655              0.0245
 42              2.0896              0.0241
```

43	2.1135	0.0238
44	2.1371	0.0236
45	2.1603	0.0233
46	2.1834	0.0230
47	2.2061	0.0228
48	2.2286	0.0225
49	2.2509	0.0223
50	2.2729	0.0220
51	2.2948	0.0218
52	2.3163	0.0216
53	2.3377	0.0214
54	2.3589	0.0212
55	2.3799	0.0210
56	2.4006	0.0208
57	2.4212	0.0206
58	2.4416	0.0204
59	2.4618	0.0202
60	2.4818	0.0200
61	2.5017	0.0199
62	2.5214	0.0197
63	2.5409	0.0195
64	2.5603	0.0194
65	2.5795	0.0192
66	2.5986	0.0191
67	2.6175	0.0189
68	2.6363	0.0188
69	2.6549	0.0186
70	2.6734	0.0185
71	2.6917	0.0184
72	2.7100	0.0182

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0182	0.0024	0.0158
2	0.0184	0.0025	0.0159
3	0.0186	0.0025	0.0161
4	0.0188	0.0025	0.0163
5	0.0191	0.0026	0.0165
6	0.0192	0.0026	0.0166
7	0.0195	0.0026	0.0169
8	0.0197	0.0026	0.0171
9	0.0200	0.0027	0.0173
10	0.0202	0.0027	0.0175
11	0.0206	0.0028	0.0178
12	0.0208	0.0028	0.0180
13	0.0212	0.0028	0.0184
14	0.0214	0.0028	0.0186
15	0.0218	0.0028	0.0190
16	0.0220	0.0028	0.0193
17	0.0225	0.0028	0.0197
18	0.0228	0.0028	0.0200
19	0.0233	0.0028	0.0205
20	0.0236	0.0028	0.0208
21	0.0241	0.0028	0.0214
22	0.0245	0.0028	0.0217
23	0.0251	0.0028	0.0223
24	0.0254	0.0028	0.0227
25	0.0259	0.0028	0.0231
26	0.0262	0.0028	0.0235
27	0.0271	0.0028	0.0243
28	0.0275	0.0028	0.0248
29	0.0285	0.0028	0.0257
30	0.0290	0.0028	0.0262
31	0.0301	0.0028	0.0274
32	0.0307	0.0028	0.0280
33	0.0321	0.0028	0.0293
34	0.0328	0.0028	0.0301
35	0.0345	0.0028	0.0317
36	0.0354	0.0028	0.0326

37	0.0374	0.0028	0.0347
38	0.0386	0.0028	0.0359
39	0.0413	0.0028	0.0386
40	0.0429	0.0028	0.0401
41	0.0396	0.0028	0.0368
42	0.0418	0.0028	0.0390
43	0.0474	0.0028	0.0446
44	0.0511	0.0028	0.0483
45	0.0661	0.0028	0.0634
46	0.0741	0.0028	0.0714
47	0.1038	0.0028	0.1011
48	0.1402	0.0028	0.1375
49	0.3999	0.0028	0.3971
50	0.0856	0.0028	0.0828
51	0.0557	0.0028	0.0529
52	0.0444	0.0028	0.0416
53	0.0447	0.0028	0.0419
54	0.0399	0.0028	0.0371
55	0.0364	0.0028	0.0336
56	0.0336	0.0028	0.0309
57	0.0314	0.0028	0.0286
58	0.0296	0.0028	0.0268
59	0.0280	0.0028	0.0252
60	0.0266	0.0028	0.0239
61	0.0258	0.0028	0.0230
62	0.0248	0.0028	0.0220
63	0.0238	0.0028	0.0211
64	0.0230	0.0028	0.0203
65	0.0223	0.0028	0.0195
66	0.0216	0.0028	0.0188
67	0.0210	0.0028	0.0182
68	0.0204	0.0027	0.0177
69	0.0199	0.0027	0.0172
70	0.0194	0.0026	0.0168
71	0.0189	0.0025	0.0164
72	0.0185	0.0025	0.0160

Total soil rain loss = 0.20(In)
Total effective rainfall = 2.51(In)
Peak flow rate in flood hydrograph = 15.61(CFS)

++

6 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	5.0	10.0	15.0	20.0
0+ 5	0.0005	0.08	Q	|	|	|	|
0+10	0.0040	0.51	VQ	|	|	|	|
0+15	0.0099	0.85	VQ	|	|	|	|
0+20	0.0166	0.98	VQ	|	|	|	|
0+25	0.0240	1.06	V Q	|	|	|	|
0+30	0.0316	1.11	|VQ	|	|	|	|
0+35	0.0395	1.14	|VQ	|	|	|	|
0+40	0.0475	1.16	|VQ	|	|	|	|
0+45	0.0556	1.18	|VQ	|	|	|	|
0+50	0.0639	1.20	| Q	|	|	|	|
0+55	0.0723	1.22	| Q	|	|	|	|
1+ 0	0.0808	1.23	| Q	|	|	|	|
1+ 5	0.0894	1.25	| Q	|	|	|	|
1+10	0.0982	1.27	| QV	|	|	|	|
1+15	0.1070	1.29	| QV	|	|	|	|
1+20	0.1161	1.31	| QV	|	|	|	|
1+25	0.1253	1.34	| Q V	|	|	|	|
1+30	0.1347	1.36	| Q V	|	|	|	|
1+35	0.1442	1.38	| Q V	|	|	|	|
1+40	0.1539	1.41	| Q V	|	|	|	|

```
   1+45       0.1638      1.44  | Q  V    |         |         |         |
   1+50       0.1740      1.47  | Q  V    |         |         |         |
   1+55       0.1843      1.50  | Q   V   |         |         |         |
   2+ 0       0.1948      1.53  |  Q  V   |         |         |         |
   2+ 5       0.2056      1.56  |  Q  V   |         |         |         |
   2+10       0.2166      1.59  |  Q   V  |         |         |         |
   2+15       0.2278      1.62  |  Q   V  |         |         |         |
   2+20       0.2392      1.66  |  Q   V  |         |         |         |
   2+25       0.2510      1.71  |  Q    V |         |         |         |
   2+30       0.2631      1.75  |  Q    V |         |         |         |
   2+35       0.2755      1.80  |  Q     V|         |         |         |
   2+40       0.2883      1.86  |  Q     V|         |         |         |
   2+45       0.3015      1.92  |  Q     V|         |         |         |
   2+50       0.3152      1.99  |  Q      V         |         |         |
   2+55       0.3294      2.06  |   Q     V         |         |         |
   3+ 0       0.3441      2.14  |   Q     |V        |         |         |
   3+ 5       0.3594      2.22  |   Q     |V        |         |         |
   3+10       0.3754      2.33  |   Q     | V       |         |         |
   3+15       0.3922      2.43  |   Q     | V       |         |         |
   3+20       0.4099      2.57  |    Q    |  V      |         |         |
   3+25       0.4283      2.67  |    Q    |   V     |         |         |
   3+30       0.4466      2.66  |    Q    |   V     |         |         |
   3+35       0.4652      2.71  |    Q    |    V    |         |         |
   3+40       0.4853      2.92  |    Q    |    V    |         |         |
   3+45       0.5075      3.22  |     Q   |     V   |         |         |
   3+50       0.5337      3.80  |      Q  |      V  |         |         |
   3+55       0.5650      4.54  |        Q|       V |         |         |
   4+ 0       0.6053      5.85  |         |Q       V|         |         |
   4+ 5       0.6663      8.87  |         |      Q  |V        |         |
   4+10       0.7738     15.61  |         |         |    V    |Q        |
   4+15       0.8616     12.74  |         |         |    Q  V |         |
   4+20       0.9133      7.51  |         |    Q    |        V|         |
   4+25       0.9503      5.37  |         |Q        |         |V        |
   4+30       0.9790      4.17  |        Q|         |         | V       |
   4+35       1.0019      3.33  |     Q   |         |         | V       |
   4+40       1.0214      2.84  |    Q    |         |         |  V      |
   4+45       1.0389      2.54  |    Q    |         |         |   V     |
   4+50       1.0548      2.30  |   Q     |         |         |   V     |
   4+55       1.0691      2.08  |   Q     |         |         |    V    |
   5+ 0       1.0822      1.91  |  Q      |         |         |    V    |
   5+ 5       1.0946      1.79  |  Q      |         |         |    V    |
   5+10       1.1063      1.70  |  Q      |         |         |     V   |
   5+15       1.1175      1.62  |  Q      |         |         |     V   |
   5+20       1.1282      1.55  |  Q      |         |         |      V  |
   5+25       1.1384      1.49  | Q       |         |         |      V  |
   5+30       1.1482      1.43  | Q       |         |         |      V  |
   5+35       1.1577      1.37  | Q       |         |         |       V |
   5+40       1.1668      1.33  | Q       |         |         |       V |
   5+45       1.1757      1.28  | Q       |         |         |       V |
   5+50       1.1842      1.25  | Q       |         |         |       V |
   5+55       1.1926      1.21  | Q       |         |         |        V|
   6+ 0       1.2007      1.18  | Q       |         |         |        V|
   6+ 5       1.2081      1.08  | Q       |         |         |        V|
   6+10       1.2124      0.62  |Q        |         |         |        V|
   6+15       1.2143      0.28  Q         |         |         |        V|
   6+20       1.2153      0.15  Q         |         |         |        V|
   6+25       1.2158      0.07  Q         |         |         |        V|
   6+30       1.2161      0.03  Q         |         |         |        V|
   6+35       1.2162      0.02  Q         |         |         |        V|
   6+40       1.2163      0.01  Q         |         |         |        V|
   6+45       1.2163      0.01  Q         |         |         |        V|
   6+50       1.2163      0.00  Q         |         |         |         V
-------------------------------------------------------------------------
```

- 25 Year 12 Hour Pre-Development Unit Hydrograph – Area 'E'

```
        U n i t   H y d r o g r a p h   A n a l y s i s

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        Study date  10/11/16   File Name EXE02512.out


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------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'E' - 25 YEAR 12 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

        Storm Event Year = 25

        Antecedent Moisture Condition = 2

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 70.6       3.6          0.61     C     0.250     0.144    0.036
 70.6       2.3          0.39     D     0.200     0.144    0.029

Area-averaged adjusted loss rate Fm (In/Hr) =  0.033

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC2)          Yield Fr
     0.51   0.088         70.6      70.6       4.16     0.381
     3.05   0.525         98.0      98.0       0.20     0.947

     0.32   0.056         70.6      70.6       4.16     0.381
     1.93   0.331         98.0      98.0       0.20     0.947

Area-averaged catchment yield fraction, Y =  0.866
Area-averaged low loss fraction, Yb =  0.134
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.154 (hours)
Watershed area =       5.81(Ac.)
Catchment Lag time =   0.123 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 67.8610
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.033(In/Hr)
Average low loss rate fraction (Yb) = 0.134 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.400(In)
Computed peak 30-minute rainfall =  0.870(In)
Specified peak 1-hour rainfall =  1.150(In)
Computed peak 3-hour rainfall =  1.940(In)
Specified peak 6-hour rainfall =  2.710(In)
Specified peak 24-hour rainfall =  4.490(In)
```

```
Rainfall depth area reduction factors:
Using a total area of       5.81(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000     Adjusted rainfall =  0.400(In)
30-minute factor = 1.000    Adjusted rainfall =  0.870(In)
1-hour factor = 1.000       Adjusted rainfall =  1.150(In)
3-hour factor = 1.000       Adjusted rainfall =  1.940(In)
6-hour factor = 1.000       Adjusted rainfall =  2.710(In)
24-hour factor = 1.000 Adjusted rainfall =  4.490(In)
```

U n i t H y d r o g r a p h

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 70.26 (CFS))	
1	6.799	4.778
2	46.036	27.570
3	76.132	21.147
4	87.339	7.874
5	93.622	4.415
6	97.025	2.391
7	98.384	0.955
8	99.035	0.458
9	99.512	0.335
10	99.867	0.249
11	100.000	0.094

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.3999	0.3999
2	0.5401	0.1402
3	0.6440	0.1038
4	0.7295	0.0856
5	0.8036	0.0741
6	0.8698	0.0661
7	0.9254	0.0557
8	0.9766	0.0511
9	1.0240	0.0474
10	1.0683	0.0444
11	1.1101	0.0418
12	1.1497	0.0396
13	1.1944	0.0447
14	1.2373	0.0429
15	1.2786	0.0413
16	1.3185	0.0399
17	1.3571	0.0386
18	1.3946	0.0374
19	1.4309	0.0364
20	1.4663	0.0354
21	1.5008	0.0345
22	1.5344	0.0336
23	1.5672	0.0328
24	1.5993	0.0321
25	1.6307	0.0314
26	1.6614	0.0307
27	1.6916	0.0301
28	1.7211	0.0296
29	1.7501	0.0290
30	1.7786	0.0285
31	1.8066	0.0280
32	1.8341	0.0275
33	1.8612	0.0271
34	1.8878	0.0266
35	1.9141	0.0262
36	1.9399	0.0259
37	1.9657	0.0258
38	1.9912	0.0254
39	2.0163	0.0251

40	2.0411	0.0248
41	2.0655	0.0245
42	2.0896	0.0241
43	2.1135	0.0238
44	2.1371	0.0236
45	2.1603	0.0233
46	2.1834	0.0230
47	2.2061	0.0228
48	2.2286	0.0225
49	2.2509	0.0223
50	2.2729	0.0220
51	2.2948	0.0218
52	2.3163	0.0216
53	2.3377	0.0214
54	2.3589	0.0212
55	2.3799	0.0210
56	2.4006	0.0208
57	2.4212	0.0206
58	2.4416	0.0204
59	2.4618	0.0202
60	2.4818	0.0200
61	2.5017	0.0199
62	2.5214	0.0197
63	2.5409	0.0195
64	2.5603	0.0194
65	2.5795	0.0192
66	2.5986	0.0191
67	2.6175	0.0189
68	2.6363	0.0188
69	2.6549	0.0186
70	2.6734	0.0185
71	2.6917	0.0184
72	2.7100	0.0182
73	2.7236	0.0136
74	2.7371	0.0135
75	2.7505	0.0134
76	2.7638	0.0133
77	2.7770	0.0132
78	2.7901	0.0131
79	2.8031	0.0130
80	2.8160	0.0129
81	2.8287	0.0128
82	2.8414	0.0127
83	2.8540	0.0126
84	2.8665	0.0125
85	2.8788	0.0124
86	2.8911	0.0123
87	2.9033	0.0122
88	2.9154	0.0121
89	2.9275	0.0120
90	2.9394	0.0119
91	2.9512	0.0119
92	2.9630	0.0118
93	2.9747	0.0117
94	2.9863	0.0116
95	2.9979	0.0115
96	3.0093	0.0115
97	3.0207	0.0114
98	3.0320	0.0113
99	3.0432	0.0112
100	3.0544	0.0112
101	3.0655	0.0111
102	3.0765	0.0110
103	3.0874	0.0110
104	3.0983	0.0109
105	3.1091	0.0108
106	3.1199	0.0108
107	3.1306	0.0107
108	3.1412	0.0106
109	3.1518	0.0106
110	3.1623	0.0105

111	3.1727	0.0104
112	3.1831	0.0104
113	3.1934	0.0103
114	3.2037	0.0103
115	3.2139	0.0102
116	3.2240	0.0102
117	3.2341	0.0101
118	3.2442	0.0100
119	3.2542	0.0100
120	3.2641	0.0099
121	3.2740	0.0099
122	3.2838	0.0098
123	3.2936	0.0098
124	3.3033	0.0097
125	3.3130	0.0097
126	3.3226	0.0096
127	3.3322	0.0096
128	3.3417	0.0095
129	3.3512	0.0095
130	3.3607	0.0094
131	3.3700	0.0094
132	3.3794	0.0093
133	3.3887	0.0093
134	3.3980	0.0093
135	3.4072	0.0092
136	3.4163	0.0092
137	3.4255	0.0091
138	3.4346	0.0091
139	3.4436	0.0090
140	3.4526	0.0090
141	3.4616	0.0090
142	3.4705	0.0089
143	3.4794	0.0089
144	3.4882	0.0088

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0088	0.0012	0.0077
2	0.0089	0.0012	0.0077
3	0.0090	0.0012	0.0078
4	0.0090	0.0012	0.0078
5	0.0091	0.0012	0.0079
6	0.0091	0.0012	0.0079
7	0.0092	0.0012	0.0080
8	0.0093	0.0012	0.0080
9	0.0093	0.0013	0.0081
10	0.0094	0.0013	0.0081
11	0.0095	0.0013	0.0082
12	0.0095	0.0013	0.0083
13	0.0096	0.0013	0.0083
14	0.0097	0.0013	0.0084
15	0.0098	0.0013	0.0085
16	0.0098	0.0013	0.0085
17	0.0099	0.0013	0.0086
18	0.0100	0.0013	0.0086
19	0.0101	0.0014	0.0087
20	0.0102	0.0014	0.0088
21	0.0103	0.0014	0.0089
22	0.0103	0.0014	0.0089
23	0.0104	0.0014	0.0090
24	0.0105	0.0014	0.0091
25	0.0106	0.0014	0.0092
26	0.0107	0.0014	0.0093
27	0.0108	0.0015	0.0094
28	0.0109	0.0015	0.0094
29	0.0110	0.0015	0.0095
30	0.0111	0.0015	0.0096
31	0.0112	0.0015	0.0097
32	0.0113	0.0015	0.0098

33	0.0115	0.0015	0.0099
34	0.0115	0.0015	0.0100
35	0.0117	0.0016	0.0101
36	0.0118	0.0016	0.0102
37	0.0119	0.0016	0.0103
38	0.0120	0.0016	0.0104
39	0.0122	0.0016	0.0106
40	0.0123	0.0016	0.0106
41	0.0125	0.0017	0.0108
42	0.0126	0.0017	0.0109
43	0.0128	0.0017	0.0111
44	0.0129	0.0017	0.0111
45	0.0131	0.0018	0.0113
46	0.0132	0.0018	0.0114
47	0.0134	0.0018	0.0116
48	0.0135	0.0018	0.0117
49	0.0182	0.0024	0.0158
50	0.0184	0.0025	0.0159
51	0.0186	0.0025	0.0161
52	0.0188	0.0025	0.0163
53	0.0191	0.0026	0.0165
54	0.0192	0.0026	0.0166
55	0.0195	0.0026	0.0169
56	0.0197	0.0026	0.0171
57	0.0200	0.0027	0.0173
58	0.0202	0.0027	0.0175
59	0.0206	0.0028	0.0178
60	0.0208	0.0028	0.0180
61	0.0212	0.0028	0.0184
62	0.0214	0.0028	0.0186
63	0.0218	0.0028	0.0190
64	0.0220	0.0028	0.0193
65	0.0225	0.0028	0.0197
66	0.0228	0.0028	0.0200
67	0.0233	0.0028	0.0205
68	0.0236	0.0028	0.0208
69	0.0241	0.0028	0.0214
70	0.0245	0.0028	0.0217
71	0.0251	0.0028	0.0223
72	0.0254	0.0028	0.0227
73	0.0259	0.0028	0.0231
74	0.0262	0.0028	0.0235
75	0.0271	0.0028	0.0243
76	0.0275	0.0028	0.0248
77	0.0285	0.0028	0.0257
78	0.0290	0.0028	0.0262
79	0.0301	0.0028	0.0274
80	0.0307	0.0028	0.0280
81	0.0321	0.0028	0.0293
82	0.0328	0.0028	0.0301
83	0.0345	0.0028	0.0317
84	0.0354	0.0028	0.0326
85	0.0374	0.0028	0.0347
86	0.0386	0.0028	0.0359
87	0.0413	0.0028	0.0386
88	0.0429	0.0028	0.0401
89	0.0396	0.0028	0.0368
90	0.0418	0.0028	0.0390
91	0.0474	0.0028	0.0446
92	0.0511	0.0028	0.0483
93	0.0661	0.0028	0.0634
94	0.0741	0.0028	0.0714
95	0.1038	0.0028	0.1011
96	0.1402	0.0028	0.1375
97	0.3999	0.0028	0.3971
98	0.0856	0.0028	0.0828
99	0.0557	0.0028	0.0529
100	0.0444	0.0028	0.0416
101	0.0447	0.0028	0.0419
102	0.0399	0.0028	0.0371
103	0.0364	0.0028	0.0336

```
      104              0.0336          0.0028              0.0309
      105              0.0314          0.0028              0.0286
      106              0.0296          0.0028              0.0268
      107              0.0280          0.0028              0.0252
      108              0.0266          0.0028              0.0239
      109              0.0258          0.0028              0.0230
      110              0.0248          0.0028              0.0220
      111              0.0238          0.0028              0.0211
      112              0.0230          0.0028              0.0203
      113              0.0223          0.0028              0.0195
      114              0.0216          0.0028              0.0188
      115              0.0210          0.0028              0.0182
      116              0.0204          0.0027              0.0177
      117              0.0199          0.0027              0.0172
      118              0.0194          0.0026              0.0168
      119              0.0189          0.0025              0.0164
      120              0.0185          0.0025              0.0160
      121              0.0136          0.0018              0.0118
      122              0.0133          0.0018              0.0115
      123              0.0130          0.0017              0.0112
      124              0.0127          0.0017              0.0110
      125              0.0124          0.0017              0.0107
      126              0.0121          0.0016              0.0105
      127              0.0119          0.0016              0.0103
      128              0.0116          0.0016              0.0101
      129              0.0114          0.0015              0.0099
      130              0.0112          0.0015              0.0097
      131              0.0110          0.0015              0.0095
      132              0.0108          0.0014              0.0093
      133              0.0106          0.0014              0.0091
      134              0.0104          0.0014              0.0090
      135              0.0102          0.0014              0.0088
      136              0.0100          0.0013              0.0087
      137              0.0099          0.0013              0.0086
      138              0.0097          0.0013              0.0084
      139              0.0096          0.0013              0.0083
      140              0.0094          0.0013              0.0082
      141              0.0093          0.0012              0.0081
      142              0.0092          0.0012              0.0079
      143              0.0090          0.0012              0.0078
      144              0.0089          0.0012              0.0077
      ------------------------------------------------------------------------
      ------------------------------------------------------------------------
      Total soil rain loss =      0.30(In)
      Total effective rainfall =      3.19(In)
      Peak flow rate in flood hydrograph =     15.61(CFS)
      ------------------------------------------------------------------------
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          12 - H O U R    S T O R M
                     R u n o f f      H y d r o g r a p h
      ------------------------------------------------------------------------
                  Hydrograph in   5   Minute intervals ((CFS))

      ------------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0        5.0      10.0      15.0      20.0
----------------------------------------------------------------------------
  0+ 5       0.0003      0.04  Q         |         |         |         |
  0+10       0.0020      0.25  Q         |         |         |         |
  0+15       0.0048      0.41  Q         |         |         |         |
  0+20       0.0081      0.47  Q         |         |         |         |
  0+25       0.0116      0.51  VQ        |         |         |         |
  0+30       0.0152      0.53  VQ        |         |         |         |
  0+35       0.0190      0.54  VQ        |         |         |         |
  0+40       0.0228      0.55  VQ        |         |         |         |
  0+45       0.0266      0.56  VQ        |         |         |         |
  0+50       0.0305      0.56  VQ        |         |         |         |
  0+55       0.0344      0.57  VQ        |         |         |         |
  1+ 0       0.0384      0.57  VQ        |         |         |         |
  1+ 5       0.0423      0.58  |Q        |         |         |         |
  1+10       0.0463      0.58  |Q        |         |         |         |
  1+15       0.0504      0.59  |Q        |         |         |         |
```

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1+20       0.0544      0.59  |Q        |         |         |         |
1+25       0.0585      0.59  |Q        |         |         |         |
1+30       0.0626      0.60  |Q        |         |         |         |
1+35       0.0668      0.60  |Q        |         |         |         |
1+40       0.0710      0.61  |Q        |         |         |         |
1+45       0.0752      0.61  |Q        |         |         |         |
1+50       0.0795      0.62  |QV       |         |         |         |
1+55       0.0838      0.62  |QV       |         |         |         |
2+ 0       0.0881      0.63  |QV       |         |         |         |
2+ 5       0.0925      0.63  |QV       |         |         |         |
2+10       0.0969      0.64  |QV       |         |         |         |
2+15       0.1013      0.65  |QV       |         |         |         |
2+20       0.1058      0.65  |QV       |         |         |         |
2+25       0.1104      0.66  |QV       |         |         |         |
2+30       0.1149      0.66  |QV       |         |         |         |
2+35       0.1195      0.67  |Q V      |         |         |         |
2+40       0.1242      0.68  |Q V      |         |         |         |
2+45       0.1289      0.68  |Q V      |         |         |         |
2+50       0.1336      0.69  |Q V      |         |         |         |
2+55       0.1384      0.70  |Q V      |         |         |         |
3+ 0       0.1433      0.70  |Q V      |         |         |         |
3+ 5       0.1482      0.71  |Q V      |         |         |         |
3+10       0.1531      0.72  |Q V      |         |         |         |
3+15       0.1581      0.73  |Q  V     |         |         |         |
3+20       0.1632      0.73  |Q  V     |         |         |         |
3+25       0.1683      0.74  |Q  V     |         |         |         |
3+30       0.1734      0.75  |Q  V     |         |         |         |
3+35       0.1787      0.76  |Q  V     |         |         |         |
3+40       0.1839      0.77  |Q  V     |         |         |         |
3+45       0.1893      0.78  |Q  V     |         |         |         |
3+50       0.1947      0.79  |Q   V    |         |         |         |
3+55       0.2002      0.79  |Q   V    |         |         |         |
4+ 0       0.2057      0.81  |Q   V    |         |         |         |
4+ 5       0.2114      0.83  |Q   V    |         |         |         |
4+10       0.2180      0.95  |Q   V    |         |         |         |
4+15       0.2252      1.04  | Q  V    |         |         |         |
4+20       0.2327      1.09  | Q   V   |         |         |         |
4+25       0.2403      1.11  | Q   V   |         |         |         |
4+30       0.2482      1.14  | Q   V   |         |         |         |
4+35       0.2561      1.15  | Q   V   |         |         |         |
4+40       0.2642      1.17  | Q   V   |         |         |         |
4+45       0.2723      1.19  | Q    V  |         |         |         |
4+50       0.2806      1.20  | Q    V  |         |         |         |
4+55       0.2890      1.22  | Q    V  |         |         |         |
5+ 0       0.2975      1.23  | Q    V  |         |         |         |
5+ 5       0.3061      1.25  | Q    V  |         |         |         |
5+10       0.3149      1.27  | Q     V |         |         |         |
5+15       0.3238      1.29  | Q     V |         |         |         |
5+20       0.3328      1.31  | Q     V |         |         |         |
5+25       0.3420      1.34  | Q     V |         |         |         |
5+30       0.3514      1.36  | Q      V|         |         |         |
5+35       0.3609      1.38  | Q      V|         |         |         |
5+40       0.3706      1.41  | Q      V|         |         |         |
5+45       0.3805      1.44  | Q      V|         |         |         |
5+50       0.3907      1.47  | Q       V         |         |         |
5+55       0.4010      1.50  | Q       V         |         |         |
6+ 0       0.4115      1.53  |  Q      V         |         |         |
6+ 5       0.4223      1.56  |  Q      V         |         |         |
6+10       0.4333      1.59  |  Q      |V        |         |         |
6+15       0.4445      1.62  |  Q      |V        |         |         |
6+20       0.4559      1.66  |  Q      |V        |         |         |
6+25       0.4677      1.71  |  Q      | V       |         |         |
6+30       0.4798      1.75  |  Q      | V       |         |         |
6+35       0.4922      1.80  |  Q      | V       |         |         |
6+40       0.5050      1.86  |  Q      |  V      |         |         |
6+45       0.5182      1.92  |  Q      |  V      |         |         |
6+50       0.5319      1.99  |  Q      |  V      |         |         |
6+55       0.5461      2.06  |   Q     |   V     |         |         |
7+ 0       0.5608      2.14  |   Q     |   V     |         |         |
7+ 5       0.5761      2.22  |   Q     |   V     |         |         |
7+10       0.5921      2.33  |   Q     |    V    |         |         |
```

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   7+15       0.6089      2.43  |   Q     |    V    |         |         |
   7+20       0.6266      2.57  |    Q    |     V   |         |         |
   7+25       0.6450      2.67  |    Q    |     V   |         |         |
   7+30       0.6633      2.66  |    Q    |      V  |         |         |
   7+35       0.6820      2.71  |    Q    |      V  |         |         |
   7+40       0.7021      2.92  |    Q    |       V |         |         |
   7+45       0.7242      3.22  |     Q   |       V |         |         |
   7+50       0.7504      3.80  |      Q  |        V|         |         |
   7+55       0.7817      4.54  |        Q|         V         |         |
   8+ 0       0.8220      5.85  |         |Q        |V        |         |
   8+ 5       0.8831      8.87  |         |     Q   | V       |         |
   8+10       0.9905     15.61  |         |         |    V    |Q        |
   8+15       1.0783     12.74  |         |         |    Q V  |         |
   8+20       1.1300      7.51  |         |    Q    |         V|        |
   8+25       1.1670      5.37  |         |Q        |         V        |
   8+30       1.1957      4.17  |        Q|         |         |V       |
   8+35       1.2186      3.33  |     Q   |         |         |V       |
   8+40       1.2382      2.84  |    Q    |         |         | V      |
   8+45       1.2557      2.54  |    Q    |         |         | V      |
   8+50       1.2715      2.30  |   Q     |         |         | V      |
   8+55       1.2858      2.08  |   Q     |         |         |  V     |
   9+ 0       1.2990      1.91  |  Q      |         |         |  V     |
   9+ 5       1.3113      1.79  |  Q      |         |         |   V    |
   9+10       1.3230      1.70  |  Q      |         |         |   V    |
   9+15       1.3342      1.62  |  Q      |         |         |   V    |
   9+20       1.3449      1.55  |  Q      |         |         |   V    |
   9+25       1.3551      1.49  | Q       |         |         |    V   |
   9+30       1.3649      1.43  | Q       |         |         |    V   |
   9+35       1.3744      1.37  | Q       |         |         |    V   |
   9+40       1.3835      1.33  | Q       |         |         |    V   |
   9+45       1.3924      1.28  | Q       |         |         |     V  |
   9+50       1.4010      1.25  | Q       |         |         |     V  |
   9+55       1.4093      1.21  | Q       |         |         |     V  |
  10+ 0       1.4174      1.18  | Q       |         |         |     V  |
  10+ 5       1.4252      1.13  | Q       |         |         |     V  |
  10+10       1.4321      1.00  | Q       |         |         |      V |
  10+15       1.4383      0.90  |Q        |         |         |      V |
  10+20       1.4441      0.84  |Q        |         |         |      V |
  10+25       1.4497      0.81  |Q        |         |         |      V |
  10+30       1.4551      0.78  |Q        |         |         |      V |
  10+35       1.4603      0.76  |Q        |         |         |      V |
  10+40       1.4654      0.74  |Q        |         |         |       V|
  10+45       1.4704      0.72  |Q        |         |         |       V|
  10+50       1.4752      0.71  |Q        |         |         |       V|
  10+55       1.4800      0.69  |Q        |         |         |       V|
  11+ 0       1.4847      0.68  |Q        |         |         |       V|
  11+ 5       1.4893      0.67  |Q        |         |         |       V|
  11+10       1.4938      0.65  |Q        |         |         |       V|
  11+15       1.4982      0.64  |Q        |         |         |       V|
  11+20       1.5025      0.63  |Q        |         |         |       V|
  11+25       1.5068      0.62  |Q        |         |         |        V|
  11+30       1.5110      0.61  |Q        |         |         |        V|
  11+35       1.5152      0.60  |Q        |         |         |        V|
  11+40       1.5192      0.59  |Q        |         |         |        V|
  11+45       1.5233      0.58  |Q        |         |         |        V|
  11+50       1.5272      0.57  |Q        |         |         |        V|
  11+55       1.5311      0.57  |Q        |         |         |        V|
  12+ 0       1.5350      0.56  |Q        |         |         |        V|
  12+ 5       1.5385      0.51  |Q        |         |         |        V|
  12+10       1.5405      0.30  Q         |         |         |        V|
  12+15       1.5414      0.13  Q         |         |         |        V|
  12+20       1.5419      0.07  Q         |         |         |        V|
  12+25       1.5422      0.04  Q         |         |         |        V|
  12+30       1.5423      0.02  Q         |         |         |        V|
  12+35       1.5423      0.01  Q         |         |         |        V|
  12+40       1.5424      0.01  Q         |         |         |        V|
  12+45       1.5424      0.00  Q         |         |         |        V|
  12+50       1.5424      0.00  Q         |         |         |        V|
-------------------------------------------------------------------------
```

- 25 Year 24 Hour Pre-Development Unit Hydrograph – Area 'E'

```
        U n i t   H y d r o g r a p h   A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989-2012, Version 7.2

        Study date  10/11/16   File Name EXE02524.out


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'E' - 25 YEAR 24 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

        Storm Event Year = 25

        Antecedent Moisture Condition = 2

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 70.6       3.6          0.61     C     0.250     0.144    0.036
 70.6       2.3          0.39     D     0.200     0.144    0.029

Area-averaged adjusted loss rate Fm (In/Hr) =  0.033

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC2)          Yield Fr
     0.51   0.088         70.6      70.6       4.16     0.381
     3.05   0.525         98.0      98.0       0.20     0.947

     0.32   0.056         70.6      70.6       4.16     0.381
     1.93   0.331         98.0      98.0       0.20     0.947

Area-averaged catchment yield fraction, Y =  0.866
Area-averaged low loss fraction, Yb =  0.134
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.154 (hours)
Watershed area =       5.81(Ac.)
Catchment Lag time =   0.123 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 67.8610
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.033(In/Hr)
Average low loss rate fraction (Yb) = 0.134 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.400(In)
Computed peak 30-minute rainfall =  0.870(In)
Specified peak 1-hour rainfall =  1.150(In)
Computed peak 3-hour rainfall =  1.940(In)
Specified peak 6-hour rainfall =  2.710(In)
Specified peak 24-hour rainfall =  4.490(In)
```

```
Rainfall depth area reduction factors:
Using a total area of       5.81(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000     Adjusted rainfall =  0.400(In)
30-minute factor = 1.000    Adjusted rainfall =  0.870(In)
1-hour factor = 1.000       Adjusted rainfall =  1.150(In)
3-hour factor = 1.000       Adjusted rainfall =  1.940(In)
6-hour factor = 1.000       Adjusted rainfall =  2.710(In)
24-hour factor = 1.000 Adjusted rainfall =  4.490(In)
```

U n i t H y d r o g r a p h

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 70.26 (CFS))	
1	6.799	4.778
2	46.036	27.570
3	76.132	21.147
4	87.339	7.874
5	93.622	4.415
6	97.025	2.391
7	98.384	0.955
8	99.035	0.458
9	99.512	0.335
10	99.867	0.249
11	100.000	0.094

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.3999	0.3999
2	0.5401	0.1402
3	0.6440	0.1038
4	0.7295	0.0856
5	0.8036	0.0741
6	0.8698	0.0661
7	0.9254	0.0557
8	0.9766	0.0511
9	1.0240	0.0474
10	1.0683	0.0444
11	1.1101	0.0418
12	1.1497	0.0396
13	1.1944	0.0447
14	1.2373	0.0429
15	1.2786	0.0413
16	1.3185	0.0399
17	1.3571	0.0386
18	1.3946	0.0374
19	1.4309	0.0364
20	1.4663	0.0354
21	1.5008	0.0345
22	1.5344	0.0336
23	1.5672	0.0328
24	1.5993	0.0321
25	1.6307	0.0314
26	1.6614	0.0307
27	1.6916	0.0301
28	1.7211	0.0296
29	1.7501	0.0290
30	1.7786	0.0285
31	1.8066	0.0280
32	1.8341	0.0275
33	1.8612	0.0271
34	1.8878	0.0266
35	1.9141	0.0262
36	1.9399	0.0259
37	1.9657	0.0258
38	1.9912	0.0254
39	2.0163	0.0251

40	2.0411	0.0248
41	2.0655	0.0245
42	2.0896	0.0241
43	2.1135	0.0238
44	2.1371	0.0236
45	2.1603	0.0233
46	2.1834	0.0230
47	2.2061	0.0228
48	2.2286	0.0225
49	2.2509	0.0223
50	2.2729	0.0220
51	2.2948	0.0218
52	2.3163	0.0216
53	2.3377	0.0214
54	2.3589	0.0212
55	2.3799	0.0210
56	2.4006	0.0208
57	2.4212	0.0206
58	2.4416	0.0204
59	2.4618	0.0202
60	2.4818	0.0200
61	2.5017	0.0199
62	2.5214	0.0197
63	2.5409	0.0195
64	2.5603	0.0194
65	2.5795	0.0192
66	2.5986	0.0191
67	2.6175	0.0189
68	2.6363	0.0188
69	2.6549	0.0186
70	2.6734	0.0185
71	2.6917	0.0184
72	2.7100	0.0182
73	2.7236	0.0136
74	2.7371	0.0135
75	2.7505	0.0134
76	2.7638	0.0133
77	2.7770	0.0132
78	2.7901	0.0131
79	2.8031	0.0130
80	2.8160	0.0129
81	2.8287	0.0128
82	2.8414	0.0127
83	2.8540	0.0126
84	2.8665	0.0125
85	2.8788	0.0124
86	2.8911	0.0123
87	2.9033	0.0122
88	2.9154	0.0121
89	2.9275	0.0120
90	2.9394	0.0119
91	2.9512	0.0119
92	2.9630	0.0118
93	2.9747	0.0117
94	2.9863	0.0116
95	2.9979	0.0115
96	3.0093	0.0115
97	3.0207	0.0114
98	3.0320	0.0113
99	3.0432	0.0112
100	3.0544	0.0112
101	3.0655	0.0111
102	3.0765	0.0110
103	3.0874	0.0110
104	3.0983	0.0109
105	3.1091	0.0108
106	3.1199	0.0108
107	3.1306	0.0107
108	3.1412	0.0106
109	3.1518	0.0106
110	3.1623	0.0105

111	3.1727	0.0104
112	3.1831	0.0104
113	3.1934	0.0103
114	3.2037	0.0103
115	3.2139	0.0102
116	3.2240	0.0102
117	3.2341	0.0101
118	3.2442	0.0100
119	3.2542	0.0100
120	3.2641	0.0099
121	3.2740	0.0099
122	3.2838	0.0098
123	3.2936	0.0098
124	3.3033	0.0097
125	3.3130	0.0097
126	3.3226	0.0096
127	3.3322	0.0096
128	3.3417	0.0095
129	3.3512	0.0095
130	3.3607	0.0094
131	3.3700	0.0094
132	3.3794	0.0093
133	3.3887	0.0093
134	3.3980	0.0093
135	3.4072	0.0092
136	3.4163	0.0092
137	3.4255	0.0091
138	3.4346	0.0091
139	3.4436	0.0090
140	3.4526	0.0090
141	3.4616	0.0090
142	3.4705	0.0089
143	3.4794	0.0089
144	3.4882	0.0088
145	3.4970	0.0088
146	3.5058	0.0088
147	3.5145	0.0087
148	3.5232	0.0087
149	3.5318	0.0087
150	3.5405	0.0086
151	3.5490	0.0086
152	3.5576	0.0085
153	3.5661	0.0085
154	3.5746	0.0085
155	3.5830	0.0084
156	3.5914	0.0084
157	3.5998	0.0084
158	3.6081	0.0083
159	3.6164	0.0083
160	3.6247	0.0083
161	3.6329	0.0082
162	3.6411	0.0082
163	3.6493	0.0082
164	3.6574	0.0081
165	3.6655	0.0081
166	3.6736	0.0081
167	3.6816	0.0080
168	3.6897	0.0080
169	3.6976	0.0080
170	3.7056	0.0080
171	3.7135	0.0079
172	3.7214	0.0079
173	3.7293	0.0079
174	3.7371	0.0078
175	3.7449	0.0078
176	3.7527	0.0078
177	3.7605	0.0078
178	3.7682	0.0077
179	3.7759	0.0077
180	3.7835	0.0077
181	3.7912	0.0076

182	3.7988	0.0076
183	3.8064	0.0076
184	3.8140	0.0076
185	3.8215	0.0075
186	3.8290	0.0075
187	3.8365	0.0075
188	3.8439	0.0075
189	3.8514	0.0074
190	3.8588	0.0074
191	3.8662	0.0074
192	3.8735	0.0074
193	3.8809	0.0073
194	3.8882	0.0073
195	3.8955	0.0073
196	3.9027	0.0073
197	3.9100	0.0072
198	3.9172	0.0072
199	3.9244	0.0072
200	3.9316	0.0072
201	3.9387	0.0071
202	3.9458	0.0071
203	3.9529	0.0071
204	3.9600	0.0071
205	3.9671	0.0071
206	3.9741	0.0070
207	3.9811	0.0070
208	3.9881	0.0070
209	3.9951	0.0070
210	4.0020	0.0070
211	4.0090	0.0069
212	4.0159	0.0069
213	4.0228	0.0069
214	4.0296	0.0069
215	4.0365	0.0068
216	4.0433	0.0068
217	4.0501	0.0068
218	4.0569	0.0068
219	4.0637	0.0068
220	4.0704	0.0067
221	4.0772	0.0067
222	4.0839	0.0067
223	4.0906	0.0067
224	4.0972	0.0067
225	4.1039	0.0067
226	4.1105	0.0066
227	4.1171	0.0066
228	4.1237	0.0066
229	4.1303	0.0066
230	4.1369	0.0066
231	4.1434	0.0065
232	4.1499	0.0065
233	4.1564	0.0065
234	4.1629	0.0065
235	4.1694	0.0065
236	4.1759	0.0065
237	4.1823	0.0064
238	4.1887	0.0064
239	4.1951	0.0064
240	4.2015	0.0064
241	4.2079	0.0064
242	4.2142	0.0064
243	4.2205	0.0063
244	4.2269	0.0063
245	4.2332	0.0063
246	4.2395	0.0063
247	4.2457	0.0063
248	4.2520	0.0063
249	4.2582	0.0062
250	4.2644	0.0062
251	4.2706	0.0062
252	4.2768	0.0062

253	4.2830	0.0062
254	4.2892	0.0062
255	4.2953	0.0061
256	4.3014	0.0061
257	4.3075	0.0061
258	4.3136	0.0061
259	4.3197	0.0061
260	4.3258	0.0061
261	4.3318	0.0061
262	4.3379	0.0060
263	4.3439	0.0060
264	4.3499	0.0060
265	4.3559	0.0060
266	4.3619	0.0060
267	4.3678	0.0060
268	4.3738	0.0060
269	4.3797	0.0059
270	4.3857	0.0059
271	4.3916	0.0059
272	4.3975	0.0059
273	4.4033	0.0059
274	4.4092	0.0059
275	4.4151	0.0059
276	4.4209	0.0058
277	4.4267	0.0058
278	4.4325	0.0058
279	4.4383	0.0058
280	4.4441	0.0058
281	4.4499	0.0058
282	4.4557	0.0058
283	4.4614	0.0057
284	4.4672	0.0057
285	4.4729	0.0057
286	4.4786	0.0057
287	4.4843	0.0057
288	4.4900	0.0057

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0057	0.0008	0.0049
2	0.0057	0.0008	0.0049
3	0.0057	0.0008	0.0050
4	0.0057	0.0008	0.0050
5	0.0058	0.0008	0.0050
6	0.0058	0.0008	0.0050
7	0.0058	0.0008	0.0050
8	0.0058	0.0008	0.0050
9	0.0058	0.0008	0.0051
10	0.0059	0.0008	0.0051
11	0.0059	0.0008	0.0051
12	0.0059	0.0008	0.0051
13	0.0059	0.0008	0.0051
14	0.0059	0.0008	0.0051
15	0.0060	0.0008	0.0052
16	0.0060	0.0008	0.0052
17	0.0060	0.0008	0.0052
18	0.0060	0.0008	0.0052
19	0.0061	0.0008	0.0052
20	0.0061	0.0008	0.0053
21	0.0061	0.0008	0.0053
22	0.0061	0.0008	0.0053
23	0.0061	0.0008	0.0053
24	0.0062	0.0008	0.0053
25	0.0062	0.0008	0.0054
26	0.0062	0.0008	0.0054
27	0.0062	0.0008	0.0054
28	0.0063	0.0008	0.0054
29	0.0063	0.0008	0.0054
30	0.0063	0.0008	0.0055

31	0.0063	0.0008	0.0055
32	0.0064	0.0009	0.0055
33	0.0064	0.0009	0.0055
34	0.0064	0.0009	0.0055
35	0.0064	0.0009	0.0056
36	0.0065	0.0009	0.0056
37	0.0065	0.0009	0.0056
38	0.0065	0.0009	0.0056
39	0.0065	0.0009	0.0057
40	0.0066	0.0009	0.0057
41	0.0066	0.0009	0.0057
42	0.0066	0.0009	0.0057
43	0.0067	0.0009	0.0058
44	0.0067	0.0009	0.0058
45	0.0067	0.0009	0.0058
46	0.0067	0.0009	0.0058
47	0.0068	0.0009	0.0059
48	0.0068	0.0009	0.0059
49	0.0068	0.0009	0.0059
50	0.0068	0.0009	0.0059
51	0.0069	0.0009	0.0060
52	0.0069	0.0009	0.0060
53	0.0070	0.0009	0.0060
54	0.0070	0.0009	0.0060
55	0.0070	0.0009	0.0061
56	0.0070	0.0009	0.0061
57	0.0071	0.0009	0.0061
58	0.0071	0.0010	0.0062
59	0.0071	0.0010	0.0062
60	0.0072	0.0010	0.0062
61	0.0072	0.0010	0.0062
62	0.0072	0.0010	0.0063
63	0.0073	0.0010	0.0063
64	0.0073	0.0010	0.0063
65	0.0074	0.0010	0.0064
66	0.0074	0.0010	0.0064
67	0.0074	0.0010	0.0064
68	0.0075	0.0010	0.0065
69	0.0075	0.0010	0.0065
70	0.0075	0.0010	0.0065
71	0.0076	0.0010	0.0066
72	0.0076	0.0010	0.0066
73	0.0077	0.0010	0.0066
74	0.0077	0.0010	0.0067
75	0.0078	0.0010	0.0067
76	0.0078	0.0010	0.0067
77	0.0078	0.0011	0.0068
78	0.0079	0.0011	0.0068
79	0.0079	0.0011	0.0069
80	0.0080	0.0011	0.0069
81	0.0080	0.0011	0.0069
82	0.0080	0.0011	0.0070
83	0.0081	0.0011	0.0070
84	0.0081	0.0011	0.0070
85	0.0082	0.0011	0.0071
86	0.0082	0.0011	0.0071
87	0.0083	0.0011	0.0072
88	0.0083	0.0011	0.0072
89	0.0084	0.0011	0.0073
90	0.0084	0.0011	0.0073
91	0.0085	0.0011	0.0074
92	0.0085	0.0011	0.0074
93	0.0086	0.0012	0.0075
94	0.0087	0.0012	0.0075
95	0.0087	0.0012	0.0076
96	0.0088	0.0012	0.0076
97	0.0088	0.0012	0.0077
98	0.0089	0.0012	0.0077
99	0.0090	0.0012	0.0078
100	0.0090	0.0012	0.0078
101	0.0091	0.0012	0.0079

102	0.0091	0.0012	0.0079
103	0.0092	0.0012	0.0080
104	0.0093	0.0012	0.0080
105	0.0093	0.0013	0.0081
106	0.0094	0.0013	0.0081
107	0.0095	0.0013	0.0082
108	0.0095	0.0013	0.0083
109	0.0096	0.0013	0.0083
110	0.0097	0.0013	0.0084
111	0.0098	0.0013	0.0085
112	0.0098	0.0013	0.0085
113	0.0099	0.0013	0.0086
114	0.0100	0.0013	0.0086
115	0.0101	0.0014	0.0087
116	0.0102	0.0014	0.0088
117	0.0103	0.0014	0.0089
118	0.0103	0.0014	0.0089
119	0.0104	0.0014	0.0090
120	0.0105	0.0014	0.0091
121	0.0106	0.0014	0.0092
122	0.0107	0.0014	0.0093
123	0.0108	0.0015	0.0094
124	0.0109	0.0015	0.0094
125	0.0110	0.0015	0.0095
126	0.0111	0.0015	0.0096
127	0.0112	0.0015	0.0097
128	0.0113	0.0015	0.0098
129	0.0115	0.0015	0.0099
130	0.0115	0.0015	0.0100
131	0.0117	0.0016	0.0101
132	0.0118	0.0016	0.0102
133	0.0119	0.0016	0.0103
134	0.0120	0.0016	0.0104
135	0.0122	0.0016	0.0106
136	0.0123	0.0016	0.0106
137	0.0125	0.0017	0.0108
138	0.0126	0.0017	0.0109
139	0.0128	0.0017	0.0111
140	0.0129	0.0017	0.0111
141	0.0131	0.0018	0.0113
142	0.0132	0.0018	0.0114
143	0.0134	0.0018	0.0116
144	0.0135	0.0018	0.0117
145	0.0182	0.0024	0.0158
146	0.0184	0.0025	0.0159
147	0.0186	0.0025	0.0161
148	0.0188	0.0025	0.0163
149	0.0191	0.0026	0.0165
150	0.0192	0.0026	0.0166
151	0.0195	0.0026	0.0169
152	0.0197	0.0026	0.0171
153	0.0200	0.0027	0.0173
154	0.0202	0.0027	0.0175
155	0.0206	0.0028	0.0178
156	0.0208	0.0028	0.0180
157	0.0212	0.0028	0.0184
158	0.0214	0.0028	0.0186
159	0.0218	0.0028	0.0190
160	0.0220	0.0028	0.0193
161	0.0225	0.0028	0.0197
162	0.0228	0.0028	0.0200
163	0.0233	0.0028	0.0205
164	0.0236	0.0028	0.0208
165	0.0241	0.0028	0.0214
166	0.0245	0.0028	0.0217
167	0.0251	0.0028	0.0223
168	0.0254	0.0028	0.0227
169	0.0259	0.0028	0.0231
170	0.0262	0.0028	0.0235
171	0.0271	0.0028	0.0243
172	0.0275	0.0028	0.0248

173	0.0285	0.0028	0.0257
174	0.0290	0.0028	0.0262
175	0.0301	0.0028	0.0274
176	0.0307	0.0028	0.0280
177	0.0321	0.0028	0.0293
178	0.0328	0.0028	0.0301
179	0.0345	0.0028	0.0317
180	0.0354	0.0028	0.0326
181	0.0374	0.0028	0.0347
182	0.0386	0.0028	0.0359
183	0.0413	0.0028	0.0386
184	0.0429	0.0028	0.0401
185	0.0396	0.0028	0.0368
186	0.0418	0.0028	0.0390
187	0.0474	0.0028	0.0446
188	0.0511	0.0028	0.0483
189	0.0661	0.0028	0.0634
190	0.0741	0.0028	0.0714
191	0.1038	0.0028	0.1011
192	0.1402	0.0028	0.1375
193	0.3999	0.0028	0.3971
194	0.0856	0.0028	0.0828
195	0.0557	0.0028	0.0529
196	0.0444	0.0028	0.0416
197	0.0447	0.0028	0.0419
198	0.0399	0.0028	0.0371
199	0.0364	0.0028	0.0336
200	0.0336	0.0028	0.0309
201	0.0314	0.0028	0.0286
202	0.0296	0.0028	0.0268
203	0.0280	0.0028	0.0252
204	0.0266	0.0028	0.0239
205	0.0258	0.0028	0.0230
206	0.0248	0.0028	0.0220
207	0.0238	0.0028	0.0211
208	0.0230	0.0028	0.0203
209	0.0223	0.0028	0.0195
210	0.0216	0.0028	0.0188
211	0.0210	0.0028	0.0182
212	0.0204	0.0027	0.0177
213	0.0199	0.0027	0.0172
214	0.0194	0.0026	0.0168
215	0.0189	0.0025	0.0164
216	0.0185	0.0025	0.0160
217	0.0136	0.0018	0.0118
218	0.0133	0.0018	0.0115
219	0.0130	0.0017	0.0112
220	0.0127	0.0017	0.0110
221	0.0124	0.0017	0.0107
222	0.0121	0.0016	0.0105
223	0.0119	0.0016	0.0103
224	0.0116	0.0016	0.0101
225	0.0114	0.0015	0.0099
226	0.0112	0.0015	0.0097
227	0.0110	0.0015	0.0095
228	0.0108	0.0014	0.0093
229	0.0106	0.0014	0.0091
230	0.0104	0.0014	0.0090
231	0.0102	0.0014	0.0088
232	0.0100	0.0013	0.0087
233	0.0099	0.0013	0.0086
234	0.0097	0.0013	0.0084
235	0.0096	0.0013	0.0083
236	0.0094	0.0013	0.0082
237	0.0093	0.0012	0.0081
238	0.0092	0.0012	0.0079
239	0.0090	0.0012	0.0078
240	0.0089	0.0012	0.0077
241	0.0088	0.0012	0.0076
242	0.0087	0.0012	0.0075
243	0.0086	0.0012	0.0074

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      244              0.0085          0.0011              0.0073
      245              0.0084          0.0011              0.0072
      246              0.0083          0.0011              0.0072
      247              0.0082          0.0011              0.0071
      248              0.0081          0.0011              0.0070
      249              0.0080          0.0011              0.0069
      250              0.0079          0.0011              0.0068
      251              0.0078          0.0010              0.0068
      252              0.0077          0.0010              0.0067
      253              0.0076          0.0010              0.0066
      254              0.0076          0.0010              0.0065
      255              0.0075          0.0010              0.0065
      256              0.0074          0.0010              0.0064
      257              0.0073          0.0010              0.0064
      258              0.0073          0.0010              0.0063
      259              0.0072          0.0010              0.0062
      260              0.0071          0.0010              0.0062
      261              0.0071          0.0009              0.0061
      262              0.0070          0.0009              0.0061
      263              0.0069          0.0009              0.0060
      264              0.0069          0.0009              0.0059
      265              0.0068          0.0009              0.0059
      266              0.0067          0.0009              0.0058
      267              0.0067          0.0009              0.0058
      268              0.0066          0.0009              0.0057
      269              0.0066          0.0009              0.0057
      270              0.0065          0.0009              0.0056
      271              0.0065          0.0009              0.0056
      272              0.0064          0.0009              0.0056
      273              0.0064          0.0009              0.0055
      274              0.0063          0.0008              0.0055
      275              0.0063          0.0008              0.0054
      276              0.0062          0.0008              0.0054
      277              0.0062          0.0008              0.0053
      278              0.0061          0.0008              0.0053
      279              0.0061          0.0008              0.0053
      280              0.0060          0.0008              0.0052
      281              0.0060          0.0008              0.0052
      282              0.0060          0.0008              0.0052
      283              0.0059          0.0008              0.0051
      284              0.0059          0.0008              0.0051
      285              0.0058          0.0008              0.0050
      286              0.0058          0.0008              0.0050
      287              0.0057          0.0008              0.0050
      288              0.0057          0.0008              0.0049
      ---------------------------------------------------------------------
      ---------------------------------------------------------------------
      Total soil rain loss =      0.44(In)
      Total effective rainfall =      4.05(In)
      Peak flow rate in flood hydrograph =     15.61(CFS)
      ---------------------------------------------------------------------
      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                        24 - H O U R    S T O R M
                   R u n o f f      H y d r o g r a p h
      ---------------------------------------------------------------------
                Hydrograph in   5   Minute intervals ((CFS))

      ---------------------------------------------------------------------
 Time(h+m) Volume Ac.Ft   Q(CFS)  0        5.0      10.0      15.0      20.0
 ------------------------------------------------------------------------
   0+ 5       0.0002      0.02  Q         |         |         |         |
   0+10       0.0013      0.16  Q         |         |         |         |
   0+15       0.0031      0.26  Q         |         |         |         |
   0+20       0.0052      0.30  Q         |         |         |         |
   0+25       0.0074      0.33  Q         |         |         |         |
   0+30       0.0097      0.34  Q         |         |         |         |
   0+35       0.0121      0.34  Q         |         |         |         |
   0+40       0.0145      0.35  Q         |         |         |         |
   0+45       0.0169      0.35  Q         |         |         |         |
   0+50       0.0194      0.35  Q         |         |         |         |
   0+55       0.0218      0.36  Q         |         |         |         |
```

1+ 0	0.0243	0.36	Q	|	|	|	|
1+ 5	0.0267	0.36	Q	|	|	|	|
1+10	0.0292	0.36	Q	|	|	|	|
1+15	0.0317	0.36	Q	|	|	|	|
1+20	0.0342	0.36	Q	|	|	|	|
1+25	0.0367	0.36	Q	|	|	|	|
1+30	0.0392	0.36	Q	|	|	|	|
1+35	0.0417	0.37	Q	|	|	|	|
1+40	0.0442	0.37	Q	|	|	|	|
1+45	0.0468	0.37	Q	|	|	|	|
1+50	0.0493	0.37	QV	|	|	|	|
1+55	0.0519	0.37	QV	|	|	|	|
2+ 0	0.0544	0.37	QV	|	|	|	|
2+ 5	0.0570	0.37	QV	|	|	|	|
2+10	0.0596	0.37	QV	|	|	|	|
2+15	0.0622	0.38	QV	|	|	|	|
2+20	0.0648	0.38	QV	|	|	|	|
2+25	0.0674	0.38	QV	|	|	|	|
2+30	0.0700	0.38	QV	|	|	|	|
2+35	0.0726	0.38	QV	|	|	|	|
2+40	0.0753	0.38	QV	|	|	|	|
2+45	0.0779	0.39	QV	|	|	|	|
2+50	0.0806	0.39	QV	|	|	|	|
2+55	0.0833	0.39	QV	|	|	|	|
3+ 0	0.0860	0.39	QV	|	|	|	|
3+ 5	0.0886	0.39	QV	|	|	|	|
3+10	0.0914	0.39	QV	|	|	|	|
3+15	0.0941	0.39	QV	|	|	|	|
3+20	0.0968	0.40	QV	|	|	|	|
3+25	0.0995	0.40	Q V	|	|	|	|
3+30	0.1023	0.40	Q V	|	|	|	|
3+35	0.1051	0.40	Q V	|	|	|	|
3+40	0.1078	0.40	Q V	|	|	|	|
3+45	0.1106	0.40	Q V	|	|	|	|
3+50	0.1134	0.41	Q V	|	|	|	|
3+55	0.1162	0.41	Q V	|	|	|	|
4+ 0	0.1190	0.41	Q V	|	|	|	|
4+ 5	0.1219	0.41	Q V	|	|	|	|
4+10	0.1247	0.41	Q V	|	|	|	|
4+15	0.1276	0.42	Q V	|	|	|	|
4+20	0.1305	0.42	Q V	|	|	|	|
4+25	0.1333	0.42	Q V	|	|	|	|
4+30	0.1362	0.42	Q V	|	|	|	|
4+35	0.1392	0.42	Q V	|	|	|	|
4+40	0.1421	0.42	Q V	|	|	|	|
4+45	0.1450	0.43	Q V	|	|	|	|
4+50	0.1480	0.43	Q V	|	|	|	|
4+55	0.1509	0.43	Q V	|	|	|	|
5+ 0	0.1539	0.43	Q V	|	|	|	|
5+ 5	0.1569	0.43	Q V	|	|	|	|
5+10	0.1599	0.44	Q V	|	|	|	|
5+15	0.1629	0.44	Q V	|	|	|	|
5+20	0.1660	0.44	Q V	|	|	|	|
5+25	0.1690	0.44	Q V	|	|	|	|
5+30	0.1721	0.45	Q V	|	|	|	|
5+35	0.1752	0.45	Q V	|	|	|	|
5+40	0.1783	0.45	Q V	|	|	|	|
5+45	0.1814	0.45	Q V	|	|	|	|
5+50	0.1845	0.45	Q V	|	|	|	|
5+55	0.1877	0.46	Q V	|	|	|	|
6+ 0	0.1908	0.46	Q V	|	|	|	|
6+ 5	0.1940	0.46	Q V	|	|	|	|
6+10	0.1972	0.46	Q V	|	|	|	|
6+15	0.2004	0.47	Q V	|	|	|	|
6+20	0.2036	0.47	Q V	|	|	|	|
6+25	0.2069	0.47	Q V	|	|	|	|
6+30	0.2101	0.47	Q V	|	|	|	|
6+35	0.2134	0.48	Q V	|	|	|	|
6+40	0.2167	0.48	Q V	|	|	|	|
6+45	0.2200	0.48	Q V	|	|	|	|
6+50	0.2234	0.48	Q V	|	|	|	|

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 6+55      0.2267      0.49  Q   V     |         |         |         |
 7+ 0      0.2301      0.49  Q   V     |         |         |         |
 7+ 5      0.2335      0.49  Q   V     |         |         |         |
 7+10      0.2369      0.50  Q   V     |         |         |         |
 7+15      0.2404      0.50  Q   V     |         |         |         |
 7+20      0.2438      0.50  |Q  V     |         |         |         |
 7+25      0.2473      0.50  |Q   V    |         |         |         |
 7+30      0.2508      0.51  |Q   V    |         |         |         |
 7+35      0.2543      0.51  |Q   V    |         |         |         |
 7+40      0.2578      0.51  |Q   V    |         |         |         |
 7+45      0.2614      0.52  |Q   V    |         |         |         |
 7+50      0.2650      0.52  |Q   V    |         |         |         |
 7+55      0.2686      0.52  |Q   V    |         |         |         |
 8+ 0      0.2722      0.53  |Q   V    |         |         |         |
 8+ 5      0.2759      0.53  |Q   V    |         |         |         |
 8+10      0.2796      0.53  |Q   V    |         |         |         |
 8+15      0.2833      0.54  |Q   V    |         |         |         |
 8+20      0.2870      0.54  |Q   V    |         |         |         |
 8+25      0.2907      0.54  |Q   V    |         |         |         |
 8+30      0.2945      0.55  |Q    V   |         |         |         |
 8+35      0.2983      0.55  |Q    V   |         |         |         |
 8+40      0.3021      0.56  |Q    V   |         |         |         |
 8+45      0.3060      0.56  |Q    V   |         |         |         |
 8+50      0.3099      0.56  |Q    V   |         |         |         |
 8+55      0.3138      0.57  |Q    V   |         |         |         |
 9+ 0      0.3177      0.57  |Q    V   |         |         |         |
 9+ 5      0.3217      0.58  |Q    V   |         |         |         |
 9+10      0.3257      0.58  |Q    V   |         |         |         |
 9+15      0.3297      0.59  |Q    V   |         |         |         |
 9+20      0.3338      0.59  |Q    V   |         |         |         |
 9+25      0.3379      0.59  |Q    V   |         |         |         |
 9+30      0.3420      0.60  |Q    V   |         |         |         |
 9+35      0.3462      0.60  |Q     V  |         |         |         |
 9+40      0.3504      0.61  |Q     V  |         |         |         |
 9+45      0.3546      0.61  |Q     V  |         |         |         |
 9+50      0.3589      0.62  |Q     V  |         |         |         |
 9+55      0.3632      0.62  |Q     V  |         |         |         |
10+ 0      0.3675      0.63  |Q     V  |         |         |         |
10+ 5      0.3719      0.63  |Q     V  |         |         |         |
10+10      0.3763      0.64  |Q     V  |         |         |         |
10+15      0.3807      0.65  |Q     V  |         |         |         |
10+20      0.3852      0.65  |Q     V  |         |         |         |
10+25      0.3897      0.66  |Q     V  |         |         |         |
10+30      0.3943      0.66  |Q      V |         |         |         |
10+35      0.3989      0.67  |Q      V |         |         |         |
10+40      0.4036      0.68  |Q      V |         |         |         |
10+45      0.4083      0.68  |Q      V |         |         |         |
10+50      0.4130      0.69  |Q      V |         |         |         |
10+55      0.4178      0.70  |Q      V |         |         |         |
11+ 0      0.4227      0.70  |Q      V |         |         |         |
11+ 5      0.4276      0.71  |Q      V |         |         |         |
11+10      0.4325      0.72  |Q      V |         |         |         |
11+15      0.4375      0.73  |Q      V |         |         |         |
11+20      0.4426      0.73  |Q       V|         |         |         |
11+25      0.4477      0.74  |Q       V|         |         |         |
11+30      0.4528      0.75  |Q       V|         |         |         |
11+35      0.4580      0.76  |Q       V|         |         |         |
11+40      0.4633      0.77  |Q       V|         |         |         |
11+45      0.4687      0.78  |Q       V|         |         |         |
11+50      0.4741      0.79  |Q       V|         |         |         |
11+55      0.4796      0.79  |Q       V|         |         |         |
12+ 0      0.4851      0.81  |Q       V|         |         |         |
12+ 5      0.4908      0.83  |Q        V         |         |         |
12+10      0.4974      0.95  |Q        V         |         |         |
12+15      0.5046      1.04  | Q       V         |         |         |
12+20      0.5120      1.09  | Q       V         |         |         |
12+25      0.5197      1.11  | Q       V         |         |         |
12+30      0.5276      1.14  | Q       V         |         |         |
12+35      0.5355      1.15  | Q       V         |         |         |
12+40      0.5436      1.17  | Q       |V        |         |         |
12+45      0.5517      1.19  | Q       |V        |         |         |
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12+50       0.5600      1.20  | Q       |V        |         |         |
12+55       0.5684      1.22  | Q       |V        |         |         |
13+ 0       0.5769      1.23  | Q       |V        |         |         |
13+ 5       0.5855      1.25  | Q       |V        |         |         |
13+10       0.5942      1.27  | Q       | V       |         |         |
13+15       0.6031      1.29  | Q       | V       |         |         |
13+20       0.6122      1.31  | Q       | V       |         |         |
13+25       0.6214      1.34  | Q       | V       |         |         |
13+30       0.6308      1.36  | Q       | V       |         |         |
13+35       0.6403      1.38  | Q       |  V      |         |         |
13+40       0.6500      1.41  | Q       |  V      |         |         |
13+45       0.6599      1.44  | Q       |  V      |         |         |
13+50       0.6701      1.47  | Q       |  V      |         |         |
13+55       0.6804      1.50  | Q       |  V      |         |         |
14+ 0       0.6909      1.53  |  Q      |   V     |         |         |
14+ 5       0.7017      1.56  |  Q      |   V     |         |         |
14+10       0.7127      1.59  |  Q      |   V     |         |         |
14+15       0.7239      1.62  |  Q      |   V     |         |         |
14+20       0.7353      1.66  |  Q      |   V     |         |         |
14+25       0.7471      1.71  |  Q      |    V    |         |         |
14+30       0.7592      1.75  |  Q      |    V    |         |         |
14+35       0.7716      1.80  |  Q      |    V    |         |         |
14+40       0.7844      1.86  |  Q      |    V    |         |         |
14+45       0.7976      1.92  |  Q      |     V   |         |         |
14+50       0.8113      1.99  |  Q      |     V   |         |         |
14+55       0.8255      2.06  |   Q     |     V   |         |         |
15+ 0       0.8402      2.14  |   Q     |      V  |         |         |
15+ 5       0.8555      2.22  |   Q     |      V  |         |         |
15+10       0.8715      2.33  |   Q     |      V  |         |         |
15+15       0.8883      2.43  |   Q     |       V |         |         |
15+20       0.9060      2.57  |    Q    |       V |         |         |
15+25       0.9244      2.67  |    Q    |       V |         |         |
15+30       0.9427      2.66  |    Q    |        V|         |         |
15+35       0.9613      2.71  |    Q    |        V|         |         |
15+40       0.9814      2.92  |    Q    |         V         |         |
15+45       1.0036      3.22  |     Q   |         V         |         |
15+50       1.0298      3.80  |      Q  |         V         |         |
15+55       1.0611      4.54  |        Q|         |V        |         |
16+ 0       1.1014      5.85  |         |Q        | V       |         |
16+ 5       1.1624      8.87  |         |      Q  |  V      |         |
16+10       1.2699     15.61  |         |         |    V    |Q        |
16+15       1.3577     12.74  |         |         |    Q V  |         |
16+20       1.4094      7.51  |         |    Q    |       V |         |
16+25       1.4464      5.37  |         |Q        |        V|         |
16+30       1.4751      4.17  |       Q |         |         V         |
16+35       1.4980      3.33  |     Q   |         |         V         |
16+40       1.5175      2.84  |    Q    |         |         V         |
16+45       1.5350      2.54  |    Q    |         |         |V        |
16+50       1.5509      2.30  |   Q     |         |         |V        |
16+55       1.5652      2.08  |   Q     |         |         |V        |
17+ 0       1.5783      1.91  |  Q      |         |         | V       |
17+ 5       1.5907      1.79  |  Q      |         |         | V       |
17+10       1.6024      1.70  |  Q      |         |         | V       |
17+15       1.6136      1.62  |  Q      |         |         | V       |
17+20       1.6243      1.55  |  Q      |         |         |  V      |
17+25       1.6345      1.49  | Q       |         |         |  V      |
17+30       1.6443      1.43  | Q       |         |         |  V      |
17+35       1.6538      1.37  | Q       |         |         |  V      |
17+40       1.6629      1.33  | Q       |         |         |  V      |
17+45       1.6718      1.28  | Q       |         |         |   V     |
17+50       1.6803      1.25  | Q       |         |         |   V     |
17+55       1.6887      1.21  | Q       |         |         |   V     |
18+ 0       1.6968      1.18  | Q       |         |         |   V     |
18+ 5       1.7046      1.13  | Q       |         |         |   V     |
18+10       1.7115      1.00  | Q       |         |         |   V     |
18+15       1.7177      0.90  |Q        |         |         |    V    |
18+20       1.7235      0.84  |Q        |         |         |    V    |
18+25       1.7291      0.81  |Q        |         |         |    V    |
18+30       1.7344      0.78  |Q        |         |         |    V    |
18+35       1.7397      0.76  |Q        |         |         |    V    |
18+40       1.7448      0.74  |Q        |         |         |    V    |
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18+45      1.7497      0.72  |Q        |         |         |    V    |
18+50      1.7546      0.71  |Q        |         |         |    V    |
18+55      1.7594      0.69  |Q        |         |         |    V    |
19+ 0      1.7641      0.68  |Q        |         |         |    V    |
19+ 5      1.7687      0.67  |Q        |         |         |     V   |
19+10      1.7732      0.65  |Q        |         |         |     V   |
19+15      1.7776      0.64  |Q        |         |         |     V   |
19+20      1.7819      0.63  |Q        |         |         |     V   |
19+25      1.7862      0.62  |Q        |         |         |     V   |
19+30      1.7904      0.61  |Q        |         |         |     V   |
19+35      1.7946      0.60  |Q        |         |         |     V   |
19+40      1.7986      0.59  |Q        |         |         |     V   |
19+45      1.8027      0.58  |Q        |         |         |     V   |
19+50      1.8066      0.57  |Q        |         |         |     V   |
19+55      1.8105      0.57  |Q        |         |         |     V   |
20+ 0      1.8143      0.56  |Q        |         |         |     V   |
20+ 5      1.8181      0.55  |Q        |         |         |      V  |
20+10      1.8219      0.54  |Q        |         |         |      V  |
20+15      1.8256      0.54  |Q        |         |         |      V  |
20+20      1.8292      0.53  |Q        |         |         |      V  |
20+25      1.8328      0.52  |Q        |         |         |      V  |
20+30      1.8363      0.52  |Q        |         |         |      V  |
20+35      1.8399      0.51  |Q        |         |         |      V  |
20+40      1.8433      0.50  |Q        |         |         |      V  |
20+45      1.8467      0.50  Q        |         |         |      V  |
20+50      1.8501      0.49  Q        |         |         |      V  |
20+55      1.8535      0.49  Q        |         |         |      V  |
21+ 0      1.8568      0.48  Q        |         |         |      V  |
21+ 5      1.8600      0.48  Q        |         |         |      V  |
21+10      1.8633      0.47  Q        |         |         |      V  |
21+15      1.8665      0.46  Q        |         |         |       V |
21+20      1.8697      0.46  Q        |         |         |       V |
21+25      1.8728      0.46  Q        |         |         |       V |
21+30      1.8759      0.45  Q        |         |         |       V |
21+35      1.8790      0.45  Q        |         |         |       V |
21+40      1.8820      0.44  Q        |         |         |       V |
21+45      1.8850      0.44  Q        |         |         |       V |
21+50      1.8880      0.43  Q        |         |         |       V |
21+55      1.8910      0.43  Q        |         |         |       V |
22+ 0      1.8939      0.43  Q        |         |         |       V |
22+ 5      1.8968      0.42  Q        |         |         |       V |
22+10      1.8997      0.42  Q        |         |         |       V |
22+15      1.9025      0.41  Q        |         |         |       V |
22+20      1.9054      0.41  Q        |         |         |       V |
22+25      1.9082      0.41  Q        |         |         |       V |
22+30      1.9109      0.40  Q        |         |         |       V |
22+35      1.9137      0.40  Q        |         |         |        V|
22+40      1.9164      0.40  Q        |         |         |        V|
22+45      1.9191      0.39  Q        |         |         |        V|
22+50      1.9218      0.39  Q        |         |         |        V|
22+55      1.9245      0.39  Q        |         |         |        V|
23+ 0      1.9271      0.38  Q        |         |         |        V|
23+ 5      1.9298      0.38  Q        |         |         |        V|
23+10      1.9324      0.38  Q        |         |         |        V|
23+15      1.9350      0.38  Q        |         |         |        V|
23+20      1.9375      0.37  Q        |         |         |        V|
23+25      1.9401      0.37  Q        |         |         |        V|
23+30      1.9426      0.37  Q        |         |         |        V|
23+35      1.9451      0.36  Q        |         |         |        V|
23+40      1.9476      0.36  Q        |         |         |        V|
23+45      1.9501      0.36  Q        |         |         |        V|
23+50      1.9525      0.36  Q        |         |         |        V|
23+55      1.9550      0.35  Q        |         |         |        V|
24+ 0      1.9574      0.35  Q        |         |         |        V|
24+ 5      1.9597      0.33  Q        |         |         |        V|
24+10      1.9610      0.19  Q        |         |         |        V|
24+15      1.9615      0.08  Q        |         |         |        V|
24+20      1.9618      0.04  Q        |         |         |        V|
24+25      1.9620      0.02  Q        |         |         |        V|
24+30      1.9621      0.01  Q        |         |         |        V|
24+35      1.9621      0.01  Q        |         |         |        V|
```

```
   24+40       1.9621      0.00  Q         |         |         |        V|
   24+45       1.9621      0.00  Q         |         |         |        V|
   24+50       1.9621      0.00  Q         |         |         |        V|
-------------------------------------------------------------------------
```

- 100 Year 3 Hour Pre-Development Unit Hydrograph – Area 'E'

```
        U n i t   H y d r o g r a p h   A n a l y s i s

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        Study date  10/11/16   File Name EXE10003.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'E' - 100 YEAR 3 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

        Storm Event Year = 100

        Antecedent Moisture Condition = 3

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 70.6       3.6          0.61     C     0.250     0.144    0.036
 70.6       2.3          0.39     D     0.200     0.144    0.029

Area-averaged adjusted loss rate Fm (In/Hr) =  0.033

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC3)          Yield Fr
     0.51   0.088         70.6      87.5       1.43     0.749
     3.05   0.525         98.0      98.0       0.20     0.958

     0.32   0.056         70.6      87.5       1.43     0.749
     1.93   0.331         98.0      98.0       0.20     0.958

Area-averaged catchment yield fraction, Y =  0.928
Area-averaged low loss fraction, Yb =  0.072
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.150 (hours)
Watershed area =       5.81(Ac.)
Catchment Lag time =   0.120 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 69.3520
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.033(In/Hr)
Average low loss rate fraction (Yb) = 0.072 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.520(In)
Computed peak 30-minute rainfall =  1.090(In)
Specified peak 1-hour rainfall =  1.450(In)
Computed peak 3-hour rainfall =  2.430(In)
Specified peak 6-hour rainfall =  3.360(In)
Specified peak 24-hour rainfall =  5.630(In)
```

```
Rainfall depth area reduction factors:
Using a total area of       5.81(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000     Adjusted rainfall =  0.520(In)
30-minute factor = 1.000    Adjusted rainfall =  1.090(In)
1-hour factor = 1.000       Adjusted rainfall =  1.450(In)
3-hour factor = 1.000       Adjusted rainfall =  2.430(In)
6-hour factor = 1.000       Adjusted rainfall =  3.360(In)
24-hour factor = 1.000 Adjusted rainfall =  5.630(In)
```

Unit Hydrograph			
Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))	
(K = 70.26 (CFS))			
1	7.049	4.953	
2	47.576	28.476	
3	76.939	20.632	
4	87.948	7.735	
5	94.060	4.295	
6	97.281	2.263	
7	98.491	0.851	
8	99.115	0.438	
9	99.599	0.340	
10	99.908	0.217	
11	100.000	0.065	

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.5199	0.5199
2	0.6922	0.1723
3	0.8184	0.1262
4	0.9217	0.1033
5	1.0107	0.0890
6	1.0897	0.0791
7	1.1611	0.0714
8	1.2267	0.0656
9	1.2877	0.0610
10	1.3448	0.0571
11	1.3986	0.0538
12	1.4496	0.0510
13	1.5052	0.0556
14	1.5586	0.0534
15	1.6100	0.0514
16	1.6596	0.0496
17	1.7076	0.0480
18	1.7541	0.0465
19	1.7992	0.0452
20	1.8432	0.0439
21	1.8859	0.0428
22	1.9276	0.0417
23	1.9684	0.0407
24	2.0081	0.0398
25	2.0471	0.0389
26	2.0852	0.0381
27	2.1225	0.0373
28	2.1591	0.0366
29	2.1950	0.0359
30	2.2303	0.0353
31	2.2649	0.0347
32	2.2990	0.0341
33	2.3325	0.0335
34	2.3655	0.0330
35	2.3979	0.0325
36	2.4299	0.0320

Unit Period	Unit Rainfall	Unit Soil-Loss	Effective Rainfall

```
      (number)           (In)          (In)                (In)
      ---------------------------------------------------------------------
        1              0.0320          0.0023              0.0297
        2              0.0325          0.0023              0.0301
        3              0.0335          0.0024              0.0311
        4              0.0341          0.0025              0.0316
        5              0.0353          0.0026              0.0327
        6              0.0359          0.0026              0.0333
        7              0.0373          0.0027              0.0346
        8              0.0381          0.0028              0.0353
        9              0.0398          0.0028              0.0370
       10              0.0407          0.0028              0.0379
       11              0.0428          0.0028              0.0400
       12              0.0439          0.0028              0.0412
       13              0.0465          0.0028              0.0437
       14              0.0480          0.0028              0.0452
       15              0.0514          0.0028              0.0486
       16              0.0534          0.0028              0.0506
       17              0.0510          0.0028              0.0482
       18              0.0538          0.0028              0.0511
       19              0.0610          0.0028              0.0582
       20              0.0656          0.0028              0.0629
       21              0.0791          0.0028              0.0763
       22              0.0890          0.0028              0.0862
       23              0.1262          0.0028              0.1234
       24              0.1723          0.0028              0.1696
       25              0.5199          0.0028              0.5171
       26              0.1033          0.0028              0.1005
       27              0.0714          0.0028              0.0686
       28              0.0571          0.0028              0.0543
       29              0.0556          0.0028              0.0528
       30              0.0496          0.0028              0.0468
       31              0.0452          0.0028              0.0424
       32              0.0417          0.0028              0.0389
       33              0.0389          0.0028              0.0361
       34              0.0366          0.0026              0.0340
       35              0.0347          0.0025              0.0321
       36              0.0330          0.0024              0.0306
      ---------------------------------------------------------------------
      ---------------------------------------------------------------------
      Total soil rain loss =      0.10(In)
      Total effective rainfall =      2.33(In)
      Peak flow rate in flood hydrograph =     20.33(CFS)
      ---------------------------------------------------------------------
      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                        3 - H O U R    S T O R M
                   R u n o f f      H y d r o g r a p h
      ---------------------------------------------------------------------
                Hydrograph in   5   Minute intervals ((CFS))

      ---------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0        7.5      15.0      22.5      30.0
-------------------------------------------------------------------------
  0+ 5       0.0010      0.15  Q         |         |         |         |
  0+10       0.0079      0.99  VQ        |         |         |         |
  0+15       0.0190      1.62  V Q       |         |         |         |
  0+20       0.0321      1.89  |VQ       |         |         |         |
  0+25       0.0463      2.06  |VQ       |         |         |         |
  0+30       0.0613      2.19  | Q       |         |         |         |
  0+35       0.0769      2.27  | VQ      |         |         |         |
  0+40       0.0931      2.35  |  Q      |         |         |         |
  0+45       0.1098      2.42  |  Q      |         |         |         |
  0+50       0.1271      2.51  |  QV     |         |         |         |
  0+55       0.1450      2.60  |  Q V    |         |         |         |
  1+ 0       0.1636      2.70  |  Q V    |         |         |         |
  1+ 5       0.1830      2.81  |  Q  V   |         |         |         |
  1+10       0.2033      2.94  |  Q   V  |         |         |         |
  1+15       0.2244      3.08  |   Q  V  |         |         |         |
  1+20       0.2468      3.24  |   Q   V |         |         |         |
  1+25       0.2701      3.39  |   Q    V|         |         |         |
  1+30       0.2936      3.42  |   Q     V         |         |         |
```

```
   1+35       0.3179      3.52  |   Q     |V        |         |         |
   1+40       0.3441      3.80  |    Q    | V       |         |         |
   1+45       0.3728      4.17  |    Q    |  V      |         |         |
   1+50       0.4056      4.77  |     Q   |   V     |         |         |
   1+55       0.4441      5.58  |      Q  |    V    |         |         |
   2+ 0       0.4938      7.22  |        Q|      V  |         |         |
   2+ 5       0.5708     11.18  |         |   Q     V         |         |
   2+10       0.7108     20.33  |         |         |    V Q  |         |
   2+15       0.8212     16.03  |         |         |Q       V|         |
   2+20       0.8863      9.45  |         | Q       |         |V        |
   2+25       0.9331      6.79  |        Q|         |         |  V      |
   2+30       0.9692      5.24  |     Q   |         |         |   V     |
   2+35       0.9978      4.16  |    Q    |         |         |    V    |
   2+40       1.0223      3.57  |   Q     |         |         |     V   |
   2+45       1.0444      3.20  |   Q     |         |         |      V  |
   2+50       1.0642      2.88  |  Q      |         |         |      V  |
   2+55       1.0822      2.61  |  Q      |         |         |       V |
   3+ 0       1.0988      2.41  |  Q      |         |         |       V |
   3+ 5       1.1135      2.13  | Q       |         |         |        V|
   3+10       1.1217      1.19  |Q        |         |         |        V|
   3+15       1.1253      0.53  Q         |         |         |        V|
   3+20       1.1272      0.27  Q         |         |         |        V|
   3+25       1.1281      0.13  Q         |         |         |        V|
   3+30       1.1285      0.06  Q         |         |         |        V|
   3+35       1.1288      0.03  Q         |         |         |        V|
   3+40       1.1289      0.02  Q         |         |         |        V|
   3+45       1.1290      0.01  Q         |         |         |        V|
   3+50       1.1290      0.00  Q         |         |         |         V
-------------------------------------------------------------------------
```

- 100 Year 6 Hour Pre-Development Unit Hydrograph – Area 'E'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/11/16   File Name EXE10006.out

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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996

Program License Serial Number 4094

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RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'E' - 100 YEAR 6 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 100

       Antecedent Moisture Condition = 3

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********

SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 70.6       3.6          0.61     C     0.250     0.144    0.036
 70.6       2.3          0.39     D     0.200     0.144    0.029

Area-averaged adjusted loss rate Fm (In/Hr) =  0.033

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC3)           Yield Fr
     0.51   0.088         70.6      87.5       1.43     0.749
     3.05   0.525         98.0      98.0       0.20     0.958

     0.32   0.056         70.6      87.5       1.43     0.749
     1.93   0.331         98.0      98.0       0.20     0.958

Area-averaged catchment yield fraction, Y =  0.928
Area-averaged low loss fraction, Yb =  0.072
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.150 (hours)
Watershed area =       5.81(Ac.)
Catchment Lag time =   0.120 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 69.3520
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.033(In/Hr)
Average low loss rate fraction (Yb) = 0.072 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.520(In)
Computed peak 30-minute rainfall =  1.090(In)
Specified peak 1-hour rainfall =  1.450(In)
Computed peak 3-hour rainfall =  2.430(In)
Specified peak 6-hour rainfall =  3.360(In)
Specified peak 24-hour rainfall =  5.630(In)


Rainfall depth area reduction factors:
Using a total area of       5.81(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000     Adjusted rainfall =  0.520(In)
```

30-minute factor = 1.000 Adjusted rainfall = 1.090(In)
1-hour factor = 1.000 Adjusted rainfall = 1.450(In)
3-hour factor = 1.000 Adjusted rainfall = 2.430(In)
6-hour factor = 1.000 Adjusted rainfall = 3.360(In)
24-hour factor = 1.000 Adjusted rainfall = 5.630(In)

U n i t H y d r o g r a p h

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 70.26 (CFS))	
1	7.049	4.953
2	47.576	28.476
3	76.939	20.632
4	87.948	7.735
5	94.060	4.295
6	97.281	2.263
7	98.491	0.851
8	99.115	0.438
9	99.599	0.340
10	99.908	0.217
11	100.000	0.065

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.5199	0.5199
2	0.6922	0.1723
3	0.8184	0.1262
4	0.9217	0.1033
5	1.0107	0.0890
6	1.0897	0.0791
7	1.1611	0.0714
8	1.2267	0.0656
9	1.2877	0.0610
10	1.3448	0.0571
11	1.3986	0.0538
12	1.4496	0.0510
13	1.5052	0.0556
14	1.5586	0.0534
15	1.6100	0.0514
16	1.6596	0.0496
17	1.7076	0.0480
18	1.7541	0.0465
19	1.7992	0.0452
20	1.8432	0.0439
21	1.8859	0.0428
22	1.9276	0.0417
23	1.9684	0.0407
24	2.0081	0.0398
25	2.0471	0.0389
26	2.0852	0.0381
27	2.1225	0.0373
28	2.1591	0.0366
29	2.1950	0.0359
30	2.2303	0.0353
31	2.2649	0.0347
32	2.2990	0.0341
33	2.3325	0.0335
34	2.3655	0.0330
35	2.3979	0.0325
36	2.4299	0.0320
37	2.4612	0.0313
38	2.4921	0.0309
39	2.5226	0.0304
40	2.5526	0.0300
41	2.5822	0.0296
42	2.6115	0.0293
43	2.6404	0.0289

44	2.6689	0.0285
45	2.6971	0.0282
46	2.7250	0.0279
47	2.7525	0.0275
48	2.7797	0.0272
49	2.8067	0.0269
50	2.8333	0.0266
51	2.8597	0.0264
52	2.8857	0.0261
53	2.9115	0.0258
54	2.9371	0.0256
55	2.9624	0.0253
56	2.9875	0.0251
57	3.0123	0.0248
58	3.0369	0.0246
59	3.0613	0.0244
60	3.0854	0.0241
61	3.1093	0.0239
62	3.1331	0.0237
63	3.1566	0.0235
64	3.1799	0.0233
65	3.2031	0.0231
66	3.2260	0.0229
67	3.2488	0.0228
68	3.2713	0.0226
69	3.2937	0.0224
70	3.3160	0.0222
71	3.3380	0.0221
72	3.3599	0.0219

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0219	0.0016	0.0203
2	0.0221	0.0016	0.0205
3	0.0224	0.0016	0.0208
4	0.0226	0.0016	0.0209
5	0.0229	0.0017	0.0213
6	0.0231	0.0017	0.0215
7	0.0235	0.0017	0.0218
8	0.0237	0.0017	0.0220
9	0.0241	0.0017	0.0224
10	0.0244	0.0018	0.0226
11	0.0248	0.0018	0.0230
12	0.0251	0.0018	0.0232
13	0.0256	0.0018	0.0237
14	0.0258	0.0019	0.0239
15	0.0264	0.0019	0.0244
16	0.0266	0.0019	0.0247
17	0.0272	0.0020	0.0253
18	0.0275	0.0020	0.0255
19	0.0282	0.0020	0.0262
20	0.0285	0.0021	0.0265
21	0.0293	0.0021	0.0271
22	0.0296	0.0021	0.0275
23	0.0304	0.0022	0.0282
24	0.0309	0.0022	0.0286
25	0.0320	0.0023	0.0297
26	0.0325	0.0023	0.0301
27	0.0335	0.0024	0.0311
28	0.0341	0.0025	0.0316
29	0.0353	0.0026	0.0327
30	0.0359	0.0026	0.0333
31	0.0373	0.0027	0.0346
32	0.0381	0.0028	0.0353
33	0.0398	0.0028	0.0370
34	0.0407	0.0028	0.0379
35	0.0428	0.0028	0.0400
36	0.0439	0.0028	0.0412
37	0.0465	0.0028	0.0437

```
       38              0.0480          0.0028              0.0452
       39              0.0514          0.0028              0.0486
       40              0.0534          0.0028              0.0506
       41              0.0510          0.0028              0.0482
       42              0.0538          0.0028              0.0511
       43              0.0610          0.0028              0.0582
       44              0.0656          0.0028              0.0629
       45              0.0791          0.0028              0.0763
       46              0.0890          0.0028              0.0862
       47              0.1262          0.0028              0.1234
       48              0.1723          0.0028              0.1696
       49              0.5199          0.0028              0.5171
       50              0.1033          0.0028              0.1005
       51              0.0714          0.0028              0.0686
       52              0.0571          0.0028              0.0543
       53              0.0556          0.0028              0.0528
       54              0.0496          0.0028              0.0468
       55              0.0452          0.0028              0.0424
       56              0.0417          0.0028              0.0389
       57              0.0389          0.0028              0.0361
       58              0.0366          0.0026              0.0340
       59              0.0347          0.0025              0.0321
       60              0.0330          0.0024              0.0306
       61              0.0313          0.0023              0.0291
       62              0.0300          0.0022              0.0279
       63              0.0289          0.0021              0.0268
       64              0.0279          0.0020              0.0258
       65              0.0269          0.0019              0.0250
       66              0.0261          0.0019              0.0242
       67              0.0253          0.0018              0.0235
       68              0.0246          0.0018              0.0228
       69              0.0239          0.0017              0.0222
       70              0.0233          0.0017              0.0216
       71              0.0228          0.0016              0.0211
       72              0.0222          0.0016              0.0206
      ------------------------------------------------------------------------
      ------------------------------------------------------------------------
      Total soil rain loss =      0.16(In)
      Total effective rainfall =      3.20(In)
      Peak flow rate in flood hydrograph =     20.33(CFS)
      ------------------------------------------------------------------------
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          6 - H O U R    S T O R M
                     R u n o f f      H y d r o g r a p h
      ------------------------------------------------------------------------
                  Hydrograph in   5   Minute intervals ((CFS))

      ------------------------------------------------------------------------
 Time(h+m) Volume Ac.Ft   Q(CFS)  0        7.5      15.0      22.5      30.0
 ------------------------------------------------------------------------
   0+ 5       0.0007      0.10  Q         |         |         |         |
   0+10       0.0054      0.68  Q         |         |         |         |
   0+15       0.0130      1.10  VQ        |         |         |         |
   0+20       0.0218      1.28  VQ        |         |         |         |
   0+25       0.0312      1.38  VQ        |         |         |         |
   0+30       0.0412      1.44  |Q        |         |         |         |
   0+35       0.0513      1.47  |Q        |         |         |         |
   0+40       0.0616      1.50  |VQ       |         |         |         |
   0+45       0.0722      1.53  |VQ       |         |         |         |
   0+50       0.0828      1.55  | Q       |         |         |         |
   0+55       0.0937      1.57  | Q       |         |         |         |
   1+ 0       0.1047      1.60  | Q       |         |         |         |
   1+ 5       0.1158      1.62  | Q       |         |         |         |
   1+10       0.1271      1.64  | QV      |         |         |         |
   1+15       0.1386      1.66  | QV      |         |         |         |
   1+20       0.1502      1.69  | QV      |         |         |         |
   1+25       0.1620      1.72  | Q V     |         |         |         |
   1+30       0.1740      1.74  | Q V     |         |         |         |
   1+35       0.1862      1.77  | Q V     |         |         |         |
   1+40       0.1987      1.80  | Q  V    |         |         |         |
   1+45       0.2113      1.84  | Q  V    |         |         |         |
```

```
   1+50       0.2242      1.87  | Q  V    |         |         |         |
   1+55       0.2373      1.91  | Q   V   |         |         |         |
   2+ 0       0.2507      1.94  | Q   V   |         |         |         |
   2+ 5       0.2644      1.98  | Q   V   |         |         |         |
   2+10       0.2784      2.03  | Q    V  |         |         |         |
   2+15       0.2927      2.08  | Q    V  |         |         |         |
   2+20       0.3074      2.13  | Q    V  |         |         |         |
   2+25       0.3224      2.18  | Q     V |         |         |         |
   2+30       0.3378      2.24  | Q     V |         |         |         |
   2+35       0.3536      2.30  |  Q     V|         |         |         |
   2+40       0.3699      2.36  |  Q     V|         |         |         |
   2+45       0.3867      2.43  |  Q      V         |         |         |
   2+50       0.4040      2.52  |  Q      V         |         |         |
   2+55       0.4219      2.60  |  Q      V         |         |         |
   3+ 0       0.4405      2.70  |  Q      |V        |         |         |
   3+ 5       0.4599      2.81  |  Q      |V        |         |         |
   3+10       0.4801      2.94  |  Q      | V       |         |         |
   3+15       0.5013      3.08  |   Q     | V       |         |         |
   3+20       0.5236      3.24  |   Q     |  V      |         |         |
   3+25       0.5470      3.39  |   Q     |   V     |         |         |
   3+30       0.5705      3.42  |   Q     |   V     |         |         |
   3+35       0.5947      3.52  |   Q     |    V    |         |         |
   3+40       0.6209      3.80  |    Q    |     V   |         |         |
   3+45       0.6497      4.17  |    Q    |     V   |         |         |
   3+50       0.6825      4.77  |     Q   |      V  |         |         |
   3+55       0.7210      5.58  |      Q  |       V |         |         |
   4+ 0       0.7707      7.22  |        Q|        V|         |         |
   4+ 5       0.8477     11.18  |         |   Q     |V        |         |
   4+10       0.9877     20.33  |         |         |   V Q   |         |
   4+15       1.0981     16.03  |         |         |Q     V  |         |
   4+20       1.1632      9.45  |         | Q       |        V|         |
   4+25       1.2099      6.79  |        Q|         |         |V        |
   4+30       1.2460      5.24  |     Q   |         |         | V       |
   4+35       1.2746      4.16  |    Q    |         |         | V       |
   4+40       1.2992      3.57  |   Q     |         |         |  V      |
   4+45       1.3212      3.20  |   Q     |         |         |   V     |
   4+50       1.3411      2.88  |  Q      |         |         |   V     |
   4+55       1.3590      2.61  |  Q      |         |         |    V    |
   5+ 0       1.3757      2.41  |  Q      |         |         |    V    |
   5+ 5       1.3913      2.27  |  Q      |         |         |    V    |
   5+10       1.4062      2.16  | Q       |         |         |     V   |
   5+15       1.4203      2.05  | Q       |         |         |     V   |
   5+20       1.4339      1.97  | Q       |         |         |      V  |
   5+25       1.4469      1.89  | Q       |         |         |      V  |
   5+30       1.4594      1.82  | Q       |         |         |      V  |
   5+35       1.4715      1.76  | Q       |         |         |       V |
   5+40       1.4832      1.70  | Q       |         |         |       V |
   5+45       1.4946      1.65  | Q       |         |         |       V |
   5+50       1.5056      1.60  | Q       |         |         |       V |
   5+55       1.5164      1.56  | Q       |         |         |        V|
   6+ 0       1.5268      1.52  | Q       |         |         |        V|
   6+ 5       1.5364      1.38  |Q        |         |         |        V|
   6+10       1.5417      0.78  |Q        |         |         |        V|
   6+15       1.5441      0.34  Q         |         |         |        V|
   6+20       1.5453      0.18  Q         |         |         |        V|
   6+25       1.5459      0.09  Q         |         |         |        V|
   6+30       1.5462      0.04  Q         |         |         |        V|
   6+35       1.5464      0.02  Q         |         |         |        V|
   6+40       1.5464      0.01  Q         |         |         |        V|
   6+45       1.5465      0.01  Q         |         |         |        V|
   6+50       1.5465      0.00  Q         |         |         |        V|
-------------------------------------------------------------------------
```

- 100 Year 12 Hour Pre-Development Unit Hydrograph – Area 'E'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/11/16   File Name EXE10012.out


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'E' - 100 YEAR 12 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 100

       Antecedent Moisture Condition = 3

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 70.6       3.6          0.61     C     0.250     0.144    0.036
 70.6       2.3          0.39     D     0.200     0.144    0.029

Area-averaged adjusted loss rate Fm (In/Hr) =  0.033

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC3)          Yield Fr
     0.51   0.088         70.6      87.5       1.43     0.749
     3.05   0.525         98.0      98.0       0.20     0.958

     0.32   0.056         70.6      87.5       1.43     0.749
     1.93   0.331         98.0      98.0       0.20     0.958

Area-averaged catchment yield fraction, Y =  0.928
Area-averaged low loss fraction, Yb =  0.072
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.150 (hours)
Watershed area =       5.81(Ac.)
Catchment Lag time =   0.120 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 69.3520
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.033(In/Hr)
Average low loss rate fraction (Yb) = 0.072 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.520(In)
Computed peak 30-minute rainfall =  1.090(In)
Specified peak 1-hour rainfall =  1.450(In)
Computed peak 3-hour rainfall =  2.430(In)
Specified peak 6-hour rainfall =  3.360(In)
Specified peak 24-hour rainfall =  5.630(In)
```

Rainfall depth area reduction factors:
Using a total area of 5.81(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000 Adjusted rainfall = 0.520(In)
30-minute factor = 1.000 Adjusted rainfall = 1.090(In)
1-hour factor = 1.000 Adjusted rainfall = 1.450(In)
3-hour factor = 1.000 Adjusted rainfall = 2.430(In)
6-hour factor = 1.000 Adjusted rainfall = 3.360(In)
24-hour factor = 1.000 Adjusted rainfall = 5.630(In)

U n i t H y d r o g r a p h

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 70.26 (CFS))	
1	7.049	4.953
2	47.576	28.476
3	76.939	20.632
4	87.948	7.735
5	94.060	4.295
6	97.281	2.263
7	98.491	0.851
8	99.115	0.438
9	99.599	0.340
10	99.908	0.217
11	100.000	0.065

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.5199	0.5199
2	0.6922	0.1723
3	0.8184	0.1262
4	0.9217	0.1033
5	1.0107	0.0890
6	1.0897	0.0791
7	1.1611	0.0714
8	1.2267	0.0656
9	1.2877	0.0610
10	1.3448	0.0571
11	1.3986	0.0538
12	1.4496	0.0510
13	1.5052	0.0556
14	1.5586	0.0534
15	1.6100	0.0514
16	1.6596	0.0496
17	1.7076	0.0480
18	1.7541	0.0465
19	1.7992	0.0452
20	1.8432	0.0439
21	1.8859	0.0428
22	1.9276	0.0417
23	1.9684	0.0407
24	2.0081	0.0398
25	2.0471	0.0389
26	2.0852	0.0381
27	2.1225	0.0373
28	2.1591	0.0366
29	2.1950	0.0359
30	2.2303	0.0353
31	2.2649	0.0347
32	2.2990	0.0341
33	2.3325	0.0335
34	2.3655	0.0330
35	2.3979	0.0325
36	2.4299	0.0320
37	2.4612	0.0313
38	2.4921	0.0309
39	2.5226	0.0304

40	2.5526	0.0300
41	2.5822	0.0296
42	2.6115	0.0293
43	2.6404	0.0289
44	2.6689	0.0285
45	2.6971	0.0282
46	2.7250	0.0279
47	2.7525	0.0275
48	2.7797	0.0272
49	2.8067	0.0269
50	2.8333	0.0266
51	2.8597	0.0264
52	2.8857	0.0261
53	2.9115	0.0258
54	2.9371	0.0256
55	2.9624	0.0253
56	2.9875	0.0251
57	3.0123	0.0248
58	3.0369	0.0246
59	3.0613	0.0244
60	3.0854	0.0241
61	3.1093	0.0239
62	3.1331	0.0237
63	3.1566	0.0235
64	3.1799	0.0233
65	3.2031	0.0231
66	3.2260	0.0229
67	3.2488	0.0228
68	3.2713	0.0226
69	3.2937	0.0224
70	3.3160	0.0222
71	3.3380	0.0221
72	3.3599	0.0219
73	3.3772	0.0173
74	3.3944	0.0172
75	3.4114	0.0170
76	3.4283	0.0169
77	3.4450	0.0167
78	3.4616	0.0166
79	3.4780	0.0165
80	3.4944	0.0163
81	3.5106	0.0162
82	3.5266	0.0161
83	3.5426	0.0160
84	3.5584	0.0158
85	3.5741	0.0157
86	3.5897	0.0156
87	3.6052	0.0155
88	3.6206	0.0154
89	3.6359	0.0153
90	3.6510	0.0152
91	3.6661	0.0151
92	3.6810	0.0149
93	3.6959	0.0148
94	3.7106	0.0147
95	3.7253	0.0146
96	3.7398	0.0146
97	3.7543	0.0145
98	3.7687	0.0144
99	3.7829	0.0143
100	3.7971	0.0142
101	3.8112	0.0141
102	3.8252	0.0140
103	3.8391	0.0139
104	3.8530	0.0138
105	3.8667	0.0138
106	3.8804	0.0137
107	3.8940	0.0136
108	3.9075	0.0135
109	3.9209	0.0134
110	3.9343	0.0134

111	3.9476	0.0133
112	3.9608	0.0132
113	3.9739	0.0131
114	3.9870	0.0131
115	3.9999	0.0130
116	4.0129	0.0129
117	4.0257	0.0128
118	4.0385	0.0128
119	4.0512	0.0127
120	4.0638	0.0126
121	4.0764	0.0126
122	4.0889	0.0125
123	4.1014	0.0124
124	4.1138	0.0124
125	4.1261	0.0123
126	4.1383	0.0123
127	4.1505	0.0122
128	4.1627	0.0121
129	4.1747	0.0121
130	4.1868	0.0120
131	4.1987	0.0120
132	4.2106	0.0119
133	4.2225	0.0118
134	4.2343	0.0118
135	4.2460	0.0117
136	4.2577	0.0117
137	4.2693	0.0116
138	4.2809	0.0116
139	4.2924	0.0115
140	4.3039	0.0115
141	4.3153	0.0114
142	4.3267	0.0114
143	4.3380	0.0113
144	4.3493	0.0113

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0113	0.0008	0.0105
2	0.0113	0.0008	0.0105
3	0.0114	0.0008	0.0106
4	0.0115	0.0008	0.0106
5	0.0116	0.0008	0.0107
6	0.0116	0.0008	0.0108
7	0.0117	0.0008	0.0109
8	0.0118	0.0009	0.0109
9	0.0119	0.0009	0.0110
10	0.0120	0.0009	0.0111
11	0.0121	0.0009	0.0112
12	0.0121	0.0009	0.0113
13	0.0123	0.0009	0.0114
14	0.0123	0.0009	0.0114
15	0.0124	0.0009	0.0115
16	0.0125	0.0009	0.0116
17	0.0126	0.0009	0.0117
18	0.0127	0.0009	0.0118
19	0.0128	0.0009	0.0119
20	0.0129	0.0009	0.0120
21	0.0131	0.0009	0.0121
22	0.0131	0.0009	0.0122
23	0.0133	0.0010	0.0123
24	0.0134	0.0010	0.0124
25	0.0135	0.0010	0.0125
26	0.0136	0.0010	0.0126
27	0.0138	0.0010	0.0128
28	0.0138	0.0010	0.0128
29	0.0140	0.0010	0.0130
30	0.0141	0.0010	0.0131
31	0.0143	0.0010	0.0132
32	0.0144	0.0010	0.0133

33	0.0146	0.0011	0.0135
34	0.0146	0.0011	0.0136
35	0.0148	0.0011	0.0138
36	0.0149	0.0011	0.0139
37	0.0152	0.0011	0.0141
38	0.0153	0.0011	0.0142
39	0.0155	0.0011	0.0144
40	0.0156	0.0011	0.0145
41	0.0158	0.0011	0.0147
42	0.0160	0.0012	0.0148
43	0.0162	0.0012	0.0150
44	0.0163	0.0012	0.0151
45	0.0166	0.0012	0.0154
46	0.0167	0.0012	0.0155
47	0.0170	0.0012	0.0158
48	0.0172	0.0012	0.0159
49	0.0219	0.0016	0.0203
50	0.0221	0.0016	0.0205
51	0.0224	0.0016	0.0208
52	0.0226	0.0016	0.0209
53	0.0229	0.0017	0.0213
54	0.0231	0.0017	0.0215
55	0.0235	0.0017	0.0218
56	0.0237	0.0017	0.0220
57	0.0241	0.0017	0.0224
58	0.0244	0.0018	0.0226
59	0.0248	0.0018	0.0230
60	0.0251	0.0018	0.0232
61	0.0256	0.0018	0.0237
62	0.0258	0.0019	0.0239
63	0.0264	0.0019	0.0244
64	0.0266	0.0019	0.0247
65	0.0272	0.0020	0.0253
66	0.0275	0.0020	0.0255
67	0.0282	0.0020	0.0262
68	0.0285	0.0021	0.0265
69	0.0293	0.0021	0.0271
70	0.0296	0.0021	0.0275
71	0.0304	0.0022	0.0282
72	0.0309	0.0022	0.0286
73	0.0320	0.0023	0.0297
74	0.0325	0.0023	0.0301
75	0.0335	0.0024	0.0311
76	0.0341	0.0025	0.0316
77	0.0353	0.0026	0.0327
78	0.0359	0.0026	0.0333
79	0.0373	0.0027	0.0346
80	0.0381	0.0028	0.0353
81	0.0398	0.0028	0.0370
82	0.0407	0.0028	0.0379
83	0.0428	0.0028	0.0400
84	0.0439	0.0028	0.0412
85	0.0465	0.0028	0.0437
86	0.0480	0.0028	0.0452
87	0.0514	0.0028	0.0486
88	0.0534	0.0028	0.0506
89	0.0510	0.0028	0.0482
90	0.0538	0.0028	0.0511
91	0.0610	0.0028	0.0582
92	0.0656	0.0028	0.0629
93	0.0791	0.0028	0.0763
94	0.0890	0.0028	0.0862
95	0.1262	0.0028	0.1234
96	0.1723	0.0028	0.1696
97	0.5199	0.0028	0.5171
98	0.1033	0.0028	0.1005
99	0.0714	0.0028	0.0686
100	0.0571	0.0028	0.0543
101	0.0556	0.0028	0.0528
102	0.0496	0.0028	0.0468
103	0.0452	0.0028	0.0424

```
      104              0.0417           0.0028              0.0389
      105              0.0389           0.0028              0.0361
      106              0.0366           0.0026              0.0340
      107              0.0347           0.0025              0.0321
      108              0.0330           0.0024              0.0306
      109              0.0313           0.0023              0.0291
      110              0.0300           0.0022              0.0279
      111              0.0289           0.0021              0.0268
      112              0.0279           0.0020              0.0258
      113              0.0269           0.0019              0.0250
      114              0.0261           0.0019              0.0242
      115              0.0253           0.0018              0.0235
      116              0.0246           0.0018              0.0228
      117              0.0239           0.0017              0.0222
      118              0.0233           0.0017              0.0216
      119              0.0228           0.0016              0.0211
      120              0.0222           0.0016              0.0206
      121              0.0173           0.0013              0.0160
      122              0.0169           0.0012              0.0156
      123              0.0165           0.0012              0.0153
      124              0.0161           0.0012              0.0149
      125              0.0157           0.0011              0.0146
      126              0.0154           0.0011              0.0143
      127              0.0151           0.0011              0.0140
      128              0.0147           0.0011              0.0137
      129              0.0145           0.0010              0.0134
      130              0.0142           0.0010              0.0132
      131              0.0139           0.0010              0.0129
      132              0.0137           0.0010              0.0127
      133              0.0134           0.0010              0.0125
      134              0.0132           0.0010              0.0122
      135              0.0130           0.0009              0.0120
      136              0.0128           0.0009              0.0119
      137              0.0126           0.0009              0.0117
      138              0.0124           0.0009              0.0115
      139              0.0122           0.0009              0.0113
      140              0.0120           0.0009              0.0112
      141              0.0118           0.0009              0.0110
      142              0.0117           0.0008              0.0108
      143              0.0115           0.0008              0.0107
      144              0.0114           0.0008              0.0105
      ------------------------------------------------------------------------
      ------------------------------------------------------------------------
      Total soil rain loss =      0.24(In)
      Total effective rainfall =      4.11(In)
      Peak flow rate in flood hydrograph =     20.33(CFS)
      ------------------------------------------------------------------------
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          12 - H O U R    S T O R M
                     R u n o f f      H y d r o g r a p h
      ------------------------------------------------------------------------
                 Hydrograph in   5   Minute intervals ((CFS))

      ------------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0        7.5      15.0      22.5      30.0
----------------------------------------------------------------------------
  0+ 5       0.0004      0.05  Q         |         |         |         |
  0+10       0.0028      0.35  Q         |         |         |         |
  0+15       0.0067      0.57  Q         |         |         |         |
  0+20       0.0112      0.65  Q         |         |         |         |
  0+25       0.0160      0.70  Q         |         |         |         |
  0+30       0.0210      0.73  Q         |         |         |         |
  0+35       0.0261      0.74  Q         |         |         |         |
  0+40       0.0313      0.75  VQ        |         |         |         |
  0+45       0.0366      0.76  VQ        |         |         |         |
  0+50       0.0419      0.77  VQ        |         |         |         |
  0+55       0.0472      0.78  VQ        |         |         |         |
  1+ 0       0.0526      0.78  |Q        |         |         |         |
  1+ 5       0.0580      0.79  |Q        |         |         |         |
  1+10       0.0635      0.79  |Q        |         |         |         |
  1+15       0.0690      0.80  |Q        |         |         |         |
```

```
1+20       0.0745      0.80  |Q        |         |         |         |
1+25       0.0801      0.81  |Q        |         |         |         |
1+30       0.0857      0.82  |Q        |         |         |         |
1+35       0.0914      0.82  |Q        |         |         |         |
1+40       0.0971      0.83  |Q        |         |         |         |
1+45       0.1029      0.84  |QV       |         |         |         |
1+50       0.1087      0.84  |QV       |         |         |         |
1+55       0.1145      0.85  |QV       |         |         |         |
2+ 0       0.1205      0.86  |QV       |         |         |         |
2+ 5       0.1264      0.86  |QV       |         |         |         |
2+10       0.1324      0.87  |QV       |         |         |         |
2+15       0.1385      0.88  |QV       |         |         |         |
2+20       0.1446      0.89  |QV       |         |         |         |
2+25       0.1508      0.90  |Q V      |         |         |         |
2+30       0.1570      0.90  |Q V      |         |         |         |
2+35       0.1633      0.91  |Q V      |         |         |         |
2+40       0.1696      0.92  |Q V      |         |         |         |
2+45       0.1760      0.93  |Q V      |         |         |         |
2+50       0.1825      0.94  |Q V      |         |         |         |
2+55       0.1890      0.95  |Q V      |         |         |         |
3+ 0       0.1956      0.96  |Q V      |         |         |         |
3+ 5       0.2023      0.97  |Q  V     |         |         |         |
3+10       0.2090      0.98  |Q  V     |         |         |         |
3+15       0.2158      0.99  |Q  V     |         |         |         |
3+20       0.2227      1.00  |Q  V     |         |         |         |
3+25       0.2296      1.01  |Q  V     |         |         |         |
3+30       0.2367      1.02  |Q  V     |         |         |         |
3+35       0.2438      1.03  |Q  V     |         |         |         |
3+40       0.2509      1.04  |Q   V    |         |         |         |
3+45       0.2582      1.06  |Q   V    |         |         |         |
3+50       0.2656      1.07  |Q   V    |         |         |         |
3+55       0.2730      1.08  |Q   V    |         |         |         |
4+ 0       0.2805      1.09  |Q   V    |         |         |         |
4+ 5       0.2883      1.13  |Q   V    |         |         |         |
4+10       0.2970      1.26  |Q   V    |         |         |         |
4+15       0.3064      1.36  |Q    V   |         |         |         |
4+20       0.3161      1.41  |Q    V   |         |         |         |
4+25       0.3260      1.44  |Q    V   |         |         |         |
4+30       0.3361      1.47  |Q    V   |         |         |         |
4+35       0.3464      1.49  |Q    V   |         |         |         |
4+40       0.3568      1.51  | Q    V  |         |         |         |
4+45       0.3673      1.53  | Q    V  |         |         |         |
4+50       0.3780      1.55  | Q    V  |         |         |         |
4+55       0.3888      1.57  | Q    V  |         |         |         |
5+ 0       0.3998      1.60  | Q     V |         |         |         |
5+ 5       0.4110      1.62  | Q     V |         |         |         |
5+10       0.4223      1.64  | Q     V |         |         |         |
5+15       0.4337      1.66  | Q     V |         |         |         |
5+20       0.4454      1.69  | Q     V |         |         |         |
5+25       0.4572      1.72  | Q      V|         |         |         |
5+30       0.4692      1.74  | Q      V|         |         |         |
5+35       0.4814      1.77  | Q      V|         |         |         |
5+40       0.4938      1.80  | Q      V|         |         |         |
5+45       0.5065      1.84  | Q       V         |         |         |
5+50       0.5194      1.87  | Q       V         |         |         |
5+55       0.5325      1.91  | Q       V         |         |         |
6+ 0       0.5459      1.94  | Q       V         |         |         |
6+ 5       0.5595      1.98  | Q       |V        |         |         |
6+10       0.5735      2.03  | Q       |V        |         |         |
6+15       0.5879      2.08  | Q       |V        |         |         |
6+20       0.6025      2.13  | Q       | V       |         |         |
6+25       0.6176      2.18  | Q       | V       |         |         |
6+30       0.6330      2.24  | Q       | V       |         |         |
6+35       0.6488      2.30  |  Q      |  V      |         |         |
6+40       0.6651      2.36  |  Q      |  V      |         |         |
6+45       0.6818      2.43  |  Q      |  V      |         |         |
6+50       0.6991      2.52  |  Q      |   V     |         |         |
6+55       0.7171      2.60  |  Q      |   V     |         |         |
7+ 0       0.7357      2.70  |  Q      |   V     |         |         |
7+ 5       0.7550      2.81  |  Q      |    V    |         |         |
7+10       0.7753      2.94  |  Q      |    V    |         |         |
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   7+15       0.7965      3.08  |   Q     |     V   |         |         |
   7+20       0.8188      3.24  |   Q     |     V   |         |         |
   7+25       0.8421      3.39  |   Q     |     V   |         |         |
   7+30       0.8657      3.42  |   Q     |      V  |         |         |
   7+35       0.8899      3.52  |   Q     |      V  |         |         |
   7+40       0.9161      3.80  |    Q    |       V |         |         |
   7+45       0.9448      4.17  |    Q    |       V |         |         |
   7+50       0.9777      4.77  |     Q   |        V|         |         |
   7+55       1.0161      5.58  |      Q  |         V         |         |
   8+ 0       1.0659      7.22  |         Q|         |V        |         |
   8+ 5       1.1428     11.18  |          |   Q     | V       |         |
   8+10       1.2828     20.33  |          |         |    V Q  |         |
   8+15       1.3933     16.03  |          |         |Q     V  |         |
   8+20       1.4583      9.45  |          | Q       |        V|         |
   8+25       1.5051      6.79  |         Q|         |         V         |
   8+30       1.5412      5.24  |     Q    |         |         V         |
   8+35       1.5698      4.16  |    Q     |         |         |V        |
   8+40       1.5944      3.57  |   Q      |         |         | V       |
   8+45       1.6164      3.20  |   Q      |         |         | V       |
   8+50       1.6362      2.88  |  Q       |         |         | V       |
   8+55       1.6542      2.61  |  Q       |         |         |  V      |
   9+ 0       1.6708      2.41  |  Q       |         |         |  V      |
   9+ 5       1.6865      2.27  |  Q       |         |         |  V      |
   9+10       1.7013      2.16  | Q        |         |         |   V     |
   9+15       1.7155      2.05  | Q        |         |         |   V     |
   9+20       1.7290      1.97  | Q        |         |         |   V     |
   9+25       1.7420      1.89  | Q        |         |         |    V    |
   9+30       1.7546      1.82  | Q        |         |         |    V    |
   9+35       1.7667      1.76  | Q        |         |         |    V    |
   9+40       1.7784      1.70  | Q        |         |         |    V    |
   9+45       1.7897      1.65  | Q        |         |         |    V    |
   9+50       1.8008      1.60  | Q        |         |         |     V   |
   9+55       1.8115      1.56  | Q        |         |         |     V   |
  10+ 0       1.8220      1.52  | Q        |         |         |     V   |
  10+ 5       1.8321      1.46  |Q         |         |         |     V   |
  10+10       1.8411      1.31  |Q         |         |         |     V   |
  10+15       1.8493      1.20  |Q         |         |         |      V  |
  10+20       1.8572      1.13  |Q         |         |         |      V  |
  10+25       1.8647      1.09  |Q         |         |         |      V  |
  10+30       1.8719      1.06  |Q         |         |         |      V  |
  10+35       1.8790      1.03  |Q         |         |         |      V  |
  10+40       1.8859      1.00  |Q         |         |         |      V  |
  10+45       1.8927      0.98  |Q         |         |         |       V |
  10+50       1.8993      0.96  |Q         |         |         |       V |
  10+55       1.9058      0.94  |Q         |         |         |       V |
  11+ 0       1.9122      0.92  |Q         |         |         |       V |
  11+ 5       1.9184      0.91  |Q         |         |         |       V |
  11+10       1.9245      0.89  |Q         |         |         |       V |
  11+15       1.9306      0.88  |Q         |         |         |       V |
  11+20       1.9365      0.86  |Q         |         |         |       V |
  11+25       1.9423      0.85  |Q         |         |         |        V|
  11+30       1.9481      0.83  |Q         |         |         |        V|
  11+35       1.9537      0.82  |Q         |         |         |        V|
  11+40       1.9593      0.81  |Q         |         |         |        V|
  11+45       1.9647      0.79  |Q         |         |         |        V|
  11+50       1.9701      0.78  |Q         |         |         |        V|
  11+55       1.9754      0.77  |Q         |         |         |        V|
  12+ 0       1.9807      0.76  |Q         |         |         |        V|
  12+ 5       1.9855      0.70  Q          |         |         |        V|
  12+10       1.9882      0.39  Q          |         |         |        V|
  12+15       1.9894      0.17  Q          |         |         |        V|
  12+20       1.9900      0.09  Q          |         |         |        V|
  12+25       1.9903      0.04  Q          |         |         |        V|
  12+30       1.9905      0.02  Q          |         |         |        V|
  12+35       1.9906      0.01  Q          |         |         |        V|
  12+40       1.9906      0.01  Q          |         |         |        V|
  12+45       1.9906      0.00  Q          |         |         |        V|
  12+50       1.9906      0.00  Q          |         |         |         V
------------------------------------------------------------------------
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- 100 Year 24 Hour Pre-Development Unit Hydrograph – Area 'E'

```
        U n i t   H y d r o g r a p h   A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989-2012, Version 7.2

        Study date  10/11/16   File Name EXE10024.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

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RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'E' - 100 YEAR 24 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

        Storm Event Year = 100

        Antecedent Moisture Condition = 3

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 70.6       3.6          0.61     C     0.250     0.144    0.036
 70.6       2.3          0.39     D     0.200     0.144    0.029

Area-averaged adjusted loss rate Fm (In/Hr) =  0.033

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC3)          Yield Fr
     0.51   0.088         70.6      87.5       1.43     0.749
     3.05   0.525         98.0      98.0       0.20     0.958

     0.32   0.056         70.6      87.5       1.43     0.749
     1.93   0.331         98.0      98.0       0.20     0.958

Area-averaged catchment yield fraction, Y =  0.928
Area-averaged low loss fraction, Yb =  0.072
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.150 (hours)
Watershed area =       5.81(Ac.)
Catchment Lag time =   0.120 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 69.3520
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.033(In/Hr)
Average low loss rate fraction (Yb) = 0.072 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.520(In)
Computed peak 30-minute rainfall =  1.090(In)
Specified peak 1-hour rainfall =  1.450(In)
Computed peak 3-hour rainfall =  2.430(In)
Specified peak 6-hour rainfall =  3.360(In)
Specified peak 24-hour rainfall =  5.630(In)
```

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Rainfall depth area reduction factors:
Using a total area of       5.81(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000     Adjusted rainfall =  0.520(In)
30-minute factor = 1.000    Adjusted rainfall =  1.090(In)
1-hour factor = 1.000       Adjusted rainfall =  1.450(In)
3-hour factor = 1.000       Adjusted rainfall =  2.430(In)
6-hour factor = 1.000       Adjusted rainfall =  3.360(In)
24-hour factor = 1.000 Adjusted rainfall =  5.630(In)
```

U n i t H y d r o g r a p h

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 70.26 (CFS))	
1	7.049	4.953
2	47.576	28.476
3	76.939	20.632
4	87.948	7.735
5	94.060	4.295
6	97.281	2.263
7	98.491	0.851
8	99.115	0.438
9	99.599	0.340
10	99.908	0.217
11	100.000	0.065

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.5199	0.5199
2	0.6922	0.1723
3	0.8184	0.1262
4	0.9217	0.1033
5	1.0107	0.0890
6	1.0897	0.0791
7	1.1611	0.0714
8	1.2267	0.0656
9	1.2877	0.0610
10	1.3448	0.0571
11	1.3986	0.0538
12	1.4496	0.0510
13	1.5052	0.0556
14	1.5586	0.0534
15	1.6100	0.0514
16	1.6596	0.0496
17	1.7076	0.0480
18	1.7541	0.0465
19	1.7992	0.0452
20	1.8432	0.0439
21	1.8859	0.0428
22	1.9276	0.0417
23	1.9684	0.0407
24	2.0081	0.0398
25	2.0471	0.0389
26	2.0852	0.0381
27	2.1225	0.0373
28	2.1591	0.0366
29	2.1950	0.0359
30	2.2303	0.0353
31	2.2649	0.0347
32	2.2990	0.0341
33	2.3325	0.0335
34	2.3655	0.0330
35	2.3979	0.0325
36	2.4299	0.0320
37	2.4612	0.0313
38	2.4921	0.0309
39	2.5226	0.0304

40	2.5526	0.0300
41	2.5822	0.0296
42	2.6115	0.0293
43	2.6404	0.0289
44	2.6689	0.0285
45	2.6971	0.0282
46	2.7250	0.0279
47	2.7525	0.0275
48	2.7797	0.0272
49	2.8067	0.0269
50	2.8333	0.0266
51	2.8597	0.0264
52	2.8857	0.0261
53	2.9115	0.0258
54	2.9371	0.0256
55	2.9624	0.0253
56	2.9875	0.0251
57	3.0123	0.0248
58	3.0369	0.0246
59	3.0613	0.0244
60	3.0854	0.0241
61	3.1093	0.0239
62	3.1331	0.0237
63	3.1566	0.0235
64	3.1799	0.0233
65	3.2031	0.0231
66	3.2260	0.0229
67	3.2488	0.0228
68	3.2713	0.0226
69	3.2937	0.0224
70	3.3160	0.0222
71	3.3380	0.0221
72	3.3599	0.0219
73	3.3772	0.0173
74	3.3944	0.0172
75	3.4114	0.0170
76	3.4283	0.0169
77	3.4450	0.0167
78	3.4616	0.0166
79	3.4780	0.0165
80	3.4944	0.0163
81	3.5106	0.0162
82	3.5266	0.0161
83	3.5426	0.0160
84	3.5584	0.0158
85	3.5741	0.0157
86	3.5897	0.0156
87	3.6052	0.0155
88	3.6206	0.0154
89	3.6359	0.0153
90	3.6510	0.0152
91	3.6661	0.0151
92	3.6810	0.0149
93	3.6959	0.0148
94	3.7106	0.0147
95	3.7253	0.0146
96	3.7398	0.0146
97	3.7543	0.0145
98	3.7687	0.0144
99	3.7829	0.0143
100	3.7971	0.0142
101	3.8112	0.0141
102	3.8252	0.0140
103	3.8391	0.0139
104	3.8530	0.0138
105	3.8667	0.0138
106	3.8804	0.0137
107	3.8940	0.0136
108	3.9075	0.0135
109	3.9209	0.0134
110	3.9343	0.0134

111	3.9476	0.0133
112	3.9608	0.0132
113	3.9739	0.0131
114	3.9870	0.0131
115	3.9999	0.0130
116	4.0129	0.0129
117	4.0257	0.0128
118	4.0385	0.0128
119	4.0512	0.0127
120	4.0638	0.0126
121	4.0764	0.0126
122	4.0889	0.0125
123	4.1014	0.0124
124	4.1138	0.0124
125	4.1261	0.0123
126	4.1383	0.0123
127	4.1505	0.0122
128	4.1627	0.0121
129	4.1747	0.0121
130	4.1868	0.0120
131	4.1987	0.0120
132	4.2106	0.0119
133	4.2225	0.0118
134	4.2343	0.0118
135	4.2460	0.0117
136	4.2577	0.0117
137	4.2693	0.0116
138	4.2809	0.0116
139	4.2924	0.0115
140	4.3039	0.0115
141	4.3153	0.0114
142	4.3267	0.0114
143	4.3380	0.0113
144	4.3493	0.0113
145	4.3605	0.0112
146	4.3717	0.0112
147	4.3828	0.0111
148	4.3939	0.0111
149	4.4049	0.0110
150	4.4159	0.0110
151	4.4268	0.0109
152	4.4377	0.0109
153	4.4486	0.0108
154	4.4594	0.0108
155	4.4701	0.0108
156	4.4809	0.0107
157	4.4915	0.0107
158	4.5022	0.0106
159	4.5128	0.0106
160	4.5233	0.0105
161	4.5338	0.0105
162	4.5443	0.0105
163	4.5547	0.0104
164	4.5651	0.0104
165	4.5754	0.0103
166	4.5857	0.0103
167	4.5960	0.0103
168	4.6062	0.0102
169	4.6164	0.0102
170	4.6266	0.0102
171	4.6367	0.0101
172	4.6468	0.0101
173	4.6568	0.0100
174	4.6668	0.0100
175	4.6768	0.0100
176	4.6867	0.0099
177	4.6966	0.0099
178	4.7065	0.0099
179	4.7163	0.0098
180	4.7261	0.0098
181	4.7359	0.0098

182	4.7456	0.0097
183	4.7553	0.0097
184	4.7649	0.0097
185	4.7746	0.0096
186	4.7841	0.0096
187	4.7937	0.0096
188	4.8032	0.0095
189	4.8127	0.0095
190	4.8222	0.0095
191	4.8316	0.0094
192	4.8410	0.0094
193	4.8504	0.0094
194	4.8598	0.0093
195	4.8691	0.0093
196	4.8783	0.0093
197	4.8876	0.0093
198	4.8968	0.0092
199	4.9060	0.0092
200	4.9152	0.0092
201	4.9243	0.0091
202	4.9334	0.0091
203	4.9425	0.0091
204	4.9516	0.0091
205	4.9606	0.0090
206	4.9696	0.0090
207	4.9785	0.0090
208	4.9875	0.0089
209	4.9964	0.0089
210	5.0053	0.0089
211	5.0142	0.0089
212	5.0230	0.0088
213	5.0318	0.0088
214	5.0406	0.0088
215	5.0493	0.0088
216	5.0581	0.0087
217	5.0668	0.0087
218	5.0755	0.0087
219	5.0841	0.0087
220	5.0927	0.0086
221	5.1014	0.0086
222	5.1099	0.0086
223	5.1185	0.0086
224	5.1270	0.0085
225	5.1355	0.0085
226	5.1440	0.0085
227	5.1525	0.0085
228	5.1609	0.0084
229	5.1693	0.0084
230	5.1777	0.0084
231	5.1861	0.0084
232	5.1945	0.0083
233	5.2028	0.0083
234	5.2111	0.0083
235	5.2194	0.0083
236	5.2276	0.0083
237	5.2359	0.0082
238	5.2441	0.0082
239	5.2523	0.0082
240	5.2604	0.0082
241	5.2686	0.0082
242	5.2767	0.0081
243	5.2848	0.0081
244	5.2929	0.0081
245	5.3010	0.0081
246	5.3090	0.0080
247	5.3171	0.0080
248	5.3251	0.0080
249	5.3330	0.0080
250	5.3410	0.0080
251	5.3490	0.0079
252	5.3569	0.0079

253	5.3648	0.0079
254	5.3727	0.0079
255	5.3805	0.0079
256	5.3884	0.0078
257	5.3962	0.0078
258	5.4040	0.0078
259	5.4118	0.0078
260	5.4196	0.0078
261	5.4273	0.0078
262	5.4351	0.0077
263	5.4428	0.0077
264	5.4505	0.0077
265	5.4582	0.0077
266	5.4658	0.0077
267	5.4735	0.0076
268	5.4811	0.0076
269	5.4887	0.0076
270	5.4963	0.0076
271	5.5039	0.0076
272	5.5114	0.0076
273	5.5189	0.0075
274	5.5265	0.0075
275	5.5340	0.0075
276	5.5414	0.0075
277	5.5489	0.0075
278	5.5564	0.0075
279	5.5638	0.0074
280	5.5712	0.0074
281	5.5786	0.0074
282	5.5860	0.0074
283	5.5934	0.0074
284	5.6007	0.0074
285	5.6081	0.0073
286	5.6154	0.0073
287	5.6227	0.0073
288	5.6300	0.0073

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0073	0.0005	0.0068
2	0.0073	0.0005	0.0068
3	0.0073	0.0005	0.0068
4	0.0074	0.0005	0.0068
5	0.0074	0.0005	0.0068
6	0.0074	0.0005	0.0069
7	0.0074	0.0005	0.0069
8	0.0075	0.0005	0.0069
9	0.0075	0.0005	0.0069
10	0.0075	0.0005	0.0070
11	0.0075	0.0005	0.0070
12	0.0076	0.0005	0.0070
13	0.0076	0.0005	0.0070
14	0.0076	0.0006	0.0071
15	0.0076	0.0006	0.0071
16	0.0077	0.0006	0.0071
17	0.0077	0.0006	0.0071
18	0.0077	0.0006	0.0072
19	0.0078	0.0006	0.0072
20	0.0078	0.0006	0.0072
21	0.0078	0.0006	0.0072
22	0.0078	0.0006	0.0073
23	0.0079	0.0006	0.0073
24	0.0079	0.0006	0.0073
25	0.0079	0.0006	0.0074
26	0.0079	0.0006	0.0074
27	0.0080	0.0006	0.0074
28	0.0080	0.0006	0.0074
29	0.0080	0.0006	0.0075
30	0.0081	0.0006	0.0075

31	0.0081	0.0006	0.0075
32	0.0081	0.0006	0.0075
33	0.0082	0.0006	0.0076
34	0.0082	0.0006	0.0076
35	0.0082	0.0006	0.0076
36	0.0083	0.0006	0.0077
37	0.0083	0.0006	0.0077
38	0.0083	0.0006	0.0077
39	0.0084	0.0006	0.0078
40	0.0084	0.0006	0.0078
41	0.0084	0.0006	0.0078
42	0.0085	0.0006	0.0079
43	0.0085	0.0006	0.0079
44	0.0085	0.0006	0.0079
45	0.0086	0.0006	0.0080
46	0.0086	0.0006	0.0080
47	0.0087	0.0006	0.0080
48	0.0087	0.0006	0.0081
49	0.0087	0.0006	0.0081
50	0.0088	0.0006	0.0081
51	0.0088	0.0006	0.0082
52	0.0088	0.0006	0.0082
53	0.0089	0.0006	0.0082
54	0.0089	0.0006	0.0083
55	0.0090	0.0006	0.0083
56	0.0090	0.0007	0.0083
57	0.0091	0.0007	0.0084
58	0.0091	0.0007	0.0084
59	0.0091	0.0007	0.0085
60	0.0092	0.0007	0.0085
61	0.0092	0.0007	0.0086
62	0.0093	0.0007	0.0086
63	0.0093	0.0007	0.0086
64	0.0093	0.0007	0.0087
65	0.0094	0.0007	0.0087
66	0.0094	0.0007	0.0088
67	0.0095	0.0007	0.0088
68	0.0095	0.0007	0.0088
69	0.0096	0.0007	0.0089
70	0.0096	0.0007	0.0089
71	0.0097	0.0007	0.0090
72	0.0097	0.0007	0.0090
73	0.0098	0.0007	0.0091
74	0.0098	0.0007	0.0091
75	0.0099	0.0007	0.0092
76	0.0099	0.0007	0.0092
77	0.0100	0.0007	0.0093
78	0.0100	0.0007	0.0093
79	0.0101	0.0007	0.0094
80	0.0102	0.0007	0.0094
81	0.0102	0.0007	0.0095
82	0.0103	0.0007	0.0095
83	0.0103	0.0007	0.0096
84	0.0104	0.0008	0.0096
85	0.0105	0.0008	0.0097
86	0.0105	0.0008	0.0097
87	0.0106	0.0008	0.0098
88	0.0106	0.0008	0.0099
89	0.0107	0.0008	0.0099
90	0.0108	0.0008	0.0100
91	0.0108	0.0008	0.0101
92	0.0109	0.0008	0.0101
93	0.0110	0.0008	0.0102
94	0.0110	0.0008	0.0102
95	0.0111	0.0008	0.0103
96	0.0112	0.0008	0.0104
97	0.0113	0.0008	0.0105
98	0.0113	0.0008	0.0105
99	0.0114	0.0008	0.0106
100	0.0115	0.0008	0.0106
101	0.0116	0.0008	0.0107

102	0.0116	0.0008	0.0108
103	0.0117	0.0008	0.0109
104	0.0118	0.0009	0.0109
105	0.0119	0.0009	0.0110
106	0.0120	0.0009	0.0111
107	0.0121	0.0009	0.0112
108	0.0121	0.0009	0.0113
109	0.0123	0.0009	0.0114
110	0.0123	0.0009	0.0114
111	0.0124	0.0009	0.0115
112	0.0125	0.0009	0.0116
113	0.0126	0.0009	0.0117
114	0.0127	0.0009	0.0118
115	0.0128	0.0009	0.0119
116	0.0129	0.0009	0.0120
117	0.0131	0.0009	0.0121
118	0.0131	0.0009	0.0122
119	0.0133	0.0010	0.0123
120	0.0134	0.0010	0.0124
121	0.0135	0.0010	0.0125
122	0.0136	0.0010	0.0126
123	0.0138	0.0010	0.0128
124	0.0138	0.0010	0.0128
125	0.0140	0.0010	0.0130
126	0.0141	0.0010	0.0131
127	0.0143	0.0010	0.0132
128	0.0144	0.0010	0.0133
129	0.0146	0.0011	0.0135
130	0.0146	0.0011	0.0136
131	0.0148	0.0011	0.0138
132	0.0149	0.0011	0.0139
133	0.0152	0.0011	0.0141
134	0.0153	0.0011	0.0142
135	0.0155	0.0011	0.0144
136	0.0156	0.0011	0.0145
137	0.0158	0.0011	0.0147
138	0.0160	0.0012	0.0148
139	0.0162	0.0012	0.0150
140	0.0163	0.0012	0.0151
141	0.0166	0.0012	0.0154
142	0.0167	0.0012	0.0155
143	0.0170	0.0012	0.0158
144	0.0172	0.0012	0.0159
145	0.0219	0.0016	0.0203
146	0.0221	0.0016	0.0205
147	0.0224	0.0016	0.0208
148	0.0226	0.0016	0.0209
149	0.0229	0.0017	0.0213
150	0.0231	0.0017	0.0215
151	0.0235	0.0017	0.0218
152	0.0237	0.0017	0.0220
153	0.0241	0.0017	0.0224
154	0.0244	0.0018	0.0226
155	0.0248	0.0018	0.0230
156	0.0251	0.0018	0.0232
157	0.0256	0.0018	0.0237
158	0.0258	0.0019	0.0239
159	0.0264	0.0019	0.0244
160	0.0266	0.0019	0.0247
161	0.0272	0.0020	0.0253
162	0.0275	0.0020	0.0255
163	0.0282	0.0020	0.0262
164	0.0285	0.0021	0.0265
165	0.0293	0.0021	0.0271
166	0.0296	0.0021	0.0275
167	0.0304	0.0022	0.0282
168	0.0309	0.0022	0.0286
169	0.0320	0.0023	0.0297
170	0.0325	0.0023	0.0301
171	0.0335	0.0024	0.0311
172	0.0341	0.0025	0.0316

173	0.0353	0.0026	0.0327
174	0.0359	0.0026	0.0333
175	0.0373	0.0027	0.0346
176	0.0381	0.0028	0.0353
177	0.0398	0.0028	0.0370
178	0.0407	0.0028	0.0379
179	0.0428	0.0028	0.0400
180	0.0439	0.0028	0.0412
181	0.0465	0.0028	0.0437
182	0.0480	0.0028	0.0452
183	0.0514	0.0028	0.0486
184	0.0534	0.0028	0.0506
185	0.0510	0.0028	0.0482
186	0.0538	0.0028	0.0511
187	0.0610	0.0028	0.0582
188	0.0656	0.0028	0.0629
189	0.0791	0.0028	0.0763
190	0.0890	0.0028	0.0862
191	0.1262	0.0028	0.1234
192	0.1723	0.0028	0.1696
193	0.5199	0.0028	0.5171
194	0.1033	0.0028	0.1005
195	0.0714	0.0028	0.0686
196	0.0571	0.0028	0.0543
197	0.0556	0.0028	0.0528
198	0.0496	0.0028	0.0468
199	0.0452	0.0028	0.0424
200	0.0417	0.0028	0.0389
201	0.0389	0.0028	0.0361
202	0.0366	0.0026	0.0340
203	0.0347	0.0025	0.0321
204	0.0330	0.0024	0.0306
205	0.0313	0.0023	0.0291
206	0.0300	0.0022	0.0279
207	0.0289	0.0021	0.0268
208	0.0279	0.0020	0.0258
209	0.0269	0.0019	0.0250
210	0.0261	0.0019	0.0242
211	0.0253	0.0018	0.0235
212	0.0246	0.0018	0.0228
213	0.0239	0.0017	0.0222
214	0.0233	0.0017	0.0216
215	0.0228	0.0016	0.0211
216	0.0222	0.0016	0.0206
217	0.0173	0.0013	0.0160
218	0.0169	0.0012	0.0156
219	0.0165	0.0012	0.0153
220	0.0161	0.0012	0.0149
221	0.0157	0.0011	0.0146
222	0.0154	0.0011	0.0143
223	0.0151	0.0011	0.0140
224	0.0147	0.0011	0.0137
225	0.0145	0.0010	0.0134
226	0.0142	0.0010	0.0132
227	0.0139	0.0010	0.0129
228	0.0137	0.0010	0.0127
229	0.0134	0.0010	0.0125
230	0.0132	0.0010	0.0122
231	0.0130	0.0009	0.0120
232	0.0128	0.0009	0.0119
233	0.0126	0.0009	0.0117
234	0.0124	0.0009	0.0115
235	0.0122	0.0009	0.0113
236	0.0120	0.0009	0.0112
237	0.0118	0.0009	0.0110
238	0.0117	0.0008	0.0108
239	0.0115	0.0008	0.0107
240	0.0114	0.0008	0.0105
241	0.0112	0.0008	0.0104
242	0.0111	0.0008	0.0103
243	0.0109	0.0008	0.0101

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      244              0.0108          0.0008              0.0100
      245              0.0107          0.0008              0.0099
      246              0.0105          0.0008              0.0098
      247              0.0104          0.0008              0.0097
      248              0.0103          0.0007              0.0096
      249              0.0102          0.0007              0.0095
      250              0.0101          0.0007              0.0093
      251              0.0100          0.0007              0.0092
      252              0.0099          0.0007              0.0091
      253              0.0098          0.0007              0.0091
      254              0.0097          0.0007              0.0090
      255              0.0096          0.0007              0.0089
      256              0.0095          0.0007              0.0088
      257              0.0094          0.0007              0.0087
      258              0.0093          0.0007              0.0086
      259              0.0092          0.0007              0.0085
      260              0.0091          0.0007              0.0084
      261              0.0090          0.0007              0.0084
      262              0.0089          0.0006              0.0083
      263              0.0089          0.0006              0.0082
      264              0.0088          0.0006              0.0081
      265              0.0087          0.0006              0.0081
      266              0.0086          0.0006              0.0080
      267              0.0086          0.0006              0.0079
      268              0.0085          0.0006              0.0079
      269              0.0084          0.0006              0.0078
      270              0.0083          0.0006              0.0077
      271              0.0083          0.0006              0.0077
      272              0.0082          0.0006              0.0076
      273              0.0082          0.0006              0.0076
      274              0.0081          0.0006              0.0075
      275              0.0080          0.0006              0.0074
      276              0.0080          0.0006              0.0074
      277              0.0079          0.0006              0.0073
      278              0.0078          0.0006              0.0073
      279              0.0078          0.0006              0.0072
      280              0.0077          0.0006              0.0072
      281              0.0077          0.0006              0.0071
      282              0.0076          0.0006              0.0071
      283              0.0076          0.0005              0.0070
      284              0.0075          0.0005              0.0070
      285              0.0075          0.0005              0.0069
      286              0.0074          0.0005              0.0069
      287              0.0074          0.0005              0.0068
      288              0.0073          0.0005              0.0068
      ---------------------------------------------------------------------
      ---------------------------------------------------------------------
      Total soil rain loss =      0.33(In)
      Total effective rainfall =      5.30(In)
      Peak flow rate in flood hydrograph =     20.33(CFS)
      ---------------------------------------------------------------------
      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                        24 - H O U R    S T O R M
                    R u n o f f      H y d r o g r a p h
      ---------------------------------------------------------------------
                Hydrograph in   5   Minute intervals ((CFS))

      ---------------------------------------------------------------------
 Time(h+m) Volume Ac.Ft   Q(CFS)  0        7.5      15.0      22.5      30.0
 ---------------------------------------------------------------------------
   0+ 5       0.0002      0.03  Q         |         |         |         |
   0+10       0.0018      0.23  Q         |         |         |         |
   0+15       0.0043      0.37  Q         |         |         |         |
   0+20       0.0072      0.42  Q         |         |         |         |
   0+25       0.0103      0.45  Q         |         |         |         |
   0+30       0.0135      0.47  Q         |         |         |         |
   0+35       0.0168      0.47  Q         |         |         |         |
   0+40       0.0201      0.48  Q         |         |         |         |
   0+45       0.0234      0.48  Q         |         |         |         |
   0+50       0.0267      0.49  Q         |         |         |         |
   0+55       0.0301      0.49  Q         |         |         |         |
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1+ 0	0.0335	0.49	Q	|	|	|	|
1+ 5	0.0369	0.49	Q	|	|	|	|
1+10	0.0402	0.49	Q	|	|	|	|
1+15	0.0437	0.49	Q	|	|	|	|
1+20	0.0471	0.50	Q	|	|	|	|
1+25	0.0505	0.50	Q	|	|	|	|
1+30	0.0539	0.50	Q	|	|	|	|
1+35	0.0574	0.50	Q	|	|	|	|
1+40	0.0609	0.50	Q	|	|	|	|
1+45	0.0643	0.51	QV	|	|	|	|
1+50	0.0678	0.51	QV	|	|	|	|
1+55	0.0713	0.51	QV	|	|	|	|
2+ 0	0.0749	0.51	QV	|	|	|	|
2+ 5	0.0784	0.51	QV	|	|	|	|
2+10	0.0819	0.51	QV	|	|	|	|
2+15	0.0855	0.52	QV	|	|	|	|
2+20	0.0891	0.52	QV	|	|	|	|
2+25	0.0926	0.52	QV	|	|	|	|
2+30	0.0962	0.52	QV	|	|	|	|
2+35	0.0998	0.52	QV	|	|	|	|
2+40	0.1035	0.53	QV	|	|	|	|
2+45	0.1071	0.53	QV	|	|	|	|
2+50	0.1108	0.53	QV	|	|	|	|
2+55	0.1144	0.53	QV	|	|	|	|
3+ 0	0.1181	0.53	QV	|	|	|	|
3+ 5	0.1218	0.54	QV	|	|	|	|
3+10	0.1255	0.54	QV	|	|	|	|
3+15	0.1292	0.54	Q V	|	|	|	|
3+20	0.1330	0.54	Q V	|	|	|	|
3+25	0.1367	0.55	Q V	|	|	|	|
3+30	0.1405	0.55	Q V	|	|	|	|
3+35	0.1443	0.55	Q V	|	|	|	|
3+40	0.1481	0.55	Q V	|	|	|	|
3+45	0.1519	0.55	Q V	|	|	|	|
3+50	0.1558	0.56	Q V	|	|	|	|
3+55	0.1596	0.56	Q V	|	|	|	|
4+ 0	0.1635	0.56	Q V	|	|	|	|
4+ 5	0.1674	0.56	Q V	|	|	|	|
4+10	0.1713	0.57	Q V	|	|	|	|
4+15	0.1752	0.57	Q V	|	|	|	|
4+20	0.1791	0.57	Q V	|	|	|	|
4+25	0.1831	0.57	Q V	|	|	|	|
4+30	0.1870	0.58	Q V	|	|	|	|
4+35	0.1910	0.58	Q V	|	|	|	|
4+40	0.1950	0.58	Q V	|	|	|	|
4+45	0.1991	0.58	Q V	|	|	|	|
4+50	0.2031	0.59	Q V	|	|	|	|
4+55	0.2072	0.59	Q V	|	|	|	|
5+ 0	0.2113	0.59	Q V	|	|	|	|
5+ 5	0.2154	0.60	Q V	|	|	|	|
5+10	0.2195	0.60	Q V	|	|	|	|
5+15	0.2236	0.60	Q V	|	|	|	|
5+20	0.2278	0.60	Q V	|	|	|	|
5+25	0.2319	0.61	Q V	|	|	|	|
5+30	0.2361	0.61	Q V	|	|	|	|
5+35	0.2404	0.61	Q V	|	|	|	|
5+40	0.2446	0.62	Q V	|	|	|	|
5+45	0.2489	0.62	Q V	|	|	|	|
5+50	0.2532	0.62	Q V	|	|	|	|
5+55	0.2575	0.63	Q V	|	|	|	|
6+ 0	0.2618	0.63	Q V	|	|	|	|
6+ 5	0.2661	0.63	Q V	|	|	|	|
6+10	0.2705	0.63	Q V	|	|	|	|
6+15	0.2749	0.64	Q V	|	|	|	|
6+20	0.2793	0.64	Q V	|	|	|	|
6+25	0.2838	0.64	Q V	|	|	|	|
6+30	0.2882	0.65	Q V	|	|	|	|
6+35	0.2927	0.65	Q V	|	|	|	|
6+40	0.2972	0.66	Q V	|	|	|	|
6+45	0.3018	0.66	Q V	|	|	|	|
6+50	0.3063	0.66	Q V	|	|	|	|

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 6+55      0.3109      0.67  Q   V     |         |         |         |
 7+ 0      0.3155      0.67  Q   V     |         |         |         |
 7+ 5      0.3202      0.67  Q   V     |         |         |         |
 7+10      0.3248      0.68  Q    V    |         |         |         |
 7+15      0.3295      0.68  Q    V    |         |         |         |
 7+20      0.3343      0.69  Q    V    |         |         |         |
 7+25      0.3390      0.69  Q    V    |         |         |         |
 7+30      0.3438      0.69  Q    V    |         |         |         |
 7+35      0.3486      0.70  Q    V    |         |         |         |
 7+40      0.3534      0.70  Q    V    |         |         |         |
 7+45      0.3583      0.71  Q    V    |         |         |         |
 7+50      0.3632      0.71  Q    V    |         |         |         |
 7+55      0.3681      0.72  Q    V    |         |         |         |
 8+ 0      0.3731      0.72  Q    V    |         |         |         |
 8+ 5      0.3781      0.72  Q    V    |         |         |         |
 8+10      0.3831      0.73  Q    V    |         |         |         |
 8+15      0.3882      0.73  Q     V   |         |         |         |
 8+20      0.3933      0.74  Q     V   |         |         |         |
 8+25      0.3984      0.74  Q     V   |         |         |         |
 8+30      0.4035      0.75  Q     V   |         |         |         |
 8+35      0.4087      0.75  |Q    V   |         |         |         |
 8+40      0.4140      0.76  |Q    V   |         |         |         |
 8+45      0.4192      0.76  |Q    V   |         |         |         |
 8+50      0.4245      0.77  |Q    V   |         |         |         |
 8+55      0.4299      0.78  |Q    V   |         |         |         |
 9+ 0      0.4353      0.78  |Q    V   |         |         |         |
 9+ 5      0.4407      0.79  |Q    V   |         |         |         |
 9+10      0.4461      0.79  |Q    V   |         |         |         |
 9+15      0.4516      0.80  |Q     V  |         |         |         |
 9+20      0.4572      0.80  |Q     V  |         |         |         |
 9+25      0.4628      0.81  |Q     V  |         |         |         |
 9+30      0.4684      0.82  |Q     V  |         |         |         |
 9+35      0.4741      0.82  |Q     V  |         |         |         |
 9+40      0.4798      0.83  |Q     V  |         |         |         |
 9+45      0.4856      0.84  |Q     V  |         |         |         |
 9+50      0.4914      0.84  |Q     V  |         |         |         |
 9+55      0.4972      0.85  |Q     V  |         |         |         |
10+ 0      0.5031      0.86  |Q     V  |         |         |         |
10+ 5      0.5091      0.86  |Q     V  |         |         |         |
10+10      0.5151      0.87  |Q      V |         |         |         |
10+15      0.5212      0.88  |Q      V |         |         |         |
10+20      0.5273      0.89  |Q      V |         |         |         |
10+25      0.5334      0.90  |Q      V |         |         |         |
10+30      0.5397      0.90  |Q      V |         |         |         |
10+35      0.5460      0.91  |Q      V |         |         |         |
10+40      0.5523      0.92  |Q      V |         |         |         |
10+45      0.5587      0.93  |Q      V |         |         |         |
10+50      0.5652      0.94  |Q      V |         |         |         |
10+55      0.5717      0.95  |Q      V |         |         |         |
11+ 0      0.5783      0.96  |Q       V|         |         |         |
11+ 5      0.5850      0.97  |Q       V|         |         |         |
11+10      0.5917      0.98  |Q       V|         |         |         |
11+15      0.5985      0.99  |Q       V|         |         |         |
11+20      0.6054      1.00  |Q       V|         |         |         |
11+25      0.6123      1.01  |Q       V|         |         |         |
11+30      0.6193      1.02  |Q       V|         |         |         |
11+35      0.6264      1.03  |Q       V|         |         |         |
11+40      0.6336      1.04  |Q       V|         |         |         |
11+45      0.6409      1.06  |Q       V|         |         |         |
11+50      0.6482      1.07  |Q        V         |         |         |
11+55      0.6557      1.08  |Q        V         |         |         |
12+ 0      0.6632      1.09  |Q        V         |         |         |
12+ 5      0.6710      1.13  |Q        V         |         |         |
12+10      0.6797      1.26  |Q        V         |         |         |
12+15      0.6890      1.36  |Q        V         |         |         |
12+20      0.6987      1.41  |Q        V         |         |         |
12+25      0.7087      1.44  |Q         |V        |         |         |
12+30      0.7188      1.47  |Q         |V        |         |         |
12+35      0.7290      1.49  |Q         |V        |         |         |
12+40      0.7394      1.51  | Q        |V        |         |         |
12+45      0.7500      1.53  | Q        |V        |         |         |
```

```
12+50      0.7607     1.55  | Q       |V        |         |         |
12+55      0.7715     1.57  | Q       | V       |         |         |
13+ 0      0.7825     1.60  | Q       | V       |         |         |
13+ 5      0.7936     1.62  | Q       | V       |         |         |
13+10      0.8049     1.64  | Q       | V       |         |         |
13+15      0.8164     1.66  | Q       | V       |         |         |
13+20      0.8280     1.69  | Q       | V       |         |         |
13+25      0.8399     1.72  | Q       |  V      |         |         |
13+30      0.8519     1.74  | Q       |  V      |         |         |
13+35      0.8641     1.77  | Q       |  V      |         |         |
13+40      0.8765     1.80  | Q       |  V      |         |         |
13+45      0.8892     1.84  | Q       |  V      |         |         |
13+50      0.9020     1.87  | Q       |   V     |         |         |
13+55      0.9152     1.91  | Q       |   V     |         |         |
14+ 0      0.9286     1.94  | Q       |   V     |         |         |
14+ 5      0.9422     1.98  | Q       |   V     |         |         |
14+10      0.9562     2.03  | Q       |   V     |         |         |
14+15      0.9705     2.08  | Q       |    V    |         |         |
14+20      0.9852     2.13  | Q       |    V    |         |         |
14+25      1.0002     2.18  | Q       |    V    |         |         |
14+30      1.0157     2.24  | Q       |    V    |         |         |
14+35      1.0315     2.30  |  Q      |     V   |         |         |
14+40      1.0478     2.36  |  Q      |     V   |         |         |
14+45      1.0645     2.43  |  Q      |     V   |         |         |
14+50      1.0818     2.52  |  Q      |     V   |         |         |
14+55      1.0997     2.60  |  Q      |      V  |         |         |
15+ 0      1.1184     2.70  |  Q      |      V  |         |         |
15+ 5      1.1377     2.81  |  Q      |      V  |         |         |
15+10      1.1580     2.94  |  Q      |       V |         |         |
15+15      1.1791     3.08  |   Q     |       V |         |         |
15+20      1.2015     3.24  |   Q     |       V |         |         |
15+25      1.2248     3.39  |   Q     |        V|         |         |
15+30      1.2483     3.42  |   Q     |        V|         |         |
15+35      1.2726     3.52  |   Q     |        V|         |         |
15+40      1.2988     3.80  |    Q    |         V         |         |
15+45      1.3275     4.17  |    Q    |         V         |         |
15+50      1.3603     4.77  |     Q   |         |V        |         |
15+55      1.3988     5.58  |      Q  |         |V        |         |
16+ 0      1.4485     7.22  |         Q|        | V       |         |
16+ 5      1.5255    11.18  |          |   Q     |  V      |         |
16+10      1.6655    20.33  |          |         |    V Q  |         |
16+15      1.7759    16.03  |          |         |Q     V  |         |
16+20      1.8410     9.45  |          | Q       |       V |         |
16+25      1.8878     6.79  |         Q|         |        V|         |
16+30      1.9239     5.24  |      Q   |         |        V|         |
16+35      1.9525     4.16  |     Q    |         |         V         |
16+40      1.9770     3.57  |    Q     |         |         V         |
16+45      1.9991     3.20  |    Q     |         |         |V        |
16+50      2.0189     2.88  |  Q       |         |         |V        |
16+55      2.0369     2.61  |  Q       |         |         |V        |
17+ 0      2.0535     2.41  |  Q       |         |         | V       |
17+ 5      2.0692     2.27  |  Q       |         |         | V       |
17+10      2.0840     2.16  | Q        |         |         | V       |
17+15      2.0982     2.05  | Q        |         |         | V       |
17+20      2.1117     1.97  | Q        |         |         | V       |
17+25      2.1247     1.89  | Q        |         |         |  V      |
17+30      2.1372     1.82  | Q        |         |         |  V      |
17+35      2.1493     1.76  | Q        |         |         |  V      |
17+40      2.1611     1.70  | Q        |         |         |  V      |
17+45      2.1724     1.65  | Q        |         |         |  V      |
17+50      2.1835     1.60  | Q        |         |         |   V     |
17+55      2.1942     1.56  | Q        |         |         |   V     |
18+ 0      2.2047     1.52  | Q        |         |         |   V     |
18+ 5      2.2148     1.46  |Q         |         |         |   V     |
18+10      2.2238     1.31  |Q         |         |         |   V     |
18+15      2.2320     1.20  |Q         |         |         |   V     |
18+20      2.2398     1.13  |Q         |         |         |   V     |
18+25      2.2473     1.09  |Q         |         |         |    V    |
18+30      2.2546     1.06  |Q         |         |         |    V    |
18+35      2.2617     1.03  |Q         |         |         |    V    |
18+40      2.2686     1.00  |Q         |         |         |    V    |
```

```
18+45       2.2754      0.98  |Q        |         |         |    V    |
18+50       2.2820      0.96  |Q        |         |         |    V    |
18+55       2.2885      0.94  |Q        |         |         |    V    |
19+ 0       2.2948      0.92  |Q        |         |         |    V    |
19+ 5       2.3011      0.91  |Q        |         |         |    V    |
19+10       2.3072      0.89  |Q        |         |         |    V    |
19+15       2.3133      0.88  |Q        |         |         |     V   |
19+20       2.3192      0.86  |Q        |         |         |     V   |
19+25       2.3250      0.85  |Q        |         |         |     V   |
19+30       2.3307      0.83  |Q        |         |         |     V   |
19+35       2.3364      0.82  |Q        |         |         |     V   |
19+40       2.3419      0.81  |Q        |         |         |     V   |
19+45       2.3474      0.79  |Q        |         |         |     V   |
19+50       2.3528      0.78  |Q        |         |         |     V   |
19+55       2.3581      0.77  |Q        |         |         |     V   |
20+ 0       2.3634      0.76  |Q        |         |         |     V   |
20+ 5       2.3685      0.75  |Q        |         |         |     V   |
20+10       2.3736      0.74  Q        |         |         |      V  |
20+15       2.3787      0.73  Q        |         |         |      V  |
20+20       2.3836      0.72  Q        |         |         |      V  |
20+25       2.3885      0.71  Q        |         |         |      V  |
20+30       2.3934      0.70  Q        |         |         |      V  |
20+35       2.3982      0.70  Q        |         |         |      V  |
20+40       2.4029      0.69  Q        |         |         |      V  |
20+45       2.4076      0.68  Q        |         |         |      V  |
20+50       2.4122      0.67  Q        |         |         |      V  |
20+55       2.4168      0.66  Q        |         |         |      V  |
21+ 0       2.4213      0.66  Q        |         |         |      V  |
21+ 5       2.4258      0.65  Q        |         |         |      V  |
21+10       2.4302      0.64  Q        |         |         |      V  |
21+15       2.4346      0.64  Q        |         |         |      V  |
21+20       2.4389      0.63  Q        |         |         |       V |
21+25       2.4432      0.62  Q        |         |         |       V |
21+30       2.4475      0.62  Q        |         |         |       V |
21+35       2.4517      0.61  Q        |         |         |       V |
21+40       2.4558      0.60  Q        |         |         |       V |
21+45       2.4600      0.60  Q        |         |         |       V |
21+50       2.4640      0.59  Q        |         |         |       V |
21+55       2.4681      0.59  Q        |         |         |       V |
22+ 0       2.4721      0.58  Q        |         |         |       V |
22+ 5       2.4761      0.58  Q        |         |         |       V |
22+10       2.4800      0.57  Q        |         |         |       V |
22+15       2.4839      0.57  Q        |         |         |       V |
22+20       2.4878      0.56  Q        |         |         |       V |
22+25       2.4916      0.56  Q        |         |         |       V |
22+30       2.4954      0.55  Q        |         |         |       V |
22+35       2.4992      0.55  Q        |         |         |       V |
22+40       2.5030      0.54  Q        |         |         |        V|
22+45       2.5067      0.54  Q        |         |         |        V|
22+50       2.5104      0.54  Q        |         |         |        V|
22+55       2.5140      0.53  Q        |         |         |        V|
23+ 0       2.5177      0.53  Q        |         |         |        V|
23+ 5       2.5213      0.52  Q        |         |         |        V|
23+10       2.5248      0.52  Q        |         |         |        V|
23+15       2.5284      0.52  Q        |         |         |        V|
23+20       2.5319      0.51  Q        |         |         |        V|
23+25       2.5354      0.51  Q        |         |         |        V|
23+30       2.5389      0.50  Q        |         |         |        V|
23+35       2.5423      0.50  Q        |         |         |        V|
23+40       2.5457      0.50  Q        |         |         |        V|
23+45       2.5491      0.49  Q        |         |         |        V|
23+50       2.5525      0.49  Q        |         |         |        V|
23+55       2.5558      0.49  Q        |         |         |        V|
24+ 0       2.5592      0.48  Q        |         |         |        V|
24+ 5       2.5623      0.45  Q        |         |         |        V|
24+10       2.5640      0.25  Q        |         |         |        V|
24+15       2.5647      0.11  Q        |         |         |        V|
24+20       2.5651      0.06  Q        |         |         |        V|
24+25       2.5653      0.03  Q        |         |         |        V|
24+30       2.5654      0.01  Q        |         |         |        V|
24+35       2.5655      0.01  Q        |         |         |        V|
```

```
   24+40       2.5655      0.00  Q         |         |         |        V|
   24+45       2.5655      0.00  Q         |         |         |        V|
   24+50       2.5655      0.00  Q         |         |         |        V|
-------------------------------------------------------------------------
```

- 2 Year 3 Hour Post-Development Unit Hydrograph – Area 'E'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/11/16   File Name pre00203.out


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------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'E' - 2 YEAR 3 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 2

       Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 71.2       3.5          0.61     C     0.250     0.144    0.036
 71.2       2.3          0.39     D     0.200     0.144    0.029

Area-averaged adjusted loss rate Fm (In/Hr) =  0.033

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
     0.51   0.088         71.2      52.4       9.07     0.003
     3.03   0.523         98.0      98.0       0.20     0.890

     0.32   0.056         71.2      52.4       9.07     0.003
     1.93   0.333         98.0      98.0       0.20     0.890

Area-averaged catchment yield fraction, Y =  0.762
Area-averaged low loss fraction, Yb =  0.238
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.122 (hours)
Watershed area =       5.79(Ac.)
Catchment Lag time =   0.098 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 85.2428
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.033(In/Hr)
Average low loss rate fraction (Yb) = 0.238 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.190(In)
Computed peak 30-minute rainfall =  0.400(In)
Specified peak 1-hour rainfall =  0.530(In)
Computed peak 3-hour rainfall =  0.890(In)
Specified peak 6-hour rainfall =  1.220(In)
Specified peak 24-hour rainfall =  2.050(In)
```

```
Rainfall depth area reduction factors:
Using a total area of       5.79(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000     Adjusted rainfall =  0.190(In)
30-minute factor = 1.000    Adjusted rainfall =  0.400(In)
1-hour factor = 1.000       Adjusted rainfall =  0.530(In)
3-hour factor = 1.000       Adjusted rainfall =  0.890(In)
6-hour factor = 1.000       Adjusted rainfall =  1.220(In)
24-hour factor = 1.000 Adjusted rainfall =  2.050(In)
```

U n i t H y d r o g r a p h

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 70.02 (CFS))	
1	10.134	7.096
2	61.479	35.953
3	83.939	15.728
4	93.052	6.381
5	97.291	2.968
6	98.679	0.972
7	99.350	0.470
8	99.845	0.347
9	100.000	0.108

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.1899	0.1899
2	0.2533	0.0634
3	0.2998	0.0465
4	0.3379	0.0381
5	0.3707	0.0328
6	0.3999	0.0292
7	0.4257	0.0258
8	0.4494	0.0237
9	0.4714	0.0220
10	0.4921	0.0206
11	0.5115	0.0194
12	0.5299	0.0184
13	0.5503	0.0204
14	0.5698	0.0196
15	0.5887	0.0189
16	0.6069	0.0182
17	0.6245	0.0176
18	0.6416	0.0171
19	0.6582	0.0166
20	0.6743	0.0161
21	0.6900	0.0157
22	0.7054	0.0153
23	0.7203	0.0150
24	0.7349	0.0146
25	0.7492	0.0143
26	0.7632	0.0140
27	0.7770	0.0137
28	0.7904	0.0135
29	0.8036	0.0132
30	0.8166	0.0130
31	0.8293	0.0127
32	0.8418	0.0125
33	0.8542	0.0123
34	0.8663	0.0121
35	0.8782	0.0119
36	0.8900	0.0118

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)

1	0.0118	0.0028	0.0090
2	0.0119	0.0028	0.0092
3	0.0123	0.0028	0.0096
4	0.0125	0.0028	0.0098
5	0.0130	0.0028	0.0102
6	0.0132	0.0028	0.0104
7	0.0137	0.0028	0.0110
8	0.0140	0.0028	0.0112
9	0.0146	0.0028	0.0119
10	0.0150	0.0028	0.0122
11	0.0157	0.0028	0.0129
12	0.0161	0.0028	0.0134
13	0.0171	0.0028	0.0143
14	0.0176	0.0028	0.0149
15	0.0189	0.0028	0.0161
16	0.0196	0.0028	0.0168
17	0.0184	0.0028	0.0156
18	0.0194	0.0028	0.0166
19	0.0220	0.0028	0.0192
20	0.0237	0.0028	0.0209
21	0.0292	0.0028	0.0264
22	0.0328	0.0028	0.0301
23	0.0465	0.0028	0.0437
24	0.0634	0.0028	0.0606
25	0.1899	0.0028	0.1872
26	0.0381	0.0028	0.0353
27	0.0258	0.0028	0.0231
28	0.0206	0.0028	0.0178
29	0.0204	0.0028	0.0176
30	0.0182	0.0028	0.0154
31	0.0166	0.0028	0.0138
32	0.0153	0.0028	0.0126
33	0.0143	0.0028	0.0115
34	0.0135	0.0028	0.0107
35	0.0127	0.0028	0.0100
36	0.0121	0.0028	0.0094

Total soil rain loss = 0.10(In)
Total effective rainfall = 0.79(In)
Peak flow rate in flood hydrograph = 8.35(CFS)

++

3 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

```
Time(h+m) Volume Ac.Ft   Q(CFS)  0        2.5       5.0       7.5      10.0
-------------------------------------------------------------------------
  0+ 5       0.0004      0.06  Q         |         |         |         |
  0+10       0.0031      0.39  VQ        |         |         |         |
  0+15       0.0068      0.54  V Q       |         |         |         |
  0+20       0.0111      0.61  |VQ       |         |         |         |
  0+25       0.0156      0.66  |VQ       |         |         |         |
  0+30       0.0203      0.69  | Q       |         |         |         |
  0+35       0.0253      0.72  | Q       |         |         |         |
  0+40       0.0304      0.75  | QV      |         |         |         |
  0+45       0.0358      0.78  |  Q      |         |         |         |
  0+50       0.0413      0.81  |  QV     |         |         |         |
  0+55       0.0471      0.84  |  QV     |         |         |         |
  1+ 0       0.0532      0.88  |  Q V    |         |         |         |
  1+ 5       0.0595      0.92  |  Q  V   |         |         |         |
  1+10       0.0662      0.97  |  Q  V   |         |         |         |
  1+15       0.0732      1.02  |   Q  V  |         |         |         |
  1+20       0.0807      1.09  |   Q   V |         |         |         |
  1+25       0.0885      1.13  |   Q    V|         |         |         |
  1+30       0.0962      1.12  |   Q     V         |         |         |
  1+35       0.1042      1.16  |   Q     V         |         |         |
  1+40       0.1130      1.28  |    Q    |V        |         |         |
```

```
   1+45       0.1229      1.43  |    Q    | V       |         |         |
   1+50       0.1345      1.69  |     Q   |   V     |         |         |
   1+55       0.1485      2.03  |       Q |    V    |         |         |
   2+ 0       0.1674      2.74  |         Q      V  |         |         |
   2+ 5       0.1984      4.50  |          |       Q V        |         |
   2+10       0.2559      8.35  |          |          |     V   |  Q      |
   2+15       0.2899      4.94  |          |        Q|         V         |
   2+20       0.3102      2.95  |          |Q        |         | V       |
   2+25       0.3240      2.00  |        Q |         |         |   V     |
   2+30       0.3344      1.50  |     Q    |         |         |    V    |
   2+35       0.3431      1.26  |    Q     |         |         |     V   |
   2+40       0.3507      1.10  |   Q      |         |         |     V   |
   2+45       0.3573      0.96  |  Q       |         |         |      V  |
   2+50       0.3632      0.86  |  Q       |         |         |       V |
   2+55       0.3687      0.79  |  Q       |         |         |       V |
   3+ 0       0.3737      0.73  | Q        |         |         |        V|
   3+ 5       0.3780      0.62  | Q        |         |         |        V|
   3+10       0.3798      0.27  |Q         |         |         |        V|
   3+15       0.3806      0.11  Q          |         |         |        V|
   3+20       0.3809      0.05  Q          |         |         |        V|
   3+25       0.3811      0.02  Q          |         |         |        V|
   3+30       0.3811      0.01  Q          |         |         |        V|
   3+35       0.3811      0.00  Q          |         |         |        V|
   3+40       0.3812      0.00  Q          |         |         |        V|
-------------------------------------------------------------------------
```

- 2 Year 6 Hour Post-Development Unit Hydrograph – Area 'E'

```
        U n i t   H y d r o g r a p h   A n a l y s i s

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        Study date  10/11/16   File Name pre00206.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'E' - 2 YEAR 6 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

        Storm Event Year = 2

        Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 71.2       3.5          0.61     C     0.250     0.144    0.036
 71.2       2.3          0.39     D     0.200     0.144    0.029

Area-averaged adjusted loss rate Fm (In/Hr) =  0.033

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
     0.51   0.088         71.2      52.4       9.07     0.003
     3.03   0.523         98.0      98.0       0.20     0.890

     0.32   0.056         71.2      52.4       9.07     0.003
     1.93   0.333         98.0      98.0       0.20     0.890

Area-averaged catchment yield fraction, Y =  0.762
Area-averaged low loss fraction, Yb =  0.238
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.122 (hours)
Watershed area =       5.79(Ac.)
Catchment Lag time =   0.098 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 85.2428
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.033(In/Hr)
Average low loss rate fraction (Yb) = 0.238 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.190(In)
Computed peak 30-minute rainfall =  0.400(In)
Specified peak 1-hour rainfall =  0.530(In)
Computed peak 3-hour rainfall =  0.890(In)
Specified peak 6-hour rainfall =  1.220(In)
Specified peak 24-hour rainfall =  2.050(In)
```

```
Rainfall depth area reduction factors:
Using a total area of       5.79(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000     Adjusted rainfall =  0.190(In)
30-minute factor = 1.000    Adjusted rainfall =  0.400(In)
1-hour factor = 1.000       Adjusted rainfall =  0.530(In)
3-hour factor = 1.000       Adjusted rainfall =  0.890(In)
6-hour factor = 1.000       Adjusted rainfall =  1.220(In)
24-hour factor = 1.000 Adjusted rainfall =  2.050(In)
------------------------------------------------------------------------

                      U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
------------------------------------------------------------------------
               (K =        70.02 (CFS))

  1               10.134                   7.096
  2               61.479                  35.953
  3               83.939                  15.728
  4               93.052                   6.381
  5               97.291                   2.968
  6               98.679                   0.972
  7               99.350                   0.470
  8               99.845                   0.347
  9              100.000                   0.108
------------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.1899              0.1899
  2              0.2533              0.0634
  3              0.2998              0.0465
  4              0.3379              0.0381
  5              0.3707              0.0328
  6              0.3999              0.0292
  7              0.4257              0.0258
  8              0.4494              0.0237
  9              0.4714              0.0220
 10              0.4921              0.0206
 11              0.5115              0.0194
 12              0.5299              0.0184
 13              0.5503              0.0204
 14              0.5698              0.0196
 15              0.5887              0.0189
 16              0.6069              0.0182
 17              0.6245              0.0176
 18              0.6416              0.0171
 19              0.6582              0.0166
 20              0.6743              0.0161
 21              0.6900              0.0157
 22              0.7054              0.0153
 23              0.7203              0.0150
 24              0.7349              0.0146
 25              0.7492              0.0143
 26              0.7632              0.0140
 27              0.7770              0.0137
 28              0.7904              0.0135
 29              0.8036              0.0132
 30              0.8166              0.0130
 31              0.8293              0.0127
 32              0.8418              0.0125
 33              0.8542              0.0123
 34              0.8663              0.0121
 35              0.8782              0.0119
 36              0.8900              0.0118
 37              0.9011              0.0112
 38              0.9121              0.0110
 39              0.9230              0.0108
 40              0.9337              0.0107
 41              0.9442              0.0105
```

42	0.9546	0.0104
43	0.9649	0.0103
44	0.9751	0.0101
45	0.9851	0.0100
46	0.9950	0.0099
47	1.0048	0.0098
48	1.0144	0.0097
49	1.0240	0.0096
50	1.0335	0.0095
51	1.0428	0.0094
52	1.0521	0.0093
53	1.0612	0.0092
54	1.0703	0.0091
55	1.0793	0.0090
56	1.0881	0.0089
57	1.0969	0.0088
58	1.1057	0.0087
59	1.1143	0.0086
60	1.1229	0.0086
61	1.1313	0.0085
62	1.1397	0.0084
63	1.1481	0.0083
64	1.1563	0.0083
65	1.1645	0.0082
66	1.1726	0.0081
67	1.1807	0.0081
68	1.1887	0.0080
69	1.1966	0.0079
70	1.2044	0.0079
71	1.2122	0.0078
72	1.2200	0.0077

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0077	0.0018	0.0059
2	0.0078	0.0019	0.0059
3	0.0079	0.0019	0.0060
4	0.0080	0.0019	0.0061
5	0.0081	0.0019	0.0062
6	0.0082	0.0019	0.0062
7	0.0083	0.0020	0.0063
8	0.0084	0.0020	0.0064
9	0.0086	0.0020	0.0065
10	0.0086	0.0021	0.0066
11	0.0088	0.0021	0.0067
12	0.0089	0.0021	0.0068
13	0.0091	0.0022	0.0069
14	0.0092	0.0022	0.0070
15	0.0094	0.0022	0.0071
16	0.0095	0.0023	0.0072
17	0.0097	0.0023	0.0074
18	0.0098	0.0023	0.0075
19	0.0100	0.0024	0.0076
20	0.0101	0.0024	0.0077
21	0.0104	0.0025	0.0079
22	0.0105	0.0025	0.0080
23	0.0108	0.0026	0.0083
24	0.0110	0.0026	0.0084
25	0.0118	0.0028	0.0090
26	0.0119	0.0028	0.0092
27	0.0123	0.0028	0.0096
28	0.0125	0.0028	0.0098
29	0.0130	0.0028	0.0102
30	0.0132	0.0028	0.0104
31	0.0137	0.0028	0.0110
32	0.0140	0.0028	0.0112
33	0.0146	0.0028	0.0119
34	0.0150	0.0028	0.0122
35	0.0157	0.0028	0.0129

36	0.0161	0.0028	0.0134
37	0.0171	0.0028	0.0143
38	0.0176	0.0028	0.0149
39	0.0189	0.0028	0.0161
40	0.0196	0.0028	0.0168
41	0.0184	0.0028	0.0156
42	0.0194	0.0028	0.0166
43	0.0220	0.0028	0.0192
44	0.0237	0.0028	0.0209
45	0.0292	0.0028	0.0264
46	0.0328	0.0028	0.0301
47	0.0465	0.0028	0.0437
48	0.0634	0.0028	0.0606
49	0.1899	0.0028	0.1872
50	0.0381	0.0028	0.0353
51	0.0258	0.0028	0.0231
52	0.0206	0.0028	0.0178
53	0.0204	0.0028	0.0176
54	0.0182	0.0028	0.0154
55	0.0166	0.0028	0.0138
56	0.0153	0.0028	0.0126
57	0.0143	0.0028	0.0115
58	0.0135	0.0028	0.0107
59	0.0127	0.0028	0.0100
60	0.0121	0.0028	0.0094
61	0.0112	0.0027	0.0085
62	0.0107	0.0025	0.0081
63	0.0103	0.0024	0.0078
64	0.0099	0.0024	0.0075
65	0.0096	0.0023	0.0073
66	0.0093	0.0022	0.0071
67	0.0090	0.0021	0.0068
68	0.0087	0.0021	0.0066
69	0.0085	0.0020	0.0065
70	0.0083	0.0020	0.0063
71	0.0081	0.0019	0.0061
72	0.0079	0.0019	0.0060

Total soil rain loss = 0.18(In)
Total effective rainfall = 1.04(In)
Peak flow rate in flood hydrograph = 8.35(CFS)

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6 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0003	0.04	Q				
0+10	0.0020	0.25	VQ				
0+15	0.0044	0.35	VQ				
0+20	0.0071	0.39	VQ				
0+25	0.0100	0.41	VQ				
0+30	0.0129	0.42	|Q				
0+35	0.0159	0.43	|Q				
0+40	0.0189	0.44	|Q				
0+45	0.0220	0.45	|Q				
0+50	0.0251	0.45	|Q				
0+55	0.0283	0.46	|QV				
1+ 0	0.0315	0.47	|QV				
1+ 5	0.0347	0.47	|QV				
1+10	0.0380	0.48	|Q V				
1+15	0.0413	0.49	|Q V				
1+20	0.0447	0.49	|Q V				
1+25	0.0482	0.50	| QV				
1+30	0.0517	0.51	| Q V				
1+35	0.0553	0.52	| Q V				

```
   1+40       0.0589      0.53  | Q V     |         |         |         |
   1+45       0.0626      0.54  | Q V     |         |         |         |
   1+50       0.0664      0.55  | Q  V    |         |         |         |
   1+55       0.0702      0.56  | Q  V    |         |         |         |
   2+ 0       0.0742      0.57  | Q  V    |         |         |         |
   2+ 5       0.0782      0.58  | Q   V   |         |         |         |
   2+10       0.0824      0.61  | Q   V   |         |         |         |
   2+15       0.0868      0.63  | Q   V   |         |         |         |
   2+20       0.0913      0.65  | Q    V  |         |         |         |
   2+25       0.0959      0.67  | Q    V  |         |         |         |
   2+30       0.1007      0.70  | Q     V |         |         |         |
   2+35       0.1057      0.72  | Q     V |         |         |         |
   2+40       0.1109      0.75  | Q     V |         |         |         |
   2+45       0.1162      0.78  |  Q     V|         |         |         |
   2+50       0.1218      0.81  |  Q     V|         |         |         |
   2+55       0.1275      0.84  |  Q      V         |         |         |
   3+ 0       0.1336      0.88  |  Q      V         |         |         |
   3+ 5       0.1399      0.92  |  Q       V        |         |         |
   3+10       0.1466      0.97  |  Q       V        |         |         |
   3+15       0.1537      1.02  |   Q      | V      |         |         |
   3+20       0.1611      1.09  |   Q      | V      |         |         |
   3+25       0.1689      1.13  |   Q      |  V     |         |         |
   3+30       0.1766      1.12  |   Q      |   V    |         |         |
   3+35       0.1846      1.16  |   Q      |   V    |         |         |
   3+40       0.1934      1.28  |    Q     |    V   |         |         |
   3+45       0.2033      1.43  |    Q     |     V  |         |         |
   3+50       0.2149      1.69  |     Q    |      V |         |         |
   3+55       0.2289      2.03  |       Q  |       V|         |         |
   4+ 0       0.2478      2.74  |         Q|        V|        |         |
   4+ 5       0.2788      4.50  |          |       Q | V      |         |
   4+10       0.3363      8.35  |          |         |    V   |  Q      |
   4+15       0.3703      4.94  |          |        Q|        V|        |
   4+20       0.3907      2.95  |          |Q        |         |V       |
   4+25       0.4044      2.00  |       Q  |         |         | V      |
   4+30       0.4148      1.50  |     Q    |         |         |  V     |
   4+35       0.4235      1.26  |    Q     |         |         |  V     |
   4+40       0.4311      1.10  |   Q      |         |         |   V    |
   4+45       0.4377      0.96  |  Q       |         |         |   V    |
   4+50       0.4437      0.86  |  Q       |         |         |    V   |
   4+55       0.4491      0.79  |  Q       |         |         |    V   |
   5+ 0       0.4541      0.73  | Q        |         |         |     V  |
   5+ 5       0.4588      0.68  | Q        |         |         |     V  |
   5+10       0.4632      0.63  | Q        |         |         |     V  |
   5+15       0.4673      0.59  | Q        |         |         |      V |
   5+20       0.4711      0.57  | Q        |         |         |      V |
   5+25       0.4749      0.54  | Q        |         |         |      V |
   5+30       0.4785      0.52  | Q        |         |         |       V|
   5+35       0.4819      0.50  | Q        |         |         |       V|
   5+40       0.4853      0.49  |Q         |         |         |       V|
   5+45       0.4886      0.47  |Q         |         |         |       V|
   5+50       0.4917      0.46  |Q         |         |         |        V|
   5+55       0.4948      0.45  |Q         |         |         |        V|
   6+ 0       0.4978      0.44  |Q         |         |         |        V|
   6+ 5       0.5005      0.38  |Q         |         |         |        V|
   6+10       0.5016      0.16  Q          |         |         |        V|
   6+15       0.5021      0.07  Q          |         |         |        V|
   6+20       0.5023      0.03  Q          |         |         |        V|
   6+25       0.5024      0.01  Q          |         |         |        V|
   6+30       0.5024      0.01  Q          |         |         |        V|
   6+35       0.5024      0.00  Q          |         |         |        V|
   6+40       0.5024      0.00  Q          |         |         |        V|
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- 2 Year 12 Hour Post-Development Unit Hydrograph – Area 'E'

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        U n i t   H y d r o g r a p h   A n a l y s i s

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        Study date  10/11/16   File Name pre00212.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

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RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'E' - 2 YEAR 12 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

        Storm Event Year = 2

        Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 71.2       3.5          0.61     C     0.250     0.144    0.036
 71.2       2.3          0.39     D     0.200     0.144    0.029

Area-averaged adjusted loss rate Fm (In/Hr) =  0.033

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
     0.51   0.088         71.2      52.4       9.07     0.003
     3.03   0.523         98.0      98.0       0.20     0.890

     0.32   0.056         71.2      52.4       9.07     0.003
     1.93   0.333         98.0      98.0       0.20     0.890

Area-averaged catchment yield fraction, Y =  0.762
Area-averaged low loss fraction, Yb =  0.238
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.122 (hours)
Watershed area =       5.79(Ac.)
Catchment Lag time =   0.098 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 85.2428
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.033(In/Hr)
Average low loss rate fraction (Yb) = 0.238 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.190(In)
Computed peak 30-minute rainfall =  0.400(In)
Specified peak 1-hour rainfall =  0.530(In)
Computed peak 3-hour rainfall =  0.890(In)
Specified peak 6-hour rainfall =  1.220(In)
Specified peak 24-hour rainfall =  2.050(In)
```

```
Rainfall depth area reduction factors:
Using a total area of       5.79(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000     Adjusted rainfall =  0.190(In)
30-minute factor = 1.000    Adjusted rainfall =  0.400(In)
1-hour factor = 1.000       Adjusted rainfall =  0.530(In)
3-hour factor = 1.000       Adjusted rainfall =  0.890(In)
6-hour factor = 1.000       Adjusted rainfall =  1.220(In)
24-hour factor = 1.000 Adjusted rainfall =  2.050(In)
------------------------------------------------------------------------

                      U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
------------------------------------------------------------------------
               (K =        70.02 (CFS))

  1               10.134                   7.096
  2               61.479                  35.953
  3               83.939                  15.728
  4               93.052                   6.381
  5               97.291                   2.968
  6               98.679                   0.972
  7               99.350                   0.470
  8               99.845                   0.347
  9              100.000                   0.108
------------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.1899              0.1899
  2              0.2533              0.0634
  3              0.2998              0.0465
  4              0.3379              0.0381
  5              0.3707              0.0328
  6              0.3999              0.0292
  7              0.4257              0.0258
  8              0.4494              0.0237
  9              0.4714              0.0220
 10              0.4921              0.0206
 11              0.5115              0.0194
 12              0.5299              0.0184
 13              0.5503              0.0204
 14              0.5698              0.0196
 15              0.5887              0.0189
 16              0.6069              0.0182
 17              0.6245              0.0176
 18              0.6416              0.0171
 19              0.6582              0.0166
 20              0.6743              0.0161
 21              0.6900              0.0157
 22              0.7054              0.0153
 23              0.7203              0.0150
 24              0.7349              0.0146
 25              0.7492              0.0143
 26              0.7632              0.0140
 27              0.7770              0.0137
 28              0.7904              0.0135
 29              0.8036              0.0132
 30              0.8166              0.0130
 31              0.8293              0.0127
 32              0.8418              0.0125
 33              0.8542              0.0123
 34              0.8663              0.0121
 35              0.8782              0.0119
 36              0.8900              0.0118
 37              0.9011              0.0112
 38              0.9121              0.0110
 39              0.9230              0.0108
 40              0.9337              0.0107
 41              0.9442              0.0105
```

42	0.9546	0.0104
43	0.9649	0.0103
44	0.9751	0.0101
45	0.9851	0.0100
46	0.9950	0.0099
47	1.0048	0.0098
48	1.0144	0.0097
49	1.0240	0.0096
50	1.0335	0.0095
51	1.0428	0.0094
52	1.0521	0.0093
53	1.0612	0.0092
54	1.0703	0.0091
55	1.0793	0.0090
56	1.0881	0.0089
57	1.0969	0.0088
58	1.1057	0.0087
59	1.1143	0.0086
60	1.1229	0.0086
61	1.1313	0.0085
62	1.1397	0.0084
63	1.1481	0.0083
64	1.1563	0.0083
65	1.1645	0.0082
66	1.1726	0.0081
67	1.1807	0.0081
68	1.1887	0.0080
69	1.1966	0.0079
70	1.2044	0.0079
71	1.2122	0.0078
72	1.2200	0.0077
73	1.2263	0.0063
74	1.2326	0.0063
75	1.2388	0.0062
76	1.2449	0.0062
77	1.2510	0.0061
78	1.2571	0.0061
79	1.2631	0.0060
80	1.2691	0.0060
81	1.2750	0.0059
82	1.2808	0.0059
83	1.2867	0.0058
84	1.2925	0.0058
85	1.2982	0.0057
86	1.3039	0.0057
87	1.3095	0.0057
88	1.3152	0.0056
89	1.3207	0.0056
90	1.3263	0.0055
91	1.3318	0.0055
92	1.3372	0.0055
93	1.3427	0.0054
94	1.3480	0.0054
95	1.3534	0.0054
96	1.3587	0.0053
97	1.3640	0.0053
98	1.3692	0.0052
99	1.3745	0.0052
100	1.3796	0.0052
101	1.3848	0.0051
102	1.3899	0.0051
103	1.3950	0.0051
104	1.4000	0.0051
105	1.4051	0.0050
106	1.4101	0.0050
107	1.4150	0.0050
108	1.4200	0.0049
109	1.4249	0.0049
110	1.4298	0.0049
111	1.4346	0.0049
112	1.4394	0.0048

113	1.4442	0.0048
114	1.4490	0.0048
115	1.4537	0.0047
116	1.4585	0.0047
117	1.4632	0.0047
118	1.4678	0.0047
119	1.4725	0.0046
120	1.4771	0.0046
121	1.4817	0.0046
122	1.4863	0.0046
123	1.4908	0.0045
124	1.4953	0.0045
125	1.4998	0.0045
126	1.5043	0.0045
127	1.5088	0.0045
128	1.5132	0.0044
129	1.5176	0.0044
130	1.5220	0.0044
131	1.5264	0.0044
132	1.5307	0.0044
133	1.5351	0.0043
134	1.5394	0.0043
135	1.5437	0.0043
136	1.5480	0.0043
137	1.5522	0.0043
138	1.5564	0.0042
139	1.5606	0.0042
140	1.5648	0.0042
141	1.5690	0.0042
142	1.5732	0.0042
143	1.5773	0.0041
144	1.5814	0.0041

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0041	0.0010	0.0031
2	0.0041	0.0010	0.0032
3	0.0042	0.0010	0.0032
4	0.0042	0.0010	0.0032
5	0.0042	0.0010	0.0032
6	0.0043	0.0010	0.0032
7	0.0043	0.0010	0.0033
8	0.0043	0.0010	0.0033
9	0.0044	0.0010	0.0033
10	0.0044	0.0010	0.0033
11	0.0044	0.0011	0.0034
12	0.0044	0.0011	0.0034
13	0.0045	0.0011	0.0034
14	0.0045	0.0011	0.0034
15	0.0045	0.0011	0.0035
16	0.0046	0.0011	0.0035
17	0.0046	0.0011	0.0035
18	0.0046	0.0011	0.0035
19	0.0047	0.0011	0.0036
20	0.0047	0.0011	0.0036
21	0.0048	0.0011	0.0036
22	0.0048	0.0011	0.0037
23	0.0049	0.0012	0.0037
24	0.0049	0.0012	0.0037
25	0.0049	0.0012	0.0038
26	0.0050	0.0012	0.0038
27	0.0050	0.0012	0.0038
28	0.0051	0.0012	0.0039
29	0.0051	0.0012	0.0039
30	0.0051	0.0012	0.0039
31	0.0052	0.0012	0.0040
32	0.0052	0.0012	0.0040
33	0.0053	0.0013	0.0041
34	0.0054	0.0013	0.0041

35	0.0054	0.0013	0.0041
36	0.0055	0.0013	0.0042
37	0.0055	0.0013	0.0042
38	0.0056	0.0013	0.0042
39	0.0057	0.0013	0.0043
40	0.0057	0.0014	0.0043
41	0.0058	0.0014	0.0044
42	0.0058	0.0014	0.0044
43	0.0059	0.0014	0.0045
44	0.0060	0.0014	0.0045
45	0.0061	0.0014	0.0046
46	0.0061	0.0015	0.0047
47	0.0062	0.0015	0.0047
48	0.0063	0.0015	0.0048
49	0.0077	0.0018	0.0059
50	0.0078	0.0019	0.0059
51	0.0079	0.0019	0.0060
52	0.0080	0.0019	0.0061
53	0.0081	0.0019	0.0062
54	0.0082	0.0019	0.0062
55	0.0083	0.0020	0.0063
56	0.0084	0.0020	0.0064
57	0.0086	0.0020	0.0065
58	0.0086	0.0021	0.0066
59	0.0088	0.0021	0.0067
60	0.0089	0.0021	0.0068
61	0.0091	0.0022	0.0069
62	0.0092	0.0022	0.0070
63	0.0094	0.0022	0.0071
64	0.0095	0.0023	0.0072
65	0.0097	0.0023	0.0074
66	0.0098	0.0023	0.0075
67	0.0100	0.0024	0.0076
68	0.0101	0.0024	0.0077
69	0.0104	0.0025	0.0079
70	0.0105	0.0025	0.0080
71	0.0108	0.0026	0.0083
72	0.0110	0.0026	0.0084
73	0.0118	0.0028	0.0090
74	0.0119	0.0028	0.0092
75	0.0123	0.0028	0.0096
76	0.0125	0.0028	0.0098
77	0.0130	0.0028	0.0102
78	0.0132	0.0028	0.0104
79	0.0137	0.0028	0.0110
80	0.0140	0.0028	0.0112
81	0.0146	0.0028	0.0119
82	0.0150	0.0028	0.0122
83	0.0157	0.0028	0.0129
84	0.0161	0.0028	0.0134
85	0.0171	0.0028	0.0143
86	0.0176	0.0028	0.0149
87	0.0189	0.0028	0.0161
88	0.0196	0.0028	0.0168
89	0.0184	0.0028	0.0156
90	0.0194	0.0028	0.0166
91	0.0220	0.0028	0.0192
92	0.0237	0.0028	0.0209
93	0.0292	0.0028	0.0264
94	0.0328	0.0028	0.0301
95	0.0465	0.0028	0.0437
96	0.0634	0.0028	0.0606
97	0.1899	0.0028	0.1872
98	0.0381	0.0028	0.0353
99	0.0258	0.0028	0.0231
100	0.0206	0.0028	0.0178
101	0.0204	0.0028	0.0176
102	0.0182	0.0028	0.0154
103	0.0166	0.0028	0.0138
104	0.0153	0.0028	0.0126
105	0.0143	0.0028	0.0115

```
      106              0.0135          0.0028              0.0107
      107              0.0127          0.0028              0.0100
      108              0.0121          0.0028              0.0094
      109              0.0112          0.0027              0.0085
      110              0.0107          0.0025              0.0081
      111              0.0103          0.0024              0.0078
      112              0.0099          0.0024              0.0075
      113              0.0096          0.0023              0.0073
      114              0.0093          0.0022              0.0071
      115              0.0090          0.0021              0.0068
      116              0.0087          0.0021              0.0066
      117              0.0085          0.0020              0.0065
      118              0.0083          0.0020              0.0063
      119              0.0081          0.0019              0.0061
      120              0.0079          0.0019              0.0060
      121              0.0063          0.0015              0.0048
      122              0.0062          0.0015              0.0047
      123              0.0060          0.0014              0.0046
      124              0.0059          0.0014              0.0045
      125              0.0057          0.0014              0.0044
      126              0.0056          0.0013              0.0043
      127              0.0055          0.0013              0.0042
      128              0.0054          0.0013              0.0041
      129              0.0053          0.0013              0.0040
      130              0.0052          0.0012              0.0039
      131              0.0051          0.0012              0.0039
      132              0.0050          0.0012              0.0038
      133              0.0049          0.0012              0.0037
      134              0.0048          0.0011              0.0037
      135              0.0047          0.0011              0.0036
      136              0.0047          0.0011              0.0036
      137              0.0046          0.0011              0.0035
      138              0.0045          0.0011              0.0034
      139              0.0045          0.0011              0.0034
      140              0.0044          0.0010              0.0033
      141              0.0043          0.0010              0.0033
      142              0.0043          0.0010              0.0033
      143              0.0042          0.0010              0.0032
      144              0.0042          0.0010              0.0032
      ------------------------------------------------------------------------
      ------------------------------------------------------------------------
      Total soil rain loss =      0.26(In)
      Total effective rainfall =      1.32(In)
      Peak flow rate in flood hydrograph =      8.35(CFS)
      ------------------------------------------------------------------------
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                        12 - H O U R    S T O R M
                   R u n o f f      H y d r o g r a p h
      ------------------------------------------------------------------------
                Hydrograph in   5   Minute intervals ((CFS))

      ------------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0        2.5       5.0       7.5      10.0
------------------------------------------------------------------------
  0+ 5       0.0002      0.02  Q         |         |         |         |
  0+10       0.0011      0.14  Q         |         |         |         |
  0+15       0.0024      0.19  Q         |         |         |         |
  0+20       0.0038      0.21  Q         |         |         |         |
  0+25       0.0053      0.22  Q         |         |         |         |
  0+30       0.0068      0.22  Q         |         |         |         |
  0+35       0.0084      0.22  Q         |         |         |         |
  0+40       0.0099      0.23  Q         |         |         |         |
  0+45       0.0115      0.23  Q         |         |         |         |
  0+50       0.0131      0.23  Q         |         |         |         |
  0+55       0.0147      0.23  Q         |         |         |         |
  1+ 0       0.0163      0.23  QV        |         |         |         |
  1+ 5       0.0179      0.24  QV        |         |         |         |
  1+10       0.0196      0.24  QV        |         |         |         |
  1+15       0.0212      0.24  QV        |         |         |         |
  1+20       0.0229      0.24  QV        |         |         |         |
  1+25       0.0246      0.24  QV        |         |         |         |
```

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1+30       0.0263      0.25  QV        |         |         |         |
1+35       0.0280      0.25  QV        |         |         |         |
1+40       0.0297      0.25  QV        |         |         |         |
1+45       0.0314      0.25  |Q        |         |         |         |
1+50       0.0331      0.25  |QV       |         |         |         |
1+55       0.0349      0.26  |QV       |         |         |         |
2+ 0       0.0367      0.26  |QV       |         |         |         |
2+ 5       0.0385      0.26  |QV       |         |         |         |
2+10       0.0403      0.26  |QV       |         |         |         |
2+15       0.0421      0.26  |QV       |         |         |         |
2+20       0.0439      0.27  |QV       |         |         |         |
2+25       0.0458      0.27  |QV       |         |         |         |
2+30       0.0476      0.27  |QV       |         |         |         |
2+35       0.0495      0.27  |Q V      |         |         |         |
2+40       0.0514      0.28  |Q V      |         |         |         |
2+45       0.0533      0.28  |Q V      |         |         |         |
2+50       0.0553      0.28  |Q V      |         |         |         |
2+55       0.0572      0.28  |Q V      |         |         |         |
3+ 0       0.0592      0.29  |Q V      |         |         |         |
3+ 5       0.0612      0.29  |Q V      |         |         |         |
3+10       0.0632      0.29  |Q V      |         |         |         |
3+15       0.0653      0.30  |Q  V     |         |         |         |
3+20       0.0673      0.30  |Q  V     |         |         |         |
3+25       0.0694      0.30  |Q  V     |         |         |         |
3+30       0.0715      0.31  |Q  V     |         |         |         |
3+35       0.0737      0.31  |Q  V     |         |         |         |
3+40       0.0758      0.31  |Q  V     |         |         |         |
3+45       0.0780      0.32  |Q  V     |         |         |         |
3+50       0.0802      0.32  |Q   V    |         |         |         |
3+55       0.0824      0.32  |Q   V    |         |         |         |
4+ 0       0.0847      0.33  |Q   V    |         |         |         |
4+ 5       0.0871      0.34  |Q   V    |         |         |         |
4+10       0.0897      0.38  |Q   V    |         |         |         |
4+15       0.0925      0.40  |Q   V    |         |         |         |
4+20       0.0953      0.41  |Q    V   |         |         |         |
4+25       0.0982      0.42  |Q    V   |         |         |         |
4+30       0.1012      0.43  |Q    V   |         |         |         |
4+35       0.1042      0.43  |Q    V   |         |         |         |
4+40       0.1072      0.44  |Q    V   |         |         |         |
4+45       0.1103      0.45  |Q    V   |         |         |         |
4+50       0.1134      0.45  |Q     V  |         |         |         |
4+55       0.1165      0.46  |Q     V  |         |         |         |
5+ 0       0.1197      0.47  |Q     V  |         |         |         |
5+ 5       0.1230      0.47  |Q     V  |         |         |         |
5+10       0.1263      0.48  |Q     V  |         |         |         |
5+15       0.1296      0.49  |Q      V |         |         |         |
5+20       0.1330      0.49  |Q      V |         |         |         |
5+25       0.1365      0.50  | Q     V |         |         |         |
5+30       0.1400      0.51  | Q     V |         |         |         |
5+35       0.1436      0.52  | Q      V|         |         |         |
5+40       0.1472      0.53  | Q      V|         |         |         |
5+45       0.1509      0.54  | Q      V|         |         |         |
5+50       0.1547      0.55  | Q      V|         |         |         |
5+55       0.1585      0.56  | Q      V|         |         |         |
6+ 0       0.1625      0.57  | Q       V         |         |         |
6+ 5       0.1665      0.58  | Q       V         |         |         |
6+10       0.1707      0.61  | Q       V         |         |         |
6+15       0.1750      0.63  | Q       |V        |         |         |
6+20       0.1796      0.65  | Q       |V        |         |         |
6+25       0.1842      0.67  | Q       |V        |         |         |
6+30       0.1890      0.70  | Q       |V        |         |         |
6+35       0.1940      0.72  | Q       | V       |         |         |
6+40       0.1991      0.75  | Q       | V       |         |         |
6+45       0.2045      0.78  |  Q      | V       |         |         |
6+50       0.2100      0.81  |  Q      |  V      |         |         |
6+55       0.2158      0.84  |  Q      |  V      |         |         |
7+ 0       0.2219      0.88  |  Q      |  V      |         |         |
7+ 5       0.2282      0.92  |  Q      |   V     |         |         |
7+10       0.2349      0.97  |  Q      |   V     |         |         |
7+15       0.2419      1.02  |   Q     |    V    |         |         |
7+20       0.2494      1.09  |   Q     |    V    |         |         |
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   7+25       0.2572      1.13  |   Q     |     V   |         |         |
   7+30       0.2649      1.12  |   Q     |     V   |         |         |
   7+35       0.2729      1.16  |   Q     |      V  |         |         |
   7+40       0.2817      1.28  |    Q    |      V  |         |         |
   7+45       0.2916      1.43  |    Q    |       V |         |         |
   7+50       0.3032      1.69  |     Q   |        V|         |         |
   7+55       0.3172      2.03  |       Q |        V|         |         |
   8+ 0       0.3361      2.74  |         Q         |V        |         |
   8+ 5       0.3671      4.50  |          |       Q |  V      |         |
   8+10       0.4245      8.35  |          |         |     V   |  Q      |
   8+15       0.4586      4.94  |          |        Q|       V |         |
   8+20       0.4789      2.95  |          |Q        |         V         |
   8+25       0.4927      2.00  |       Q |         |         |V        |
   8+30       0.5031      1.50  |     Q   |         |         |V        |
   8+35       0.5118      1.26  |    Q    |         |         | V       |
   8+40       0.5194      1.10  |   Q     |         |         | V       |
   8+45       0.5260      0.96  |  Q      |         |         |  V      |
   8+50       0.5319      0.86  |  Q      |         |         |  V      |
   8+55       0.5374      0.79  |  Q      |         |         |  V      |
   9+ 0       0.5424      0.73  | Q       |         |         |   V     |
   9+ 5       0.5471      0.68  | Q       |         |         |   V     |
   9+10       0.5514      0.63  | Q       |         |         |   V     |
   9+15       0.5555      0.59  | Q       |         |         |   V     |
   9+20       0.5594      0.57  | Q       |         |         |    V    |
   9+25       0.5632      0.54  | Q       |         |         |    V    |
   9+30       0.5668      0.52  | Q       |         |         |    V    |
   9+35       0.5702      0.50  | Q       |         |         |    V    |
   9+40       0.5736      0.49  |Q        |         |         |     V   |
   9+45       0.5769      0.47  |Q        |         |         |     V   |
   9+50       0.5800      0.46  |Q        |         |         |     V   |
   9+55       0.5831      0.45  |Q        |         |         |     V   |
  10+ 0       0.5861      0.44  |Q        |         |         |     V   |
  10+ 5       0.5890      0.42  |Q        |         |         |      V  |
  10+10       0.5915      0.37  |Q        |         |         |      V  |
  10+15       0.5939      0.35  |Q        |         |         |      V  |
  10+20       0.5962      0.33  |Q        |         |         |      V  |
  10+25       0.5984      0.32  |Q        |         |         |      V  |
  10+30       0.6005      0.31  |Q        |         |         |      V  |
  10+35       0.6026      0.30  |Q        |         |         |      V  |
  10+40       0.6047      0.30  |Q        |         |         |       V |
  10+45       0.6067      0.29  |Q        |         |         |       V |
  10+50       0.6087      0.29  |Q        |         |         |       V |
  10+55       0.6106      0.28  |Q        |         |         |       V |
  11+ 0       0.6125      0.27  |Q        |         |         |       V |
  11+ 5       0.6143      0.27  |Q        |         |         |       V |
  11+10       0.6161      0.26  |Q        |         |         |       V |
  11+15       0.6179      0.26  |Q        |         |         |       V |
  11+20       0.6197      0.26  |Q        |         |         |        V|
  11+25       0.6214      0.25  |Q        |         |         |        V|
  11+30       0.6231      0.25  Q         |         |         |        V|
  11+35       0.6248      0.24  Q         |         |         |        V|
  11+40       0.6265      0.24  Q         |         |         |        V|
  11+45       0.6281      0.24  Q         |         |         |        V|
  11+50       0.6297      0.23  Q         |         |         |        V|
  11+55       0.6313      0.23  Q         |         |         |        V|
  12+ 0       0.6328      0.23  Q         |         |         |        V|
  12+ 5       0.6342      0.20  Q         |         |         |        V|
  12+10       0.6348      0.09  Q         |         |         |        V|
  12+15       0.6351      0.04  Q         |         |         |        V|
  12+20       0.6352      0.02  Q         |         |         |        V|
  12+25       0.6352      0.01  Q         |         |         |        V|
  12+30       0.6352      0.00  Q         |         |         |        V|
  12+35       0.6353      0.00  Q         |         |         |        V|
  12+40       0.6353      0.00  Q         |         |         |         V
-------------------------------------------------------------------------
```

- 2 Year 24 Hour Post-Development Unit Hydrograph – Area 'E'

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       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/11/16   File Name pre00224.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'E' - 2 YEAR 24 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 2

       Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 71.2       3.5          0.61     C     0.250     0.144    0.036
 71.2       2.3          0.39     D     0.200     0.144    0.029

Area-averaged adjusted loss rate Fm (In/Hr) =  0.033

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
     0.51   0.088         71.2      52.4       9.07     0.003
     3.03   0.523         98.0      98.0       0.20     0.890

     0.32   0.056         71.2      52.4       9.07     0.003
     1.93   0.333         98.0      98.0       0.20     0.890

Area-averaged catchment yield fraction, Y =  0.762
Area-averaged low loss fraction, Yb =  0.238
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.122 (hours)
Watershed area =       5.79(Ac.)
Catchment Lag time =   0.098 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 85.2428
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.033(In/Hr)
Average low loss rate fraction (Yb) = 0.238 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.190(In)
Computed peak 30-minute rainfall =  0.400(In)
Specified peak 1-hour rainfall =  0.530(In)
Computed peak 3-hour rainfall =  0.890(In)
Specified peak 6-hour rainfall =  1.220(In)
Specified peak 24-hour rainfall =  2.050(In)
```

```
Rainfall depth area reduction factors:
Using a total area of       5.79(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000     Adjusted rainfall =  0.190(In)
30-minute factor = 1.000    Adjusted rainfall =  0.400(In)
1-hour factor = 1.000       Adjusted rainfall =  0.530(In)
3-hour factor = 1.000       Adjusted rainfall =  0.890(In)
6-hour factor = 1.000       Adjusted rainfall =  1.220(In)
24-hour factor = 1.000 Adjusted rainfall =  2.050(In)
```

U n i t H y d r o g r a p h

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 70.02 (CFS))	
1	10.134	7.096
2	61.479	35.953
3	83.939	15.728
4	93.052	6.381
5	97.291	2.968
6	98.679	0.972
7	99.350	0.470
8	99.845	0.347
9	100.000	0.108

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.1899	0.1899
2	0.2533	0.0634
3	0.2998	0.0465
4	0.3379	0.0381
5	0.3707	0.0328
6	0.3999	0.0292
7	0.4257	0.0258
8	0.4494	0.0237
9	0.4714	0.0220
10	0.4921	0.0206
11	0.5115	0.0194
12	0.5299	0.0184
13	0.5503	0.0204
14	0.5698	0.0196
15	0.5887	0.0189
16	0.6069	0.0182
17	0.6245	0.0176
18	0.6416	0.0171
19	0.6582	0.0166
20	0.6743	0.0161
21	0.6900	0.0157
22	0.7054	0.0153
23	0.7203	0.0150
24	0.7349	0.0146
25	0.7492	0.0143
26	0.7632	0.0140
27	0.7770	0.0137
28	0.7904	0.0135
29	0.8036	0.0132
30	0.8166	0.0130
31	0.8293	0.0127
32	0.8418	0.0125
33	0.8542	0.0123
34	0.8663	0.0121
35	0.8782	0.0119
36	0.8900	0.0118
37	0.9011	0.0112
38	0.9121	0.0110
39	0.9230	0.0108
40	0.9337	0.0107
41	0.9442	0.0105

42	0.9546	0.0104
43	0.9649	0.0103
44	0.9751	0.0101
45	0.9851	0.0100
46	0.9950	0.0099
47	1.0048	0.0098
48	1.0144	0.0097
49	1.0240	0.0096
50	1.0335	0.0095
51	1.0428	0.0094
52	1.0521	0.0093
53	1.0612	0.0092
54	1.0703	0.0091
55	1.0793	0.0090
56	1.0881	0.0089
57	1.0969	0.0088
58	1.1057	0.0087
59	1.1143	0.0086
60	1.1229	0.0086
61	1.1313	0.0085
62	1.1397	0.0084
63	1.1481	0.0083
64	1.1563	0.0083
65	1.1645	0.0082
66	1.1726	0.0081
67	1.1807	0.0081
68	1.1887	0.0080
69	1.1966	0.0079
70	1.2044	0.0079
71	1.2122	0.0078
72	1.2200	0.0077
73	1.2263	0.0063
74	1.2326	0.0063
75	1.2388	0.0062
76	1.2449	0.0062
77	1.2510	0.0061
78	1.2571	0.0061
79	1.2631	0.0060
80	1.2691	0.0060
81	1.2750	0.0059
82	1.2808	0.0059
83	1.2867	0.0058
84	1.2925	0.0058
85	1.2982	0.0057
86	1.3039	0.0057
87	1.3095	0.0057
88	1.3152	0.0056
89	1.3207	0.0056
90	1.3263	0.0055
91	1.3318	0.0055
92	1.3372	0.0055
93	1.3427	0.0054
94	1.3480	0.0054
95	1.3534	0.0054
96	1.3587	0.0053
97	1.3640	0.0053
98	1.3692	0.0052
99	1.3745	0.0052
100	1.3796	0.0052
101	1.3848	0.0051
102	1.3899	0.0051
103	1.3950	0.0051
104	1.4000	0.0051
105	1.4051	0.0050
106	1.4101	0.0050
107	1.4150	0.0050
108	1.4200	0.0049
109	1.4249	0.0049
110	1.4298	0.0049
111	1.4346	0.0049
112	1.4394	0.0048

113	1.4442	0.0048
114	1.4490	0.0048
115	1.4537	0.0047
116	1.4585	0.0047
117	1.4632	0.0047
118	1.4678	0.0047
119	1.4725	0.0046
120	1.4771	0.0046
121	1.4817	0.0046
122	1.4863	0.0046
123	1.4908	0.0045
124	1.4953	0.0045
125	1.4998	0.0045
126	1.5043	0.0045
127	1.5088	0.0045
128	1.5132	0.0044
129	1.5176	0.0044
130	1.5220	0.0044
131	1.5264	0.0044
132	1.5307	0.0044
133	1.5351	0.0043
134	1.5394	0.0043
135	1.5437	0.0043
136	1.5480	0.0043
137	1.5522	0.0043
138	1.5564	0.0042
139	1.5606	0.0042
140	1.5648	0.0042
141	1.5690	0.0042
142	1.5732	0.0042
143	1.5773	0.0041
144	1.5814	0.0041
145	1.5855	0.0041
146	1.5896	0.0041
147	1.5937	0.0041
148	1.5977	0.0041
149	1.6018	0.0040
150	1.6058	0.0040
151	1.6098	0.0040
152	1.6138	0.0040
153	1.6177	0.0040
154	1.6217	0.0040
155	1.6256	0.0039
156	1.6295	0.0039
157	1.6334	0.0039
158	1.6373	0.0039
159	1.6412	0.0039
160	1.6451	0.0039
161	1.6489	0.0038
162	1.6527	0.0038
163	1.6565	0.0038
164	1.6603	0.0038
165	1.6641	0.0038
166	1.6679	0.0038
167	1.6716	0.0038
168	1.6754	0.0037
169	1.6791	0.0037
170	1.6828	0.0037
171	1.6865	0.0037
172	1.6902	0.0037
173	1.6939	0.0037
174	1.6975	0.0037
175	1.7012	0.0036
176	1.7048	0.0036
177	1.7084	0.0036
178	1.7120	0.0036
179	1.7156	0.0036
180	1.7192	0.0036
181	1.7228	0.0036
182	1.7264	0.0036
183	1.7299	0.0035

184	1.7334	0.0035
185	1.7369	0.0035
186	1.7405	0.0035
187	1.7440	0.0035
188	1.7474	0.0035
189	1.7509	0.0035
190	1.7544	0.0035
191	1.7578	0.0035
192	1.7613	0.0034
193	1.7647	0.0034
194	1.7681	0.0034
195	1.7715	0.0034
196	1.7749	0.0034
197	1.7783	0.0034
198	1.7817	0.0034
199	1.7850	0.0034
200	1.7884	0.0034
201	1.7917	0.0033
202	1.7951	0.0033
203	1.7984	0.0033
204	1.8017	0.0033
205	1.8050	0.0033
206	1.8083	0.0033
207	1.8116	0.0033
208	1.8148	0.0033
209	1.8181	0.0033
210	1.8214	0.0033
211	1.8246	0.0032
212	1.8278	0.0032
213	1.8311	0.0032
214	1.8343	0.0032
215	1.8375	0.0032
216	1.8407	0.0032
217	1.8439	0.0032
218	1.8470	0.0032
219	1.8502	0.0032
220	1.8534	0.0032
221	1.8565	0.0031
222	1.8596	0.0031
223	1.8628	0.0031
224	1.8659	0.0031
225	1.8690	0.0031
226	1.8721	0.0031
227	1.8752	0.0031
228	1.8783	0.0031
229	1.8814	0.0031
230	1.8845	0.0031
231	1.8875	0.0031
232	1.8906	0.0031
233	1.8936	0.0030
234	1.8967	0.0030
235	1.8997	0.0030
236	1.9027	0.0030
237	1.9057	0.0030
238	1.9087	0.0030
239	1.9117	0.0030
240	1.9147	0.0030
241	1.9177	0.0030
242	1.9207	0.0030
243	1.9237	0.0030
244	1.9266	0.0030
245	1.9296	0.0030
246	1.9325	0.0029
247	1.9354	0.0029
248	1.9384	0.0029
249	1.9413	0.0029
250	1.9442	0.0029
251	1.9471	0.0029
252	1.9500	0.0029
253	1.9529	0.0029
254	1.9558	0.0029

255	1.9587	0.0029
256	1.9616	0.0029
257	1.9644	0.0029
258	1.9673	0.0029
259	1.9701	0.0029
260	1.9730	0.0028
261	1.9758	0.0028
262	1.9786	0.0028
263	1.9815	0.0028
264	1.9843	0.0028
265	1.9871	0.0028
266	1.9899	0.0028
267	1.9927	0.0028
268	1.9955	0.0028
269	1.9983	0.0028
270	2.0010	0.0028
271	2.0038	0.0028
272	2.0066	0.0028
273	2.0093	0.0028
274	2.0121	0.0028
275	2.0148	0.0027
276	2.0176	0.0027
277	2.0203	0.0027
278	2.0230	0.0027
279	2.0258	0.0027
280	2.0285	0.0027
281	2.0312	0.0027
282	2.0339	0.0027
283	2.0366	0.0027
284	2.0393	0.0027
285	2.0420	0.0027
286	2.0446	0.0027
287	2.0473	0.0027
288	2.0500	0.0027

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0027	0.0006	0.0020
2	0.0027	0.0006	0.0020
3	0.0027	0.0006	0.0020
4	0.0027	0.0006	0.0021
5	0.0027	0.0006	0.0021
6	0.0027	0.0006	0.0021
7	0.0027	0.0006	0.0021
8	0.0027	0.0006	0.0021
9	0.0027	0.0007	0.0021
10	0.0027	0.0007	0.0021
11	0.0028	0.0007	0.0021
12	0.0028	0.0007	0.0021
13	0.0028	0.0007	0.0021
14	0.0028	0.0007	0.0021
15	0.0028	0.0007	0.0021
16	0.0028	0.0007	0.0021
17	0.0028	0.0007	0.0021
18	0.0028	0.0007	0.0022
19	0.0028	0.0007	0.0022
20	0.0028	0.0007	0.0022
21	0.0029	0.0007	0.0022
22	0.0029	0.0007	0.0022
23	0.0029	0.0007	0.0022
24	0.0029	0.0007	0.0022
25	0.0029	0.0007	0.0022
26	0.0029	0.0007	0.0022
27	0.0029	0.0007	0.0022
28	0.0029	0.0007	0.0022
29	0.0029	0.0007	0.0022
30	0.0030	0.0007	0.0022
31	0.0030	0.0007	0.0023
32	0.0030	0.0007	0.0023

33	0.0030	0.0007	0.0023
34	0.0030	0.0007	0.0023
35	0.0030	0.0007	0.0023
36	0.0030	0.0007	0.0023
37	0.0030	0.0007	0.0023
38	0.0030	0.0007	0.0023
39	0.0031	0.0007	0.0023
40	0.0031	0.0007	0.0023
41	0.0031	0.0007	0.0024
42	0.0031	0.0007	0.0024
43	0.0031	0.0007	0.0024
44	0.0031	0.0007	0.0024
45	0.0031	0.0007	0.0024
46	0.0031	0.0007	0.0024
47	0.0032	0.0008	0.0024
48	0.0032	0.0008	0.0024
49	0.0032	0.0008	0.0024
50	0.0032	0.0008	0.0024
51	0.0032	0.0008	0.0025
52	0.0032	0.0008	0.0025
53	0.0033	0.0008	0.0025
54	0.0033	0.0008	0.0025
55	0.0033	0.0008	0.0025
56	0.0033	0.0008	0.0025
57	0.0033	0.0008	0.0025
58	0.0033	0.0008	0.0025
59	0.0033	0.0008	0.0025
60	0.0034	0.0008	0.0026
61	0.0034	0.0008	0.0026
62	0.0034	0.0008	0.0026
63	0.0034	0.0008	0.0026
64	0.0034	0.0008	0.0026
65	0.0034	0.0008	0.0026
66	0.0035	0.0008	0.0026
67	0.0035	0.0008	0.0026
68	0.0035	0.0008	0.0027
69	0.0035	0.0008	0.0027
70	0.0035	0.0008	0.0027
71	0.0035	0.0008	0.0027
72	0.0036	0.0008	0.0027
73	0.0036	0.0009	0.0027
74	0.0036	0.0009	0.0027
75	0.0036	0.0009	0.0028
76	0.0036	0.0009	0.0028
77	0.0037	0.0009	0.0028
78	0.0037	0.0009	0.0028
79	0.0037	0.0009	0.0028
80	0.0037	0.0009	0.0028
81	0.0037	0.0009	0.0029
82	0.0038	0.0009	0.0029
83	0.0038	0.0009	0.0029
84	0.0038	0.0009	0.0029
85	0.0038	0.0009	0.0029
86	0.0038	0.0009	0.0029
87	0.0039	0.0009	0.0030
88	0.0039	0.0009	0.0030
89	0.0039	0.0009	0.0030
90	0.0039	0.0009	0.0030
91	0.0040	0.0009	0.0030
92	0.0040	0.0009	0.0030
93	0.0040	0.0010	0.0031
94	0.0040	0.0010	0.0031
95	0.0041	0.0010	0.0031
96	0.0041	0.0010	0.0031
97	0.0041	0.0010	0.0031
98	0.0041	0.0010	0.0032
99	0.0042	0.0010	0.0032
100	0.0042	0.0010	0.0032
101	0.0042	0.0010	0.0032
102	0.0043	0.0010	0.0032
103	0.0043	0.0010	0.0033

104	0.0043	0.0010	0.0033
105	0.0044	0.0010	0.0033
106	0.0044	0.0010	0.0033
107	0.0044	0.0011	0.0034
108	0.0044	0.0011	0.0034
109	0.0045	0.0011	0.0034
110	0.0045	0.0011	0.0034
111	0.0045	0.0011	0.0035
112	0.0046	0.0011	0.0035
113	0.0046	0.0011	0.0035
114	0.0046	0.0011	0.0035
115	0.0047	0.0011	0.0036
116	0.0047	0.0011	0.0036
117	0.0048	0.0011	0.0036
118	0.0048	0.0011	0.0037
119	0.0049	0.0012	0.0037
120	0.0049	0.0012	0.0037
121	0.0049	0.0012	0.0038
122	0.0050	0.0012	0.0038
123	0.0050	0.0012	0.0038
124	0.0051	0.0012	0.0039
125	0.0051	0.0012	0.0039
126	0.0051	0.0012	0.0039
127	0.0052	0.0012	0.0040
128	0.0052	0.0012	0.0040
129	0.0053	0.0013	0.0041
130	0.0054	0.0013	0.0041
131	0.0054	0.0013	0.0041
132	0.0055	0.0013	0.0042
133	0.0055	0.0013	0.0042
134	0.0056	0.0013	0.0042
135	0.0057	0.0013	0.0043
136	0.0057	0.0014	0.0043
137	0.0058	0.0014	0.0044
138	0.0058	0.0014	0.0044
139	0.0059	0.0014	0.0045
140	0.0060	0.0014	0.0045
141	0.0061	0.0014	0.0046
142	0.0061	0.0015	0.0047
143	0.0062	0.0015	0.0047
144	0.0063	0.0015	0.0048
145	0.0077	0.0018	0.0059
146	0.0078	0.0019	0.0059
147	0.0079	0.0019	0.0060
148	0.0080	0.0019	0.0061
149	0.0081	0.0019	0.0062
150	0.0082	0.0019	0.0062
151	0.0083	0.0020	0.0063
152	0.0084	0.0020	0.0064
153	0.0086	0.0020	0.0065
154	0.0086	0.0021	0.0066
155	0.0088	0.0021	0.0067
156	0.0089	0.0021	0.0068
157	0.0091	0.0022	0.0069
158	0.0092	0.0022	0.0070
159	0.0094	0.0022	0.0071
160	0.0095	0.0023	0.0072
161	0.0097	0.0023	0.0074
162	0.0098	0.0023	0.0075
163	0.0100	0.0024	0.0076
164	0.0101	0.0024	0.0077
165	0.0104	0.0025	0.0079
166	0.0105	0.0025	0.0080
167	0.0108	0.0026	0.0083
168	0.0110	0.0026	0.0084
169	0.0118	0.0028	0.0090
170	0.0119	0.0028	0.0092
171	0.0123	0.0028	0.0096
172	0.0125	0.0028	0.0098
173	0.0130	0.0028	0.0102
174	0.0132	0.0028	0.0104

175	0.0137	0.0028	0.0110
176	0.0140	0.0028	0.0112
177	0.0146	0.0028	0.0119
178	0.0150	0.0028	0.0122
179	0.0157	0.0028	0.0129
180	0.0161	0.0028	0.0134
181	0.0171	0.0028	0.0143
182	0.0176	0.0028	0.0149
183	0.0189	0.0028	0.0161
184	0.0196	0.0028	0.0168
185	0.0184	0.0028	0.0156
186	0.0194	0.0028	0.0166
187	0.0220	0.0028	0.0192
188	0.0237	0.0028	0.0209
189	0.0292	0.0028	0.0264
190	0.0328	0.0028	0.0301
191	0.0465	0.0028	0.0437
192	0.0634	0.0028	0.0606
193	0.1899	0.0028	0.1872
194	0.0381	0.0028	0.0353
195	0.0258	0.0028	0.0231
196	0.0206	0.0028	0.0178
197	0.0204	0.0028	0.0176
198	0.0182	0.0028	0.0154
199	0.0166	0.0028	0.0138
200	0.0153	0.0028	0.0126
201	0.0143	0.0028	0.0115
202	0.0135	0.0028	0.0107
203	0.0127	0.0028	0.0100
204	0.0121	0.0028	0.0094
205	0.0112	0.0027	0.0085
206	0.0107	0.0025	0.0081
207	0.0103	0.0024	0.0078
208	0.0099	0.0024	0.0075
209	0.0096	0.0023	0.0073
210	0.0093	0.0022	0.0071
211	0.0090	0.0021	0.0068
212	0.0087	0.0021	0.0066
213	0.0085	0.0020	0.0065
214	0.0083	0.0020	0.0063
215	0.0081	0.0019	0.0061
216	0.0079	0.0019	0.0060
217	0.0063	0.0015	0.0048
218	0.0062	0.0015	0.0047
219	0.0060	0.0014	0.0046
220	0.0059	0.0014	0.0045
221	0.0057	0.0014	0.0044
222	0.0056	0.0013	0.0043
223	0.0055	0.0013	0.0042
224	0.0054	0.0013	0.0041
225	0.0053	0.0013	0.0040
226	0.0052	0.0012	0.0039
227	0.0051	0.0012	0.0039
228	0.0050	0.0012	0.0038
229	0.0049	0.0012	0.0037
230	0.0048	0.0011	0.0037
231	0.0047	0.0011	0.0036
232	0.0047	0.0011	0.0036
233	0.0046	0.0011	0.0035
234	0.0045	0.0011	0.0034
235	0.0045	0.0011	0.0034
236	0.0044	0.0010	0.0033
237	0.0043	0.0010	0.0033
238	0.0043	0.0010	0.0033
239	0.0042	0.0010	0.0032
240	0.0042	0.0010	0.0032
241	0.0041	0.0010	0.0031
242	0.0041	0.0010	0.0031
243	0.0040	0.0010	0.0030
244	0.0040	0.0009	0.0030
245	0.0039	0.0009	0.0030

```
      246              0.0039          0.0009              0.0029
      247              0.0038          0.0009              0.0029
      248              0.0038          0.0009              0.0029
      249              0.0037          0.0009              0.0028
      250              0.0037          0.0009              0.0028
      251              0.0036          0.0009              0.0028
      252              0.0036          0.0009              0.0027
      253              0.0036          0.0008              0.0027
      254              0.0035          0.0008              0.0027
      255              0.0035          0.0008              0.0027
      256              0.0035          0.0008              0.0026
      257              0.0034          0.0008              0.0026
      258              0.0034          0.0008              0.0026
      259              0.0034          0.0008              0.0026
      260              0.0033          0.0008              0.0025
      261              0.0033          0.0008              0.0025
      262              0.0033          0.0008              0.0025
      263              0.0032          0.0008              0.0025
      264              0.0032          0.0008              0.0024
      265              0.0032          0.0008              0.0024
      266              0.0032          0.0008              0.0024
      267              0.0031          0.0007              0.0024
      268              0.0031          0.0007              0.0024
      269              0.0031          0.0007              0.0023
      270              0.0031          0.0007              0.0023
      271              0.0030          0.0007              0.0023
      272              0.0030          0.0007              0.0023
      273              0.0030          0.0007              0.0023
      274              0.0030          0.0007              0.0023
      275              0.0029          0.0007              0.0022
      276              0.0029          0.0007              0.0022
      277              0.0029          0.0007              0.0022
      278              0.0029          0.0007              0.0022
      279              0.0029          0.0007              0.0022
      280              0.0028          0.0007              0.0022
      281              0.0028          0.0007              0.0021
      282              0.0028          0.0007              0.0021
      283              0.0028          0.0007              0.0021
      284              0.0028          0.0007              0.0021
      285              0.0027          0.0007              0.0021
      286              0.0027          0.0006              0.0021
      287              0.0027          0.0006              0.0021
      288              0.0027          0.0006              0.0020
      ------------------------------------------------------------------------
      ------------------------------------------------------------------------
      Total soil rain loss =      0.38(In)
      Total effective rainfall =      1.67(In)
      Peak flow rate in flood hydrograph =      8.35(CFS)
      ------------------------------------------------------------------------
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          24 - H O U R    S T O R M
                     R u n o f f      H y d r o g r a p h
      ------------------------------------------------------------------------
                  Hydrograph in   5   Minute intervals ((CFS))

      ------------------------------------------------------------------------
 Time(h+m) Volume Ac.Ft   Q(CFS)  0        2.5       5.0       7.5      10.0
 ------------------------------------------------------------------------
   0+ 5       0.0001      0.01  Q         |         |         |         |
   0+10       0.0007      0.09  Q         |         |         |         |
   0+15       0.0015      0.12  Q         |         |         |         |
   0+20       0.0024      0.13  Q         |         |         |         |
   0+25       0.0034      0.14  Q         |         |         |         |
   0+30       0.0044      0.14  Q         |         |         |         |
   0+35       0.0054      0.14  Q         |         |         |         |
   0+40       0.0064      0.14  Q         |         |         |         |
   0+45       0.0074      0.15  Q         |         |         |         |
   0+50       0.0084      0.15  Q         |         |         |         |
   0+55       0.0094      0.15  Q         |         |         |         |
   1+ 0       0.0104      0.15  Q         |         |         |         |
   1+ 5       0.0114      0.15  Q         |         |         |         |
```

1+10	0.0124	0.15	Q	|	|	|	|
1+15	0.0134	0.15	Q	|	|	|	|
1+20	0.0145	0.15	Q	|	|	|	|
1+25	0.0155	0.15	Q	|	|	|	|
1+30	0.0165	0.15	Q	|	|	|	|
1+35	0.0176	0.15	Q	|	|	|	|
1+40	0.0186	0.15	Q	|	|	|	|
1+45	0.0197	0.15	Q	|	|	|	|
1+50	0.0207	0.15	QV	|	|	|	|
1+55	0.0218	0.15	QV	|	|	|	|
2+ 0	0.0228	0.15	QV	|	|	|	|
2+ 5	0.0239	0.15	QV	|	|	|	|
2+10	0.0249	0.15	QV	|	|	|	|
2+15	0.0260	0.15	QV	|	|	|	|
2+20	0.0271	0.16	QV	|	|	|	|
2+25	0.0281	0.16	QV	|	|	|	|
2+30	0.0292	0.16	QV	|	|	|	|
2+35	0.0303	0.16	QV	|	|	|	|
2+40	0.0314	0.16	QV	|	|	|	|
2+45	0.0325	0.16	QV	|	|	|	|
2+50	0.0336	0.16	QV	|	|	|	|
2+55	0.0347	0.16	QV	|	|	|	|
3+ 0	0.0358	0.16	QV	|	|	|	|
3+ 5	0.0369	0.16	QV	|	|	|	|
3+10	0.0380	0.16	QV	|	|	|	|
3+15	0.0391	0.16	QV	|	|	|	|
3+20	0.0402	0.16	QV	|	|	|	|
3+25	0.0414	0.16	Q V	|	|	|	|
3+30	0.0425	0.16	Q V	|	|	|	|
3+35	0.0436	0.16	Q V	|	|	|	|
3+40	0.0448	0.17	Q V	|	|	|	|
3+45	0.0459	0.17	Q V	|	|	|	|
3+50	0.0471	0.17	Q V	|	|	|	|
3+55	0.0482	0.17	Q V	|	|	|	|
4+ 0	0.0494	0.17	Q V	|	|	|	|
4+ 5	0.0506	0.17	Q V	|	|	|	|
4+10	0.0517	0.17	Q V	|	|	|	|
4+15	0.0529	0.17	Q V	|	|	|	|
4+20	0.0541	0.17	Q V	|	|	|	|
4+25	0.0553	0.17	Q V	|	|	|	|
4+30	0.0565	0.17	Q V	|	|	|	|
4+35	0.0577	0.17	Q V	|	|	|	|
4+40	0.0589	0.17	Q V	|	|	|	|
4+45	0.0601	0.18	Q V	|	|	|	|
4+50	0.0613	0.18	Q V	|	|	|	|
4+55	0.0625	0.18	Q V	|	|	|	|
5+ 0	0.0637	0.18	Q V	|	|	|	|
5+ 5	0.0650	0.18	Q V	|	|	|	|
5+10	0.0662	0.18	Q V	|	|	|	|
5+15	0.0674	0.18	Q V	|	|	|	|
5+20	0.0687	0.18	Q V	|	|	|	|
5+25	0.0699	0.18	Q V	|	|	|	|
5+30	0.0712	0.18	Q V	|	|	|	|
5+35	0.0725	0.18	Q V	|	|	|	|
5+40	0.0737	0.18	Q V	|	|	|	|
5+45	0.0750	0.19	Q V	|	|	|	|
5+50	0.0763	0.19	Q V	|	|	|	|
5+55	0.0776	0.19	Q V	|	|	|	|
6+ 0	0.0789	0.19	Q V	|	|	|	|
6+ 5	0.0802	0.19	Q V	|	|	|	|
6+10	0.0815	0.19	Q V	|	|	|	|
6+15	0.0828	0.19	Q V	|	|	|	|
6+20	0.0841	0.19	Q V	|	|	|	|
6+25	0.0855	0.19	Q V	|	|	|	|
6+30	0.0868	0.19	Q V	|	|	|	|
6+35	0.0882	0.20	Q V	|	|	|	|
6+40	0.0895	0.20	Q V	|	|	|	|
6+45	0.0909	0.20	Q V	|	|	|	|
6+50	0.0922	0.20	Q V	|	|	|	|
6+55	0.0936	0.20	Q V	|	|	|	|
7+ 0	0.0950	0.20	Q V	|	|	|	|

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 7+ 5       0.0964      0.20  Q   V     |          |          |          |
 7+10       0.0978      0.20  Q   V     |          |          |          |
 7+15       0.0992      0.20  Q   V     |          |          |          |
 7+20       0.1006      0.21  Q   V     |          |          |          |
 7+25       0.1021      0.21  Q    V    |          |          |          |
 7+30       0.1035      0.21  Q    V    |          |          |          |
 7+35       0.1049      0.21  Q    V    |          |          |          |
 7+40       0.1064      0.21  Q    V    |          |          |          |
 7+45       0.1078      0.21  Q    V    |          |          |          |
 7+50       0.1093      0.21  Q    V    |          |          |          |
 7+55       0.1108      0.21  Q    V    |          |          |          |
 8+ 0       0.1123      0.22  Q    V    |          |          |          |
 8+ 5       0.1138      0.22  Q    V    |          |          |          |
 8+10       0.1153      0.22  Q    V    |          |          |          |
 8+15       0.1168      0.22  Q    V    |          |          |          |
 8+20       0.1183      0.22  Q    V    |          |          |          |
 8+25       0.1199      0.22  Q    V    |          |          |          |
 8+30       0.1214      0.22  Q     V   |          |          |          |
 8+35       0.1230      0.23  Q     V   |          |          |          |
 8+40       0.1245      0.23  Q     V   |          |          |          |
 8+45       0.1261      0.23  Q     V   |          |          |          |
 8+50       0.1277      0.23  Q     V   |          |          |          |
 8+55       0.1293      0.23  Q     V   |          |          |          |
 9+ 0       0.1309      0.23  Q     V   |          |          |          |
 9+ 5       0.1326      0.24  Q     V   |          |          |          |
 9+10       0.1342      0.24  Q     V   |          |          |          |
 9+15       0.1358      0.24  Q     V   |          |          |          |
 9+20       0.1375      0.24  Q     V   |          |          |          |
 9+25       0.1392      0.24  Q     V   |          |          |          |
 9+30       0.1409      0.25  Q     V   |          |          |          |
 9+35       0.1426      0.25  Q      V  |          |          |          |
 9+40       0.1443      0.25  Q      V  |          |          |          |
 9+45       0.1460      0.25  |Q     V  |          |          |          |
 9+50       0.1478      0.25  |Q     V  |          |          |          |
 9+55       0.1495      0.26  |Q     V  |          |          |          |
10+ 0       0.1513      0.26  |Q     V  |          |          |          |
10+ 5       0.1531      0.26  |Q     V  |          |          |          |
10+10       0.1549      0.26  |Q     V  |          |          |          |
10+15       0.1567      0.26  |Q     V  |          |          |          |
10+20       0.1585      0.27  |Q     V  |          |          |          |
10+25       0.1604      0.27  |Q     V  |          |          |          |
10+30       0.1622      0.27  |Q      V |          |          |          |
10+35       0.1641      0.27  |Q      V |          |          |          |
10+40       0.1660      0.28  |Q      V |          |          |          |
10+45       0.1680      0.28  |Q      V |          |          |          |
10+50       0.1699      0.28  |Q      V |          |          |          |
10+55       0.1719      0.28  |Q      V |          |          |          |
11+ 0       0.1738      0.29  |Q      V |          |          |          |
11+ 5       0.1758      0.29  |Q      V |          |          |          |
11+10       0.1779      0.29  |Q      V |          |          |          |
11+15       0.1799      0.30  |Q      V |          |          |          |
11+20       0.1820      0.30  |Q       V|          |          |          |
11+25       0.1840      0.30  |Q       V|          |          |          |
11+30       0.1862      0.31  |Q       V|          |          |          |
11+35       0.1883      0.31  |Q       V|          |          |          |
11+40       0.1904      0.31  |Q       V|          |          |          |
11+45       0.1926      0.32  |Q       V|          |          |          |
11+50       0.1948      0.32  |Q       V|          |          |          |
11+55       0.1971      0.32  |Q       V|          |          |          |
12+ 0       0.1993      0.33  |Q       V|          |          |          |
12+ 5       0.2017      0.34  |Q       V|          |          |          |
12+10       0.2043      0.38  |Q        V          |          |          |
12+15       0.2071      0.40  |Q        V          |          |          |
12+20       0.2099      0.41  |Q        V          |          |          |
12+25       0.2128      0.42  |Q        V          |          |          |
12+30       0.2158      0.43  |Q        V          |          |          |
12+35       0.2188      0.43  |Q        V          |          |          |
12+40       0.2218      0.44  |Q        V          |          |          |
12+45       0.2249      0.45  |Q         |V         |          |          |
12+50       0.2280      0.45  |Q         |V         |          |          |
12+55       0.2311      0.46  |Q         |V         |          |          |
```

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13+ 0       0.2343      0.47  |Q        |V        |         |         |
13+ 5       0.2376      0.47  |Q        |V        |         |         |
13+10       0.2409      0.48  |Q        |V        |         |         |
13+15       0.2442      0.49  |Q        | V       |         |         |
13+20       0.2476      0.49  |Q        | V       |         |         |
13+25       0.2511      0.50  | Q       | V       |         |         |
13+30       0.2546      0.51  | Q       | V       |         |         |
13+35       0.2582      0.52  | Q       | V       |         |         |
13+40       0.2618      0.53  | Q       | V       |         |         |
13+45       0.2655      0.54  | Q       |  V      |         |         |
13+50       0.2693      0.55  | Q       |  V      |         |         |
13+55       0.2731      0.56  | Q       |  V      |         |         |
14+ 0       0.2771      0.57  | Q       |  V      |         |         |
14+ 5       0.2811      0.58  | Q       |  V      |         |         |
14+10       0.2853      0.61  | Q       |   V     |         |         |
14+15       0.2897      0.63  | Q       |   V     |         |         |
14+20       0.2942      0.65  | Q       |   V     |         |         |
14+25       0.2988      0.67  | Q       |   V     |         |         |
14+30       0.3036      0.70  | Q       |    V    |         |         |
14+35       0.3086      0.72  | Q       |    V    |         |         |
14+40       0.3137      0.75  | Q       |    V    |         |         |
14+45       0.3191      0.78  |  Q      |    V    |         |         |
14+50       0.3247      0.81  |  Q      |     V   |         |         |
14+55       0.3304      0.84  |  Q      |     V   |         |         |
15+ 0       0.3365      0.88  |  Q      |     V   |         |         |
15+ 5       0.3428      0.92  |  Q      |     V   |         |         |
15+10       0.3495      0.97  |  Q      |      V  |         |         |
15+15       0.3565      1.02  |   Q     |      V  |         |         |
15+20       0.3640      1.09  |   Q     |       V |         |         |
15+25       0.3718      1.13  |   Q     |       V |         |         |
15+30       0.3795      1.12  |   Q     |       V |         |         |
15+35       0.3875      1.16  |   Q     |        V|         |         |
15+40       0.3963      1.28  |    Q    |        V|         |         |
15+45       0.4062      1.43  |    Q    |         V         |         |
15+50       0.4178      1.69  |     Q   |         V         |         |
15+55       0.4318      2.03  |       Q |          V        |         |
16+ 0       0.4507      2.74  |         Q          | V      |         |
16+ 5       0.4817      4.50  |          |       Q |  V     |         |
16+10       0.5392      8.35  |          |         |     V  |  Q      |
16+15       0.5732      4.94  |          |        Q|       V |         |
16+20       0.5935      2.95  |          |Q        |        V|         |
16+25       0.6073      2.00  |       Q  |         |         V         |
16+30       0.6177      1.50  |     Q    |         |         V         |
16+35       0.6264      1.26  |    Q     |         |         |V        |
16+40       0.6340      1.10  |   Q      |         |         |V        |
16+45       0.6406      0.96  |  Q       |         |         |V        |
16+50       0.6465      0.86  |  Q       |         |         | V       |
16+55       0.6520      0.79  |  Q       |         |         | V       |
17+ 0       0.6570      0.73  | Q        |         |         | V       |
17+ 5       0.6617      0.68  | Q        |         |         | V       |
17+10       0.6661      0.63  | Q        |         |         | V       |
17+15       0.6701      0.59  | Q        |         |         |  V      |
17+20       0.6740      0.57  | Q        |         |         |  V      |
17+25       0.6778      0.54  | Q        |         |         |  V      |
17+30       0.6814      0.52  | Q        |         |         |  V      |
17+35       0.6848      0.50  | Q        |         |         |  V      |
17+40       0.6882      0.49  |Q         |         |         |   V     |
17+45       0.6915      0.47  |Q         |         |         |   V     |
17+50       0.6946      0.46  |Q         |         |         |   V     |
17+55       0.6977      0.45  |Q         |         |         |   V     |
18+ 0       0.7007      0.44  |Q         |         |         |   V     |
18+ 5       0.7036      0.42  |Q         |         |         |   V     |
18+10       0.7062      0.37  |Q         |         |         |   V     |
18+15       0.7085      0.35  |Q         |         |         |    V    |
18+20       0.7108      0.33  |Q         |         |         |    V    |
18+25       0.7130      0.32  |Q         |         |         |    V    |
18+30       0.7152      0.31  |Q         |         |         |    V    |
18+35       0.7173      0.30  |Q         |         |         |    V    |
18+40       0.7193      0.30  |Q         |         |         |    V    |
18+45       0.7213      0.29  |Q         |         |         |    V    |
18+50       0.7233      0.29  |Q         |         |         |    V    |
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  18+55      0.7252      0.28  |Q        |         |         |    V    |
  19+ 0      0.7271      0.27  |Q        |         |         |     V   |
  19+ 5      0.7289      0.27  |Q        |         |         |     V   |
  19+10      0.7308      0.26  |Q        |         |         |     V   |
  19+15      0.7326      0.26  |Q        |         |         |     V   |
  19+20      0.7343      0.26  |Q        |         |         |     V   |
  19+25      0.7360      0.25  |Q        |         |         |     V   |
  19+30      0.7377      0.25  Q         |         |         |     V   |
  19+35      0.7394      0.24  Q         |         |         |     V   |
  19+40      0.7411      0.24  Q         |         |         |     V   |
  19+45      0.7427      0.24  Q         |         |         |     V   |
  19+50      0.7443      0.23  Q         |         |         |     V   |
  19+55      0.7459      0.23  Q         |         |         |     V   |
  20+ 0      0.7475      0.23  Q         |         |         |      V  |
  20+ 5      0.7490      0.22  Q         |         |         |      V  |
  20+10      0.7505      0.22  Q         |         |         |      V  |
  20+15      0.7520      0.22  Q         |         |         |      V  |
  20+20      0.7535      0.21  Q         |         |         |      V  |
  20+25      0.7550      0.21  Q         |         |         |      V  |
  20+30      0.7564      0.21  Q         |         |         |      V  |
  20+35      0.7578      0.21  Q         |         |         |      V  |
  20+40      0.7592      0.20  Q         |         |         |      V  |
  20+45      0.7606      0.20  Q         |         |         |      V  |
  20+50      0.7620      0.20  Q         |         |         |      V  |
  20+55      0.7634      0.20  Q         |         |         |      V  |
  21+ 0      0.7647      0.20  Q         |         |         |      V  |
  21+ 5      0.7661      0.19  Q         |         |         |      V  |
  21+10      0.7674      0.19  Q         |         |         |       V |
  21+15      0.7687      0.19  Q         |         |         |       V |
  21+20      0.7700      0.19  Q         |         |         |       V |
  21+25      0.7713      0.19  Q         |         |         |       V |
  21+30      0.7725      0.18  Q         |         |         |       V |
  21+35      0.7738      0.18  Q         |         |         |       V |
  21+40      0.7750      0.18  Q         |         |         |       V |
  21+45      0.7763      0.18  Q         |         |         |       V |
  21+50      0.7775      0.18  Q         |         |         |       V |
  21+55      0.7787      0.18  Q         |         |         |       V |
  22+ 0      0.7799      0.17  Q         |         |         |       V |
  22+ 5      0.7811      0.17  Q         |         |         |       V |
  22+10      0.7822      0.17  Q         |         |         |       V |
  22+15      0.7834      0.17  Q         |         |         |       V |
  22+20      0.7846      0.17  Q         |         |         |       V |
  22+25      0.7857      0.17  Q         |         |         |       V |
  22+30      0.7868      0.17  Q         |         |         |       V |
  22+35      0.7880      0.16  Q         |         |         |        V|
  22+40      0.7891      0.16  Q         |         |         |        V|
  22+45      0.7902      0.16  Q         |         |         |        V|
  22+50      0.7913      0.16  Q         |         |         |        V|
  22+55      0.7924      0.16  Q         |         |         |        V|
  23+ 0      0.7935      0.16  Q         |         |         |        V|
  23+ 5      0.7946      0.16  Q         |         |         |        V|
  23+10      0.7956      0.16  Q         |         |         |        V|
  23+15      0.7967      0.15  Q         |         |         |        V|
  23+20      0.7977      0.15  Q         |         |         |        V|
  23+25      0.7988      0.15  Q         |         |         |        V|
  23+30      0.7998      0.15  Q         |         |         |        V|
  23+35      0.8009      0.15  Q         |         |         |        V|
  23+40      0.8019      0.15  Q         |         |         |        V|
  23+45      0.8029      0.15  Q         |         |         |        V|
  23+50      0.8039      0.15  Q         |         |         |        V|
  23+55      0.8049      0.15  Q         |         |         |        V|
  24+ 0      0.8059      0.14  Q         |         |         |        V|
  24+ 5      0.8068      0.13  Q         |         |         |        V|
  24+10      0.8072      0.06  Q         |         |         |        V|
  24+15      0.8073      0.02  Q         |         |         |        V|
  24+20      0.8074      0.01  Q         |         |         |        V|
  24+25      0.8074      0.00  Q         |         |         |        V|
  24+30      0.8074      0.00  Q         |         |         |        V|
  24+35      0.8074      0.00  Q         |         |         |        V|
  24+40      0.8074      0.00  Q         |         |         |        V|
-------------------------------------------------------------------------
```

- 5 Year 3 Hour Post-Development Unit Hydrograph – Area 'E'

```
        U n i t   H y d r o g r a p h   A n a l y s i s

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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'E' - 5 YEAR 3 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

        Storm Event Year = 5

        Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 71.2       3.5          0.61     C     0.250     0.144    0.036
 71.2       2.3          0.39     D     0.200     0.144    0.029

Area-averaged adjusted loss rate Fm (In/Hr) =  0.033

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
     0.51   0.088         71.2      52.4       9.07     0.047
     3.03   0.523         98.0      98.0       0.20     0.923

     0.32   0.056         71.2      52.4       9.07     0.047
     1.93   0.333         98.0      98.0       0.20     0.923

Area-averaged catchment yield fraction, Y =  0.797
Area-averaged low loss fraction, Yb =  0.203
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.118 (hours)
Watershed area =       5.79(Ac.)
Catchment Lag time =   0.094 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 88.3517
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.033(In/Hr)
Average low loss rate fraction (Yb) = 0.203 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.260(In)
Computed peak 30-minute rainfall =  0.590(In)
Specified peak 1-hour rainfall =  0.780(In)
Computed peak 3-hour rainfall =  1.310(In)
Specified peak 6-hour rainfall =  1.810(In)
Specified peak 24-hour rainfall =  3.030(In)
```

```
Rainfall depth area reduction factors:
Using a total area of       5.79(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000     Adjusted rainfall =  0.260(In)
30-minute factor = 1.000    Adjusted rainfall =  0.590(In)
1-hour factor = 1.000       Adjusted rainfall =  0.780(In)
3-hour factor = 1.000       Adjusted rainfall =  1.310(In)
6-hour factor = 1.000       Adjusted rainfall =  1.810(In)
24-hour factor = 1.000 Adjusted rainfall =  3.030(In)
```

U n i t H y d r o g r a p h

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 70.02 (CFS))	
1	10.863	7.607
2	63.680	36.984
3	85.035	14.953
4	93.798	6.136
5	97.643	2.692
6	98.838	0.837
7	99.491	0.457
8	100.000	0.356

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.2599	0.2599
2	0.3569	0.0970
3	0.4296	0.0727
4	0.4900	0.0604
5	0.5427	0.0526
6	0.5898	0.0472
7	0.6276	0.0378
8	0.6623	0.0347
9	0.6945	0.0322
10	0.7246	0.0301
11	0.7529	0.0284
12	0.7798	0.0269
13	0.8098	0.0300
14	0.8387	0.0288
15	0.8664	0.0278
16	0.8932	0.0268
17	0.9192	0.0259
18	0.9443	0.0251
19	0.9687	0.0244
20	0.9925	0.0237
21	1.0156	0.0231
22	1.0382	0.0226
23	1.0602	0.0220
24	1.0817	0.0215
25	1.1028	0.0211
26	1.1234	0.0206
27	1.1436	0.0202
28	1.1634	0.0198
29	1.1828	0.0194
30	1.2019	0.0191
31	1.2207	0.0188
32	1.2391	0.0184
33	1.2572	0.0181
34	1.2751	0.0178
35	1.2926	0.0176
36	1.3100	0.0173

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0173	0.0028	0.0145

2	0.0176	0.0028	0.0148
3	0.0181	0.0028	0.0154
4	0.0184	0.0028	0.0157
5	0.0191	0.0028	0.0163
6	0.0194	0.0028	0.0167
7	0.0202	0.0028	0.0174
8	0.0206	0.0028	0.0178
9	0.0215	0.0028	0.0188
10	0.0220	0.0028	0.0193
11	0.0231	0.0028	0.0204
12	0.0237	0.0028	0.0210
13	0.0251	0.0028	0.0224
14	0.0259	0.0028	0.0232
15	0.0278	0.0028	0.0250
16	0.0288	0.0028	0.0261
17	0.0269	0.0028	0.0241
18	0.0284	0.0028	0.0256
19	0.0322	0.0028	0.0294
20	0.0347	0.0028	0.0319
21	0.0472	0.0028	0.0444
22	0.0526	0.0028	0.0499
23	0.0727	0.0028	0.0699
24	0.0970	0.0028	0.0942
25	0.2599	0.0028	0.2572
26	0.0604	0.0028	0.0576
27	0.0378	0.0028	0.0350
28	0.0301	0.0028	0.0273
29	0.0300	0.0028	0.0273
30	0.0268	0.0028	0.0240
31	0.0244	0.0028	0.0217
32	0.0226	0.0028	0.0198
33	0.0211	0.0028	0.0183
34	0.0198	0.0028	0.0170
35	0.0188	0.0028	0.0160
36	0.0178	0.0028	0.0151

Total soil rain loss = 0.10(In)
Total effective rainfall = 1.21(In)
Peak flow rate in flood hydrograph = 11.98(CFS)

++

3 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	5.0	10.0	15.0	20.0
0+ 5	0.0008	0.11	Q	|	|	|	|
0+10	0.0052	0.65	VQ	|	|	|	|
0+15	0.0113	0.88	VQ	|	|	|	|
0+20	0.0182	1.00	|Q	|	|	|	|
0+25	0.0255	1.06	|VQ	|	|	|	|
0+30	0.0332	1.11	| Q	|	|	|	|
0+35	0.0411	1.15	| Q	|	|	|	|
0+40	0.0493	1.20	| QV	|	|	|	|
0+45	0.0578	1.23	| QV	|	|	|	|
0+50	0.0667	1.29	| Q V	|	|	|	|
0+55	0.0758	1.33	| Q V	|	|	|	|
1+ 0	0.0854	1.39	| Q V	|	|	|	|
1+ 5	0.0954	1.45	| Q V	|	|	|	|
1+10	0.1059	1.52	| Q V	|	|	|	|
1+15	0.1169	1.60	| Q V	|	|	|	|
1+20	0.1286	1.70	| Q V |	|	|	|	|
1+25	0.1407	1.76	| Q V|	|	|	|	|
1+30	0.1526	1.73	| Q V	|	|	|	|
1+35	0.1649	1.79	| Q |V	|	|	|	|
1+40	0.1785	1.97	| Q | V	|	|	|	|
1+45	0.1938	2.22	| Q | V	|	|	|	|

```
   1+50       0.2130      2.79  |    Q    |   V     |         |         |
   1+55       0.2361      3.36  |     Q   |     V   |         |         |
   2+ 0       0.2668      4.45  |       Q |       V |         |         |
   2+ 5       0.3147      6.96  |         |  Q      |V        |         |
   2+10       0.3973     11.98  |         |         |  Q   V  |         |
   2+15       0.4461      7.08  |         |   Q     |         V         |
   2+20       0.4756      4.29  |       Q |         |         | V       |
   2+25       0.4957      2.92  |    Q    |         |         |  V      |
   2+30       0.5112      2.25  |   Q     |         |         |    V    |
   2+35       0.5245      1.92  |  Q      |         |         |    V    |
   2+40       0.5362      1.70  |  Q      |         |         |     V   |
   2+45       0.5463      1.48  | Q       |         |         |      V  |
   2+50       0.5556      1.35  | Q       |         |         |       V |
   2+55       0.5642      1.25  | Q       |         |         |       V |
   3+ 0       0.5722      1.17  | Q       |         |         |        V|
   3+ 5       0.5790      0.99  |Q        |         |         |        V|
   3+10       0.5818      0.40  Q         |         |         |        V|
   3+15       0.5829      0.17  Q         |         |         |        V|
   3+20       0.5834      0.07  Q         |         |         |        V|
   3+25       0.5836      0.03  Q         |         |         |        V|
   3+30       0.5837      0.01  Q         |         |         |        V|
   3+35       0.5837      0.01  Q         |         |         |         V
-------------------------------------------------------------------------
```

- 5 Year 6 Hour Post-Development Unit Hydrograph – Area 'E'

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       U n i t   H y d r o g r a p h   A n a l y s i s

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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

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RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'E' - 5 YEAR 6 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 5

       Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 71.2       3.5          0.61     C     0.250     0.144    0.036
 71.2       2.3          0.39     D     0.200     0.144    0.029

Area-averaged adjusted loss rate Fm (In/Hr) =  0.033

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
     0.51   0.088         71.2      52.4       9.07     0.047
     3.03   0.523         98.0      98.0       0.20     0.923

     0.32   0.056         71.2      52.4       9.07     0.047
     1.93   0.333         98.0      98.0       0.20     0.923

Area-averaged catchment yield fraction, Y =  0.797
Area-averaged low loss fraction, Yb =  0.203
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.118 (hours)
Watershed area =       5.79(Ac.)
Catchment Lag time =   0.094 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 88.3517
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.033(In/Hr)
Average low loss rate fraction (Yb) = 0.203 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.260(In)
Computed peak 30-minute rainfall =  0.590(In)
Specified peak 1-hour rainfall =  0.780(In)
Computed peak 3-hour rainfall =  1.310(In)
Specified peak 6-hour rainfall =  1.810(In)
Specified peak 24-hour rainfall =  3.030(In)
```

```
Rainfall depth area reduction factors:
Using a total area of       5.79(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000     Adjusted rainfall =  0.260(In)
30-minute factor = 1.000    Adjusted rainfall =  0.590(In)
1-hour factor = 1.000       Adjusted rainfall =  0.780(In)
3-hour factor = 1.000       Adjusted rainfall =  1.310(In)
6-hour factor = 1.000       Adjusted rainfall =  1.810(In)
24-hour factor = 1.000 Adjusted rainfall =  3.030(In)
------------------------------------------------------------------------

                      U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
------------------------------------------------------------------------
               (K =        70.02 (CFS))

  1               10.863                   7.607
  2               63.680                  36.984
  3               85.035                  14.953
  4               93.798                   6.136
  5               97.643                   2.692
  6               98.838                   0.837
  7               99.491                   0.457
  8              100.000                   0.356
------------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.2599              0.2599
  2              0.3569              0.0970
  3              0.4296              0.0727
  4              0.4900              0.0604
  5              0.5427              0.0526
  6              0.5898              0.0472
  7              0.6276              0.0378
  8              0.6623              0.0347
  9              0.6945              0.0322
 10              0.7246              0.0301
 11              0.7529              0.0284
 12              0.7798              0.0269
 13              0.8098              0.0300
 14              0.8387              0.0288
 15              0.8664              0.0278
 16              0.8932              0.0268
 17              0.9192              0.0259
 18              0.9443              0.0251
 19              0.9687              0.0244
 20              0.9925              0.0237
 21              1.0156              0.0231
 22              1.0382              0.0226
 23              1.0602              0.0220
 24              1.0817              0.0215
 25              1.1028              0.0211
 26              1.1234              0.0206
 27              1.1436              0.0202
 28              1.1634              0.0198
 29              1.1828              0.0194
 30              1.2019              0.0191
 31              1.2207              0.0188
 32              1.2391              0.0184
 33              1.2572              0.0181
 34              1.2751              0.0178
 35              1.2926              0.0176
 36              1.3100              0.0173
 37              1.3268              0.0168
 38              1.3434              0.0166
 39              1.3598              0.0164
 40              1.3759              0.0162
 41              1.3919              0.0159
 42              1.4076              0.0157
```

43	1.4231	0.0155
44	1.4385	0.0153
45	1.4536	0.0152
46	1.4686	0.0150
47	1.4834	0.0148
48	1.4981	0.0146
49	1.5126	0.0145
50	1.5269	0.0143
51	1.5410	0.0142
52	1.5551	0.0140
53	1.5689	0.0139
54	1.5827	0.0137
55	1.5963	0.0136
56	1.6098	0.0135
57	1.6231	0.0133
58	1.6363	0.0132
59	1.6494	0.0131
60	1.6624	0.0130
61	1.6753	0.0129
62	1.6880	0.0128
63	1.7007	0.0126
64	1.7132	0.0125
65	1.7256	0.0124
66	1.7380	0.0123
67	1.7502	0.0122
68	1.7623	0.0121
69	1.7744	0.0120
70	1.7863	0.0119
71	1.7982	0.0119
72	1.8100	0.0118

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0118	0.0024	0.0094
2	0.0119	0.0024	0.0095
3	0.0120	0.0024	0.0096
4	0.0121	0.0025	0.0097
5	0.0123	0.0025	0.0098
6	0.0124	0.0025	0.0099
7	0.0126	0.0026	0.0101
8	0.0128	0.0026	0.0102
9	0.0130	0.0026	0.0104
10	0.0131	0.0027	0.0104
11	0.0133	0.0027	0.0106
12	0.0135	0.0027	0.0107
13	0.0137	0.0028	0.0110
14	0.0139	0.0028	0.0111
15	0.0142	0.0028	0.0114
16	0.0143	0.0028	0.0116
17	0.0146	0.0028	0.0119
18	0.0148	0.0028	0.0120
19	0.0152	0.0028	0.0124
20	0.0153	0.0028	0.0126
21	0.0157	0.0028	0.0130
22	0.0159	0.0028	0.0132
23	0.0164	0.0028	0.0136
24	0.0166	0.0028	0.0138
25	0.0173	0.0028	0.0145
26	0.0176	0.0028	0.0148
27	0.0181	0.0028	0.0154
28	0.0184	0.0028	0.0157
29	0.0191	0.0028	0.0163
30	0.0194	0.0028	0.0167
31	0.0202	0.0028	0.0174
32	0.0206	0.0028	0.0178
33	0.0215	0.0028	0.0188
34	0.0220	0.0028	0.0193
35	0.0231	0.0028	0.0204
36	0.0237	0.0028	0.0210

37	0.0251	0.0028	0.0224
38	0.0259	0.0028	0.0232
39	0.0278	0.0028	0.0250
40	0.0288	0.0028	0.0261
41	0.0269	0.0028	0.0241
42	0.0284	0.0028	0.0256
43	0.0322	0.0028	0.0294
44	0.0347	0.0028	0.0319
45	0.0472	0.0028	0.0444
46	0.0526	0.0028	0.0499
47	0.0727	0.0028	0.0699
48	0.0970	0.0028	0.0942
49	0.2599	0.0028	0.2572
50	0.0604	0.0028	0.0576
51	0.0378	0.0028	0.0350
52	0.0301	0.0028	0.0273
53	0.0300	0.0028	0.0273
54	0.0268	0.0028	0.0240
55	0.0244	0.0028	0.0217
56	0.0226	0.0028	0.0198
57	0.0211	0.0028	0.0183
58	0.0198	0.0028	0.0170
59	0.0188	0.0028	0.0160
60	0.0178	0.0028	0.0151
61	0.0168	0.0028	0.0141
62	0.0162	0.0028	0.0134
63	0.0155	0.0028	0.0128
64	0.0150	0.0028	0.0122
65	0.0145	0.0028	0.0117
66	0.0140	0.0028	0.0113
67	0.0136	0.0028	0.0108
68	0.0132	0.0027	0.0105
69	0.0129	0.0026	0.0103
70	0.0125	0.0025	0.0100
71	0.0122	0.0025	0.0098
72	0.0119	0.0024	0.0095

Total soil rain loss = 0.20(In)
Total effective rainfall = 1.61(In)
Peak flow rate in flood hydrograph = 11.98(CFS)

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6 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	5.0	10.0	15.0	20.0
0+ 5	0.0005	0.07	Q	|	|	|	|
0+10	0.0034	0.42	Q	|	|	|	|
0+15	0.0073	0.56	VQ	|	|	|	|
0+20	0.0116	0.63	VQ	|	|	|	|
0+25	0.0161	0.66	VQ	|	|	|	|
0+30	0.0208	0.68	|Q	|	|	|	|
0+35	0.0255	0.69	|Q	|	|	|	|
0+40	0.0303	0.70	|Q	|	|	|	|
0+45	0.0352	0.71	|Q	|	|	|	|
0+50	0.0402	0.72	|QV	|	|	|	|
0+55	0.0452	0.73	|QV	|	|	|	|
1+ 0	0.0503	0.74	|QV	|	|	|	|
1+ 5	0.0554	0.75	|QV	|	|	|	|
1+10	0.0607	0.76	|Q V	|	|	|	|
1+15	0.0660	0.77	|Q V	|	|	|	|
1+20	0.0714	0.79	|Q V	|	|	|	|
1+25	0.0770	0.80	|Q V	|	|	|	|
1+30	0.0826	0.82	|Q V	|	|	|	|
1+35	0.0884	0.84	|Q V	|	|	|	|
1+40	0.0943	0.86	|Q V	|	|	|	|

```
   1+45       0.1003      0.87  |Q   V    |          |          |          |
   1+50       0.1065      0.90  |Q   V    |          |          |          |
   1+55       0.1128      0.91  |Q   V    |          |          |          |
   2+ 0       0.1192      0.94  |Q    V   |          |          |          |
   2+ 5       0.1259      0.96  |Q    V   |          |          |          |
   2+10       0.1327      1.00  |Q    V   |          |          |          |
   2+15       0.1398      1.02  | Q    V  |          |          |          |
   2+20       0.1471      1.06  | Q    V  |          |          |          |
   2+25       0.1546      1.09  | Q    V  |          |          |          |
   2+30       0.1623      1.12  | Q     V |          |          |          |
   2+35       0.1702      1.15  | Q     V |          |          |          |
   2+40       0.1785      1.20  | Q      V|          |          |          |
   2+45       0.1870      1.23  | Q      V|          |          |          |
   2+50       0.1958      1.29  | Q       V          |          |          |
   2+55       0.2050      1.33  | Q       V          |          |          |
   3+ 0       0.2146      1.39  | Q        |V         |          |          |
   3+ 5       0.2246      1.45  | Q        |V         |          |          |
   3+10       0.2351      1.52  |  Q       | V        |          |          |
   3+15       0.2460      1.60  |  Q       | V        |          |          |
   3+20       0.2577      1.70  |  Q       |  V       |          |          |
   3+25       0.2698      1.76  |  Q       |  V       |          |          |
   3+30       0.2817      1.73  |  Q       |   V      |          |          |
   3+35       0.2941      1.79  |  Q       |    V     |          |          |
   3+40       0.3077      1.97  |  Q       |    V     |          |          |
   3+45       0.3230      2.22  |   Q      |     V    |          |          |
   3+50       0.3422      2.79  |    Q     |      V   |          |          |
   3+55       0.3653      3.36  |     Q    |       V  |          |          |
   4+ 0       0.3960      4.45  |        Q |          V          |          |
   4+ 5       0.4439      6.96  |          |  Q       | V        |          |
   4+10       0.5264     11.98  |          |          |  Q   V   |          |
   4+15       0.5752      7.08  |          |   Q      |        V |          |
   4+20       0.6048      4.29  |        Q |          |          |V         |
   4+25       0.6249      2.92  |    Q     |          |          | V        |
   4+30       0.6404      2.25  |   Q      |          |          | V        |
   4+35       0.6536      1.92  |  Q       |          |          |  V       |
   4+40       0.6653      1.70  |  Q       |          |          |   V      |
   4+45       0.6755      1.48  | Q        |          |          |   V      |
   4+50       0.6848      1.35  | Q        |          |          |    V     |
   4+55       0.6934      1.25  | Q        |          |          |    V     |
   5+ 0       0.7014      1.17  | Q        |          |          |     V    |
   5+ 5       0.7089      1.09  | Q        |          |          |     V    |
   5+10       0.7160      1.02  | Q        |          |          |     V    |
   5+15       0.7226      0.97  |Q         |          |          |      V   |
   5+20       0.7290      0.92  |Q         |          |          |      V   |
   5+25       0.7350      0.88  |Q         |          |          |      V   |
   5+30       0.7408      0.84  |Q         |          |          |       V  |
   5+35       0.7463      0.81  |Q         |          |          |       V  |
   5+40       0.7517      0.78  |Q         |          |          |       V  |
   5+45       0.7569      0.75  |Q         |          |          |       V  |
   5+50       0.7619      0.73  |Q         |          |          |        V|
   5+55       0.7668      0.71  |Q         |          |          |        V|
   6+ 0       0.7716      0.69  |Q         |          |          |        V|
   6+ 5       0.7757      0.60  |Q         |          |          |        V|
   6+10       0.7774      0.25  Q          |          |          |        V|
   6+15       0.7781      0.10  Q          |          |          |        V|
   6+20       0.7784      0.04  Q          |          |          |        V|
   6+25       0.7785      0.02  Q          |          |          |        V|
   6+30       0.7786      0.01  Q          |          |          |        V|
   6+35       0.7786      0.00  Q          |          |          |         V
-------------------------------------------------------------------------
```

- 5 Year 12 Hour Post-Development Unit Hydrograph – Area 'E'

```
        U n i t   H y d r o g r a p h   A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989-2012, Version 7.2

        Study date  10/11/16   File Name pre00512.out


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'E' - 5 YEAR 12 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

        Storm Event Year = 5

        Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 71.2       3.5          0.61     C     0.250     0.144    0.036
 71.2       2.3          0.39     D     0.200     0.144    0.029

Area-averaged adjusted loss rate Fm (In/Hr) =  0.033

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
     0.51   0.088         71.2      52.4       9.07     0.047
     3.03   0.523         98.0      98.0       0.20     0.923

     0.32   0.056         71.2      52.4       9.07     0.047
     1.93   0.333         98.0      98.0       0.20     0.923

Area-averaged catchment yield fraction, Y =  0.797
Area-averaged low loss fraction, Yb =  0.203
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.118 (hours)
Watershed area =       5.79(Ac.)
Catchment Lag time =   0.094 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 88.3517
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.033(In/Hr)
Average low loss rate fraction (Yb) = 0.203 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.260(In)
Computed peak 30-minute rainfall =  0.590(In)
Specified peak 1-hour rainfall =  0.780(In)
Computed peak 3-hour rainfall =  1.310(In)
Specified peak 6-hour rainfall =  1.810(In)
Specified peak 24-hour rainfall =  3.030(In)
```

```
Rainfall depth area reduction factors:
Using a total area of       5.79(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000     Adjusted rainfall =  0.260(In)
30-minute factor = 1.000    Adjusted rainfall =  0.590(In)
1-hour factor = 1.000       Adjusted rainfall =  0.780(In)
3-hour factor = 1.000       Adjusted rainfall =  1.310(In)
6-hour factor = 1.000       Adjusted rainfall =  1.810(In)
24-hour factor = 1.000 Adjusted rainfall =  3.030(In)
------------------------------------------------------------------------

                      U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
------------------------------------------------------------------------
               (K =        70.02 (CFS))

  1               10.863                   7.607
  2               63.680                  36.984
  3               85.035                  14.953
  4               93.798                   6.136
  5               97.643                   2.692
  6               98.838                   0.837
  7               99.491                   0.457
  8              100.000                   0.356
------------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.2599              0.2599
  2              0.3569              0.0970
  3              0.4296              0.0727
  4              0.4900              0.0604
  5              0.5427              0.0526
  6              0.5898              0.0472
  7              0.6276              0.0378
  8              0.6623              0.0347
  9              0.6945              0.0322
 10              0.7246              0.0301
 11              0.7529              0.0284
 12              0.7798              0.0269
 13              0.8098              0.0300
 14              0.8387              0.0288
 15              0.8664              0.0278
 16              0.8932              0.0268
 17              0.9192              0.0259
 18              0.9443              0.0251
 19              0.9687              0.0244
 20              0.9925              0.0237
 21              1.0156              0.0231
 22              1.0382              0.0226
 23              1.0602              0.0220
 24              1.0817              0.0215
 25              1.1028              0.0211
 26              1.1234              0.0206
 27              1.1436              0.0202
 28              1.1634              0.0198
 29              1.1828              0.0194
 30              1.2019              0.0191
 31              1.2207              0.0188
 32              1.2391              0.0184
 33              1.2572              0.0181
 34              1.2751              0.0178
 35              1.2926              0.0176
 36              1.3100              0.0173
 37              1.3268              0.0168
 38              1.3434              0.0166
 39              1.3598              0.0164
 40              1.3759              0.0162
 41              1.3919              0.0159
 42              1.4076              0.0157
```

43	1.4231	0.0155
44	1.4385	0.0153
45	1.4536	0.0152
46	1.4686	0.0150
47	1.4834	0.0148
48	1.4981	0.0146
49	1.5126	0.0145
50	1.5269	0.0143
51	1.5410	0.0142
52	1.5551	0.0140
53	1.5689	0.0139
54	1.5827	0.0137
55	1.5963	0.0136
56	1.6098	0.0135
57	1.6231	0.0133
58	1.6363	0.0132
59	1.6494	0.0131
60	1.6624	0.0130
61	1.6753	0.0129
62	1.6880	0.0128
63	1.7007	0.0126
64	1.7132	0.0125
65	1.7256	0.0124
66	1.7380	0.0123
67	1.7502	0.0122
68	1.7623	0.0121
69	1.7744	0.0120
70	1.7863	0.0119
71	1.7982	0.0119
72	1.8100	0.0118
73	1.8193	0.0093
74	1.8285	0.0092
75	1.8376	0.0091
76	1.8467	0.0091
77	1.8557	0.0090
78	1.8646	0.0089
79	1.8735	0.0088
80	1.8823	0.0088
81	1.8910	0.0087
82	1.8996	0.0086
83	1.9082	0.0086
84	1.9167	0.0085
85	1.9251	0.0084
86	1.9335	0.0084
87	1.9419	0.0083
88	1.9501	0.0083
89	1.9583	0.0082
90	1.9665	0.0081
91	1.9746	0.0081
92	1.9826	0.0080
93	1.9906	0.0080
94	1.9985	0.0079
95	2.0064	0.0079
96	2.0142	0.0078
97	2.0220	0.0078
98	2.0297	0.0077
99	2.0374	0.0077
100	2.0450	0.0076
101	2.0526	0.0076
102	2.0601	0.0075
103	2.0676	0.0075
104	2.0750	0.0074
105	2.0824	0.0074
106	2.0898	0.0073
107	2.0971	0.0073
108	2.1044	0.0073
109	2.1116	0.0072
110	2.1188	0.0072
111	2.1259	0.0071
112	2.1330	0.0071
113	2.1401	0.0071

114	2.1471	0.0070
115	2.1541	0.0070
116	2.1610	0.0069
117	2.1679	0.0069
118	2.1748	0.0069
119	2.1816	0.0068
120	2.1884	0.0068
121	2.1952	0.0068
122	2.2019	0.0067
123	2.2086	0.0067
124	2.2152	0.0067
125	2.2219	0.0066
126	2.2284	0.0066
127	2.2350	0.0066
128	2.2415	0.0065
129	2.2480	0.0065
130	2.2545	0.0065
131	2.2609	0.0064
132	2.2673	0.0064
133	2.2737	0.0064
134	2.2800	0.0063
135	2.2863	0.0063
136	2.2926	0.0063
137	2.2989	0.0063
138	2.3051	0.0062
139	2.3113	0.0062
140	2.3174	0.0062
141	2.3236	0.0061
142	2.3297	0.0061
143	2.3358	0.0061
144	2.3418	0.0061

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0061	0.0012	0.0048
2	0.0061	0.0012	0.0049
3	0.0061	0.0012	0.0049
4	0.0062	0.0012	0.0049
5	0.0062	0.0013	0.0050
6	0.0063	0.0013	0.0050
7	0.0063	0.0013	0.0050
8	0.0063	0.0013	0.0051
9	0.0064	0.0013	0.0051
10	0.0064	0.0013	0.0051
11	0.0065	0.0013	0.0052
12	0.0065	0.0013	0.0052
13	0.0066	0.0013	0.0053
14	0.0066	0.0013	0.0053
15	0.0067	0.0014	0.0053
16	0.0067	0.0014	0.0054
17	0.0068	0.0014	0.0054
18	0.0068	0.0014	0.0054
19	0.0069	0.0014	0.0055
20	0.0069	0.0014	0.0055
21	0.0070	0.0014	0.0056
22	0.0071	0.0014	0.0056
23	0.0071	0.0014	0.0057
24	0.0072	0.0015	0.0057
25	0.0073	0.0015	0.0058
26	0.0073	0.0015	0.0058
27	0.0074	0.0015	0.0059
28	0.0074	0.0015	0.0059
29	0.0075	0.0015	0.0060
30	0.0076	0.0015	0.0060
31	0.0077	0.0016	0.0061
32	0.0077	0.0016	0.0062
33	0.0078	0.0016	0.0062
34	0.0079	0.0016	0.0063
35	0.0080	0.0016	0.0064

36	0.0080	0.0016	0.0064
37	0.0081	0.0017	0.0065
38	0.0082	0.0017	0.0065
39	0.0083	0.0017	0.0066
40	0.0084	0.0017	0.0067
41	0.0085	0.0017	0.0068
42	0.0086	0.0017	0.0068
43	0.0087	0.0018	0.0069
44	0.0088	0.0018	0.0070
45	0.0089	0.0018	0.0071
46	0.0090	0.0018	0.0072
47	0.0091	0.0019	0.0073
48	0.0092	0.0019	0.0074
49	0.0118	0.0024	0.0094
50	0.0119	0.0024	0.0095
51	0.0120	0.0024	0.0096
52	0.0121	0.0025	0.0097
53	0.0123	0.0025	0.0098
54	0.0124	0.0025	0.0099
55	0.0126	0.0026	0.0101
56	0.0128	0.0026	0.0102
57	0.0130	0.0026	0.0104
58	0.0131	0.0027	0.0104
59	0.0133	0.0027	0.0106
60	0.0135	0.0027	0.0107
61	0.0137	0.0028	0.0110
62	0.0139	0.0028	0.0111
63	0.0142	0.0028	0.0114
64	0.0143	0.0028	0.0116
65	0.0146	0.0028	0.0119
66	0.0148	0.0028	0.0120
67	0.0152	0.0028	0.0124
68	0.0153	0.0028	0.0126
69	0.0157	0.0028	0.0130
70	0.0159	0.0028	0.0132
71	0.0164	0.0028	0.0136
72	0.0166	0.0028	0.0138
73	0.0173	0.0028	0.0145
74	0.0176	0.0028	0.0148
75	0.0181	0.0028	0.0154
76	0.0184	0.0028	0.0157
77	0.0191	0.0028	0.0163
78	0.0194	0.0028	0.0167
79	0.0202	0.0028	0.0174
80	0.0206	0.0028	0.0178
81	0.0215	0.0028	0.0188
82	0.0220	0.0028	0.0193
83	0.0231	0.0028	0.0204
84	0.0237	0.0028	0.0210
85	0.0251	0.0028	0.0224
86	0.0259	0.0028	0.0232
87	0.0278	0.0028	0.0250
88	0.0288	0.0028	0.0261
89	0.0269	0.0028	0.0241
90	0.0284	0.0028	0.0256
91	0.0322	0.0028	0.0294
92	0.0347	0.0028	0.0319
93	0.0472	0.0028	0.0444
94	0.0526	0.0028	0.0499
95	0.0727	0.0028	0.0699
96	0.0970	0.0028	0.0942
97	0.2599	0.0028	0.2572
98	0.0604	0.0028	0.0576
99	0.0378	0.0028	0.0350
100	0.0301	0.0028	0.0273
101	0.0300	0.0028	0.0273
102	0.0268	0.0028	0.0240
103	0.0244	0.0028	0.0217
104	0.0226	0.0028	0.0198
105	0.0211	0.0028	0.0183
106	0.0198	0.0028	0.0170

```
      107              0.0188           0.0028              0.0160
      108              0.0178           0.0028              0.0151
      109              0.0168           0.0028              0.0141
      110              0.0162           0.0028              0.0134
      111              0.0155           0.0028              0.0128
      112              0.0150           0.0028              0.0122
      113              0.0145           0.0028              0.0117
      114              0.0140           0.0028              0.0113
      115              0.0136           0.0028              0.0108
      116              0.0132           0.0027              0.0105
      117              0.0129           0.0026              0.0103
      118              0.0125           0.0025              0.0100
      119              0.0122           0.0025              0.0098
      120              0.0119           0.0024              0.0095
      121              0.0093           0.0019              0.0074
      122              0.0091           0.0018              0.0072
      123              0.0088           0.0018              0.0071
      124              0.0086           0.0018              0.0069
      125              0.0084           0.0017              0.0067
      126              0.0083           0.0017              0.0066
      127              0.0081           0.0016              0.0065
      128              0.0079           0.0016              0.0063
      129              0.0078           0.0016              0.0062
      130              0.0076           0.0015              0.0061
      131              0.0075           0.0015              0.0060
      132              0.0073           0.0015              0.0059
      133              0.0072           0.0015              0.0058
      134              0.0071           0.0014              0.0057
      135              0.0070           0.0014              0.0056
      136              0.0069           0.0014              0.0055
      137              0.0068           0.0014              0.0054
      138              0.0067           0.0013              0.0053
      139              0.0066           0.0013              0.0052
      140              0.0065           0.0013              0.0052
      141              0.0064           0.0013              0.0051
      142              0.0063           0.0013              0.0050
      143              0.0062           0.0013              0.0049
      144              0.0061           0.0012              0.0049
      ---------------------------------------------------------------------
      ---------------------------------------------------------------------
      Total soil rain loss =      0.30(In)
      Total effective rainfall =      2.04(In)
      Peak flow rate in flood hydrograph =     11.98(CFS)
      ---------------------------------------------------------------------
      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                        12 - H O U R    S T O R M
                   R u n o f f      H y d r o g r a p h
      ---------------------------------------------------------------------
                Hydrograph in   5   Minute intervals ((CFS))

      ---------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0        5.0      10.0      15.0      20.0
---------------------------------------------------------------------------
  0+ 5       0.0003      0.04  Q         |         |         |         |
  0+10       0.0017      0.22  Q         |         |         |         |
  0+15       0.0037      0.29  Q         |         |         |         |
  0+20       0.0059      0.32  Q         |         |         |         |
  0+25       0.0082      0.34  Q         |         |         |         |
  0+30       0.0106      0.34  Q         |         |         |         |
  0+35       0.0130      0.35  Q         |         |         |         |
  0+40       0.0154      0.35  Q         |         |         |         |
  0+45       0.0178      0.35  Q         |         |         |         |
  0+50       0.0203      0.36  Q         |         |         |         |
  0+55       0.0227      0.36  Q         |         |         |         |
  1+ 0       0.0252      0.36  QV        |         |         |         |
  1+ 5       0.0277      0.36  QV        |         |         |         |
  1+10       0.0303      0.37  QV        |         |         |         |
  1+15       0.0328      0.37  QV        |         |         |         |
  1+20       0.0354      0.37  QV        |         |         |         |
  1+25       0.0379      0.37  QV        |         |         |         |
  1+30       0.0405      0.38  QV        |         |         |         |
```

```
1+35      0.0432      0.38  QV        |         |         |         |
1+40      0.0458      0.38  QV        |         |         |         |
1+45      0.0485      0.39  QV        |         |         |         |
1+50      0.0511      0.39  Q V       |         |         |         |
1+55      0.0539      0.39  Q V       |         |         |         |
2+ 0      0.0566      0.40  Q V       |         |         |         |
2+ 5      0.0593      0.40  Q V       |         |         |         |
2+10      0.0621      0.40  Q V       |         |         |         |
2+15      0.0649      0.41  Q V       |         |         |         |
2+20      0.0677      0.41  Q V       |         |         |         |
2+25      0.0706      0.41  Q V       |         |         |         |
2+30      0.0735      0.42  Q V       |         |         |         |
2+35      0.0764      0.42  Q  V      |         |         |         |
2+40      0.0793      0.43  Q  V      |         |         |         |
2+45      0.0823      0.43  Q  V      |         |         |         |
2+50      0.0853      0.43  Q  V      |         |         |         |
2+55      0.0883      0.44  Q  V      |         |         |         |
3+ 0      0.0913      0.44  Q  V      |         |         |         |
3+ 5      0.0944      0.45  Q  V      |         |         |         |
3+10      0.0975      0.45  Q  V      |         |         |         |
3+15      0.1007      0.46  Q   V     |         |         |         |
3+20      0.1038      0.46  Q   V     |         |         |         |
3+25      0.1071      0.47  Q   V     |         |         |         |
3+30      0.1103      0.47  Q   V     |         |         |         |
3+35      0.1136      0.48  Q   V     |         |         |         |
3+40      0.1169      0.48  Q   V     |         |         |         |
3+45      0.1203      0.49  Q   V     |         |         |         |
3+50      0.1237      0.49  Q    V    |         |         |         |
3+55      0.1271      0.50  Q    V    |         |         |         |
4+ 0      0.1306      0.51  |Q   V    |         |         |         |
4+ 5      0.1342      0.53  |Q   V    |         |         |         |
4+10      0.1384      0.60  |Q   V    |         |         |         |
4+15      0.1428      0.64  |Q   V    |         |         |         |
4+20      0.1474      0.66  |Q   V    |         |         |         |
4+25      0.1520      0.67  |Q    V   |         |         |         |
4+30      0.1567      0.68  |Q    V   |         |         |         |
4+35      0.1614      0.69  |Q    V   |         |         |         |
4+40      0.1663      0.70  |Q    V   |         |         |         |
4+45      0.1711      0.71  |Q    V   |         |         |         |
4+50      0.1761      0.72  |Q     V  |         |         |         |
4+55      0.1811      0.73  |Q     V  |         |         |         |
5+ 0      0.1862      0.74  |Q     V  |         |         |         |
5+ 5      0.1913      0.75  |Q     V  |         |         |         |
5+10      0.1966      0.76  |Q     V  |         |         |         |
5+15      0.2019      0.77  |Q      V |         |         |         |
5+20      0.2073      0.79  |Q      V |         |         |         |
5+25      0.2129      0.80  |Q      V |         |         |         |
5+30      0.2185      0.82  |Q      V |         |         |         |
5+35      0.2243      0.84  |Q       V|         |         |         |
5+40      0.2302      0.86  |Q       V|         |         |         |
5+45      0.2362      0.87  |Q       V|         |         |         |
5+50      0.2424      0.90  |Q       V|         |         |         |
5+55      0.2487      0.91  |Q        V         |         |         |
6+ 0      0.2552      0.94  |Q        V         |         |         |
6+ 5      0.2618      0.96  |Q        V         |         |         |
6+10      0.2686      1.00  |Q        V         |         |         |
6+15      0.2757      1.02  | Q       |V        |         |         |
6+20      0.2830      1.06  | Q       |V        |         |         |
6+25      0.2905      1.09  | Q       |V        |         |         |
6+30      0.2982      1.12  | Q       | V       |         |         |
6+35      0.3061      1.15  | Q       | V       |         |         |
6+40      0.3144      1.20  | Q       | V       |         |         |
6+45      0.3229      1.23  | Q       |  V      |         |         |
6+50      0.3317      1.29  | Q       |  V      |         |         |
6+55      0.3409      1.33  | Q       |  V      |         |         |
7+ 0      0.3505      1.39  | Q       |   V     |         |         |
7+ 5      0.3605      1.45  | Q       |   V     |         |         |
7+10      0.3710      1.52  |  Q      |    V    |         |         |
7+15      0.3820      1.60  |  Q      |    V    |         |         |
7+20      0.3936      1.70  |  Q      |     V   |         |         |
7+25      0.4057      1.76  |  Q      |     V   |         |         |
```

```
   7+30       0.4176      1.73  |  Q       |     V    |          |          |
   7+35       0.4300      1.79  |  Q       |      V   |          |          |
   7+40       0.4436      1.97  |  Q       |       V  |          |          |
   7+45       0.4589      2.22  |   Q      |       V  |          |          |
   7+50       0.4781      2.79  |    Q     |        V |          |          |
   7+55       0.5012      3.36  |     Q    |          V          |          |
   8+ 0       0.5319      4.45  |        Q |          |V         |          |
   8+ 5       0.5798      6.96  |          |  Q       |  V       |          |
   8+10       0.6623     11.98  |          |          |  Q  V    |          |
   8+15       0.7111      7.08  |          |   Q      |       V  |          |
   8+20       0.7407      4.29  |        Q |          |          V          |
   8+25       0.7608      2.92  |    Q     |          |          V          |
   8+30       0.7763      2.25  |   Q      |          |          |V         |
   8+35       0.7895      1.92  |  Q       |          |          | V        |
   8+40       0.8012      1.70  |  Q       |          |          | V        |
   8+45       0.8114      1.48  | Q        |          |          |  V       |
   8+50       0.8207      1.35  | Q        |          |          |  V       |
   8+55       0.8293      1.25  | Q        |          |          |  V       |
   9+ 0       0.8373      1.17  | Q        |          |          |   V      |
   9+ 5       0.8448      1.09  | Q        |          |          |   V      |
   9+10       0.8519      1.02  | Q        |          |          |   V      |
   9+15       0.8585      0.97  |Q         |          |          |   V      |
   9+20       0.8649      0.92  |Q         |          |          |    V     |
   9+25       0.8709      0.88  |Q         |          |          |    V     |
   9+30       0.8767      0.84  |Q         |          |          |    V     |
   9+35       0.8823      0.81  |Q         |          |          |    V     |
   9+40       0.8876      0.78  |Q         |          |          |     V    |
   9+45       0.8928      0.75  |Q         |          |          |     V    |
   9+50       0.8978      0.73  |Q         |          |          |     V    |
   9+55       0.9027      0.71  |Q         |          |          |     V    |
  10+ 0       0.9075      0.69  |Q         |          |          |     V    |
  10+ 5       0.9120      0.66  |Q         |          |          |      V   |
  10+10       0.9160      0.58  |Q         |          |          |      V   |
  10+15       0.9197      0.53  |Q         |          |          |      V   |
  10+20       0.9232      0.51  |Q         |          |          |      V   |
  10+25       0.9266      0.49  Q          |          |          |      V   |
  10+30       0.9299      0.48  Q          |          |          |      V   |
  10+35       0.9331      0.47  Q          |          |          |      V   |
  10+40       0.9362      0.46  Q          |          |          |       V  |
  10+45       0.9393      0.45  Q          |          |          |       V  |
  10+50       0.9423      0.44  Q          |          |          |       V  |
  10+55       0.9453      0.43  Q          |          |          |       V  |
  11+ 0       0.9482      0.42  Q          |          |          |       V  |
  11+ 5       0.9510      0.41  Q          |          |          |       V  |
  11+10       0.9539      0.41  Q          |          |          |       V  |
  11+15       0.9566      0.40  Q          |          |          |       V  |
  11+20       0.9593      0.39  Q          |          |          |        V|
  11+25       0.9620      0.39  Q          |          |          |        V|
  11+30       0.9646      0.38  Q          |          |          |        V|
  11+35       0.9672      0.37  Q          |          |          |        V|
  11+40       0.9697      0.37  Q          |          |          |        V|
  11+45       0.9722      0.36  Q          |          |          |        V|
  11+50       0.9747      0.36  Q          |          |          |        V|
  11+55       0.9771      0.35  Q          |          |          |        V|
  12+ 0       0.9795      0.35  Q          |          |          |        V|
  12+ 5       0.9816      0.31  Q          |          |          |        V|
  12+10       0.9825      0.13  Q          |          |          |        V|
  12+15       0.9829      0.05  Q          |          |          |        V|
  12+20       0.9830      0.02  Q          |          |          |        V|
  12+25       0.9831      0.01  Q          |          |          |        V|
  12+30       0.9831      0.00  Q          |          |          |        V|
  12+35       0.9831      0.00  Q          |          |          |         V
------------------------------------------------------------------------
```

- 5 Year 24 Hour Post-Development Unit Hydrograph – Area 'E'

```
        U n i t   H y d r o g r a p h   A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989-2012, Version 7.2

        Study date  10/11/16   File Name pre00524.out


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------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'E' - 5 YEAR 24 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

        Storm Event Year = 5

        Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 71.2       3.5          0.61     C     0.250     0.144    0.036
 71.2       2.3          0.39     D     0.200     0.144    0.029

Area-averaged adjusted loss rate Fm (In/Hr) =  0.033

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
     0.51   0.088         71.2      52.4       9.07     0.047
     3.03   0.523         98.0      98.0       0.20     0.923

     0.32   0.056         71.2      52.4       9.07     0.047
     1.93   0.333         98.0      98.0       0.20     0.923

Area-averaged catchment yield fraction, Y =  0.797
Area-averaged low loss fraction, Yb =  0.203
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.118 (hours)
Watershed area =       5.79(Ac.)
Catchment Lag time =   0.094 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 88.3517
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.033(In/Hr)
Average low loss rate fraction (Yb) = 0.203 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.260(In)
Computed peak 30-minute rainfall =  0.590(In)
Specified peak 1-hour rainfall =  0.780(In)
Computed peak 3-hour rainfall =  1.310(In)
Specified peak 6-hour rainfall =  1.810(In)
Specified peak 24-hour rainfall =  3.030(In)
```

```
Rainfall depth area reduction factors:
Using a total area of       5.79(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000     Adjusted rainfall =  0.260(In)
30-minute factor = 1.000    Adjusted rainfall =  0.590(In)
1-hour factor = 1.000       Adjusted rainfall =  0.780(In)
3-hour factor = 1.000       Adjusted rainfall =  1.310(In)
6-hour factor = 1.000       Adjusted rainfall =  1.810(In)
24-hour factor = 1.000 Adjusted rainfall =  3.030(In)
------------------------------------------------------------------------

                      U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
------------------------------------------------------------------------
               (K =        70.02 (CFS))

  1               10.863                   7.607
  2               63.680                  36.984
  3               85.035                  14.953
  4               93.798                   6.136
  5               97.643                   2.692
  6               98.838                   0.837
  7               99.491                   0.457
  8              100.000                   0.356
------------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.2599              0.2599
  2              0.3569              0.0970
  3              0.4296              0.0727
  4              0.4900              0.0604
  5              0.5427              0.0526
  6              0.5898              0.0472
  7              0.6276              0.0378
  8              0.6623              0.0347
  9              0.6945              0.0322
 10              0.7246              0.0301
 11              0.7529              0.0284
 12              0.7798              0.0269
 13              0.8098              0.0300
 14              0.8387              0.0288
 15              0.8664              0.0278
 16              0.8932              0.0268
 17              0.9192              0.0259
 18              0.9443              0.0251
 19              0.9687              0.0244
 20              0.9925              0.0237
 21              1.0156              0.0231
 22              1.0382              0.0226
 23              1.0602              0.0220
 24              1.0817              0.0215
 25              1.1028              0.0211
 26              1.1234              0.0206
 27              1.1436              0.0202
 28              1.1634              0.0198
 29              1.1828              0.0194
 30              1.2019              0.0191
 31              1.2207              0.0188
 32              1.2391              0.0184
 33              1.2572              0.0181
 34              1.2751              0.0178
 35              1.2926              0.0176
 36              1.3100              0.0173
 37              1.3268              0.0168
 38              1.3434              0.0166
 39              1.3598              0.0164
 40              1.3759              0.0162
 41              1.3919              0.0159
 42              1.4076              0.0157
```

43	1.4231	0.0155
44	1.4385	0.0153
45	1.4536	0.0152
46	1.4686	0.0150
47	1.4834	0.0148
48	1.4981	0.0146
49	1.5126	0.0145
50	1.5269	0.0143
51	1.5410	0.0142
52	1.5551	0.0140
53	1.5689	0.0139
54	1.5827	0.0137
55	1.5963	0.0136
56	1.6098	0.0135
57	1.6231	0.0133
58	1.6363	0.0132
59	1.6494	0.0131
60	1.6624	0.0130
61	1.6753	0.0129
62	1.6880	0.0128
63	1.7007	0.0126
64	1.7132	0.0125
65	1.7256	0.0124
66	1.7380	0.0123
67	1.7502	0.0122
68	1.7623	0.0121
69	1.7744	0.0120
70	1.7863	0.0119
71	1.7982	0.0119
72	1.8100	0.0118
73	1.8193	0.0093
74	1.8285	0.0092
75	1.8376	0.0091
76	1.8467	0.0091
77	1.8557	0.0090
78	1.8646	0.0089
79	1.8735	0.0088
80	1.8823	0.0088
81	1.8910	0.0087
82	1.8996	0.0086
83	1.9082	0.0086
84	1.9167	0.0085
85	1.9251	0.0084
86	1.9335	0.0084
87	1.9419	0.0083
88	1.9501	0.0083
89	1.9583	0.0082
90	1.9665	0.0081
91	1.9746	0.0081
92	1.9826	0.0080
93	1.9906	0.0080
94	1.9985	0.0079
95	2.0064	0.0079
96	2.0142	0.0078
97	2.0220	0.0078
98	2.0297	0.0077
99	2.0374	0.0077
100	2.0450	0.0076
101	2.0526	0.0076
102	2.0601	0.0075
103	2.0676	0.0075
104	2.0750	0.0074
105	2.0824	0.0074
106	2.0898	0.0073
107	2.0971	0.0073
108	2.1044	0.0073
109	2.1116	0.0072
110	2.1188	0.0072
111	2.1259	0.0071
112	2.1330	0.0071
113	2.1401	0.0071

114	2.1471	0.0070
115	2.1541	0.0070
116	2.1610	0.0069
117	2.1679	0.0069
118	2.1748	0.0069
119	2.1816	0.0068
120	2.1884	0.0068
121	2.1952	0.0068
122	2.2019	0.0067
123	2.2086	0.0067
124	2.2152	0.0067
125	2.2219	0.0066
126	2.2284	0.0066
127	2.2350	0.0066
128	2.2415	0.0065
129	2.2480	0.0065
130	2.2545	0.0065
131	2.2609	0.0064
132	2.2673	0.0064
133	2.2737	0.0064
134	2.2800	0.0063
135	2.2863	0.0063
136	2.2926	0.0063
137	2.2989	0.0063
138	2.3051	0.0062
139	2.3113	0.0062
140	2.3174	0.0062
141	2.3236	0.0061
142	2.3297	0.0061
143	2.3358	0.0061
144	2.3418	0.0061
145	2.3479	0.0060
146	2.3539	0.0060
147	2.3598	0.0060
148	2.3658	0.0060
149	2.3717	0.0059
150	2.3776	0.0059
151	2.3835	0.0059
152	2.3894	0.0059
153	2.3952	0.0058
154	2.4010	0.0058
155	2.4068	0.0058
156	2.4125	0.0058
157	2.4183	0.0057
158	2.4240	0.0057
159	2.4297	0.0057
160	2.4354	0.0057
161	2.4410	0.0056
162	2.4466	0.0056
163	2.4522	0.0056
164	2.4578	0.0056
165	2.4634	0.0056
166	2.4689	0.0055
167	2.4744	0.0055
168	2.4799	0.0055
169	2.4854	0.0055
170	2.4909	0.0055
171	2.4963	0.0054
172	2.5017	0.0054
173	2.5071	0.0054
174	2.5125	0.0054
175	2.5178	0.0054
176	2.5232	0.0053
177	2.5285	0.0053
178	2.5338	0.0053
179	2.5391	0.0053
180	2.5443	0.0053
181	2.5496	0.0052
182	2.5548	0.0052
183	2.5600	0.0052
184	2.5652	0.0052

185	2.5704	0.0052
186	2.5755	0.0052
187	2.5807	0.0051
188	2.5858	0.0051
189	2.5909	0.0051
190	2.5960	0.0051
191	2.6010	0.0051
192	2.6061	0.0051
193	2.6111	0.0050
194	2.6162	0.0050
195	2.6212	0.0050
196	2.6262	0.0050
197	2.6311	0.0050
198	2.6361	0.0050
199	2.6410	0.0049
200	2.6459	0.0049
201	2.6509	0.0049
202	2.6557	0.0049
203	2.6606	0.0049
204	2.6655	0.0049
205	2.6703	0.0048
206	2.6752	0.0048
207	2.6800	0.0048
208	2.6848	0.0048
209	2.6896	0.0048
210	2.6944	0.0048
211	2.6991	0.0048
212	2.7039	0.0047
213	2.7086	0.0047
214	2.7133	0.0047
215	2.7180	0.0047
216	2.7227	0.0047
217	2.7274	0.0047
218	2.7321	0.0047
219	2.7367	0.0047
220	2.7414	0.0046
221	2.7460	0.0046
222	2.7506	0.0046
223	2.7552	0.0046
224	2.7598	0.0046
225	2.7643	0.0046
226	2.7689	0.0046
227	2.7735	0.0045
228	2.7780	0.0045
229	2.7825	0.0045
230	2.7870	0.0045
231	2.7915	0.0045
232	2.7960	0.0045
233	2.8005	0.0045
234	2.8049	0.0045
235	2.8094	0.0044
236	2.8138	0.0044
237	2.8183	0.0044
238	2.8227	0.0044
239	2.8271	0.0044
240	2.8315	0.0044
241	2.8358	0.0044
242	2.8402	0.0044
243	2.8446	0.0044
244	2.8489	0.0043
245	2.8532	0.0043
246	2.8576	0.0043
247	2.8619	0.0043
248	2.8662	0.0043
249	2.8705	0.0043
250	2.8747	0.0043
251	2.8790	0.0043
252	2.8833	0.0043
253	2.8875	0.0042
254	2.8918	0.0042
255	2.8960	0.0042

256	2.9002	0.0042
257	2.9044	0.0042
258	2.9086	0.0042
259	2.9128	0.0042
260	2.9170	0.0042
261	2.9211	0.0042
262	2.9253	0.0042
263	2.9294	0.0041
264	2.9336	0.0041
265	2.9377	0.0041
266	2.9418	0.0041
267	2.9459	0.0041
268	2.9500	0.0041
269	2.9541	0.0041
270	2.9582	0.0041
271	2.9622	0.0041
272	2.9663	0.0041
273	2.9703	0.0040
274	2.9744	0.0040
275	2.9784	0.0040
276	2.9824	0.0040
277	2.9864	0.0040
278	2.9904	0.0040
279	2.9944	0.0040
280	2.9984	0.0040
281	3.0024	0.0040
282	3.0064	0.0040
283	3.0103	0.0040
284	3.0143	0.0039
285	3.0182	0.0039
286	3.0221	0.0039
287	3.0261	0.0039
288	3.0300	0.0039

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0039	0.0008	0.0031
2	0.0039	0.0008	0.0031
3	0.0039	0.0008	0.0031
4	0.0039	0.0008	0.0031
5	0.0040	0.0008	0.0032
6	0.0040	0.0008	0.0032
7	0.0040	0.0008	0.0032
8	0.0040	0.0008	0.0032
9	0.0040	0.0008	0.0032
10	0.0040	0.0008	0.0032
11	0.0040	0.0008	0.0032
12	0.0041	0.0008	0.0032
13	0.0041	0.0008	0.0033
14	0.0041	0.0008	0.0033
15	0.0041	0.0008	0.0033
16	0.0041	0.0008	0.0033
17	0.0041	0.0008	0.0033
18	0.0041	0.0008	0.0033
19	0.0042	0.0008	0.0033
20	0.0042	0.0008	0.0033
21	0.0042	0.0009	0.0033
22	0.0042	0.0009	0.0034
23	0.0042	0.0009	0.0034
24	0.0042	0.0009	0.0034
25	0.0043	0.0009	0.0034
26	0.0043	0.0009	0.0034
27	0.0043	0.0009	0.0034
28	0.0043	0.0009	0.0034
29	0.0043	0.0009	0.0034
30	0.0043	0.0009	0.0035
31	0.0044	0.0009	0.0035
32	0.0044	0.0009	0.0035
33	0.0044	0.0009	0.0035

34	0.0044	0.0009	0.0035
35	0.0044	0.0009	0.0035
36	0.0044	0.0009	0.0035
37	0.0045	0.0009	0.0036
38	0.0045	0.0009	0.0036
39	0.0045	0.0009	0.0036
40	0.0045	0.0009	0.0036
41	0.0045	0.0009	0.0036
42	0.0045	0.0009	0.0036
43	0.0046	0.0009	0.0036
44	0.0046	0.0009	0.0037
45	0.0046	0.0009	0.0037
46	0.0046	0.0009	0.0037
47	0.0047	0.0009	0.0037
48	0.0047	0.0009	0.0037
49	0.0047	0.0010	0.0037
50	0.0047	0.0010	0.0038
51	0.0047	0.0010	0.0038
52	0.0047	0.0010	0.0038
53	0.0048	0.0010	0.0038
54	0.0048	0.0010	0.0038
55	0.0048	0.0010	0.0038
56	0.0048	0.0010	0.0039
57	0.0049	0.0010	0.0039
58	0.0049	0.0010	0.0039
59	0.0049	0.0010	0.0039
60	0.0049	0.0010	0.0039
61	0.0050	0.0010	0.0040
62	0.0050	0.0010	0.0040
63	0.0050	0.0010	0.0040
64	0.0050	0.0010	0.0040
65	0.0051	0.0010	0.0040
66	0.0051	0.0010	0.0040
67	0.0051	0.0010	0.0041
68	0.0051	0.0010	0.0041
69	0.0052	0.0010	0.0041
70	0.0052	0.0010	0.0041
71	0.0052	0.0011	0.0042
72	0.0052	0.0011	0.0042
73	0.0053	0.0011	0.0042
74	0.0053	0.0011	0.0042
75	0.0053	0.0011	0.0042
76	0.0053	0.0011	0.0043
77	0.0054	0.0011	0.0043
78	0.0054	0.0011	0.0043
79	0.0054	0.0011	0.0043
80	0.0055	0.0011	0.0044
81	0.0055	0.0011	0.0044
82	0.0055	0.0011	0.0044
83	0.0056	0.0011	0.0044
84	0.0056	0.0011	0.0044
85	0.0056	0.0011	0.0045
86	0.0056	0.0011	0.0045
87	0.0057	0.0012	0.0045
88	0.0057	0.0012	0.0046
89	0.0058	0.0012	0.0046
90	0.0058	0.0012	0.0046
91	0.0058	0.0012	0.0046
92	0.0059	0.0012	0.0047
93	0.0059	0.0012	0.0047
94	0.0059	0.0012	0.0047
95	0.0060	0.0012	0.0048
96	0.0060	0.0012	0.0048
97	0.0061	0.0012	0.0048
98	0.0061	0.0012	0.0049
99	0.0061	0.0012	0.0049
100	0.0062	0.0012	0.0049
101	0.0062	0.0013	0.0050
102	0.0063	0.0013	0.0050
103	0.0063	0.0013	0.0050
104	0.0063	0.0013	0.0051

105	0.0064	0.0013	0.0051
106	0.0064	0.0013	0.0051
107	0.0065	0.0013	0.0052
108	0.0065	0.0013	0.0052
109	0.0066	0.0013	0.0053
110	0.0066	0.0013	0.0053
111	0.0067	0.0014	0.0053
112	0.0067	0.0014	0.0054
113	0.0068	0.0014	0.0054
114	0.0068	0.0014	0.0054
115	0.0069	0.0014	0.0055
116	0.0069	0.0014	0.0055
117	0.0070	0.0014	0.0056
118	0.0071	0.0014	0.0056
119	0.0071	0.0014	0.0057
120	0.0072	0.0015	0.0057
121	0.0073	0.0015	0.0058
122	0.0073	0.0015	0.0058
123	0.0074	0.0015	0.0059
124	0.0074	0.0015	0.0059
125	0.0075	0.0015	0.0060
126	0.0076	0.0015	0.0060
127	0.0077	0.0016	0.0061
128	0.0077	0.0016	0.0062
129	0.0078	0.0016	0.0062
130	0.0079	0.0016	0.0063
131	0.0080	0.0016	0.0064
132	0.0080	0.0016	0.0064
133	0.0081	0.0017	0.0065
134	0.0082	0.0017	0.0065
135	0.0083	0.0017	0.0066
136	0.0084	0.0017	0.0067
137	0.0085	0.0017	0.0068
138	0.0086	0.0017	0.0068
139	0.0087	0.0018	0.0069
140	0.0088	0.0018	0.0070
141	0.0089	0.0018	0.0071
142	0.0090	0.0018	0.0072
143	0.0091	0.0019	0.0073
144	0.0092	0.0019	0.0074
145	0.0118	0.0024	0.0094
146	0.0119	0.0024	0.0095
147	0.0120	0.0024	0.0096
148	0.0121	0.0025	0.0097
149	0.0123	0.0025	0.0098
150	0.0124	0.0025	0.0099
151	0.0126	0.0026	0.0101
152	0.0128	0.0026	0.0102
153	0.0130	0.0026	0.0104
154	0.0131	0.0027	0.0104
155	0.0133	0.0027	0.0106
156	0.0135	0.0027	0.0107
157	0.0137	0.0028	0.0110
158	0.0139	0.0028	0.0111
159	0.0142	0.0028	0.0114
160	0.0143	0.0028	0.0116
161	0.0146	0.0028	0.0119
162	0.0148	0.0028	0.0120
163	0.0152	0.0028	0.0124
164	0.0153	0.0028	0.0126
165	0.0157	0.0028	0.0130
166	0.0159	0.0028	0.0132
167	0.0164	0.0028	0.0136
168	0.0166	0.0028	0.0138
169	0.0173	0.0028	0.0145
170	0.0176	0.0028	0.0148
171	0.0181	0.0028	0.0154
172	0.0184	0.0028	0.0157
173	0.0191	0.0028	0.0163
174	0.0194	0.0028	0.0167
175	0.0202	0.0028	0.0174

176	0.0206	0.0028	0.0178
177	0.0215	0.0028	0.0188
178	0.0220	0.0028	0.0193
179	0.0231	0.0028	0.0204
180	0.0237	0.0028	0.0210
181	0.0251	0.0028	0.0224
182	0.0259	0.0028	0.0232
183	0.0278	0.0028	0.0250
184	0.0288	0.0028	0.0261
185	0.0269	0.0028	0.0241
186	0.0284	0.0028	0.0256
187	0.0322	0.0028	0.0294
188	0.0347	0.0028	0.0319
189	0.0472	0.0028	0.0444
190	0.0526	0.0028	0.0499
191	0.0727	0.0028	0.0699
192	0.0970	0.0028	0.0942
193	0.2599	0.0028	0.2572
194	0.0604	0.0028	0.0576
195	0.0378	0.0028	0.0350
196	0.0301	0.0028	0.0273
197	0.0300	0.0028	0.0273
198	0.0268	0.0028	0.0240
199	0.0244	0.0028	0.0217
200	0.0226	0.0028	0.0198
201	0.0211	0.0028	0.0183
202	0.0198	0.0028	0.0170
203	0.0188	0.0028	0.0160
204	0.0178	0.0028	0.0151
205	0.0168	0.0028	0.0141
206	0.0162	0.0028	0.0134
207	0.0155	0.0028	0.0128
208	0.0150	0.0028	0.0122
209	0.0145	0.0028	0.0117
210	0.0140	0.0028	0.0113
211	0.0136	0.0028	0.0108
212	0.0132	0.0027	0.0105
213	0.0129	0.0026	0.0103
214	0.0125	0.0025	0.0100
215	0.0122	0.0025	0.0098
216	0.0119	0.0024	0.0095
217	0.0093	0.0019	0.0074
218	0.0091	0.0018	0.0072
219	0.0088	0.0018	0.0071
220	0.0086	0.0018	0.0069
221	0.0084	0.0017	0.0067
222	0.0083	0.0017	0.0066
223	0.0081	0.0016	0.0065
224	0.0079	0.0016	0.0063
225	0.0078	0.0016	0.0062
226	0.0076	0.0015	0.0061
227	0.0075	0.0015	0.0060
228	0.0073	0.0015	0.0059
229	0.0072	0.0015	0.0058
230	0.0071	0.0014	0.0057
231	0.0070	0.0014	0.0056
232	0.0069	0.0014	0.0055
233	0.0068	0.0014	0.0054
234	0.0067	0.0013	0.0053
235	0.0066	0.0013	0.0052
236	0.0065	0.0013	0.0052
237	0.0064	0.0013	0.0051
238	0.0063	0.0013	0.0050
239	0.0062	0.0013	0.0049
240	0.0061	0.0012	0.0049
241	0.0060	0.0012	0.0048
242	0.0060	0.0012	0.0047
243	0.0059	0.0012	0.0047
244	0.0058	0.0012	0.0046
245	0.0057	0.0012	0.0046
246	0.0057	0.0011	0.0045

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      247              0.0056           0.0011              0.0045
      248              0.0055           0.0011              0.0044
      249              0.0055           0.0011              0.0044
      250              0.0054           0.0011              0.0043
      251              0.0054           0.0011              0.0043
      252              0.0053           0.0011              0.0042
      253              0.0052           0.0011              0.0042
      254              0.0052           0.0011              0.0041
      255              0.0051           0.0010              0.0041
      256              0.0051           0.0010              0.0041
      257              0.0050           0.0010              0.0040
      258              0.0050           0.0010              0.0040
      259              0.0049           0.0010              0.0039
      260              0.0049           0.0010              0.0039
      261              0.0048           0.0010              0.0039
      262              0.0048           0.0010              0.0038
      263              0.0048           0.0010              0.0038
      264              0.0047           0.0010              0.0038
      265              0.0047           0.0009              0.0037
      266              0.0046           0.0009              0.0037
      267              0.0046           0.0009              0.0037
      268              0.0046           0.0009              0.0036
      269              0.0045           0.0009              0.0036
      270              0.0045           0.0009              0.0036
      271              0.0044           0.0009              0.0035
      272              0.0044           0.0009              0.0035
      273              0.0044           0.0009              0.0035
      274              0.0043           0.0009              0.0035
      275              0.0043           0.0009              0.0034
      276              0.0043           0.0009              0.0034
      277              0.0042           0.0009              0.0034
      278              0.0042           0.0009              0.0034
      279              0.0042           0.0008              0.0033
      280              0.0042           0.0008              0.0033
      281              0.0041           0.0008              0.0033
      282              0.0041           0.0008              0.0033
      283              0.0041           0.0008              0.0032
      284              0.0040           0.0008              0.0032
      285              0.0040           0.0008              0.0032
      286              0.0040           0.0008              0.0032
      287              0.0040           0.0008              0.0032
      288              0.0039           0.0008              0.0031
      ------------------------------------------------------------------------
      ------------------------------------------------------------------------
      Total soil rain loss =      0.44(In)
      Total effective rainfall =      2.59(In)
      Peak flow rate in flood hydrograph =     11.98(CFS)
      ------------------------------------------------------------------------
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          24 - H O U R    S T O R M
                     R u n o f f      H y d r o g r a p h
      ------------------------------------------------------------------------
                  Hydrograph in   5   Minute intervals ((CFS))

      ------------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0        5.0      10.0      15.0      20.0
-------------------------------------------------------------------------
  0+ 5       0.0002      0.02  Q         |         |         |         |
  0+10       0.0011      0.14  Q         |         |         |         |
  0+15       0.0024      0.19  Q         |         |         |         |
  0+20       0.0038      0.21  Q         |         |         |         |
  0+25       0.0053      0.22  Q         |         |         |         |
  0+30       0.0068      0.22  Q         |         |         |         |
  0+35       0.0083      0.22  Q         |         |         |         |
  0+40       0.0099      0.22  Q         |         |         |         |
  0+45       0.0114      0.22  Q         |         |         |         |
  0+50       0.0129      0.22  Q         |         |         |         |
  0+55       0.0145      0.22  Q         |         |         |         |
  1+ 0       0.0160      0.23  Q         |         |         |         |
  1+ 5       0.0176      0.23  Q         |         |         |         |
  1+10       0.0192      0.23  Q         |         |         |         |
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1+15      0.0207      0.23  Q          |          |          |          |
1+20      0.0223      0.23  Q          |          |          |          |
1+25      0.0239      0.23  Q          |          |          |          |
1+30      0.0255      0.23  Q          |          |          |          |
1+35      0.0271      0.23  Q          |          |          |          |
1+40      0.0287      0.23  Q          |          |          |          |
1+45      0.0303      0.23  Q          |          |          |          |
1+50      0.0319      0.23  QV         |          |          |          |
1+55      0.0335      0.23  QV         |          |          |          |
2+ 0      0.0351      0.24  QV         |          |          |          |
2+ 5      0.0367      0.24  QV         |          |          |          |
2+10      0.0384      0.24  QV         |          |          |          |
2+15      0.0400      0.24  QV         |          |          |          |
2+20      0.0417      0.24  QV         |          |          |          |
2+25      0.0433      0.24  QV         |          |          |          |
2+30      0.0450      0.24  QV         |          |          |          |
2+35      0.0466      0.24  QV         |          |          |          |
2+40      0.0483      0.24  QV         |          |          |          |
2+45      0.0500      0.24  QV         |          |          |          |
2+50      0.0517      0.24  QV         |          |          |          |
2+55      0.0534      0.25  QV         |          |          |          |
3+ 0      0.0551      0.25  QV         |          |          |          |
3+ 5      0.0568      0.25  QV         |          |          |          |
3+10      0.0585      0.25  QV         |          |          |          |
3+15      0.0602      0.25  QV         |          |          |          |
3+20      0.0619      0.25  QV         |          |          |          |
3+25      0.0636      0.25  Q V        |          |          |          |
3+30      0.0654      0.25  Q V        |          |          |          |
3+35      0.0671      0.25  Q V        |          |          |          |
3+40      0.0689      0.25  Q V        |          |          |          |
3+45      0.0706      0.26  Q V        |          |          |          |
3+50      0.0724      0.26  Q V        |          |          |          |
3+55      0.0742      0.26  Q V        |          |          |          |
4+ 0      0.0760      0.26  Q V        |          |          |          |
4+ 5      0.0778      0.26  Q V        |          |          |          |
4+10      0.0796      0.26  Q V        |          |          |          |
4+15      0.0814      0.26  Q V        |          |          |          |
4+20      0.0832      0.26  Q V        |          |          |          |
4+25      0.0850      0.26  Q V        |          |          |          |
4+30      0.0868      0.27  Q V        |          |          |          |
4+35      0.0887      0.27  Q V        |          |          |          |
4+40      0.0905      0.27  Q V        |          |          |          |
4+45      0.0924      0.27  Q V        |          |          |          |
4+50      0.0942      0.27  Q  V       |          |          |          |
4+55      0.0961      0.27  Q  V       |          |          |          |
5+ 0      0.0980      0.27  Q  V       |          |          |          |
5+ 5      0.0999      0.27  Q  V       |          |          |          |
5+10      0.1018      0.28  Q  V       |          |          |          |
5+15      0.1037      0.28  Q  V       |          |          |          |
5+20      0.1056      0.28  Q  V       |          |          |          |
5+25      0.1075      0.28  Q  V       |          |          |          |
5+30      0.1095      0.28  Q  V       |          |          |          |
5+35      0.1114      0.28  Q  V       |          |          |          |
5+40      0.1134      0.28  Q  V       |          |          |          |
5+45      0.1153      0.29  Q  V       |          |          |          |
5+50      0.1173      0.29  Q  V       |          |          |          |
5+55      0.1193      0.29  Q  V       |          |          |          |
6+ 0      0.1213      0.29  Q  V       |          |          |          |
6+ 5      0.1233      0.29  Q  V       |          |          |          |
6+10      0.1253      0.29  Q   V      |          |          |          |
6+15      0.1274      0.29  Q   V      |          |          |          |
6+20      0.1294      0.30  Q   V      |          |          |          |
6+25      0.1314      0.30  Q   V      |          |          |          |
6+30      0.1335      0.30  Q   V      |          |          |          |
6+35      0.1356      0.30  Q   V      |          |          |          |
6+40      0.1377      0.30  Q   V      |          |          |          |
6+45      0.1397      0.30  Q   V      |          |          |          |
6+50      0.1419      0.31  Q   V      |          |          |          |
6+55      0.1440      0.31  Q   V      |          |          |          |
7+ 0      0.1461      0.31  Q   V      |          |          |          |
7+ 5      0.1482      0.31  Q   V      |          |          |          |
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 7+10      0.1504      0.31  Q   V     |         |         |         |
 7+15      0.1526      0.31  Q   V     |         |         |         |
 7+20      0.1547      0.32  Q   V     |         |         |         |
 7+25      0.1569      0.32  Q    V    |         |         |         |
 7+30      0.1591      0.32  Q    V    |         |         |         |
 7+35      0.1614      0.32  Q    V    |         |         |         |
 7+40      0.1636      0.32  Q    V    |         |         |         |
 7+45      0.1658      0.33  Q    V    |         |         |         |
 7+50      0.1681      0.33  Q    V    |         |         |         |
 7+55      0.1704      0.33  Q    V    |         |         |         |
 8+ 0      0.1727      0.33  Q    V    |         |         |         |
 8+ 5      0.1750      0.33  Q    V    |         |         |         |
 8+10      0.1773      0.34  Q    V    |         |         |         |
 8+15      0.1796      0.34  Q    V    |         |         |         |
 8+20      0.1820      0.34  Q    V    |         |         |         |
 8+25      0.1843      0.34  Q    V    |         |         |         |
 8+30      0.1867      0.35  Q    V    |         |         |         |
 8+35      0.1891      0.35  Q     V   |         |         |         |
 8+40      0.1915      0.35  Q     V   |         |         |         |
 8+45      0.1940      0.35  Q     V   |         |         |         |
 8+50      0.1964      0.36  Q     V   |         |         |         |
 8+55      0.1989      0.36  Q     V   |         |         |         |
 9+ 0      0.2014      0.36  Q     V   |         |         |         |
 9+ 5      0.2039      0.36  Q     V   |         |         |         |
 9+10      0.2064      0.37  Q     V   |         |         |         |
 9+15      0.2089      0.37  Q     V   |         |         |         |
 9+20      0.2115      0.37  Q     V   |         |         |         |
 9+25      0.2141      0.37  Q     V   |         |         |         |
 9+30      0.2167      0.38  Q     V   |         |         |         |
 9+35      0.2193      0.38  Q      V  |         |         |         |
 9+40      0.2219      0.38  Q      V  |         |         |         |
 9+45      0.2246      0.39  Q      V  |         |         |         |
 9+50      0.2273      0.39  Q      V  |         |         |         |
 9+55      0.2300      0.39  Q      V  |         |         |         |
10+ 0      0.2327      0.40  Q      V  |         |         |         |
10+ 5      0.2355      0.40  Q      V  |         |         |         |
10+10      0.2382      0.40  Q      V  |         |         |         |
10+15      0.2410      0.41  Q      V  |         |         |         |
10+20      0.2439      0.41  Q      V  |         |         |         |
10+25      0.2467      0.41  Q      V  |         |         |         |
10+30      0.2496      0.42  Q       V |         |         |         |
10+35      0.2525      0.42  Q       V |         |         |         |
10+40      0.2554      0.43  Q       V |         |         |         |
10+45      0.2584      0.43  Q       V |         |         |         |
10+50      0.2614      0.43  Q       V |         |         |         |
10+55      0.2644      0.44  Q       V |         |         |         |
11+ 0      0.2675      0.44  Q       V |         |         |         |
11+ 5      0.2705      0.45  Q       V |         |         |         |
11+10      0.2736      0.45  Q       V |         |         |         |
11+15      0.2768      0.46  Q       V |         |         |         |
11+20      0.2800      0.46  Q       V |         |         |         |
11+25      0.2832      0.47  Q        V|         |         |         |
11+30      0.2864      0.47  Q        V|         |         |         |
11+35      0.2897      0.48  Q        V|         |         |         |
11+40      0.2930      0.48  Q        V|         |         |         |
11+45      0.2964      0.49  Q        V|         |         |         |
11+50      0.2998      0.49  Q        V|         |         |         |
11+55      0.3032      0.50  Q        V|         |         |         |
12+ 0      0.3067      0.51  |Q       V|         |         |         |
12+ 5      0.3104      0.53  |Q       V|         |         |         |
12+10      0.3145      0.60  |Q        V         |         |         |
12+15      0.3189      0.64  |Q        V         |         |         |
12+20      0.3235      0.66  |Q        V         |         |         |
12+25      0.3281      0.67  |Q        V         |         |         |
12+30      0.3328      0.68  |Q        V         |         |         |
12+35      0.3376      0.69  |Q        V         |         |         |
12+40      0.3424      0.70  |Q        V         |         |         |
12+45      0.3473      0.71  |Q         |V        |         |         |
12+50      0.3522      0.72  |Q         |V        |         |         |
12+55      0.3572      0.73  |Q         |V        |         |         |
13+ 0      0.3623      0.74  |Q         |V        |         |         |
```

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13+ 5       0.3675      0.75  |Q        |V        |         |         |
13+10       0.3727      0.76  |Q        |V        |         |         |
13+15       0.3780      0.77  |Q        | V       |         |         |
13+20       0.3835      0.79  |Q        | V       |         |         |
13+25       0.3890      0.80  |Q        | V       |         |         |
13+30       0.3947      0.82  |Q        | V       |         |         |
13+35       0.4004      0.84  |Q        | V       |         |         |
13+40       0.4063      0.86  |Q        |  V      |         |         |
13+45       0.4123      0.87  |Q        |  V      |         |         |
13+50       0.4185      0.90  |Q        |  V      |         |         |
13+55       0.4248      0.91  |Q        |  V      |         |         |
14+ 0       0.4313      0.94  |Q        |  V      |         |         |
14+ 5       0.4379      0.96  |Q        |   V     |         |         |
14+10       0.4448      1.00  |Q        |   V     |         |         |
14+15       0.4518      1.02  | Q       |   V     |         |         |
14+20       0.4591      1.06  | Q       |   V     |         |         |
14+25       0.4666      1.09  | Q       |   V     |         |         |
14+30       0.4743      1.12  | Q       |    V    |         |         |
14+35       0.4823      1.15  | Q       |    V    |         |         |
14+40       0.4905      1.20  | Q       |    V    |         |         |
14+45       0.4990      1.23  | Q       |    V    |         |         |
14+50       0.5079      1.29  | Q       |     V   |         |         |
14+55       0.5170      1.33  | Q       |     V   |         |         |
15+ 0       0.5266      1.39  | Q       |     V   |         |         |
15+ 5       0.5366      1.45  | Q       |      V  |         |         |
15+10       0.5471      1.52  |  Q      |      V  |         |         |
15+15       0.5581      1.60  |  Q      |      V  |         |         |
15+20       0.5698      1.70  |  Q      |       V |         |         |
15+25       0.5819      1.76  |  Q      |       V |         |         |
15+30       0.5938      1.73  |  Q      |        V|         |         |
15+35       0.6061      1.79  |  Q      |        V|         |         |
15+40       0.6197      1.97  |  Q      |        V|         |         |
15+45       0.6350      2.22  |   Q     |         V         |         |
15+50       0.6542      2.79  |    Q    |         V         |         |
15+55       0.6773      3.36  |     Q   |         |V        |         |
16+ 0       0.7080      4.45  |       Q |         | V       |         |
16+ 5       0.7559      6.96  |         |  Q      |   V     |         |
16+10       0.8385     11.98  |         |         |  Q  V   |         |
16+15       0.8872      7.08  |         |   Q     |       V |         |
16+20       0.9168      4.29  |       Q |         |        V|         |
16+25       0.9369      2.92  |    Q    |         |         V         |
16+30       0.9524      2.25  |   Q     |         |         V         |
16+35       0.9657      1.92  |  Q      |         |         V         |
16+40       0.9774      1.70  |  Q      |         |         |V        |
16+45       0.9875      1.48  | Q       |         |         |V        |
16+50       0.9968      1.35  | Q       |         |         |V        |
16+55       1.0054      1.25  | Q       |         |         | V       |
17+ 0       1.0134      1.17  | Q       |         |         | V       |
17+ 5       1.0209      1.09  | Q       |         |         | V       |
17+10       1.0280      1.02  | Q       |         |         | V       |
17+15       1.0347      0.97  |Q        |         |         |  V      |
17+20       1.0410      0.92  |Q        |         |         |  V      |
17+25       1.0470      0.88  |Q        |         |         |  V      |
17+30       1.0528      0.84  |Q        |         |         |  V      |
17+35       1.0584      0.81  |Q        |         |         |  V      |
17+40       1.0637      0.78  |Q        |         |         |   V     |
17+45       1.0689      0.75  |Q        |         |         |   V     |
17+50       1.0739      0.73  |Q        |         |         |   V     |
17+55       1.0788      0.71  |Q        |         |         |   V     |
18+ 0       1.0836      0.69  |Q        |         |         |   V     |
18+ 5       1.0881      0.66  |Q        |         |         |   V     |
18+10       1.0921      0.58  |Q        |         |         |    V    |
18+15       1.0958      0.53  |Q        |         |         |    V    |
18+20       1.0993      0.51  |Q        |         |         |    V    |
18+25       1.1027      0.49  Q         |         |         |    V    |
18+30       1.1060      0.48  Q         |         |         |    V    |
18+35       1.1092      0.47  Q         |         |         |    V    |
18+40       1.1124      0.46  Q         |         |         |    V    |
18+45       1.1154      0.45  Q         |         |         |    V    |
18+50       1.1185      0.44  Q         |         |         |    V    |
18+55       1.1214      0.43  Q         |         |         |    V    |
```

```
  19+ 0       1.1243      0.42  Q          |          |          |     V    |
  19+ 5       1.1272      0.41  Q          |          |          |     V    |
  19+10       1.1300      0.41  Q          |          |          |     V    |
  19+15       1.1327      0.40  Q          |          |          |     V    |
  19+20       1.1354      0.39  Q          |          |          |     V    |
  19+25       1.1381      0.39  Q          |          |          |     V    |
  19+30       1.1407      0.38  Q          |          |          |     V    |
  19+35       1.1433      0.37  Q          |          |          |     V    |
  19+40       1.1459      0.37  Q          |          |          |     V    |
  19+45       1.1484      0.36  Q          |          |          |     V    |
  19+50       1.1508      0.36  Q          |          |          |     V    |
  19+55       1.1533      0.35  Q          |          |          |     V    |
  20+ 0       1.1557      0.35  Q          |          |          |      V   |
  20+ 5       1.1580      0.34  Q          |          |          |      V   |
  20+10       1.1604      0.34  Q          |          |          |      V   |
  20+15       1.1627      0.33  Q          |          |          |      V   |
  20+20       1.1649      0.33  Q          |          |          |      V   |
  20+25       1.1672      0.33  Q          |          |          |      V   |
  20+30       1.1694      0.32  Q          |          |          |      V   |
  20+35       1.1716      0.32  Q          |          |          |      V   |
  20+40       1.1738      0.31  Q          |          |          |      V   |
  20+45       1.1759      0.31  Q          |          |          |      V   |
  20+50       1.1780      0.31  Q          |          |          |      V   |
  20+55       1.1801      0.30  Q          |          |          |      V   |
  21+ 0       1.1822      0.30  Q          |          |          |      V   |
  21+ 5       1.1842      0.30  Q          |          |          |      V   |
  21+10       1.1863      0.29  Q          |          |          |       V  |
  21+15       1.1883      0.29  Q          |          |          |       V  |
  21+20       1.1903      0.29  Q          |          |          |       V  |
  21+25       1.1922      0.29  Q          |          |          |       V  |
  21+30       1.1942      0.28  Q          |          |          |       V  |
  21+35       1.1961      0.28  Q          |          |          |       V  |
  21+40       1.1980      0.28  Q          |          |          |       V  |
  21+45       1.1999      0.27  Q          |          |          |       V  |
  21+50       1.2018      0.27  Q          |          |          |       V  |
  21+55       1.2036      0.27  Q          |          |          |       V  |
  22+ 0       1.2055      0.27  Q          |          |          |       V  |
  22+ 5       1.2073      0.26  Q          |          |          |       V  |
  22+10       1.2091      0.26  Q          |          |          |       V  |
  22+15       1.2109      0.26  Q          |          |          |       V  |
  22+20       1.2127      0.26  Q          |          |          |       V  |
  22+25       1.2144      0.26  Q          |          |          |       V  |
  22+30       1.2162      0.25  Q          |          |          |       V  |
  22+35       1.2179      0.25  Q          |          |          |        V |
  22+40       1.2196      0.25  Q          |          |          |        V |
  22+45       1.2213      0.25  Q          |          |          |        V |
  22+50       1.2230      0.25  Q          |          |          |        V |
  22+55       1.2247      0.24  Q          |          |          |        V |
  23+ 0       1.2264      0.24  Q          |          |          |        V |
  23+ 5       1.2280      0.24  Q          |          |          |        V |
  23+10       1.2297      0.24  Q          |          |          |        V |
  23+15       1.2313      0.24  Q          |          |          |        V |
  23+20       1.2329      0.23  Q          |          |          |        V |
  23+25       1.2345      0.23  Q          |          |          |        V |
  23+30       1.2361      0.23  Q          |          |          |        V |
  23+35       1.2377      0.23  Q          |          |          |        V |
  23+40       1.2392      0.23  Q          |          |          |        V |
  23+45       1.2408      0.23  Q          |          |          |        V |
  23+50       1.2423      0.22  Q          |          |          |        V |
  23+55       1.2439      0.22  Q          |          |          |        V |
  24+ 0       1.2454      0.22  Q          |          |          |        V |
  24+ 5       1.2468      0.20  Q          |          |          |        V |
  24+10       1.2473      0.08  Q          |          |          |        V |
  24+15       1.2475      0.03  Q          |          |          |        V |
  24+20       1.2476      0.01  Q          |          |          |        V |
  24+25       1.2477      0.01  Q          |          |          |        V |
  24+30       1.2477      0.00  Q          |          |          |        V |
  24+35       1.2477      0.00  Q          |          |          |         V
----------------------------------------------------------------------------
```

- 25 Year 3 Hour Post-Development Unit Hydrograph – Area 'E'

```
        U n i t   H y d r o g r a p h   A n a l y s i s

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        Study date  10/11/16   File Name pre02503.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'E' - 25 YEAR 3 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

        Storm Event Year = 25

        Antecedent Moisture Condition = 2

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 71.2       3.5          0.61     C     0.250     0.144    0.036
 71.2       2.3          0.39     D     0.200     0.144    0.029

Area-averaged adjusted loss rate Fm (In/Hr) =  0.033

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC2)          Yield Fr
     0.51   0.088         71.2      71.2       4.04     0.391
     3.03   0.523         98.0      98.0       0.20     0.947

     0.32   0.056         71.2      71.2       4.04     0.391
     1.93   0.333         98.0      98.0       0.20     0.947

Area-averaged catchment yield fraction, Y =  0.867
Area-averaged low loss fraction, Yb =  0.133
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.113 (hours)
Watershed area =       5.79(Ac.)
Catchment Lag time =   0.091 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 92.0200
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.033(In/Hr)
Average low loss rate fraction (Yb) = 0.133 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.400(In)
Computed peak 30-minute rainfall =  0.870(In)
Specified peak 1-hour rainfall =  1.150(In)
Computed peak 3-hour rainfall =  1.940(In)
Specified peak 6-hour rainfall =  2.710(In)
Specified peak 24-hour rainfall =  4.490(In)
```

```
Rainfall depth area reduction factors:
Using a total area of       5.79(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000     Adjusted rainfall =  0.400(In)
30-minute factor = 1.000    Adjusted rainfall =  0.870(In)
1-hour factor = 1.000       Adjusted rainfall =  1.150(In)
3-hour factor = 1.000       Adjusted rainfall =  1.940(In)
6-hour factor = 1.000       Adjusted rainfall =  2.710(In)
24-hour factor = 1.000 Adjusted rainfall =  4.490(In)
```

U n i t H y d r o g r a p h

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 70.02 (CFS))	
1	11.819	8.276
2	66.035	37.964
3	86.243	14.150
4	94.587	5.843
5	97.976	2.373
6	99.002	0.718
7	99.643	0.449
8	100.000	0.250

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.3999	0.3999
2	0.5401	0.1402
3	0.6440	0.1038
4	0.7295	0.0856
5	0.8036	0.0741
6	0.8698	0.0661
7	0.9254	0.0557
8	0.9766	0.0511
9	1.0240	0.0474
10	1.0683	0.0444
11	1.1101	0.0418
12	1.1497	0.0396
13	1.1944	0.0447
14	1.2373	0.0429
15	1.2786	0.0413
16	1.3185	0.0399
17	1.3571	0.0386
18	1.3946	0.0374
19	1.4309	0.0364
20	1.4663	0.0354
21	1.5008	0.0345
22	1.5344	0.0336
23	1.5672	0.0328
24	1.5993	0.0321
25	1.6307	0.0314
26	1.6614	0.0307
27	1.6916	0.0301
28	1.7211	0.0296
29	1.7501	0.0290
30	1.7786	0.0285
31	1.8066	0.0280
32	1.8341	0.0275
33	1.8612	0.0271
34	1.8878	0.0266
35	1.9141	0.0262
36	1.9399	0.0259

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0259	0.0028	0.0231

2	0.0262	0.0028	0.0235
3	0.0271	0.0028	0.0243
4	0.0275	0.0028	0.0248
5	0.0285	0.0028	0.0257
6	0.0290	0.0028	0.0262
7	0.0301	0.0028	0.0274
8	0.0307	0.0028	0.0280
9	0.0321	0.0028	0.0293
10	0.0328	0.0028	0.0301
11	0.0345	0.0028	0.0317
12	0.0354	0.0028	0.0326
13	0.0374	0.0028	0.0347
14	0.0386	0.0028	0.0359
15	0.0413	0.0028	0.0386
16	0.0429	0.0028	0.0401
17	0.0396	0.0028	0.0368
18	0.0418	0.0028	0.0390
19	0.0474	0.0028	0.0446
20	0.0511	0.0028	0.0483
21	0.0661	0.0028	0.0634
22	0.0741	0.0028	0.0714
23	0.1038	0.0028	0.1011
24	0.1402	0.0028	0.1375
25	0.3999	0.0028	0.3971
26	0.0856	0.0028	0.0828
27	0.0557	0.0028	0.0529
28	0.0444	0.0028	0.0416
29	0.0447	0.0028	0.0419
30	0.0399	0.0028	0.0371
31	0.0364	0.0028	0.0336
32	0.0336	0.0028	0.0309
33	0.0314	0.0028	0.0286
34	0.0296	0.0028	0.0268
35	0.0280	0.0028	0.0252
36	0.0266	0.0028	0.0239

Total soil rain loss = 0.10(In)
Total effective rainfall = 1.84(In)
Peak flow rate in flood hydrograph = 18.54(CFS)

++

3 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	5.0	10.0	15.0	20.0
0+ 5	0.0013	0.19	Q	|	|	|	|
0+10	0.0087	1.07	V Q	|	|	|	|
0+15	0.0185	1.42	V Q	|	|	|	|
0+20	0.0294	1.59	|V Q	|	|	|	|
0+25	0.0411	1.69	|V Q	|	|	|	|
0+30	0.0532	1.76	| VQ	|	|	|	|
0+35	0.0657	1.82	| VQ	|	|	|	|
0+40	0.0787	1.88	| Q	|	|	|	|
0+45	0.0920	1.94	| QV	|	|	|	|
0+50	0.1059	2.02	| Q	|	|	|	|
0+55	0.1203	2.08	| QV	|	|	|	|
1+ 0	0.1352	2.17	| Q V	|	|	|	|
1+ 5	0.1508	2.26	| Q V	|	|	|	|
1+10	0.1671	2.37	| Q V	|	|	|	|
1+15	0.1842	2.48	| Q V |	|	|	|	|
1+20	0.2023	2.63	| Q V|	|	|	|	|
1+25	0.2209	2.71	| Q V|	|	|	|	|
1+30	0.2392	2.65	| Q V	|	|	|	|
1+35	0.2581	2.75	| Q |V	|	|	|	|
1+40	0.2788	3.01	| Q | V	|	|	|	|
1+45	0.3020	3.36	| Q | V	|	|	|	|

```
    1+50       0.3301      4.09  |       Q |   V     |         |         |
    1+55       0.3638      4.88  |         Q|     V   |         |         |
    2+ 0       0.4087      6.53  |          |  Q    V |         |         |
    2+ 5       0.4815     10.57  |          |         |Q        |         |
    2+10       0.6092     18.54  |          |         |      V  |      Q  |
    2+15       0.6804     10.34  |          |         Q         V         |
    2+20       0.7237      6.29  |          | Q       |         | V       |
    2+25       0.7531      4.26  |        Q |         |         |  V      |
    2+30       0.7763      3.36  |      Q   |         |         |   V     |
    2+35       0.7964      2.92  |    Q     |         |         |    V    |
    2+40       0.8141      2.57  |    Q     |         |         |     V   |
    2+45       0.8298      2.27  |   Q      |         |         |      V  |
    2+50       0.8442      2.09  |   Q      |         |         |       V |
    2+55       0.8576      1.95  |  Q       |         |         |       V |
    3+ 0       0.8702      1.83  |  Q       |         |         |        V|
    3+ 5       0.8807      1.53  |  Q       |         |         |        V|
    3+10       0.8848      0.59  |Q         |         |         |        V|
    3+15       0.8865      0.24  Q          |         |         |        V|
    3+20       0.8871      0.09  Q          |         |         |        V|
    3+25       0.8873      0.04  Q          |         |         |        V|
    3+30       0.8875      0.02  Q          |         |         |        V|
    3+35       0.8875      0.01  Q          |         |         |         V
---------------------------------------------------------------------------
```

- 25 Year 6 Hour Post-Development Unit Hydrograph – Area 'E'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/11/16   File Name pre02506.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'E' - 25 YEAR 6 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 25

       Antecedent Moisture Condition = 2

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 71.2       3.5          0.61     C     0.250     0.144    0.036
 71.2       2.3          0.39     D     0.200     0.144    0.029

Area-averaged adjusted loss rate Fm (In/Hr) =  0.033

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC2)          Yield Fr
     0.51   0.088         71.2      71.2       4.04     0.391
     3.03   0.523         98.0      98.0       0.20     0.947

     0.32   0.056         71.2      71.2       4.04     0.391
     1.93   0.333         98.0      98.0       0.20     0.947

Area-averaged catchment yield fraction, Y =  0.867
Area-averaged low loss fraction, Yb =  0.133
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.113 (hours)
Watershed area =       5.79(Ac.)
Catchment Lag time =   0.091 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 92.0200
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.033(In/Hr)
Average low loss rate fraction (Yb) = 0.133 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.400(In)
Computed peak 30-minute rainfall =  0.870(In)
Specified peak 1-hour rainfall =  1.150(In)
Computed peak 3-hour rainfall =  1.940(In)
Specified peak 6-hour rainfall =  2.710(In)
Specified peak 24-hour rainfall =  4.490(In)
```

```
Rainfall depth area reduction factors:
Using a total area of       5.79(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000     Adjusted rainfall =  0.400(In)
30-minute factor = 1.000    Adjusted rainfall =  0.870(In)
1-hour factor = 1.000       Adjusted rainfall =  1.150(In)
3-hour factor = 1.000       Adjusted rainfall =  1.940(In)
6-hour factor = 1.000       Adjusted rainfall =  2.710(In)
24-hour factor = 1.000 Adjusted rainfall =  4.490(In)
------------------------------------------------------------------------

                      U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
------------------------------------------------------------------------
               (K =        70.02 (CFS))

  1               11.819                   8.276
  2               66.035                  37.964
  3               86.243                  14.150
  4               94.587                   5.843
  5               97.976                   2.373
  6               99.002                   0.718
  7               99.643                   0.449
  8              100.000                   0.250
------------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.3999              0.3999
  2              0.5401              0.1402
  3              0.6440              0.1038
  4              0.7295              0.0856
  5              0.8036              0.0741
  6              0.8698              0.0661
  7              0.9254              0.0557
  8              0.9766              0.0511
  9              1.0240              0.0474
 10              1.0683              0.0444
 11              1.1101              0.0418
 12              1.1497              0.0396
 13              1.1944              0.0447
 14              1.2373              0.0429
 15              1.2786              0.0413
 16              1.3185              0.0399
 17              1.3571              0.0386
 18              1.3946              0.0374
 19              1.4309              0.0364
 20              1.4663              0.0354
 21              1.5008              0.0345
 22              1.5344              0.0336
 23              1.5672              0.0328
 24              1.5993              0.0321
 25              1.6307              0.0314
 26              1.6614              0.0307
 27              1.6916              0.0301
 28              1.7211              0.0296
 29              1.7501              0.0290
 30              1.7786              0.0285
 31              1.8066              0.0280
 32              1.8341              0.0275
 33              1.8612              0.0271
 34              1.8878              0.0266
 35              1.9141              0.0262
 36              1.9399              0.0259
 37              1.9657              0.0258
 38              1.9912              0.0254
 39              2.0163              0.0251
 40              2.0411              0.0248
 41              2.0655              0.0245
 42              2.0896              0.0241
```

43	2.1135	0.0238
44	2.1371	0.0236
45	2.1603	0.0233
46	2.1834	0.0230
47	2.2061	0.0228
48	2.2286	0.0225
49	2.2509	0.0223
50	2.2729	0.0220
51	2.2948	0.0218
52	2.3163	0.0216
53	2.3377	0.0214
54	2.3589	0.0212
55	2.3799	0.0210
56	2.4006	0.0208
57	2.4212	0.0206
58	2.4416	0.0204
59	2.4618	0.0202
60	2.4818	0.0200
61	2.5017	0.0199
62	2.5214	0.0197
63	2.5409	0.0195
64	2.5603	0.0194
65	2.5795	0.0192
66	2.5986	0.0191
67	2.6175	0.0189
68	2.6363	0.0188
69	2.6549	0.0186
70	2.6734	0.0185
71	2.6917	0.0184
72	2.7100	0.0182

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0182	0.0024	0.0158
2	0.0184	0.0024	0.0159
3	0.0186	0.0025	0.0162
4	0.0188	0.0025	0.0163
5	0.0191	0.0025	0.0165
6	0.0192	0.0026	0.0167
7	0.0195	0.0026	0.0169
8	0.0197	0.0026	0.0171
9	0.0200	0.0027	0.0174
10	0.0202	0.0027	0.0175
11	0.0206	0.0027	0.0178
12	0.0208	0.0028	0.0180
13	0.0212	0.0028	0.0184
14	0.0214	0.0028	0.0186
15	0.0218	0.0028	0.0190
16	0.0220	0.0028	0.0193
17	0.0225	0.0028	0.0197
18	0.0228	0.0028	0.0200
19	0.0233	0.0028	0.0205
20	0.0236	0.0028	0.0208
21	0.0241	0.0028	0.0214
22	0.0245	0.0028	0.0217
23	0.0251	0.0028	0.0223
24	0.0254	0.0028	0.0227
25	0.0259	0.0028	0.0231
26	0.0262	0.0028	0.0235
27	0.0271	0.0028	0.0243
28	0.0275	0.0028	0.0248
29	0.0285	0.0028	0.0257
30	0.0290	0.0028	0.0262
31	0.0301	0.0028	0.0274
32	0.0307	0.0028	0.0280
33	0.0321	0.0028	0.0293
34	0.0328	0.0028	0.0301
35	0.0345	0.0028	0.0317
36	0.0354	0.0028	0.0326

37	0.0374	0.0028	0.0347
38	0.0386	0.0028	0.0359
39	0.0413	0.0028	0.0386
40	0.0429	0.0028	0.0401
41	0.0396	0.0028	0.0368
42	0.0418	0.0028	0.0390
43	0.0474	0.0028	0.0446
44	0.0511	0.0028	0.0483
45	0.0661	0.0028	0.0634
46	0.0741	0.0028	0.0714
47	0.1038	0.0028	0.1011
48	0.1402	0.0028	0.1375
49	0.3999	0.0028	0.3971
50	0.0856	0.0028	0.0828
51	0.0557	0.0028	0.0529
52	0.0444	0.0028	0.0416
53	0.0447	0.0028	0.0419
54	0.0399	0.0028	0.0371
55	0.0364	0.0028	0.0336
56	0.0336	0.0028	0.0309
57	0.0314	0.0028	0.0286
58	0.0296	0.0028	0.0268
59	0.0280	0.0028	0.0252
60	0.0266	0.0028	0.0239
61	0.0258	0.0028	0.0230
62	0.0248	0.0028	0.0220
63	0.0238	0.0028	0.0211
64	0.0230	0.0028	0.0203
65	0.0223	0.0028	0.0195
66	0.0216	0.0028	0.0188
67	0.0210	0.0028	0.0182
68	0.0204	0.0027	0.0177
69	0.0199	0.0026	0.0172
70	0.0194	0.0026	0.0168
71	0.0189	0.0025	0.0164
72	0.0185	0.0025	0.0160

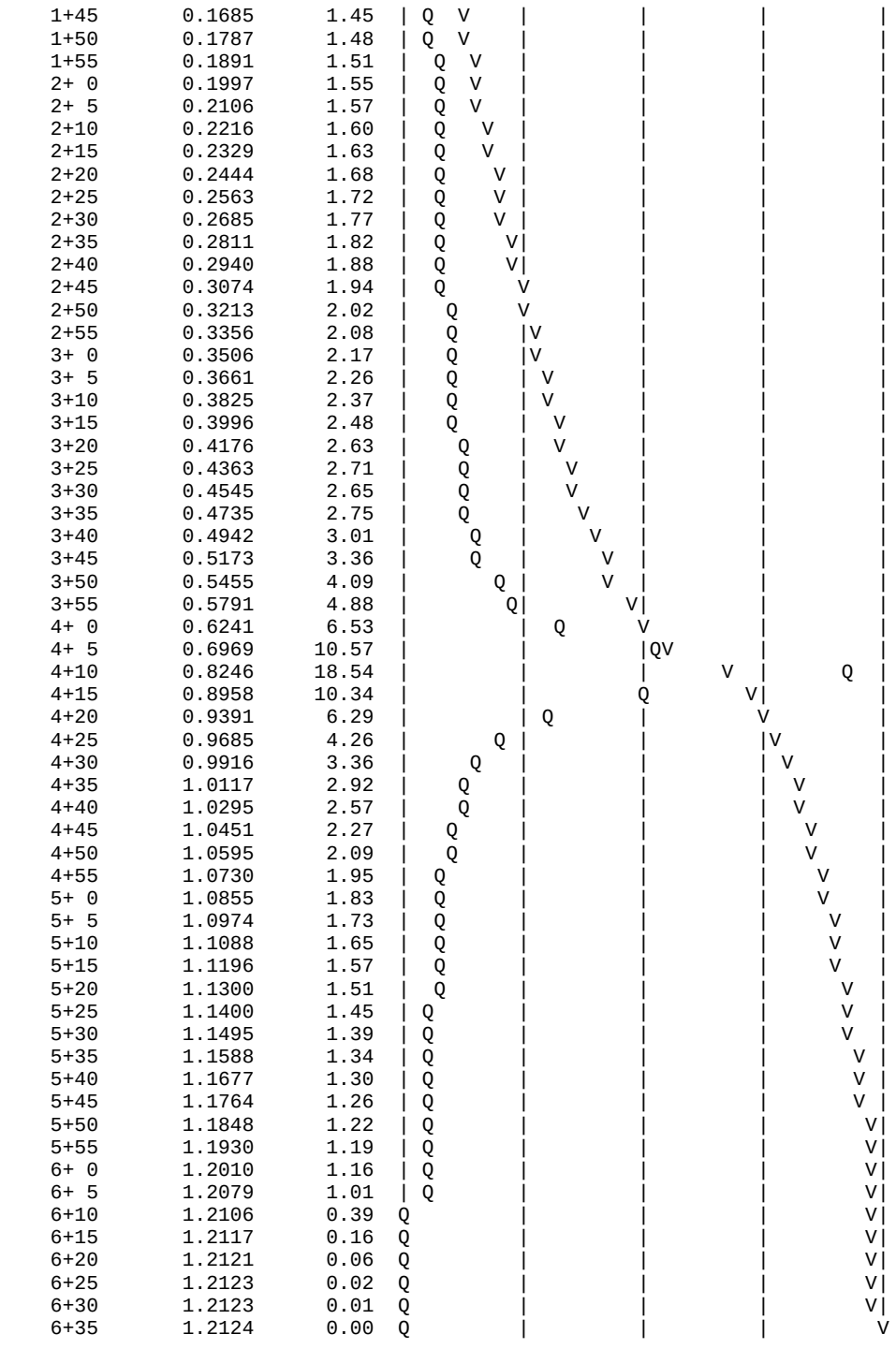
Total soil rain loss = 0.20(In)
Total effective rainfall = 2.51(In)
Peak flow rate in flood hydrograph = 18.54(CFS)

++

6 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	5.0	10.0	15.0	20.0
0+ 5	0.0009	0.13	Q				
0+10	0.0059	0.73	VQ				
0+15	0.0126	0.96	VQ				
0+20	0.0199	1.07	V Q				
0+25	0.0276	1.11	V Q				
0+30	0.0354	1.14	|VQ				
0+35	0.0434	1.16	|VQ				
0+40	0.0515	1.18	|VQ				
0+45	0.0597	1.19	|VQ				
0+50	0.0680	1.21	| Q				
0+55	0.0765	1.22	| Q				
1+ 0	0.0850	1.24	| Q				
1+ 5	0.0937	1.26	| QV				
1+10	0.1025	1.28	| QV				
1+15	0.1114	1.30	| QV				
1+20	0.1205	1.32	| QV				
1+25	0.1297	1.34	| Q V				
1+30	0.1392	1.37	| Q V				
1+35	0.1487	1.39	| Q V				
1+40	0.1585	1.42	| Q V				


1+45 0.1685 1.45
1+50 0.1787 1.48
1+55 0.1891 1.51
2+ 0 0.1997 1.55
2+ 5 0.2106 1.57
2+10 0.2216 1.60
2+15 0.2329 1.63
2+20 0.2444 1.68
2+25 0.2563 1.72
2+30 0.2685 1.77
2+35 0.2811 1.82
2+40 0.2940 1.88
2+45 0.3074 1.94
2+50 0.3213 2.02
2+55 0.3356 2.08
3+ 0 0.3506 2.17
3+ 5 0.3661 2.26
3+10 0.3825 2.37
3+15 0.3996 2.48
3+20 0.4176 2.63
3+25 0.4363 2.71
3+30 0.4545 2.65
3+35 0.4735 2.75
3+40 0.4942 3.01
3+45 0.5173 3.36
3+50 0.5455 4.09
3+55 0.5791 4.88
4+ 0 0.6241 6.53
4+ 5 0.6969 10.57
4+10 0.8246 18.54
4+15 0.8958 10.34
4+20 0.9391 6.29
4+25 0.9685 4.26
4+30 0.9916 3.36
4+35 1.0117 2.92
4+40 1.0295 2.57
4+45 1.0451 2.27
4+50 1.0595 2.09
4+55 1.0730 1.95
5+ 0 1.0855 1.83
5+ 5 1.0974 1.73
5+10 1.1088 1.65
5+15 1.1196 1.57
5+20 1.1300 1.51
5+25 1.1400 1.45
5+30 1.1495 1.39
5+35 1.1588 1.34
5+40 1.1677 1.30
5+45 1.1764 1.26
5+50 1.1848 1.22
5+55 1.1930 1.19
6+ 0 1.2010 1.16
6+ 5 1.2079 1.01
6+10 1.2106 0.39
6+15 1.2117 0.16
6+20 1.2121 0.06
6+25 1.2123 0.02
6+30 1.2123 0.01
6+35 1.2124 0.00

- 25 Year 12 Hour Post-Development Unit Hydrograph – Area 'E'

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        U n i t   H y d r o g r a p h   A n a l y s i s

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        Study date  10/11/16   File Name pre02512.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

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RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'E' - 25 YEAR 12 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

        Storm Event Year = 25

        Antecedent Moisture Condition = 2

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 71.2       3.5          0.61     C     0.250     0.144    0.036
 71.2       2.3          0.39     D     0.200     0.144    0.029

Area-averaged adjusted loss rate Fm (In/Hr) =  0.033

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC2)          Yield Fr
     0.51   0.088         71.2      71.2       4.04     0.391
     3.03   0.523         98.0      98.0       0.20     0.947

     0.32   0.056         71.2      71.2       4.04     0.391
     1.93   0.333         98.0      98.0       0.20     0.947

Area-averaged catchment yield fraction, Y =  0.867
Area-averaged low loss fraction, Yb =  0.133
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.113 (hours)
Watershed area =       5.79(Ac.)
Catchment Lag time =   0.091 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 92.0200
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.033(In/Hr)
Average low loss rate fraction (Yb) = 0.133 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.400(In)
Computed peak 30-minute rainfall =  0.870(In)
Specified peak 1-hour rainfall =  1.150(In)
Computed peak 3-hour rainfall =  1.940(In)
Specified peak 6-hour rainfall =  2.710(In)
Specified peak 24-hour rainfall =  4.490(In)
```

Rainfall depth area reduction factors:
Using a total area of 5.79(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000 Adjusted rainfall = 0.400(In)
30-minute factor = 1.000 Adjusted rainfall = 0.870(In)
1-hour factor = 1.000 Adjusted rainfall = 1.150(In)
3-hour factor = 1.000 Adjusted rainfall = 1.940(In)
6-hour factor = 1.000 Adjusted rainfall = 2.710(In)
24-hour factor = 1.000 Adjusted rainfall = 4.490(In)

U n i t H y d r o g r a p h

Interval Number	'S' Graph Mean values (K = 70.02 (CFS))	Unit Hydrograph ((CFS))
1	11.819	8.276
2	66.035	37.964
3	86.243	14.150
4	94.587	5.843
5	97.976	2.373
6	99.002	0.718
7	99.643	0.449
8	100.000	0.250

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.3999	0.3999
2	0.5401	0.1402
3	0.6440	0.1038
4	0.7295	0.0856
5	0.8036	0.0741
6	0.8698	0.0661
7	0.9254	0.0557
8	0.9766	0.0511
9	1.0240	0.0474
10	1.0683	0.0444
11	1.1101	0.0418
12	1.1497	0.0396
13	1.1944	0.0447
14	1.2373	0.0429
15	1.2786	0.0413
16	1.3185	0.0399
17	1.3571	0.0386
18	1.3946	0.0374
19	1.4309	0.0364
20	1.4663	0.0354
21	1.5008	0.0345
22	1.5344	0.0336
23	1.5672	0.0328
24	1.5993	0.0321
25	1.6307	0.0314
26	1.6614	0.0307
27	1.6916	0.0301
28	1.7211	0.0296
29	1.7501	0.0290
30	1.7786	0.0285
31	1.8066	0.0280
32	1.8341	0.0275
33	1.8612	0.0271
34	1.8878	0.0266
35	1.9141	0.0262
36	1.9399	0.0259
37	1.9657	0.0258
38	1.9912	0.0254
39	2.0163	0.0251
40	2.0411	0.0248
41	2.0655	0.0245
42	2.0896	0.0241

43	2.1135	0.0238
44	2.1371	0.0236
45	2.1603	0.0233
46	2.1834	0.0230
47	2.2061	0.0228
48	2.2286	0.0225
49	2.2509	0.0223
50	2.2729	0.0220
51	2.2948	0.0218
52	2.3163	0.0216
53	2.3377	0.0214
54	2.3589	0.0212
55	2.3799	0.0210
56	2.4006	0.0208
57	2.4212	0.0206
58	2.4416	0.0204
59	2.4618	0.0202
60	2.4818	0.0200
61	2.5017	0.0199
62	2.5214	0.0197
63	2.5409	0.0195
64	2.5603	0.0194
65	2.5795	0.0192
66	2.5986	0.0191
67	2.6175	0.0189
68	2.6363	0.0188
69	2.6549	0.0186
70	2.6734	0.0185
71	2.6917	0.0184
72	2.7100	0.0182
73	2.7236	0.0136
74	2.7371	0.0135
75	2.7505	0.0134
76	2.7638	0.0133
77	2.7770	0.0132
78	2.7901	0.0131
79	2.8031	0.0130
80	2.8160	0.0129
81	2.8287	0.0128
82	2.8414	0.0127
83	2.8540	0.0126
84	2.8665	0.0125
85	2.8788	0.0124
86	2.8911	0.0123
87	2.9033	0.0122
88	2.9154	0.0121
89	2.9275	0.0120
90	2.9394	0.0119
91	2.9512	0.0119
92	2.9630	0.0118
93	2.9747	0.0117
94	2.9863	0.0116
95	2.9979	0.0115
96	3.0093	0.0115
97	3.0207	0.0114
98	3.0320	0.0113
99	3.0432	0.0112
100	3.0544	0.0112
101	3.0655	0.0111
102	3.0765	0.0110
103	3.0874	0.0110
104	3.0983	0.0109
105	3.1091	0.0108
106	3.1199	0.0108
107	3.1306	0.0107
108	3.1412	0.0106
109	3.1518	0.0106
110	3.1623	0.0105
111	3.1727	0.0104
112	3.1831	0.0104
113	3.1934	0.0103

114	3.2037	0.0103
115	3.2139	0.0102
116	3.2240	0.0102
117	3.2341	0.0101
118	3.2442	0.0100
119	3.2542	0.0100
120	3.2641	0.0099
121	3.2740	0.0099
122	3.2838	0.0098
123	3.2936	0.0098
124	3.3033	0.0097
125	3.3130	0.0097
126	3.3226	0.0096
127	3.3322	0.0096
128	3.3417	0.0095
129	3.3512	0.0095
130	3.3607	0.0094
131	3.3700	0.0094
132	3.3794	0.0093
133	3.3887	0.0093
134	3.3980	0.0093
135	3.4072	0.0092
136	3.4163	0.0092
137	3.4255	0.0091
138	3.4346	0.0091
139	3.4436	0.0090
140	3.4526	0.0090
141	3.4616	0.0090
142	3.4705	0.0089
143	3.4794	0.0089
144	3.4882	0.0088

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0088	0.0012	0.0077
2	0.0089	0.0012	0.0077
3	0.0090	0.0012	0.0078
4	0.0090	0.0012	0.0078
5	0.0091	0.0012	0.0079
6	0.0091	0.0012	0.0079
7	0.0092	0.0012	0.0080
8	0.0093	0.0012	0.0080
9	0.0093	0.0012	0.0081
10	0.0094	0.0012	0.0081
11	0.0095	0.0013	0.0082
12	0.0095	0.0013	0.0083
13	0.0096	0.0013	0.0084
14	0.0097	0.0013	0.0084
15	0.0098	0.0013	0.0085
16	0.0098	0.0013	0.0085
17	0.0099	0.0013	0.0086
18	0.0100	0.0013	0.0087
19	0.0101	0.0013	0.0088
20	0.0102	0.0013	0.0088
21	0.0103	0.0014	0.0089
22	0.0103	0.0014	0.0090
23	0.0104	0.0014	0.0091
24	0.0105	0.0014	0.0091
25	0.0106	0.0014	0.0092
26	0.0107	0.0014	0.0093
27	0.0108	0.0014	0.0094
28	0.0109	0.0014	0.0094
29	0.0110	0.0015	0.0096
30	0.0111	0.0015	0.0096
31	0.0112	0.0015	0.0097
32	0.0113	0.0015	0.0098
33	0.0115	0.0015	0.0099
34	0.0115	0.0015	0.0100
35	0.0117	0.0016	0.0101

36	0.0118	0.0016	0.0102
37	0.0119	0.0016	0.0104
38	0.0120	0.0016	0.0104
39	0.0122	0.0016	0.0106
40	0.0123	0.0016	0.0107
41	0.0125	0.0017	0.0108
42	0.0126	0.0017	0.0109
43	0.0128	0.0017	0.0111
44	0.0129	0.0017	0.0112
45	0.0131	0.0017	0.0113
46	0.0132	0.0018	0.0114
47	0.0134	0.0018	0.0116
48	0.0135	0.0018	0.0117
49	0.0182	0.0024	0.0158
50	0.0184	0.0024	0.0159
51	0.0186	0.0025	0.0162
52	0.0188	0.0025	0.0163
53	0.0191	0.0025	0.0165
54	0.0192	0.0026	0.0167
55	0.0195	0.0026	0.0169
56	0.0197	0.0026	0.0171
57	0.0200	0.0027	0.0174
58	0.0202	0.0027	0.0175
59	0.0206	0.0027	0.0178
60	0.0208	0.0028	0.0180
61	0.0212	0.0028	0.0184
62	0.0214	0.0028	0.0186
63	0.0218	0.0028	0.0190
64	0.0220	0.0028	0.0193
65	0.0225	0.0028	0.0197
66	0.0228	0.0028	0.0200
67	0.0233	0.0028	0.0205
68	0.0236	0.0028	0.0208
69	0.0241	0.0028	0.0214
70	0.0245	0.0028	0.0217
71	0.0251	0.0028	0.0223
72	0.0254	0.0028	0.0227
73	0.0259	0.0028	0.0231
74	0.0262	0.0028	0.0235
75	0.0271	0.0028	0.0243
76	0.0275	0.0028	0.0248
77	0.0285	0.0028	0.0257
78	0.0290	0.0028	0.0262
79	0.0301	0.0028	0.0274
80	0.0307	0.0028	0.0280
81	0.0321	0.0028	0.0293
82	0.0328	0.0028	0.0301
83	0.0345	0.0028	0.0317
84	0.0354	0.0028	0.0326
85	0.0374	0.0028	0.0347
86	0.0386	0.0028	0.0359
87	0.0413	0.0028	0.0386
88	0.0429	0.0028	0.0401
89	0.0396	0.0028	0.0368
90	0.0418	0.0028	0.0390
91	0.0474	0.0028	0.0446
92	0.0511	0.0028	0.0483
93	0.0661	0.0028	0.0634
94	0.0741	0.0028	0.0714
95	0.1038	0.0028	0.1011
96	0.1402	0.0028	0.1375
97	0.3999	0.0028	0.3971
98	0.0856	0.0028	0.0828
99	0.0557	0.0028	0.0529
100	0.0444	0.0028	0.0416
101	0.0447	0.0028	0.0419
102	0.0399	0.0028	0.0371
103	0.0364	0.0028	0.0336
104	0.0336	0.0028	0.0309
105	0.0314	0.0028	0.0286
106	0.0296	0.0028	0.0268

```
      107              0.0280           0.0028              0.0252
      108              0.0266           0.0028              0.0239
      109              0.0258           0.0028              0.0230
      110              0.0248           0.0028              0.0220
      111              0.0238           0.0028              0.0211
      112              0.0230           0.0028              0.0203
      113              0.0223           0.0028              0.0195
      114              0.0216           0.0028              0.0188
      115              0.0210           0.0028              0.0182
      116              0.0204           0.0027              0.0177
      117              0.0199           0.0026              0.0172
      118              0.0194           0.0026              0.0168
      119              0.0189           0.0025              0.0164
      120              0.0185           0.0025              0.0160
      121              0.0136           0.0018              0.0118
      122              0.0133           0.0018              0.0115
      123              0.0130           0.0017              0.0113
      124              0.0127           0.0017              0.0110
      125              0.0124           0.0016              0.0107
      126              0.0121           0.0016              0.0105
      127              0.0119           0.0016              0.0103
      128              0.0116           0.0015              0.0101
      129              0.0114           0.0015              0.0099
      130              0.0112           0.0015              0.0097
      131              0.0110           0.0015              0.0095
      132              0.0108           0.0014              0.0093
      133              0.0106           0.0014              0.0092
      134              0.0104           0.0014              0.0090
      135              0.0102           0.0014              0.0089
      136              0.0100           0.0013              0.0087
      137              0.0099           0.0013              0.0086
      138              0.0097           0.0013              0.0084
      139              0.0096           0.0013              0.0083
      140              0.0094           0.0013              0.0082
      141              0.0093           0.0012              0.0081
      142              0.0092           0.0012              0.0080
      143              0.0090           0.0012              0.0078
      144              0.0089           0.0012              0.0077
      ---------------------------------------------------------------------
      ---------------------------------------------------------------------
      Total soil rain loss =      0.30(In)
      Total effective rainfall =      3.19(In)
      Peak flow rate in flood hydrograph =     18.54(CFS)
      ---------------------------------------------------------------------
      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                        12 - H O U R    S T O R M
                   R u n o f f      H y d r o g r a p h
      ---------------------------------------------------------------------
                Hydrograph in   5   Minute intervals ((CFS))

      ---------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0        5.0      10.0      15.0      20.0
---------------------------------------------------------------------------
  0+ 5       0.0004      0.06  Q         |         |         |         |
  0+10       0.0029      0.35  Q         |         |         |         |
  0+15       0.0061      0.47  Q         |         |         |         |
  0+20       0.0096      0.51  VQ        |         |         |         |
  0+25       0.0133      0.53  VQ        |         |         |         |
  0+30       0.0171      0.54  VQ        |         |         |         |
  0+35       0.0209      0.55  VQ        |         |         |         |
  0+40       0.0247      0.56  VQ        |         |         |         |
  0+45       0.0286      0.56  VQ        |         |         |         |
  0+50       0.0324      0.57  VQ        |         |         |         |
  0+55       0.0364      0.57  VQ        |         |         |         |
  1+ 0       0.0403      0.57  |Q        |         |         |         |
  1+ 5       0.0443      0.58  |Q        |         |         |         |
  1+10       0.0483      0.58  |Q        |         |         |         |
  1+15       0.0523      0.59  |Q        |         |         |         |
  1+20       0.0564      0.59  |Q        |         |         |         |
  1+25       0.0605      0.60  |Q        |         |         |         |
  1+30       0.0647      0.60  |Q        |         |         |         |
```

```
1+35      0.0688      0.60  |Q        |         |         |         |
1+40      0.0730      0.61  |Q        |         |         |         |
1+45      0.0773      0.61  |QV       |         |         |         |
1+50      0.0815      0.62  |QV       |         |         |         |
1+55      0.0858      0.63  |QV       |         |         |         |
2+ 0      0.0902      0.63  |QV       |         |         |         |
2+ 5      0.0946      0.64  |QV       |         |         |         |
2+10      0.0990      0.64  |QV       |         |         |         |
2+15      0.1034      0.65  |QV       |         |         |         |
2+20      0.1079      0.65  |QV       |         |         |         |
2+25      0.1125      0.66  |QV       |         |         |         |
2+30      0.1171      0.67  |Q V      |         |         |         |
2+35      0.1217      0.67  |Q V      |         |         |         |
2+40      0.1264      0.68  |Q V      |         |         |         |
2+45      0.1311      0.68  |Q V      |         |         |         |
2+50      0.1358      0.69  |Q V      |         |         |         |
2+55      0.1406      0.70  |Q V      |         |         |         |
3+ 0      0.1455      0.71  |Q V      |         |         |         |
3+ 5      0.1504      0.71  |Q V      |         |         |         |
3+10      0.1554      0.72  |Q  V     |         |         |         |
3+15      0.1604      0.73  |Q  V     |         |         |         |
3+20      0.1655      0.74  |Q  V     |         |         |         |
3+25      0.1706      0.74  |Q  V     |         |         |         |
3+30      0.1758      0.75  |Q  V     |         |         |         |
3+35      0.1810      0.76  |Q  V     |         |         |         |
3+40      0.1863      0.77  |Q  V     |         |         |         |
3+45      0.1917      0.78  |Q  V     |         |         |         |
3+50      0.1971      0.79  |Q   V    |         |         |         |
3+55      0.2026      0.80  |Q   V    |         |         |         |
4+ 0      0.2082      0.81  |Q   V    |         |         |         |
4+ 5      0.2140      0.85  |Q   V    |         |         |         |
4+10      0.2210      1.01  | Q  V    |         |         |         |
4+15      0.2284      1.07  | Q  V    |         |         |         |
4+20      0.2360      1.11  | Q   V   |         |         |         |
4+25      0.2438      1.13  | Q   V   |         |         |         |
4+30      0.2517      1.15  | Q   V   |         |         |         |
4+35      0.2597      1.16  | Q   V   |         |         |         |
4+40      0.2678      1.18  | Q   V   |         |         |         |
4+45      0.2760      1.19  | Q    V  |         |         |         |
4+50      0.2844      1.21  | Q    V  |         |         |         |
4+55      0.2928      1.22  | Q    V  |         |         |         |
5+ 0      0.3013      1.24  | Q    V  |         |         |         |
5+ 5      0.3100      1.26  | Q     V |         |         |         |
5+10      0.3188      1.28  | Q     V |         |         |         |
5+15      0.3277      1.30  | Q     V |         |         |         |
5+20      0.3368      1.32  | Q     V |         |         |         |
5+25      0.3460      1.34  | Q      V|         |         |         |
5+30      0.3555      1.37  | Q      V|         |         |         |
5+35      0.3651      1.39  | Q      V|         |         |         |
5+40      0.3748      1.42  | Q      V|         |         |         |
5+45      0.3848      1.45  | Q       V         |         |         |
5+50      0.3950      1.48  | Q       V         |         |         |
5+55      0.4054      1.51  |  Q      V         |         |         |
6+ 0      0.4160      1.55  |  Q      V         |         |         |
6+ 5      0.4269      1.57  |  Q      |V        |         |         |
6+10      0.4379      1.60  |  Q      |V        |         |         |
6+15      0.4492      1.63  |  Q      |V        |         |         |
6+20      0.4608      1.68  |  Q      |V        |         |         |
6+25      0.4726      1.72  |  Q      | V       |         |         |
6+30      0.4848      1.77  |  Q      | V       |         |         |
6+35      0.4974      1.82  |  Q      | V       |         |         |
6+40      0.5103      1.88  |  Q      |  V      |         |         |
6+45      0.5237      1.94  |  Q      |  V      |         |         |
6+50      0.5376      2.02  |   Q     |  V      |         |         |
6+55      0.5519      2.08  |   Q     |   V     |         |         |
7+ 0      0.5669      2.17  |   Q     |   V     |         |         |
7+ 5      0.5825      2.26  |   Q     |    V    |         |         |
7+10      0.5988      2.37  |   Q     |    V    |         |         |
7+15      0.6159      2.48  |   Q     |     V   |         |         |
7+20      0.6340      2.63  |    Q    |     V   |         |         |
7+25      0.6526      2.71  |    Q    |     V   |         |         |
```

```
   7+30       0.6709      2.65  |    Q    |      V  |         |         |
   7+35       0.6898      2.75  |    Q    |      V  |         |         |
   7+40       0.7105      3.01  |     Q   |       V |         |         |
   7+45       0.7337      3.36  |     Q   |        V|         |         |
   7+50       0.7618      4.09  |       Q |        V|         |         |
   7+55       0.7954      4.88  |        Q|         V         |         |
   8+ 0       0.8404      6.53  |         |  Q      |V        |         |
   8+ 5       0.9132     10.57  |         |         |Q V      |         |
   8+10       1.0409     18.54  |         |         |      V  |       Q |
   8+15       1.1121     10.34  |         |         Q       V |         |
   8+20       1.1554      6.29  |         | Q       |         V         |
   8+25       1.1848      4.26  |       Q |         |         V         |
   8+30       1.2079      3.36  |     Q   |         |         |V        |
   8+35       1.2281      2.92  |    Q    |         |         |V        |
   8+40       1.2458      2.57  |    Q    |         |         | V       |
   8+45       1.2615      2.27  |   Q     |         |         | V       |
   8+50       1.2759      2.09  |   Q     |         |         |  V      |
   8+55       1.2893      1.95  |  Q      |         |         |  V      |
   9+ 0       1.3018      1.83  |  Q      |         |         |  V      |
   9+ 5       1.3137      1.73  |  Q      |         |         |   V     |
   9+10       1.3251      1.65  |  Q      |         |         |   V     |
   9+15       1.3359      1.57  |  Q      |         |         |   V     |
   9+20       1.3463      1.51  |  Q      |         |         |    V    |
   9+25       1.3563      1.45  | Q       |         |         |    V    |
   9+30       1.3659      1.39  | Q       |         |         |    V    |
   9+35       1.3751      1.34  | Q       |         |         |    V    |
   9+40       1.3840      1.30  | Q       |         |         |    V    |
   9+45       1.3927      1.26  | Q       |         |         |     V   |
   9+50       1.4011      1.22  | Q       |         |         |     V   |
   9+55       1.4093      1.19  | Q       |         |         |     V   |
  10+ 0       1.4173      1.16  | Q       |         |         |     V   |
  10+ 5       1.4249      1.10  | Q       |         |         |      V  |
  10+10       1.4313      0.93  |Q        |         |         |      V  |
  10+15       1.4372      0.86  |Q        |         |         |      V  |
  10+20       1.4428      0.81  |Q        |         |         |      V  |
  10+25       1.4482      0.78  |Q        |         |         |      V  |
  10+30       1.4535      0.76  |Q        |         |         |      V  |
  10+35       1.4586      0.74  |Q        |         |         |      V  |
  10+40       1.4636      0.73  |Q        |         |         |       V |
  10+45       1.4685      0.71  |Q        |         |         |       V |
  10+50       1.4733      0.70  |Q        |         |         |       V |
  10+55       1.4780      0.68  |Q        |         |         |       V |
  11+ 0       1.4826      0.67  |Q        |         |         |       V |
  11+ 5       1.4872      0.66  |Q        |         |         |       V |
  11+10       1.4916      0.65  |Q        |         |         |       V |
  11+15       1.4960      0.64  |Q        |         |         |       V |
  11+20       1.5003      0.62  |Q        |         |         |        V|
  11+25       1.5046      0.61  |Q        |         |         |        V|
  11+30       1.5087      0.60  |Q        |         |         |        V|
  11+35       1.5128      0.60  |Q        |         |         |        V|
  11+40       1.5168      0.59  |Q        |         |         |        V|
  11+45       1.5208      0.58  |Q        |         |         |        V|
  11+50       1.5247      0.57  |Q        |         |         |        V|
  11+55       1.5286      0.56  |Q        |         |         |        V|
  12+ 0       1.5324      0.55  |Q        |         |         |        V|
  12+ 5       1.5357      0.48  Q         |         |         |        V|
  12+10       1.5370      0.19  Q         |         |         |        V|
  12+15       1.5375      0.08  Q         |         |         |        V|
  12+20       1.5377      0.03  Q         |         |         |        V|
  12+25       1.5378      0.01  Q         |         |         |        V|
  12+30       1.5378      0.01  Q         |         |         |        V|
  12+35       1.5379      0.00  Q         |         |         |         V
-------------------------------------------------------------------------
```

- 25 Year 24 Hour Post-Development Unit Hydrograph – Area 'E'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/11/16   File Name pre02524.out


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------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'E' - 25 YEAR 24 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 25

       Antecedent Moisture Condition = 2

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 71.2       3.5          0.61     C     0.250     0.144    0.036
 71.2       2.3          0.39     D     0.200     0.144    0.029

Area-averaged adjusted loss rate Fm (In/Hr) =  0.033

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC2)          Yield Fr
     0.51   0.088         71.2      71.2       4.04     0.391
     3.03   0.523         98.0      98.0       0.20     0.947

     0.32   0.056         71.2      71.2       4.04     0.391
     1.93   0.333         98.0      98.0       0.20     0.947

Area-averaged catchment yield fraction, Y =  0.867
Area-averaged low loss fraction, Yb =  0.133
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.113 (hours)
Watershed area =       5.79(Ac.)
Catchment Lag time =   0.091 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 92.0200
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.033(In/Hr)
Average low loss rate fraction (Yb) = 0.133 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.400(In)
Computed peak 30-minute rainfall =  0.870(In)
Specified peak 1-hour rainfall =  1.150(In)
Computed peak 3-hour rainfall =  1.940(In)
Specified peak 6-hour rainfall =  2.710(In)
Specified peak 24-hour rainfall =  4.490(In)
```

```
Rainfall depth area reduction factors:
Using a total area of       5.79(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000     Adjusted rainfall =  0.400(In)
30-minute factor = 1.000    Adjusted rainfall =  0.870(In)
1-hour factor = 1.000       Adjusted rainfall =  1.150(In)
3-hour factor = 1.000       Adjusted rainfall =  1.940(In)
6-hour factor = 1.000       Adjusted rainfall =  2.710(In)
24-hour factor = 1.000 Adjusted rainfall =  4.490(In)
------------------------------------------------------------------------

                      U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
------------------------------------------------------------------------
               (K =        70.02 (CFS))

  1               11.819                   8.276
  2               66.035                  37.964
  3               86.243                  14.150
  4               94.587                   5.843
  5               97.976                   2.373
  6               99.002                   0.718
  7               99.643                   0.449
  8              100.000                   0.250
------------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.3999              0.3999
  2              0.5401              0.1402
  3              0.6440              0.1038
  4              0.7295              0.0856
  5              0.8036              0.0741
  6              0.8698              0.0661
  7              0.9254              0.0557
  8              0.9766              0.0511
  9              1.0240              0.0474
 10              1.0683              0.0444
 11              1.1101              0.0418
 12              1.1497              0.0396
 13              1.1944              0.0447
 14              1.2373              0.0429
 15              1.2786              0.0413
 16              1.3185              0.0399
 17              1.3571              0.0386
 18              1.3946              0.0374
 19              1.4309              0.0364
 20              1.4663              0.0354
 21              1.5008              0.0345
 22              1.5344              0.0336
 23              1.5672              0.0328
 24              1.5993              0.0321
 25              1.6307              0.0314
 26              1.6614              0.0307
 27              1.6916              0.0301
 28              1.7211              0.0296
 29              1.7501              0.0290
 30              1.7786              0.0285
 31              1.8066              0.0280
 32              1.8341              0.0275
 33              1.8612              0.0271
 34              1.8878              0.0266
 35              1.9141              0.0262
 36              1.9399              0.0259
 37              1.9657              0.0258
 38              1.9912              0.0254
 39              2.0163              0.0251
 40              2.0411              0.0248
 41              2.0655              0.0245
 42              2.0896              0.0241
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43	2.1135	0.0238
44	2.1371	0.0236
45	2.1603	0.0233
46	2.1834	0.0230
47	2.2061	0.0228
48	2.2286	0.0225
49	2.2509	0.0223
50	2.2729	0.0220
51	2.2948	0.0218
52	2.3163	0.0216
53	2.3377	0.0214
54	2.3589	0.0212
55	2.3799	0.0210
56	2.4006	0.0208
57	2.4212	0.0206
58	2.4416	0.0204
59	2.4618	0.0202
60	2.4818	0.0200
61	2.5017	0.0199
62	2.5214	0.0197
63	2.5409	0.0195
64	2.5603	0.0194
65	2.5795	0.0192
66	2.5986	0.0191
67	2.6175	0.0189
68	2.6363	0.0188
69	2.6549	0.0186
70	2.6734	0.0185
71	2.6917	0.0184
72	2.7100	0.0182
73	2.7236	0.0136
74	2.7371	0.0135
75	2.7505	0.0134
76	2.7638	0.0133
77	2.7770	0.0132
78	2.7901	0.0131
79	2.8031	0.0130
80	2.8160	0.0129
81	2.8287	0.0128
82	2.8414	0.0127
83	2.8540	0.0126
84	2.8665	0.0125
85	2.8788	0.0124
86	2.8911	0.0123
87	2.9033	0.0122
88	2.9154	0.0121
89	2.9275	0.0120
90	2.9394	0.0119
91	2.9512	0.0119
92	2.9630	0.0118
93	2.9747	0.0117
94	2.9863	0.0116
95	2.9979	0.0115
96	3.0093	0.0115
97	3.0207	0.0114
98	3.0320	0.0113
99	3.0432	0.0112
100	3.0544	0.0112
101	3.0655	0.0111
102	3.0765	0.0110
103	3.0874	0.0110
104	3.0983	0.0109
105	3.1091	0.0108
106	3.1199	0.0108
107	3.1306	0.0107
108	3.1412	0.0106
109	3.1518	0.0106
110	3.1623	0.0105
111	3.1727	0.0104
112	3.1831	0.0104
113	3.1934	0.0103

114	3.2037	0.0103
115	3.2139	0.0102
116	3.2240	0.0102
117	3.2341	0.0101
118	3.2442	0.0100
119	3.2542	0.0100
120	3.2641	0.0099
121	3.2740	0.0099
122	3.2838	0.0098
123	3.2936	0.0098
124	3.3033	0.0097
125	3.3130	0.0097
126	3.3226	0.0096
127	3.3322	0.0096
128	3.3417	0.0095
129	3.3512	0.0095
130	3.3607	0.0094
131	3.3700	0.0094
132	3.3794	0.0093
133	3.3887	0.0093
134	3.3980	0.0093
135	3.4072	0.0092
136	3.4163	0.0092
137	3.4255	0.0091
138	3.4346	0.0091
139	3.4436	0.0090
140	3.4526	0.0090
141	3.4616	0.0090
142	3.4705	0.0089
143	3.4794	0.0089
144	3.4882	0.0088
145	3.4970	0.0088
146	3.5058	0.0088
147	3.5145	0.0087
148	3.5232	0.0087
149	3.5318	0.0087
150	3.5405	0.0086
151	3.5490	0.0086
152	3.5576	0.0085
153	3.5661	0.0085
154	3.5746	0.0085
155	3.5830	0.0084
156	3.5914	0.0084
157	3.5998	0.0084
158	3.6081	0.0083
159	3.6164	0.0083
160	3.6247	0.0083
161	3.6329	0.0082
162	3.6411	0.0082
163	3.6493	0.0082
164	3.6574	0.0081
165	3.6655	0.0081
166	3.6736	0.0081
167	3.6816	0.0080
168	3.6897	0.0080
169	3.6976	0.0080
170	3.7056	0.0080
171	3.7135	0.0079
172	3.7214	0.0079
173	3.7293	0.0079
174	3.7371	0.0078
175	3.7449	0.0078
176	3.7527	0.0078
177	3.7605	0.0078
178	3.7682	0.0077
179	3.7759	0.0077
180	3.7835	0.0077
181	3.7912	0.0076
182	3.7988	0.0076
183	3.8064	0.0076
184	3.8140	0.0076

185	3.8215	0.0075
186	3.8290	0.0075
187	3.8365	0.0075
188	3.8439	0.0075
189	3.8514	0.0074
190	3.8588	0.0074
191	3.8662	0.0074
192	3.8735	0.0074
193	3.8809	0.0073
194	3.8882	0.0073
195	3.8955	0.0073
196	3.9027	0.0073
197	3.9100	0.0072
198	3.9172	0.0072
199	3.9244	0.0072
200	3.9316	0.0072
201	3.9387	0.0071
202	3.9458	0.0071
203	3.9529	0.0071
204	3.9600	0.0071
205	3.9671	0.0071
206	3.9741	0.0070
207	3.9811	0.0070
208	3.9881	0.0070
209	3.9951	0.0070
210	4.0020	0.0070
211	4.0090	0.0069
212	4.0159	0.0069
213	4.0228	0.0069
214	4.0296	0.0069
215	4.0365	0.0068
216	4.0433	0.0068
217	4.0501	0.0068
218	4.0569	0.0068
219	4.0637	0.0068
220	4.0704	0.0067
221	4.0772	0.0067
222	4.0839	0.0067
223	4.0906	0.0067
224	4.0972	0.0067
225	4.1039	0.0067
226	4.1105	0.0066
227	4.1171	0.0066
228	4.1237	0.0066
229	4.1303	0.0066
230	4.1369	0.0066
231	4.1434	0.0065
232	4.1499	0.0065
233	4.1564	0.0065
234	4.1629	0.0065
235	4.1694	0.0065
236	4.1759	0.0065
237	4.1823	0.0064
238	4.1887	0.0064
239	4.1951	0.0064
240	4.2015	0.0064
241	4.2079	0.0064
242	4.2142	0.0064
243	4.2205	0.0063
244	4.2269	0.0063
245	4.2332	0.0063
246	4.2395	0.0063
247	4.2457	0.0063
248	4.2520	0.0063
249	4.2582	0.0062
250	4.2644	0.0062
251	4.2706	0.0062
252	4.2768	0.0062
253	4.2830	0.0062
254	4.2892	0.0062
255	4.2953	0.0061

256	4.3014	0.0061
257	4.3075	0.0061
258	4.3136	0.0061
259	4.3197	0.0061
260	4.3258	0.0061
261	4.3318	0.0061
262	4.3379	0.0060
263	4.3439	0.0060
264	4.3499	0.0060
265	4.3559	0.0060
266	4.3619	0.0060
267	4.3678	0.0060
268	4.3738	0.0060
269	4.3797	0.0059
270	4.3857	0.0059
271	4.3916	0.0059
272	4.3975	0.0059
273	4.4033	0.0059
274	4.4092	0.0059
275	4.4151	0.0059
276	4.4209	0.0058
277	4.4267	0.0058
278	4.4325	0.0058
279	4.4383	0.0058
280	4.4441	0.0058
281	4.4499	0.0058
282	4.4557	0.0058
283	4.4614	0.0057
284	4.4672	0.0057
285	4.4729	0.0057
286	4.4786	0.0057
287	4.4843	0.0057
288	4.4900	0.0057

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0057	0.0008	0.0049
2	0.0057	0.0008	0.0049
3	0.0057	0.0008	0.0050
4	0.0057	0.0008	0.0050
5	0.0058	0.0008	0.0050
6	0.0058	0.0008	0.0050
7	0.0058	0.0008	0.0050
8	0.0058	0.0008	0.0050
9	0.0058	0.0008	0.0051
10	0.0059	0.0008	0.0051
11	0.0059	0.0008	0.0051
12	0.0059	0.0008	0.0051
13	0.0059	0.0008	0.0051
14	0.0059	0.0008	0.0051
15	0.0060	0.0008	0.0052
16	0.0060	0.0008	0.0052
17	0.0060	0.0008	0.0052
18	0.0060	0.0008	0.0052
19	0.0061	0.0008	0.0052
20	0.0061	0.0008	0.0053
21	0.0061	0.0008	0.0053
22	0.0061	0.0008	0.0053
23	0.0061	0.0008	0.0053
24	0.0062	0.0008	0.0053
25	0.0062	0.0008	0.0054
26	0.0062	0.0008	0.0054
27	0.0062	0.0008	0.0054
28	0.0063	0.0008	0.0054
29	0.0063	0.0008	0.0055
30	0.0063	0.0008	0.0055
31	0.0063	0.0008	0.0055
32	0.0064	0.0008	0.0055
33	0.0064	0.0008	0.0055

34	0.0064	0.0008	0.0056
35	0.0064	0.0009	0.0056
36	0.0065	0.0009	0.0056
37	0.0065	0.0009	0.0056
38	0.0065	0.0009	0.0056
39	0.0065	0.0009	0.0057
40	0.0066	0.0009	0.0057
41	0.0066	0.0009	0.0057
42	0.0066	0.0009	0.0057
43	0.0067	0.0009	0.0058
44	0.0067	0.0009	0.0058
45	0.0067	0.0009	0.0058
46	0.0067	0.0009	0.0058
47	0.0068	0.0009	0.0059
48	0.0068	0.0009	0.0059
49	0.0068	0.0009	0.0059
50	0.0068	0.0009	0.0059
51	0.0069	0.0009	0.0060
52	0.0069	0.0009	0.0060
53	0.0070	0.0009	0.0060
54	0.0070	0.0009	0.0060
55	0.0070	0.0009	0.0061
56	0.0070	0.0009	0.0061
57	0.0071	0.0009	0.0061
58	0.0071	0.0009	0.0062
59	0.0071	0.0009	0.0062
60	0.0072	0.0010	0.0062
61	0.0072	0.0010	0.0063
62	0.0072	0.0010	0.0063
63	0.0073	0.0010	0.0063
64	0.0073	0.0010	0.0063
65	0.0074	0.0010	0.0064
66	0.0074	0.0010	0.0064
67	0.0074	0.0010	0.0064
68	0.0075	0.0010	0.0065
69	0.0075	0.0010	0.0065
70	0.0075	0.0010	0.0065
71	0.0076	0.0010	0.0066
72	0.0076	0.0010	0.0066
73	0.0077	0.0010	0.0067
74	0.0077	0.0010	0.0067
75	0.0078	0.0010	0.0067
76	0.0078	0.0010	0.0067
77	0.0078	0.0010	0.0068
78	0.0079	0.0010	0.0068
79	0.0079	0.0011	0.0069
80	0.0080	0.0011	0.0069
81	0.0080	0.0011	0.0070
82	0.0080	0.0011	0.0070
83	0.0081	0.0011	0.0070
84	0.0081	0.0011	0.0071
85	0.0082	0.0011	0.0071
86	0.0082	0.0011	0.0071
87	0.0083	0.0011	0.0072
88	0.0083	0.0011	0.0072
89	0.0084	0.0011	0.0073
90	0.0084	0.0011	0.0073
91	0.0085	0.0011	0.0074
92	0.0085	0.0011	0.0074
93	0.0086	0.0011	0.0075
94	0.0087	0.0011	0.0075
95	0.0087	0.0012	0.0076
96	0.0088	0.0012	0.0076
97	0.0088	0.0012	0.0077
98	0.0089	0.0012	0.0077
99	0.0090	0.0012	0.0078
100	0.0090	0.0012	0.0078
101	0.0091	0.0012	0.0079
102	0.0091	0.0012	0.0079
103	0.0092	0.0012	0.0080
104	0.0093	0.0012	0.0080

105	0.0093	0.0012	0.0081
106	0.0094	0.0012	0.0081
107	0.0095	0.0013	0.0082
108	0.0095	0.0013	0.0083
109	0.0096	0.0013	0.0084
110	0.0097	0.0013	0.0084
111	0.0098	0.0013	0.0085
112	0.0098	0.0013	0.0085
113	0.0099	0.0013	0.0086
114	0.0100	0.0013	0.0087
115	0.0101	0.0013	0.0088
116	0.0102	0.0013	0.0088
117	0.0103	0.0014	0.0089
118	0.0103	0.0014	0.0090
119	0.0104	0.0014	0.0091
120	0.0105	0.0014	0.0091
121	0.0106	0.0014	0.0092
122	0.0107	0.0014	0.0093
123	0.0108	0.0014	0.0094
124	0.0109	0.0014	0.0094
125	0.0110	0.0015	0.0096
126	0.0111	0.0015	0.0096
127	0.0112	0.0015	0.0097
128	0.0113	0.0015	0.0098
129	0.0115	0.0015	0.0099
130	0.0115	0.0015	0.0100
131	0.0117	0.0016	0.0101
132	0.0118	0.0016	0.0102
133	0.0119	0.0016	0.0104
134	0.0120	0.0016	0.0104
135	0.0122	0.0016	0.0106
136	0.0123	0.0016	0.0107
137	0.0125	0.0017	0.0108
138	0.0126	0.0017	0.0109
139	0.0128	0.0017	0.0111
140	0.0129	0.0017	0.0112
141	0.0131	0.0017	0.0113
142	0.0132	0.0018	0.0114
143	0.0134	0.0018	0.0116
144	0.0135	0.0018	0.0117
145	0.0182	0.0024	0.0158
146	0.0184	0.0024	0.0159
147	0.0186	0.0025	0.0162
148	0.0188	0.0025	0.0163
149	0.0191	0.0025	0.0165
150	0.0192	0.0026	0.0167
151	0.0195	0.0026	0.0169
152	0.0197	0.0026	0.0171
153	0.0200	0.0027	0.0174
154	0.0202	0.0027	0.0175
155	0.0206	0.0027	0.0178
156	0.0208	0.0028	0.0180
157	0.0212	0.0028	0.0184
158	0.0214	0.0028	0.0186
159	0.0218	0.0028	0.0190
160	0.0220	0.0028	0.0193
161	0.0225	0.0028	0.0197
162	0.0228	0.0028	0.0200
163	0.0233	0.0028	0.0205
164	0.0236	0.0028	0.0208
165	0.0241	0.0028	0.0214
166	0.0245	0.0028	0.0217
167	0.0251	0.0028	0.0223
168	0.0254	0.0028	0.0227
169	0.0259	0.0028	0.0231
170	0.0262	0.0028	0.0235
171	0.0271	0.0028	0.0243
172	0.0275	0.0028	0.0248
173	0.0285	0.0028	0.0257
174	0.0290	0.0028	0.0262
175	0.0301	0.0028	0.0274

176	0.0307	0.0028	0.0280
177	0.0321	0.0028	0.0293
178	0.0328	0.0028	0.0301
179	0.0345	0.0028	0.0317
180	0.0354	0.0028	0.0326
181	0.0374	0.0028	0.0347
182	0.0386	0.0028	0.0359
183	0.0413	0.0028	0.0386
184	0.0429	0.0028	0.0401
185	0.0396	0.0028	0.0368
186	0.0418	0.0028	0.0390
187	0.0474	0.0028	0.0446
188	0.0511	0.0028	0.0483
189	0.0661	0.0028	0.0634
190	0.0741	0.0028	0.0714
191	0.1038	0.0028	0.1011
192	0.1402	0.0028	0.1375
193	0.3999	0.0028	0.3971
194	0.0856	0.0028	0.0828
195	0.0557	0.0028	0.0529
196	0.0444	0.0028	0.0416
197	0.0447	0.0028	0.0419
198	0.0399	0.0028	0.0371
199	0.0364	0.0028	0.0336
200	0.0336	0.0028	0.0309
201	0.0314	0.0028	0.0286
202	0.0296	0.0028	0.0268
203	0.0280	0.0028	0.0252
204	0.0266	0.0028	0.0239
205	0.0258	0.0028	0.0230
206	0.0248	0.0028	0.0220
207	0.0238	0.0028	0.0211
208	0.0230	0.0028	0.0203
209	0.0223	0.0028	0.0195
210	0.0216	0.0028	0.0188
211	0.0210	0.0028	0.0182
212	0.0204	0.0027	0.0177
213	0.0199	0.0026	0.0172
214	0.0194	0.0026	0.0168
215	0.0189	0.0025	0.0164
216	0.0185	0.0025	0.0160
217	0.0136	0.0018	0.0118
218	0.0133	0.0018	0.0115
219	0.0130	0.0017	0.0113
220	0.0127	0.0017	0.0110
221	0.0124	0.0016	0.0107
222	0.0121	0.0016	0.0105
223	0.0119	0.0016	0.0103
224	0.0116	0.0015	0.0101
225	0.0114	0.0015	0.0099
226	0.0112	0.0015	0.0097
227	0.0110	0.0015	0.0095
228	0.0108	0.0014	0.0093
229	0.0106	0.0014	0.0092
230	0.0104	0.0014	0.0090
231	0.0102	0.0014	0.0089
232	0.0100	0.0013	0.0087
233	0.0099	0.0013	0.0086
234	0.0097	0.0013	0.0084
235	0.0096	0.0013	0.0083
236	0.0094	0.0013	0.0082
237	0.0093	0.0012	0.0081
238	0.0092	0.0012	0.0080
239	0.0090	0.0012	0.0078
240	0.0089	0.0012	0.0077
241	0.0088	0.0012	0.0076
242	0.0087	0.0012	0.0075
243	0.0086	0.0011	0.0074
244	0.0085	0.0011	0.0073
245	0.0084	0.0011	0.0073
246	0.0083	0.0011	0.0072

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      247              0.0082          0.0011              0.0071
      248              0.0081          0.0011              0.0070
      249              0.0080          0.0011              0.0069
      250              0.0079          0.0010              0.0068
      251              0.0078          0.0010              0.0068
      252              0.0077          0.0010              0.0067
      253              0.0076          0.0010              0.0066
      254              0.0076          0.0010              0.0066
      255              0.0075          0.0010              0.0065
      256              0.0074          0.0010              0.0064
      257              0.0073          0.0010              0.0064
      258              0.0073          0.0010              0.0063
      259              0.0072          0.0010              0.0062
      260              0.0071          0.0009              0.0062
      261              0.0071          0.0009              0.0061
      262              0.0070          0.0009              0.0061
      263              0.0069          0.0009              0.0060
      264              0.0069          0.0009              0.0060
      265              0.0068          0.0009              0.0059
      266              0.0067          0.0009              0.0059
      267              0.0067          0.0009              0.0058
      268              0.0066          0.0009              0.0058
      269              0.0066          0.0009              0.0057
      270              0.0065          0.0009              0.0057
      271              0.0065          0.0009              0.0056
      272              0.0064          0.0009              0.0056
      273              0.0064          0.0008              0.0055
      274              0.0063          0.0008              0.0055
      275              0.0063          0.0008              0.0054
      276              0.0062          0.0008              0.0054
      277              0.0062          0.0008              0.0054
      278              0.0061          0.0008              0.0053
      279              0.0061          0.0008              0.0053
      280              0.0060          0.0008              0.0052
      281              0.0060          0.0008              0.0052
      282              0.0060          0.0008              0.0052
      283              0.0059          0.0008              0.0051
      284              0.0059          0.0008              0.0051
      285              0.0058          0.0008              0.0051
      286              0.0058          0.0008              0.0050
      287              0.0057          0.0008              0.0050
      288              0.0057          0.0008              0.0050
      ---------------------------------------------------------------------
      ---------------------------------------------------------------------
      Total soil rain loss =      0.43(In)
      Total effective rainfall =      4.06(In)
      Peak flow rate in flood hydrograph =     18.54(CFS)
      ---------------------------------------------------------------------
      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          24 - H O U R    S T O R M
                     R u n o f f      H y d r o g r a p h
      ---------------------------------------------------------------------
                  Hydrograph in   5   Minute intervals ((CFS))

      ---------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0        5.0      10.0      15.0      20.0
-------------------------------------------------------------------------
  0+ 5       0.0003      0.04  Q         |         |         |         |
  0+10       0.0019      0.23  Q         |         |         |         |
  0+15       0.0039      0.30  Q         |         |         |         |
  0+20       0.0062      0.33  Q         |         |         |         |
  0+25       0.0085      0.34  Q         |         |         |         |
  0+30       0.0109      0.35  Q         |         |         |         |
  0+35       0.0133      0.35  Q         |         |         |         |
  0+40       0.0157      0.35  Q         |         |         |         |
  0+45       0.0182      0.35  Q         |         |         |         |
  0+50       0.0206      0.35  Q         |         |         |         |
  0+55       0.0230      0.36  Q         |         |         |         |
  1+ 0       0.0255      0.36  Q         |         |         |         |
  1+ 5       0.0280      0.36  Q         |         |         |         |
  1+10       0.0304      0.36  Q         |         |         |         |
```

1+15	0.0329	0.36	Q	|	|	|	|
1+20	0.0354	0.36	Q	|	|	|	|
1+25	0.0379	0.36	Q	|	|	|	|
1+30	0.0404	0.36	Q	|	|	|	|
1+35	0.0429	0.37	Q	|	|	|	|
1+40	0.0454	0.37	Q	|	|	|	|
1+45	0.0480	0.37	Q	|	|	|	|
1+50	0.0505	0.37	QV	|	|	|	|
1+55	0.0531	0.37	QV	|	|	|	|
2+ 0	0.0556	0.37	QV	|	|	|	|
2+ 5	0.0582	0.37	QV	|	|	|	|
2+10	0.0608	0.38	QV	|	|	|	|
2+15	0.0634	0.38	QV	|	|	|	|
2+20	0.0660	0.38	QV	|	|	|	|
2+25	0.0686	0.38	QV	|	|	|	|
2+30	0.0712	0.38	QV	|	|	|	|
2+35	0.0739	0.38	QV	|	|	|	|
2+40	0.0765	0.38	QV	|	|	|	|
2+45	0.0792	0.39	QV	|	|	|	|
2+50	0.0818	0.39	QV	|	|	|	|
2+55	0.0845	0.39	QV	|	|	|	|
3+ 0	0.0872	0.39	QV	|	|	|	|
3+ 5	0.0899	0.39	QV	|	|	|	|
3+10	0.0926	0.39	QV	|	|	|	|
3+15	0.0953	0.39	QV	|	|	|	|
3+20	0.0980	0.40	Q V	|	|	|	|
3+25	0.1008	0.40	Q V	|	|	|	|
3+30	0.1035	0.40	Q V	|	|	|	|
3+35	0.1063	0.40	Q V	|	|	|	|
3+40	0.1091	0.40	Q V	|	|	|	|
3+45	0.1118	0.40	Q V	|	|	|	|
3+50	0.1146	0.41	Q V	|	|	|	|
3+55	0.1175	0.41	Q V	|	|	|	|
4+ 0	0.1203	0.41	Q V	|	|	|	|
4+ 5	0.1231	0.41	Q V	|	|	|	|
4+10	0.1260	0.41	Q V	|	|	|	|
4+15	0.1288	0.42	Q V	|	|	|	|
4+20	0.1317	0.42	Q V	|	|	|	|
4+25	0.1346	0.42	Q V	|	|	|	|
4+30	0.1375	0.42	Q V	|	|	|	|
4+35	0.1404	0.42	Q V	|	|	|	|
4+40	0.1433	0.42	Q V	|	|	|	|
4+45	0.1463	0.43	Q V	|	|	|	|
4+50	0.1492	0.43	Q V	|	|	|	|
4+55	0.1522	0.43	Q V	|	|	|	|
5+ 0	0.1552	0.43	Q V	|	|	|	|
5+ 5	0.1582	0.43	Q V	|	|	|	|
5+10	0.1612	0.44	Q V	|	|	|	|
5+15	0.1642	0.44	Q V	|	|	|	|
5+20	0.1672	0.44	Q V	|	|	|	|
5+25	0.1703	0.44	Q V	|	|	|	|
5+30	0.1734	0.45	Q V	|	|	|	|
5+35	0.1764	0.45	Q V	|	|	|	|
5+40	0.1795	0.45	Q V	|	|	|	|
5+45	0.1827	0.45	Q V	|	|	|	|
5+50	0.1858	0.45	Q V	|	|	|	|
5+55	0.1889	0.46	Q V	|	|	|	|
6+ 0	0.1921	0.46	Q V	|	|	|	|
6+ 5	0.1953	0.46	Q V	|	|	|	|
6+10	0.1985	0.46	Q V	|	|	|	|
6+15	0.2017	0.47	Q V	|	|	|	|
6+20	0.2049	0.47	Q V	|	|	|	|
6+25	0.2082	0.47	Q V	|	|	|	|
6+30	0.2114	0.47	Q V	|	|	|	|
6+35	0.2147	0.48	Q V	|	|	|	|
6+40	0.2180	0.48	Q V	|	|	|	|
6+45	0.2213	0.48	Q V	|	|	|	|
6+50	0.2247	0.49	Q V	|	|	|	|
6+55	0.2280	0.49	Q V	|	|	|	|
7+ 0	0.2314	0.49	Q V	|	|	|	|
7+ 5	0.2348	0.49	Q V	|	|	|	|

```
 7+10      0.2382      0.50  Q   V     |         |         |         |
 7+15      0.2417      0.50  Q   V     |         |         |         |
 7+20      0.2451      0.50  |Q   V     |         |         |         |
 7+25      0.2486      0.51  |Q   V     |         |         |         |
 7+30      0.2521      0.51  |Q   V     |         |         |         |
 7+35      0.2556      0.51  |Q   V     |         |         |         |
 7+40      0.2592      0.51  |Q   V     |         |         |         |
 7+45      0.2628      0.52  |Q   V     |         |         |         |
 7+50      0.2663      0.52  |Q   V     |         |         |         |
 7+55      0.2700      0.52  |Q   V     |         |         |         |
 8+ 0      0.2736      0.53  |Q   V     |         |         |         |
 8+ 5      0.2773      0.53  |Q   V     |         |         |         |
 8+10      0.2809      0.53  |Q   V     |         |         |         |
 8+15      0.2846      0.54  |Q   V     |         |         |         |
 8+20      0.2884      0.54  |Q   V     |         |         |         |
 8+25      0.2921      0.55  |Q   V     |         |         |         |
 8+30      0.2959      0.55  |Q    V    |         |         |         |
 8+35      0.2997      0.55  |Q    V    |         |         |         |
 8+40      0.3036      0.56  |Q    V    |         |         |         |
 8+45      0.3074      0.56  |Q    V    |         |         |         |
 8+50      0.3113      0.57  |Q    V    |         |         |         |
 8+55      0.3152      0.57  |Q    V    |         |         |         |
 9+ 0      0.3192      0.57  |Q    V    |         |         |         |
 9+ 5      0.3232      0.58  |Q    V    |         |         |         |
 9+10      0.3272      0.58  |Q    V    |         |         |         |
 9+15      0.3312      0.59  |Q    V    |         |         |         |
 9+20      0.3353      0.59  |Q    V    |         |         |         |
 9+25      0.3394      0.60  |Q    V    |         |         |         |
 9+30      0.3435      0.60  |Q     V   |         |         |         |
 9+35      0.3477      0.60  |Q     V   |         |         |         |
 9+40      0.3519      0.61  |Q     V   |         |         |         |
 9+45      0.3561      0.61  |Q     V   |         |         |         |
 9+50      0.3604      0.62  |Q     V   |         |         |         |
 9+55      0.3647      0.63  |Q     V   |         |         |         |
10+ 0      0.3691      0.63  |Q     V   |         |         |         |
10+ 5      0.3734      0.64  |Q     V   |         |         |         |
10+10      0.3779      0.64  |Q     V   |         |         |         |
10+15      0.3823      0.65  |Q     V   |         |         |         |
10+20      0.3868      0.65  |Q     V   |         |         |         |
10+25      0.3914      0.66  |Q     V   |         |         |         |
10+30      0.3959      0.67  |Q      V  |         |         |         |
10+35      0.4006      0.67  |Q      V  |         |         |         |
10+40      0.4052      0.68  |Q      V  |         |         |         |
10+45      0.4100      0.68  |Q      V  |         |         |         |
10+50      0.4147      0.69  |Q      V  |         |         |         |
10+55      0.4195      0.70  |Q      V  |         |         |         |
11+ 0      0.4244      0.71  |Q      V  |         |         |         |
11+ 5      0.4293      0.71  |Q      V  |         |         |         |
11+10      0.4343      0.72  |Q      V  |         |         |         |
11+15      0.4393      0.73  |Q      V  |         |         |         |
11+20      0.4443      0.74  |Q       V |         |         |         |
11+25      0.4495      0.74  |Q       V |         |         |         |
11+30      0.4546      0.75  |Q       V |         |         |         |
11+35      0.4599      0.76  |Q       V |         |         |         |
11+40      0.4652      0.77  |Q       V |         |         |         |
11+45      0.4706      0.78  |Q       V |         |         |         |
11+50      0.4760      0.79  |Q       V |         |         |         |
11+55      0.4815      0.80  |Q       V |         |         |         |
12+ 0      0.4871      0.81  |Q       V |         |         |         |
12+ 5      0.4929      0.85  |Q        V         |         |         |
12+10      0.4999      1.01  | Q       V         |         |         |
12+15      0.5073      1.07  | Q       V         |         |         |
12+20      0.5149      1.11  | Q       V         |         |         |
12+25      0.5227      1.13  | Q       V         |         |         |
12+30      0.5306      1.15  | Q       V         |         |         |
12+35      0.5386      1.16  | Q       |V        |         |         |
12+40      0.5467      1.18  | Q       |V        |         |         |
12+45      0.5549      1.19  | Q       |V        |         |         |
12+50      0.5632      1.21  | Q       |V        |         |         |
12+55      0.5716      1.22  | Q       |V        |         |         |
13+ 0      0.5802      1.24  | Q       |V        |         |         |
```

```
13+ 5       0.5888      1.26  | Q       | V       |         |         |
13+10       0.5976      1.28  | Q       | V       |         |         |
13+15       0.6066      1.30  | Q       | V       |         |         |
13+20       0.6157      1.32  | Q       | V       |         |         |
13+25       0.6249      1.34  | Q       | V       |         |         |
13+30       0.6343      1.37  | Q       | V       |         |         |
13+35       0.6439      1.39  | Q       |  V      |         |         |
13+40       0.6537      1.42  | Q       |  V      |         |         |
13+45       0.6637      1.45  | Q       |  V      |         |         |
13+50       0.6739      1.48  | Q       |  V      |         |         |
13+55       0.6843      1.51  |  Q      |  V      |         |         |
14+ 0       0.6949      1.55  |  Q      |   V     |         |         |
14+ 5       0.7058      1.57  |  Q      |   V     |         |         |
14+10       0.7168      1.60  |  Q      |   V     |         |         |
14+15       0.7281      1.63  |  Q      |   V     |         |         |
14+20       0.7396      1.68  |  Q      |    V    |         |         |
14+25       0.7515      1.72  |  Q      |    V    |         |         |
14+30       0.7637      1.77  |  Q      |    V    |         |         |
14+35       0.7762      1.82  |  Q      |    V    |         |         |
14+40       0.7892      1.88  |  Q      |     V   |         |         |
14+45       0.8026      1.94  |  Q      |     V   |         |         |
14+50       0.8165      2.02  |   Q     |     V   |         |         |
14+55       0.8308      2.08  |   Q     |     V   |         |         |
15+ 0       0.8458      2.17  |   Q     |      V  |         |         |
15+ 5       0.8613      2.26  |   Q     |      V  |         |         |
15+10       0.8777      2.37  |   Q     |      V  |         |         |
15+15       0.8947      2.48  |   Q     |       V |         |         |
15+20       0.9128      2.63  |    Q    |       V |         |         |
15+25       0.9315      2.71  |    Q    |        V|         |         |
15+30       0.9497      2.65  |    Q    |        V|         |         |
15+35       0.9686      2.75  |    Q    |        V|         |         |
15+40       0.9894      3.01  |     Q   |         V         |         |
15+45       1.0125      3.36  |     Q   |         V         |         |
15+50       1.0407      4.09  |       Q |         |V        |         |
15+55       1.0743      4.88  |        Q|         |V        |         |
16+ 0       1.1193      6.53  |         |  Q      | V       |         |
16+ 5       1.1921     10.57  |         |         |Q  V     |         |
16+10       1.3198     18.54  |         |         |    V    |      Q  |
16+15       1.3910     10.34  |         |         |Q       V|         |
16+20       1.4343      6.29  |         | Q       |         V|        |
16+25       1.4636      4.26  |       Q |         |         V|        |
16+30       1.4868      3.36  |     Q   |         |          V        |
16+35       1.5069      2.92  |    Q    |         |          V        |
16+40       1.5247      2.57  |    Q    |         |          |V       |
16+45       1.5403      2.27  |   Q     |         |          |V       |
16+50       1.5547      2.09  |   Q     |         |          |V       |
16+55       1.5681      1.95  |  Q      |         |          | V      |
17+ 0       1.5807      1.83  |  Q      |         |          | V      |
17+ 5       1.5926      1.73  |  Q      |         |          | V      |
17+10       1.6040      1.65  |  Q      |         |          | V      |
17+15       1.6148      1.57  |  Q      |         |          |  V     |
17+20       1.6252      1.51  |  Q      |         |          |  V     |
17+25       1.6351      1.45  | Q       |         |          |  V     |
17+30       1.6447      1.39  | Q       |         |          |  V     |
17+35       1.6540      1.34  | Q       |         |          |  V     |
17+40       1.6629      1.30  | Q       |         |          |  V     |
17+45       1.6716      1.26  | Q       |         |          |   V    |
17+50       1.6800      1.22  | Q       |         |          |   V    |
17+55       1.6882      1.19  | Q       |         |          |   V    |
18+ 0       1.6962      1.16  | Q       |         |          |   V    |
18+ 5       1.7038      1.10  | Q       |         |          |   V    |
18+10       1.7102      0.93  |Q        |         |          |   V    |
18+15       1.7161      0.86  |Q        |         |          |    V   |
18+20       1.7217      0.81  |Q        |         |          |    V   |
18+25       1.7271      0.78  |Q        |         |          |    V   |
18+30       1.7323      0.76  |Q        |         |          |    V   |
18+35       1.7375      0.74  |Q        |         |          |    V   |
18+40       1.7425      0.73  |Q        |         |          |    V   |
18+45       1.7474      0.71  |Q        |         |          |    V   |
18+50       1.7522      0.70  |Q        |         |          |    V   |
18+55       1.7569      0.68  |Q        |         |          |    V   |
```

```
  19+ 0       1.7615      0.67  |Q        |         |         |     V   |
  19+ 5       1.7661      0.66  |Q        |         |         |     V   |
  19+10       1.7705      0.65  |Q        |         |         |     V   |
  19+15       1.7749      0.64  |Q        |         |         |     V   |
  19+20       1.7792      0.62  |Q        |         |         |     V   |
  19+25       1.7834      0.61  |Q        |         |         |     V   |
  19+30       1.7876      0.60  |Q        |         |         |     V   |
  19+35       1.7917      0.60  |Q        |         |         |     V   |
  19+40       1.7957      0.59  |Q        |         |         |     V   |
  19+45       1.7997      0.58  |Q        |         |         |     V   |
  19+50       1.8036      0.57  |Q        |         |         |     V   |
  19+55       1.8075      0.56  |Q        |         |         |     V   |
  20+ 0       1.8113      0.55  |Q        |         |         |      V  |
  20+ 5       1.8150      0.55  |Q        |         |         |      V  |
  20+10       1.8187      0.54  |Q        |         |         |      V  |
  20+15       1.8224      0.53  |Q        |         |         |      V  |
  20+20       1.8260      0.52  |Q        |         |         |      V  |
  20+25       1.8296      0.52  |Q        |         |         |      V  |
  20+30       1.8331      0.51  |Q        |         |         |      V  |
  20+35       1.8366      0.50  |Q        |         |         |      V  |
  20+40       1.8400      0.50  Q         |         |         |      V  |
  20+45       1.8434      0.49  Q         |         |         |      V  |
  20+50       1.8468      0.49  Q         |         |         |      V  |
  20+55       1.8501      0.48  Q         |         |         |      V  |
  21+ 0       1.8534      0.48  Q         |         |         |      V  |
  21+ 5       1.8566      0.47  Q         |         |         |      V  |
  21+10       1.8598      0.47  Q         |         |         |       V |
  21+15       1.8630      0.46  Q         |         |         |       V |
  21+20       1.8661      0.46  Q         |         |         |       V |
  21+25       1.8693      0.45  Q         |         |         |       V |
  21+30       1.8723      0.45  Q         |         |         |       V |
  21+35       1.8754      0.44  Q         |         |         |       V |
  21+40       1.8784      0.44  Q         |         |         |       V |
  21+45       1.8814      0.43  Q         |         |         |       V |
  21+50       1.8844      0.43  Q         |         |         |       V |
  21+55       1.8873      0.43  Q         |         |         |       V |
  22+ 0       1.8902      0.42  Q         |         |         |       V |
  22+ 5       1.8931      0.42  Q         |         |         |       V |
  22+10       1.8960      0.42  Q         |         |         |       V |
  22+15       1.8988      0.41  Q         |         |         |       V |
  22+20       1.9016      0.41  Q         |         |         |       V |
  22+25       1.9044      0.40  Q         |         |         |       V |
  22+30       1.9072      0.40  Q         |         |         |       V |
  22+35       1.9099      0.40  Q         |         |         |        V|
  22+40       1.9126      0.39  Q         |         |         |        V|
  22+45       1.9153      0.39  Q         |         |         |        V|
  22+50       1.9180      0.39  Q         |         |         |        V|
  22+55       1.9206      0.39  Q         |         |         |        V|
  23+ 0       1.9233      0.38  Q         |         |         |        V|
  23+ 5       1.9259      0.38  Q         |         |         |        V|
  23+10       1.9285      0.38  Q         |         |         |        V|
  23+15       1.9310      0.37  Q         |         |         |        V|
  23+20       1.9336      0.37  Q         |         |         |        V|
  23+25       1.9361      0.37  Q         |         |         |        V|
  23+30       1.9386      0.37  Q         |         |         |        V|
  23+35       1.9411      0.36  Q         |         |         |        V|
  23+40       1.9436      0.36  Q         |         |         |        V|
  23+45       1.9461      0.36  Q         |         |         |        V|
  23+50       1.9485      0.36  Q         |         |         |        V|
  23+55       1.9509      0.35  Q         |         |         |        V|
  24+ 0       1.9534      0.35  Q         |         |         |        V|
  24+ 5       1.9555      0.31  Q         |         |         |        V|
  24+10       1.9563      0.12  Q         |         |         |        V|
  24+15       1.9566      0.05  Q         |         |         |        V|
  24+20       1.9568      0.02  Q         |         |         |        V|
  24+25       1.9568      0.01  Q         |         |         |        V|
  24+30       1.9568      0.00  Q         |         |         |        V|
  24+35       1.9568      0.00  Q         |         |         |        V|
----------------------------------------------------------------------
```

- 100 Year 3 Hour Post-Development Unit Hydrograph – Area 'E'

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        U n i t   H y d r o g r a p h   A n a l y s i s

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        Study date  10/11/16   File Name pre10003.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

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RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'E' - 100 YEAR 3 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
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        Storm Event Year = 100

        Antecedent Moisture Condition = 3

 English (in-lb) Input Units Used
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******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 71.2       3.5          0.61     C     0.250     0.144    0.036
 71.2       2.3          0.39     D     0.200     0.144    0.029

Area-averaged adjusted loss rate Fm (In/Hr) =  0.033

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC3)          Yield Fr
     0.51   0.088         71.2      88.0       1.37     0.758
     3.03   0.523         98.0      98.0       0.20     0.958

     0.32   0.056         71.2      88.0       1.37     0.758
     1.93   0.333         98.0      98.0       0.20     0.958

Area-averaged catchment yield fraction, Y =  0.929
Area-averaged low loss fraction, Yb =  0.071
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.111 (hours)
Watershed area =       5.79(Ac.)
Catchment Lag time =   0.088 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 94.2685
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.033(In/Hr)
Average low loss rate fraction (Yb) = 0.071 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.520(In)
Computed peak 30-minute rainfall =  1.090(In)
Specified peak 1-hour rainfall =  1.450(In)
Computed peak 3-hour rainfall =  2.430(In)
Specified peak 6-hour rainfall =  3.360(In)
Specified peak 24-hour rainfall =  5.630(In)
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Rainfall depth area reduction factors:
Using a total area of 5.79(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000 Adjusted rainfall = 0.520(In)
30-minute factor = 1.000 Adjusted rainfall = 1.090(In)
1-hour factor = 1.000 Adjusted rainfall = 1.450(In)
3-hour factor = 1.000 Adjusted rainfall = 2.430(In)
6-hour factor = 1.000 Adjusted rainfall = 3.360(In)
24-hour factor = 1.000 Adjusted rainfall = 5.630(In)

U n i t H y d r o g r a p h

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 70.02 (CFS))	
1	12.489	8.745
2	67.318	38.393
3	86.941	13.741
4	95.030	5.664
5	98.141	2.179
6	99.096	0.669
7	99.725	0.440
8	100.000	0.193

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.5199	0.5199
2	0.6922	0.1723
3	0.8184	0.1262
4	0.9217	0.1033
5	1.0107	0.0890
6	1.0897	0.0791
7	1.1611	0.0714
8	1.2267	0.0656
9	1.2877	0.0610
10	1.3448	0.0571
11	1.3986	0.0538
12	1.4496	0.0510
13	1.5052	0.0556
14	1.5586	0.0534
15	1.6100	0.0514
16	1.6596	0.0496
17	1.7076	0.0480
18	1.7541	0.0465
19	1.7992	0.0452
20	1.8432	0.0439
21	1.8859	0.0428
22	1.9276	0.0417
23	1.9684	0.0407
24	2.0081	0.0398
25	2.0471	0.0389
26	2.0852	0.0381
27	2.1225	0.0373
28	2.1591	0.0366
29	2.1950	0.0359
30	2.2303	0.0353
31	2.2649	0.0347
32	2.2990	0.0341
33	2.3325	0.0335
34	2.3655	0.0330
35	2.3979	0.0325
36	2.4299	0.0320

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0320	0.0023	0.0297

2	0.0325	0.0023	0.0302
3	0.0335	0.0024	0.0311
4	0.0341	0.0024	0.0316
5	0.0353	0.0025	0.0328
6	0.0359	0.0026	0.0334
7	0.0373	0.0027	0.0347
8	0.0381	0.0027	0.0354
9	0.0398	0.0028	0.0370
10	0.0407	0.0028	0.0379
11	0.0428	0.0028	0.0400
12	0.0439	0.0028	0.0412
13	0.0465	0.0028	0.0437
14	0.0480	0.0028	0.0452
15	0.0514	0.0028	0.0486
16	0.0534	0.0028	0.0506
17	0.0510	0.0028	0.0482
18	0.0538	0.0028	0.0511
19	0.0610	0.0028	0.0582
20	0.0656	0.0028	0.0629
21	0.0791	0.0028	0.0763
22	0.0890	0.0028	0.0862
23	0.1262	0.0028	0.1234
24	0.1723	0.0028	0.1696
25	0.5199	0.0028	0.5171
26	0.1033	0.0028	0.1005
27	0.0714	0.0028	0.0686
28	0.0571	0.0028	0.0543
29	0.0556	0.0028	0.0528
30	0.0496	0.0028	0.0468
31	0.0452	0.0028	0.0424
32	0.0417	0.0028	0.0389
33	0.0389	0.0028	0.0362
34	0.0366	0.0026	0.0340
35	0.0347	0.0025	0.0322
36	0.0330	0.0023	0.0306

Total soil rain loss = 0.10(In)
Total effective rainfall = 2.33(In)
Peak flow rate in flood hydrograph = 24.04(CFS)

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3 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	7.5	15.0	22.5	30.0
0+ 5	0.0018	0.26	Q	|	|	|	|
0+10	0.0115	1.40	VQ	|	|	|	|
0+15	0.0241	1.84	V Q	|	|	|	|
0+20	0.0383	2.05	|VQ	|	|	|	|
0+25	0.0532	2.16	|VQ	|	|	|	|
0+30	0.0686	2.25	| Q	|	|	|	|
0+35	0.0846	2.31	| Q	|	|	|	|
0+40	0.1011	2.39	| Q	|	|	|	|
0+45	0.1180	2.46	| QV	|	|	|	|
0+50	0.1356	2.55	| QV	|	|	|	|
0+55	0.1537	2.63	| Q V	|	|	|	|
1+ 0	0.1727	2.75	| Q V	|	|	|	|
1+ 5	0.1923	2.85	| Q V	|	|	|	|
1+10	0.2129	3.00	| Q V	|	|	|	|
1+15	0.2345	3.13	| Q V	|	|	|	|
1+20	0.2574	3.32	| Q V|	|	|	|	|
1+25	0.2810	3.44	| Q V|	|	|	|	|
1+30	0.3046	3.42	| Q V	|	|	|	|
1+35	0.3293	3.58	| Q |V	|	|	|	|
1+40	0.3563	3.93	| Q | V	|	|	|	|
1+45	0.3862	4.34	| Q | V	|	|	|	|

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   1+50       0.4210      5.05  |     Q   |   V     |         |         |
   1+55       0.4622      5.99  |      Q  |     V   |         |         |
   2+ 0       0.5176      8.05  |         Q       V |         |         |
   2+ 5       0.6104     13.46  |         |      Q  |V        |         |
   2+10       0.7759     24.04  |         |         |      V  | Q       |
   2+15       0.8647     12.90  |         |      Q  |         V         |
   2+20       0.9193      7.92  |         Q         |         | V       |
   2+25       0.9563      5.37  |       Q |         |         |  V      |
   2+30       0.9855      4.24  |     Q   |         |         |    V    |
   2+35       1.0108      3.68  |   Q     |         |         |    V    |
   2+40       1.0330      3.22  |   Q     |         |         |     V   |
   2+45       1.0527      2.86  |  Q      |         |         |      V  |
   2+50       1.0708      2.64  |  Q      |         |         |       V |
   2+55       1.0878      2.46  |  Q      |         |         |       V |
   3+ 0       1.1038      2.32  |  Q      |         |         |        V|
   3+ 5       1.1171      1.94  | Q       |         |         |        V|
   3+10       1.1221      0.73  Q         |         |         |        V|
   3+15       1.1241      0.29  Q         |         |         |        V|
   3+20       1.1249      0.11  Q         |         |         |        V|
   3+25       1.1252      0.04  Q         |         |         |        V|
   3+30       1.1253      0.02  Q         |         |         |        V|
   3+35       1.1254      0.01  Q         |         |         |         V
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- 100 Year 6 Hour Post-Development Unit Hydrograph – Area 'E'

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        U n i t   H y d r o g r a p h   A n a l y s i s

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        Study date  10/11/16   File Name pre10006.out


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Orange County Unit Hydrograph Hydrology Method
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PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'E' - 100 YEAR 6 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
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        Storm Event Year = 100

        Antecedent Moisture Condition = 3

 English (in-lb) Input Units Used
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******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 71.2       3.5          0.61     C     0.250     0.144    0.036
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Area-averaged adjusted loss rate Fm (In/Hr) =  0.033

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 (Ac.)      Fract         (AMC2)    (AMC3)          Yield Fr
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     3.03   0.523         98.0      98.0       0.20     0.958

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Unit interval percentage of lag time = 94.2685
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Average maximum watershed loss rate(Fm) =  0.033(In/Hr)
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FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.520(In)
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Using a total area of 5.79(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000 Adjusted rainfall = 0.520(In)
30-minute factor = 1.000 Adjusted rainfall = 1.090(In)
1-hour factor = 1.000 Adjusted rainfall = 1.450(In)
3-hour factor = 1.000 Adjusted rainfall = 2.430(In)
6-hour factor = 1.000 Adjusted rainfall = 3.360(In)
24-hour factor = 1.000 Adjusted rainfall = 5.630(In)

U n i t H y d r o g r a p h

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
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5	1.0107	0.0890
6	1.0897	0.0791
7	1.1611	0.0714
8	1.2267	0.0656
9	1.2877	0.0610
10	1.3448	0.0571
11	1.3986	0.0538
12	1.4496	0.0510
13	1.5052	0.0556
14	1.5586	0.0534
15	1.6100	0.0514
16	1.6596	0.0496
17	1.7076	0.0480
18	1.7541	0.0465
19	1.7992	0.0452
20	1.8432	0.0439
21	1.8859	0.0428
22	1.9276	0.0417
23	1.9684	0.0407
24	2.0081	0.0398
25	2.0471	0.0389
26	2.0852	0.0381
27	2.1225	0.0373
28	2.1591	0.0366
29	2.1950	0.0359
30	2.2303	0.0353
31	2.2649	0.0347
32	2.2990	0.0341
33	2.3325	0.0335
34	2.3655	0.0330
35	2.3979	0.0325
36	2.4299	0.0320
37	2.4612	0.0313
38	2.4921	0.0309
39	2.5226	0.0304
40	2.5526	0.0300
41	2.5822	0.0296
42	2.6115	0.0293

43	2.6404	0.0289
44	2.6689	0.0285
45	2.6971	0.0282
46	2.7250	0.0279
47	2.7525	0.0275
48	2.7797	0.0272
49	2.8067	0.0269
50	2.8333	0.0266
51	2.8597	0.0264
52	2.8857	0.0261
53	2.9115	0.0258
54	2.9371	0.0256
55	2.9624	0.0253
56	2.9875	0.0251
57	3.0123	0.0248
58	3.0369	0.0246
59	3.0613	0.0244
60	3.0854	0.0241
61	3.1093	0.0239
62	3.1331	0.0237
63	3.1566	0.0235
64	3.1799	0.0233
65	3.2031	0.0231
66	3.2260	0.0229
67	3.2488	0.0228
68	3.2713	0.0226
69	3.2937	0.0224
70	3.3160	0.0222
71	3.3380	0.0221
72	3.3599	0.0219

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0219	0.0016	0.0203
2	0.0221	0.0016	0.0205
3	0.0224	0.0016	0.0208
4	0.0226	0.0016	0.0210
5	0.0229	0.0016	0.0213
6	0.0231	0.0016	0.0215
7	0.0235	0.0017	0.0219
8	0.0237	0.0017	0.0220
9	0.0241	0.0017	0.0224
10	0.0244	0.0017	0.0226
11	0.0248	0.0018	0.0231
12	0.0251	0.0018	0.0233
13	0.0256	0.0018	0.0237
14	0.0258	0.0018	0.0240
15	0.0264	0.0019	0.0245
16	0.0266	0.0019	0.0247
17	0.0272	0.0019	0.0253
18	0.0275	0.0020	0.0256
19	0.0282	0.0020	0.0262
20	0.0285	0.0020	0.0265
21	0.0293	0.0021	0.0272
22	0.0296	0.0021	0.0275
23	0.0304	0.0022	0.0283
24	0.0309	0.0022	0.0287
25	0.0320	0.0023	0.0297
26	0.0325	0.0023	0.0302
27	0.0335	0.0024	0.0311
28	0.0341	0.0024	0.0316
29	0.0353	0.0025	0.0328
30	0.0359	0.0026	0.0334
31	0.0373	0.0027	0.0347
32	0.0381	0.0027	0.0354
33	0.0398	0.0028	0.0370
34	0.0407	0.0028	0.0379
35	0.0428	0.0028	0.0400
36	0.0439	0.0028	0.0412

37	0.0465	0.0028	0.0437
38	0.0480	0.0028	0.0452
39	0.0514	0.0028	0.0486
40	0.0534	0.0028	0.0506
41	0.0510	0.0028	0.0482
42	0.0538	0.0028	0.0511
43	0.0610	0.0028	0.0582
44	0.0656	0.0028	0.0629
45	0.0791	0.0028	0.0763
46	0.0890	0.0028	0.0862
47	0.1262	0.0028	0.1234
48	0.1723	0.0028	0.1696
49	0.5199	0.0028	0.5171
50	0.1033	0.0028	0.1005
51	0.0714	0.0028	0.0686
52	0.0571	0.0028	0.0543
53	0.0556	0.0028	0.0528
54	0.0496	0.0028	0.0468
55	0.0452	0.0028	0.0424
56	0.0417	0.0028	0.0389
57	0.0389	0.0028	0.0362
58	0.0366	0.0026	0.0340
59	0.0347	0.0025	0.0322
60	0.0330	0.0023	0.0306
61	0.0313	0.0022	0.0291
62	0.0300	0.0021	0.0279
63	0.0289	0.0021	0.0268
64	0.0279	0.0020	0.0259
65	0.0269	0.0019	0.0250
66	0.0261	0.0019	0.0242
67	0.0253	0.0018	0.0235
68	0.0246	0.0017	0.0228
69	0.0239	0.0017	0.0222
70	0.0233	0.0017	0.0217
71	0.0228	0.0016	0.0211
72	0.0222	0.0016	0.0207

Total soil rain loss = 0.16(In)
Total effective rainfall = 3.20(In)
Peak flow rate in flood hydrograph = 24.04(CFS)

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6 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	7.5	15.0	22.5	30.0
0+ 5	0.0012	0.18	Q				
0+10	0.0078	0.96	VQ				
0+15	0.0164	1.25	VQ				
0+20	0.0259	1.38	VQ				
0+25	0.0358	1.44	VQ				
0+30	0.0460	1.47	|Q				
0+35	0.0563	1.50	|Q				
0+40	0.0667	1.52	|VQ				
0+45	0.0773	1.54	| Q				
0+50	0.0881	1.56	| Q				
0+55	0.0990	1.58	| Q				
1+ 0	0.1100	1.60	| Q				
1+ 5	0.1212	1.62	| QV				
1+10	0.1325	1.65	| QV				
1+15	0.1441	1.67	| QV				
1+20	0.1558	1.70	| Q V				
1+25	0.1677	1.73	| Q V				
1+30	0.1798	1.76	| Q V				
1+35	0.1920	1.78	| Q V				
1+40	0.2046	1.82	| Q V				

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   1+45       0.2173      1.85  | Q  V    |         |         |         |
   1+50       0.2303      1.89  | Q  V    |         |         |         |
   1+55       0.2435      1.92  | Q   V   |         |         |         |
   2+ 0       0.2570      1.96  | Q   V   |         |         |         |
   2+ 5       0.2707      2.00  | Q    V  |         |         |         |
   2+10       0.2849      2.05  | Q    V  |         |         |         |
   2+15       0.2993      2.10  | Q    V  |         |         |         |
   2+20       0.3142      2.15  | Q     V |         |         |         |
   2+25       0.3293      2.20  | Q     V |         |         |         |
   2+30       0.3449      2.26  |  Q    V |         |         |         |
   2+35       0.3609      2.32  |  Q     V|         |         |         |
   2+40       0.3774      2.39  |  Q     V|         |         |         |
   2+45       0.3943      2.46  |  Q      V         |         |         |
   2+50       0.4119      2.55  |  Q      V         |         |         |
   2+55       0.4300      2.63  |  Q      |V        |         |         |
   3+ 0       0.4490      2.75  |  Q      |V        |         |         |
   3+ 5       0.4686      2.85  |  Q      | V       |         |         |
   3+10       0.4892      3.00  |  Q      | V       |         |         |
   3+15       0.5108      3.13  |   Q     |  V      |         |         |
   3+20       0.5337      3.32  |   Q     |  V      |         |         |
   3+25       0.5573      3.44  |   Q     |   V     |         |         |
   3+30       0.5809      3.42  |   Q     |    V    |         |         |
   3+35       0.6056      3.58  |   Q     |    V    |         |         |
   3+40       0.6326      3.93  |    Q    |     V   |         |         |
   3+45       0.6625      4.34  |    Q    |      V  |         |         |
   3+50       0.6973      5.05  |     Q   |       V |         |         |
   3+55       0.7385      5.99  |      Q  |        V|         |         |
   4+ 0       0.7940      8.05  |         Q         V         |         |
   4+ 5       0.8867     13.46  |         |      Q  |  V      |         |
   4+10       1.0522     24.04  |         |         |     V   | Q       |
   4+15       1.1410     12.90  |         |      Q  |        V|         |
   4+20       1.1956      7.92  |         Q         |         |V        |
   4+25       1.2326      5.37  |      Q  |         |         |V        |
   4+30       1.2618      4.24  |    Q    |         |         | V       |
   4+35       1.2871      3.68  |   Q     |         |         |  V      |
   4+40       1.3093      3.22  |   Q     |         |         |  V      |
   4+45       1.3290      2.86  |  Q      |         |         |   V     |
   4+50       1.3471      2.64  |  Q      |         |         |   V     |
   4+55       1.3641      2.46  |  Q      |         |         |    V    |
   5+ 0       1.3801      2.32  |  Q      |         |         |    V    |
   5+ 5       1.3952      2.20  | Q       |         |         |     V   |
   5+10       1.4096      2.09  | Q       |         |         |     V   |
   5+15       1.4233      2.00  | Q       |         |         |     V   |
   5+20       1.4365      1.92  | Q       |         |         |      V  |
   5+25       1.4492      1.84  | Q       |         |         |      V  |
   5+30       1.4615      1.78  | Q       |         |         |      V  |
   5+35       1.4733      1.72  | Q       |         |         |       V |
   5+40       1.4848      1.67  | Q       |         |         |       V |
   5+45       1.4960      1.62  | Q       |         |         |       V |
   5+50       1.5068      1.58  | Q       |         |         |        V|
   5+55       1.5174      1.54  | Q       |         |         |        V|
   6+ 0       1.5277      1.50  |Q        |         |         |        V|
   6+ 5       1.5366      1.28  |Q        |         |         |        V|
   6+10       1.5399      0.48  Q         |         |         |        V|
   6+15       1.5412      0.19  Q         |         |         |        V|
   6+20       1.5417      0.07  Q         |         |         |        V|
   6+25       1.5419      0.03  Q         |         |         |        V|
   6+30       1.5420      0.01  Q         |         |         |        V|
   6+35       1.5420      0.00  Q         |         |         |         V
-------------------------------------------------------------------------
```

- 100 Year 12 Hour Post-Development Unit Hydrograph – Area 'E'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/11/16   File Name pre10012.out

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996

Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'E' - 100 YEAR 12 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 100

       Antecedent Moisture Condition = 3

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********

SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 71.2       3.5          0.61     C     0.250     0.144    0.036
 71.2       2.3          0.39     D     0.200     0.144    0.029

Area-averaged adjusted loss rate Fm (In/Hr) =  0.033

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC3)          Yield Fr
     0.51   0.088         71.2      88.0       1.37     0.758
     3.03   0.523         98.0      98.0       0.20     0.958

     0.32   0.056         71.2      88.0       1.37     0.758
     1.93   0.333         98.0      98.0       0.20     0.958

Area-averaged catchment yield fraction, Y =  0.929
Area-averaged low loss fraction, Yb =  0.071
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.111 (hours)
Watershed area =       5.79(Ac.)
Catchment Lag time =   0.088 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 94.2685
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.033(In/Hr)
Average low loss rate fraction (Yb) = 0.071 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.520(In)
Computed peak 30-minute rainfall =  1.090(In)
Specified peak 1-hour rainfall =  1.450(In)
Computed peak 3-hour rainfall =  2.430(In)
Specified peak 6-hour rainfall =  3.360(In)
Specified peak 24-hour rainfall =  5.630(In)


Rainfall depth area reduction factors:
Using a total area of       5.79(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000     Adjusted rainfall =  0.520(In)
```

```
30-minute factor = 1.000    Adjusted rainfall =  1.090(In)
1-hour factor = 1.000       Adjusted rainfall =  1.450(In)
3-hour factor = 1.000       Adjusted rainfall =  2.430(In)
6-hour factor = 1.000       Adjusted rainfall =  3.360(In)
24-hour factor = 1.000 Adjusted rainfall =  5.630(In)
------------------------------------------------------------------------

                      U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
------------------------------------------------------------------------
               (K =        70.02 (CFS))

  1               12.489                   8.745
  2               67.318                  38.393
  3               86.941                  13.741
  4               95.030                   5.664
  5               98.141                   2.179
  6               99.096                   0.669
  7               99.725                   0.440
  8              100.000                   0.193
------------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.5199               0.5199
  2              0.6922               0.1723
  3              0.8184               0.1262
  4              0.9217               0.1033
  5              1.0107               0.0890
  6              1.0897               0.0791
  7              1.1611               0.0714
  8              1.2267               0.0656
  9              1.2877               0.0610
 10              1.3448               0.0571
 11              1.3986               0.0538
 12              1.4496               0.0510
 13              1.5052               0.0556
 14              1.5586               0.0534
 15              1.6100               0.0514
 16              1.6596               0.0496
 17              1.7076               0.0480
 18              1.7541               0.0465
 19              1.7992               0.0452
 20              1.8432               0.0439
 21              1.8859               0.0428
 22              1.9276               0.0417
 23              1.9684               0.0407
 24              2.0081               0.0398
 25              2.0471               0.0389
 26              2.0852               0.0381
 27              2.1225               0.0373
 28              2.1591               0.0366
 29              2.1950               0.0359
 30              2.2303               0.0353
 31              2.2649               0.0347
 32              2.2990               0.0341
 33              2.3325               0.0335
 34              2.3655               0.0330
 35              2.3979               0.0325
 36              2.4299               0.0320
 37              2.4612               0.0313
 38              2.4921               0.0309
 39              2.5226               0.0304
 40              2.5526               0.0300
 41              2.5822               0.0296
 42              2.6115               0.0293
 43              2.6404               0.0289
 44              2.6689               0.0285
 45              2.6971               0.0282
 46              2.7250               0.0279
```

47	2.7525	0.0275
48	2.7797	0.0272
49	2.8067	0.0269
50	2.8333	0.0266
51	2.8597	0.0264
52	2.8857	0.0261
53	2.9115	0.0258
54	2.9371	0.0256
55	2.9624	0.0253
56	2.9875	0.0251
57	3.0123	0.0248
58	3.0369	0.0246
59	3.0613	0.0244
60	3.0854	0.0241
61	3.1093	0.0239
62	3.1331	0.0237
63	3.1566	0.0235
64	3.1799	0.0233
65	3.2031	0.0231
66	3.2260	0.0229
67	3.2488	0.0228
68	3.2713	0.0226
69	3.2937	0.0224
70	3.3160	0.0222
71	3.3380	0.0221
72	3.3599	0.0219
73	3.3772	0.0173
74	3.3944	0.0172
75	3.4114	0.0170
76	3.4283	0.0169
77	3.4450	0.0167
78	3.4616	0.0166
79	3.4780	0.0165
80	3.4944	0.0163
81	3.5106	0.0162
82	3.5266	0.0161
83	3.5426	0.0160
84	3.5584	0.0158
85	3.5741	0.0157
86	3.5897	0.0156
87	3.6052	0.0155
88	3.6206	0.0154
89	3.6359	0.0153
90	3.6510	0.0152
91	3.6661	0.0151
92	3.6810	0.0149
93	3.6959	0.0148
94	3.7106	0.0147
95	3.7253	0.0146
96	3.7398	0.0146
97	3.7543	0.0145
98	3.7687	0.0144
99	3.7829	0.0143
100	3.7971	0.0142
101	3.8112	0.0141
102	3.8252	0.0140
103	3.8391	0.0139
104	3.8530	0.0138
105	3.8667	0.0138
106	3.8804	0.0137
107	3.8940	0.0136
108	3.9075	0.0135
109	3.9209	0.0134
110	3.9343	0.0134
111	3.9476	0.0133
112	3.9608	0.0132
113	3.9739	0.0131
114	3.9870	0.0131
115	3.9999	0.0130
116	4.0129	0.0129
117	4.0257	0.0128

118	4.0385	0.0128
119	4.0512	0.0127
120	4.0638	0.0126
121	4.0764	0.0126
122	4.0889	0.0125
123	4.1014	0.0124
124	4.1138	0.0124
125	4.1261	0.0123
126	4.1383	0.0123
127	4.1505	0.0122
128	4.1627	0.0121
129	4.1747	0.0121
130	4.1868	0.0120
131	4.1987	0.0120
132	4.2106	0.0119
133	4.2225	0.0118
134	4.2343	0.0118
135	4.2460	0.0117
136	4.2577	0.0117
137	4.2693	0.0116
138	4.2809	0.0116
139	4.2924	0.0115
140	4.3039	0.0115
141	4.3153	0.0114
142	4.3267	0.0114
143	4.3380	0.0113
144	4.3493	0.0113

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0113	0.0008	0.0105
2	0.0113	0.0008	0.0105
3	0.0114	0.0008	0.0106
4	0.0115	0.0008	0.0107
5	0.0116	0.0008	0.0108
6	0.0116	0.0008	0.0108
7	0.0117	0.0008	0.0109
8	0.0118	0.0008	0.0110
9	0.0119	0.0008	0.0111
10	0.0120	0.0008	0.0111
11	0.0121	0.0009	0.0112
12	0.0121	0.0009	0.0113
13	0.0123	0.0009	0.0114
14	0.0123	0.0009	0.0114
15	0.0124	0.0009	0.0116
16	0.0125	0.0009	0.0116
17	0.0126	0.0009	0.0117
18	0.0127	0.0009	0.0118
19	0.0128	0.0009	0.0119
20	0.0129	0.0009	0.0120
21	0.0131	0.0009	0.0121
22	0.0131	0.0009	0.0122
23	0.0133	0.0009	0.0123
24	0.0134	0.0009	0.0124
25	0.0135	0.0010	0.0126
26	0.0136	0.0010	0.0126
27	0.0138	0.0010	0.0128
28	0.0138	0.0010	0.0129
29	0.0140	0.0010	0.0130
30	0.0141	0.0010	0.0131
31	0.0143	0.0010	0.0133
32	0.0144	0.0010	0.0133
33	0.0146	0.0010	0.0135
34	0.0146	0.0010	0.0136
35	0.0148	0.0011	0.0138
36	0.0149	0.0011	0.0139
37	0.0152	0.0011	0.0141
38	0.0153	0.0011	0.0142
39	0.0155	0.0011	0.0144

40	0.0156	0.0011	0.0145
41	0.0158	0.0011	0.0147
42	0.0160	0.0011	0.0148
43	0.0162	0.0012	0.0150
44	0.0163	0.0012	0.0152
45	0.0166	0.0012	0.0154
46	0.0167	0.0012	0.0155
47	0.0170	0.0012	0.0158
48	0.0172	0.0012	0.0159
49	0.0219	0.0016	0.0203
50	0.0221	0.0016	0.0205
51	0.0224	0.0016	0.0208
52	0.0226	0.0016	0.0210
53	0.0229	0.0016	0.0213
54	0.0231	0.0016	0.0215
55	0.0235	0.0017	0.0219
56	0.0237	0.0017	0.0220
57	0.0241	0.0017	0.0224
58	0.0244	0.0017	0.0226
59	0.0248	0.0018	0.0231
60	0.0251	0.0018	0.0233
61	0.0256	0.0018	0.0237
62	0.0258	0.0018	0.0240
63	0.0264	0.0019	0.0245
64	0.0266	0.0019	0.0247
65	0.0272	0.0019	0.0253
66	0.0275	0.0020	0.0256
67	0.0282	0.0020	0.0262
68	0.0285	0.0020	0.0265
69	0.0293	0.0021	0.0272
70	0.0296	0.0021	0.0275
71	0.0304	0.0022	0.0283
72	0.0309	0.0022	0.0287
73	0.0320	0.0023	0.0297
74	0.0325	0.0023	0.0302
75	0.0335	0.0024	0.0311
76	0.0341	0.0024	0.0316
77	0.0353	0.0025	0.0328
78	0.0359	0.0026	0.0334
79	0.0373	0.0027	0.0347
80	0.0381	0.0027	0.0354
81	0.0398	0.0028	0.0370
82	0.0407	0.0028	0.0379
83	0.0428	0.0028	0.0400
84	0.0439	0.0028	0.0412
85	0.0465	0.0028	0.0437
86	0.0480	0.0028	0.0452
87	0.0514	0.0028	0.0486
88	0.0534	0.0028	0.0506
89	0.0510	0.0028	0.0482
90	0.0538	0.0028	0.0511
91	0.0610	0.0028	0.0582
92	0.0656	0.0028	0.0629
93	0.0791	0.0028	0.0763
94	0.0890	0.0028	0.0862
95	0.1262	0.0028	0.1234
96	0.1723	0.0028	0.1696
97	0.5199	0.0028	0.5171
98	0.1033	0.0028	0.1005
99	0.0714	0.0028	0.0686
100	0.0571	0.0028	0.0543
101	0.0556	0.0028	0.0528
102	0.0496	0.0028	0.0468
103	0.0452	0.0028	0.0424
104	0.0417	0.0028	0.0389
105	0.0389	0.0028	0.0362
106	0.0366	0.0026	0.0340
107	0.0347	0.0025	0.0322
108	0.0330	0.0023	0.0306
109	0.0313	0.0022	0.0291
110	0.0300	0.0021	0.0279

```
      111              0.0289          0.0021              0.0268
      112              0.0279          0.0020              0.0259
      113              0.0269          0.0019              0.0250
      114              0.0261          0.0019              0.0242
      115              0.0253          0.0018              0.0235
      116              0.0246          0.0017              0.0228
      117              0.0239          0.0017              0.0222
      118              0.0233          0.0017              0.0217
      119              0.0228          0.0016              0.0211
      120              0.0222          0.0016              0.0207
      121              0.0173          0.0012              0.0161
      122              0.0169          0.0012              0.0157
      123              0.0165          0.0012              0.0153
      124              0.0161          0.0011              0.0149
      125              0.0157          0.0011              0.0146
      126              0.0154          0.0011              0.0143
      127              0.0151          0.0011              0.0140
      128              0.0147          0.0010              0.0137
      129              0.0145          0.0010              0.0134
      130              0.0142          0.0010              0.0132
      131              0.0139          0.0010              0.0129
      132              0.0137          0.0010              0.0127
      133              0.0134          0.0010              0.0125
      134              0.0132          0.0009              0.0123
      135              0.0130          0.0009              0.0121
      136              0.0128          0.0009              0.0119
      137              0.0126          0.0009              0.0117
      138              0.0124          0.0009              0.0115
      139              0.0122          0.0009              0.0113
      140              0.0120          0.0009              0.0112
      141              0.0118          0.0008              0.0110
      142              0.0117          0.0008              0.0109
      143              0.0115          0.0008              0.0107
      144              0.0114          0.0008              0.0106
      ------------------------------------------------------------------------
      ------------------------------------------------------------------------
      Total soil rain loss =      0.23(In)
      Total effective rainfall =      4.12(In)
      Peak flow rate in flood hydrograph =     24.04(CFS)
      ------------------------------------------------------------------------
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          12 - H O U R    S T O R M
                     R u n o f f      H y d r o g r a p h
      ------------------------------------------------------------------------
                  Hydrograph in   5   Minute intervals ((CFS))

      ------------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0        7.5      15.0      22.5      30.0
----------------------------------------------------------------------------
  0+ 5       0.0006      0.09  Q          |          |          |          |
  0+10       0.0040      0.49  Q          |          |          |          |
  0+15       0.0084      0.64  Q          |          |          |          |
  0+20       0.0133      0.70  Q          |          |          |          |
  0+25       0.0183      0.73  Q          |          |          |          |
  0+30       0.0235      0.74  Q          |          |          |          |
  0+35       0.0286      0.75  VQ         |          |          |          |
  0+40       0.0339      0.76  VQ         |          |          |          |
  0+45       0.0392      0.77  VQ         |          |          |          |
  0+50       0.0445      0.77  VQ         |          |          |          |
  0+55       0.0498      0.78  |Q         |          |          |          |
  1+ 0       0.0552      0.78  |Q         |          |          |          |
  1+ 5       0.0606      0.79  |Q         |          |          |          |
  1+10       0.0661      0.79  |Q         |          |          |          |
  1+15       0.0716      0.80  |Q         |          |          |          |
  1+20       0.0772      0.81  |Q         |          |          |          |
  1+25       0.0828      0.81  |Q         |          |          |          |
  1+30       0.0884      0.82  |Q         |          |          |          |
  1+35       0.0941      0.82  |Q         |          |          |          |
  1+40       0.0998      0.83  |QV        |          |          |          |
  1+45       0.1056      0.84  |QV        |          |          |          |
  1+50       0.1114      0.85  |QV        |          |          |          |
```

```
1+55      0.1173      0.85  |QV       |         |         |         |
2+ 0      0.1232      0.86  |QV       |         |         |         |
2+ 5      0.1292      0.87  |QV       |         |         |         |
2+10      0.1352      0.87  |QV       |         |         |         |
2+15      0.1413      0.88  |QV       |         |         |         |
2+20      0.1474      0.89  |QV       |         |         |         |
2+25      0.1536      0.90  |Q V      |         |         |         |
2+30      0.1598      0.91  |Q V      |         |         |         |
2+35      0.1661      0.91  |Q V      |         |         |         |
2+40      0.1725      0.92  |Q V      |         |         |         |
2+45      0.1789      0.93  |Q V      |         |         |         |
2+50      0.1854      0.94  |Q V      |         |         |         |
2+55      0.1919      0.95  |Q V      |         |         |         |
3+ 0      0.1986      0.96  |Q  V     |         |         |         |
3+ 5      0.2052      0.97  |Q  V     |         |         |         |
3+10      0.2120      0.98  |Q  V     |         |         |         |
3+15      0.2188      0.99  |Q  V     |         |         |         |
3+20      0.2257      1.00  |Q  V     |         |         |         |
3+25      0.2327      1.01  |Q  V     |         |         |         |
3+30      0.2397      1.02  |Q  V     |         |         |         |
3+35      0.2469      1.03  |Q  V     |         |         |         |
3+40      0.2541      1.05  |Q   V    |         |         |         |
3+45      0.2614      1.06  |Q   V    |         |         |         |
3+50      0.2687      1.07  |Q   V    |         |         |         |
3+55      0.2762      1.08  |Q   V    |         |         |         |
4+ 0      0.2838      1.10  |Q   V    |         |         |         |
4+ 5      0.2917      1.15  |Q   V    |         |         |         |
4+10      0.3008      1.32  |Q    V   |         |         |         |
4+15      0.3104      1.39  |Q    V   |         |         |         |
4+20      0.3203      1.43  |Q    V   |         |         |         |
4+25      0.3303      1.46  |Q    V   |         |         |         |
4+30      0.3405      1.48  |Q    V   |         |         |         |
4+35      0.3508      1.50  |Q     V  |         |         |         |
4+40      0.3613      1.52  | Q    V  |         |         |         |
4+45      0.3719      1.54  | Q    V  |         |         |         |
4+50      0.3826      1.56  | Q    V  |         |         |         |
4+55      0.3935      1.58  | Q    V  |         |         |         |
5+ 0      0.4046      1.60  | Q     V |         |         |         |
5+ 5      0.4158      1.62  | Q     V |         |         |         |
5+10      0.4271      1.65  | Q     V |         |         |         |
5+15      0.4386      1.67  | Q     V |         |         |         |
5+20      0.4503      1.70  | Q      V|         |         |         |
5+25      0.4622      1.73  | Q      V|         |         |         |
5+30      0.4743      1.76  | Q      V|         |         |         |
5+35      0.4866      1.78  | Q      V|         |         |         |
5+40      0.4991      1.82  | Q       V         |         |         |
5+45      0.5118      1.85  | Q       V         |         |         |
5+50      0.5248      1.89  | Q       V         |         |         |
5+55      0.5380      1.92  | Q       V         |         |         |
6+ 0      0.5515      1.96  | Q       |V        |         |         |
6+ 5      0.5653      2.00  | Q       |V        |         |         |
6+10      0.5794      2.05  | Q       |V        |         |         |
6+15      0.5939      2.10  | Q       |V        |         |         |
6+20      0.6087      2.15  | Q       | V       |         |         |
6+25      0.6239      2.20  | Q       | V       |         |         |
6+30      0.6395      2.26  |  Q      | V       |         |         |
6+35      0.6555      2.32  |  Q      |  V      |         |         |
6+40      0.6719      2.39  |  Q      |  V      |         |         |
6+45      0.6889      2.46  |  Q      |  V      |         |         |
6+50      0.7065      2.55  |  Q      |   V     |         |         |
6+55      0.7246      2.63  |  Q      |   V     |         |         |
7+ 0      0.7435      2.75  |  Q      |   V     |         |         |
7+ 5      0.7632      2.85  |  Q      |    V    |         |         |
7+10      0.7838      3.00  |  Q      |    V    |         |         |
7+15      0.8054      3.13  |   Q     |     V   |         |         |
7+20      0.8282      3.32  |   Q     |     V   |         |         |
7+25      0.8519      3.44  |   Q     |      V  |         |         |
7+30      0.8755      3.42  |   Q     |      V  |         |         |
7+35      0.9001      3.58  |   Q     |       V |         |         |
7+40      0.9272      3.93  |    Q    |       V |         |         |
7+45      0.9571      4.34  |    Q    |        V|         |         |
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   7+50       0.9919      5.05  |     Q    |         V|          |          |
   7+55       1.0331      5.99  |      Q   |          V          |          |
   8+ 0       1.0885      8.05  |          Q          |V         |          |
   8+ 5       1.1812     13.46  |          |      Q   |  V       |          |
   8+10       1.3468     24.04  |          |          |       V  | Q        |
   8+15       1.4356     12.90  |          |      Q   |        V |          |
   8+20       1.4902      7.92  |          Q          |          V          |
   8+25       1.5272      5.37  |       Q  |          |          V          |
   8+30       1.5563      4.24  |     Q    |          |          |V         |
   8+35       1.5817      3.68  |    Q     |          |          |V         |
   8+40       1.6038      3.22  |    Q     |          |          | V        |
   8+45       1.6235      2.86  |  Q       |          |          | V        |
   8+50       1.6417      2.64  |  Q       |          |          |  V       |
   8+55       1.6586      2.46  |  Q       |          |          |  V       |
   9+ 0       1.6746      2.32  |  Q       |          |          |  V       |
   9+ 5       1.6898      2.20  | Q        |          |          |   V      |
   9+10       1.7041      2.09  | Q        |          |          |   V      |
   9+15       1.7179      2.00  | Q        |          |          |   V      |
   9+20       1.7311      1.92  | Q        |          |          |   V      |
   9+25       1.7438      1.84  | Q        |          |          |    V     |
   9+30       1.7560      1.78  | Q        |          |          |    V     |
   9+35       1.7679      1.72  | Q        |          |          |    V     |
   9+40       1.7794      1.67  | Q        |          |          |    V     |
   9+45       1.7905      1.62  | Q        |          |          |     V    |
   9+50       1.8014      1.58  | Q        |          |          |     V    |
   9+55       1.8120      1.54  | Q        |          |          |     V    |
  10+ 0       1.8223      1.50  |Q         |          |          |     V    |
  10+ 5       1.8321      1.43  |Q         |          |          |     V    |
  10+10       1.8406      1.23  |Q         |          |          |      V   |
  10+15       1.8485      1.15  |Q         |          |          |      V   |
  10+20       1.8561      1.10  |Q         |          |          |      V   |
  10+25       1.8634      1.06  |Q         |          |          |      V   |
  10+30       1.8705      1.04  |Q         |          |          |      V   |
  10+35       1.8775      1.01  |Q         |          |          |      V   |
  10+40       1.8843      0.99  |Q         |          |          |      V   |
  10+45       1.8909      0.97  |Q         |          |          |       V  |
  10+50       1.8975      0.95  |Q         |          |          |       V  |
  10+55       1.9039      0.93  |Q         |          |          |       V  |
  11+ 0       1.9102      0.91  |Q         |          |          |       V  |
  11+ 5       1.9163      0.90  |Q         |          |          |       V  |
  11+10       1.9224      0.88  |Q         |          |          |       V  |
  11+15       1.9284      0.87  |Q         |          |          |       V  |
  11+20       1.9342      0.85  |Q         |          |          |       V  |
  11+25       1.9400      0.84  |Q         |          |          |        V |
  11+30       1.9457      0.82  |Q         |          |          |        V |
  11+35       1.9513      0.81  |Q         |          |          |        V |
  11+40       1.9568      0.80  |Q         |          |          |        V |
  11+45       1.9622      0.79  |Q         |          |          |        V |
  11+50       1.9675      0.78  |Q         |          |          |        V |
  11+55       1.9728      0.76  |Q         |          |          |        V |
  12+ 0       1.9780      0.75  |Q         |          |          |        V |
  12+ 5       1.9825      0.65  Q          |          |          |        V |
  12+10       1.9842      0.24  Q          |          |          |        V |
  12+15       1.9848      0.10  Q          |          |          |        V |
  12+20       1.9851      0.04  Q          |          |          |        V |
  12+25       1.9852      0.01  Q          |          |          |        V |
  12+30       1.9852      0.01  Q          |          |          |        V |
  12+35       1.9852      0.00  Q          |          |          |        V |
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- 100 Year 24 Hour Post-Development Unit Hydrograph – Area 'E'

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       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/11/16   File Name pre10024.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

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RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'E' - 100 YEAR 24 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 100

       Antecedent Moisture Condition = 3

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 71.2       3.5          0.61     C     0.250     0.144    0.036
 71.2       2.3          0.39     D     0.200     0.144    0.029

Area-averaged adjusted loss rate Fm (In/Hr) =  0.033

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC3)          Yield Fr
     0.51   0.088         71.2      88.0       1.37     0.758
     3.03   0.523         98.0      98.0       0.20     0.958

     0.32   0.056         71.2      88.0       1.37     0.758
     1.93   0.333         98.0      98.0       0.20     0.958

Area-averaged catchment yield fraction, Y =  0.929
Area-averaged low loss fraction, Yb =  0.071
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.111 (hours)
Watershed area =       5.79(Ac.)
Catchment Lag time =   0.088 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 94.2685
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.033(In/Hr)
Average low loss rate fraction (Yb) = 0.071 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.520(In)
Computed peak 30-minute rainfall =  1.090(In)
Specified peak 1-hour rainfall =  1.450(In)
Computed peak 3-hour rainfall =  2.430(In)
Specified peak 6-hour rainfall =  3.360(In)
Specified peak 24-hour rainfall =  5.630(In)
```

Rainfall depth area reduction factors:
Using a total area of 5.79(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000 Adjusted rainfall = 0.520(In)
30-minute factor = 1.000 Adjusted rainfall = 1.090(In)
1-hour factor = 1.000 Adjusted rainfall = 1.450(In)
3-hour factor = 1.000 Adjusted rainfall = 2.430(In)
6-hour factor = 1.000 Adjusted rainfall = 3.360(In)
24-hour factor = 1.000 Adjusted rainfall = 5.630(In)

U n i t H y d r o g r a p h

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 70.02 (CFS))	
1	12.489	8.745
2	67.318	38.393
3	86.941	13.741
4	95.030	5.664
5	98.141	2.179
6	99.096	0.669
7	99.725	0.440
8	100.000	0.193

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.5199	0.5199
2	0.6922	0.1723
3	0.8184	0.1262
4	0.9217	0.1033
5	1.0107	0.0890
6	1.0897	0.0791
7	1.1611	0.0714
8	1.2267	0.0656
9	1.2877	0.0610
10	1.3448	0.0571
11	1.3986	0.0538
12	1.4496	0.0510
13	1.5052	0.0556
14	1.5586	0.0534
15	1.6100	0.0514
16	1.6596	0.0496
17	1.7076	0.0480
18	1.7541	0.0465
19	1.7992	0.0452
20	1.8432	0.0439
21	1.8859	0.0428
22	1.9276	0.0417
23	1.9684	0.0407
24	2.0081	0.0398
25	2.0471	0.0389
26	2.0852	0.0381
27	2.1225	0.0373
28	2.1591	0.0366
29	2.1950	0.0359
30	2.2303	0.0353
31	2.2649	0.0347
32	2.2990	0.0341
33	2.3325	0.0335
34	2.3655	0.0330
35	2.3979	0.0325
36	2.4299	0.0320
37	2.4612	0.0313
38	2.4921	0.0309
39	2.5226	0.0304
40	2.5526	0.0300
41	2.5822	0.0296
42	2.6115	0.0293

43	2.6404	0.0289
44	2.6689	0.0285
45	2.6971	0.0282
46	2.7250	0.0279
47	2.7525	0.0275
48	2.7797	0.0272
49	2.8067	0.0269
50	2.8333	0.0266
51	2.8597	0.0264
52	2.8857	0.0261
53	2.9115	0.0258
54	2.9371	0.0256
55	2.9624	0.0253
56	2.9875	0.0251
57	3.0123	0.0248
58	3.0369	0.0246
59	3.0613	0.0244
60	3.0854	0.0241
61	3.1093	0.0239
62	3.1331	0.0237
63	3.1566	0.0235
64	3.1799	0.0233
65	3.2031	0.0231
66	3.2260	0.0229
67	3.2488	0.0228
68	3.2713	0.0226
69	3.2937	0.0224
70	3.3160	0.0222
71	3.3380	0.0221
72	3.3599	0.0219
73	3.3772	0.0173
74	3.3944	0.0172
75	3.4114	0.0170
76	3.4283	0.0169
77	3.4450	0.0167
78	3.4616	0.0166
79	3.4780	0.0165
80	3.4944	0.0163
81	3.5106	0.0162
82	3.5266	0.0161
83	3.5426	0.0160
84	3.5584	0.0158
85	3.5741	0.0157
86	3.5897	0.0156
87	3.6052	0.0155
88	3.6206	0.0154
89	3.6359	0.0153
90	3.6510	0.0152
91	3.6661	0.0151
92	3.6810	0.0149
93	3.6959	0.0148
94	3.7106	0.0147
95	3.7253	0.0146
96	3.7398	0.0146
97	3.7543	0.0145
98	3.7687	0.0144
99	3.7829	0.0143
100	3.7971	0.0142
101	3.8112	0.0141
102	3.8252	0.0140
103	3.8391	0.0139
104	3.8530	0.0138
105	3.8667	0.0138
106	3.8804	0.0137
107	3.8940	0.0136
108	3.9075	0.0135
109	3.9209	0.0134
110	3.9343	0.0134
111	3.9476	0.0133
112	3.9608	0.0132
113	3.9739	0.0131

114	3.9870	0.0131
115	3.9999	0.0130
116	4.0129	0.0129
117	4.0257	0.0128
118	4.0385	0.0128
119	4.0512	0.0127
120	4.0638	0.0126
121	4.0764	0.0126
122	4.0889	0.0125
123	4.1014	0.0124
124	4.1138	0.0124
125	4.1261	0.0123
126	4.1383	0.0123
127	4.1505	0.0122
128	4.1627	0.0121
129	4.1747	0.0121
130	4.1868	0.0120
131	4.1987	0.0120
132	4.2106	0.0119
133	4.2225	0.0118
134	4.2343	0.0118
135	4.2460	0.0117
136	4.2577	0.0117
137	4.2693	0.0116
138	4.2809	0.0116
139	4.2924	0.0115
140	4.3039	0.0115
141	4.3153	0.0114
142	4.3267	0.0114
143	4.3380	0.0113
144	4.3493	0.0113
145	4.3605	0.0112
146	4.3717	0.0112
147	4.3828	0.0111
148	4.3939	0.0111
149	4.4049	0.0110
150	4.4159	0.0110
151	4.4268	0.0109
152	4.4377	0.0109
153	4.4486	0.0108
154	4.4594	0.0108
155	4.4701	0.0108
156	4.4809	0.0107
157	4.4915	0.0107
158	4.5022	0.0106
159	4.5128	0.0106
160	4.5233	0.0105
161	4.5338	0.0105
162	4.5443	0.0105
163	4.5547	0.0104
164	4.5651	0.0104
165	4.5754	0.0103
166	4.5857	0.0103
167	4.5960	0.0103
168	4.6062	0.0102
169	4.6164	0.0102
170	4.6266	0.0102
171	4.6367	0.0101
172	4.6468	0.0101
173	4.6568	0.0100
174	4.6668	0.0100
175	4.6768	0.0100
176	4.6867	0.0099
177	4.6966	0.0099
178	4.7065	0.0099
179	4.7163	0.0098
180	4.7261	0.0098
181	4.7359	0.0098
182	4.7456	0.0097
183	4.7553	0.0097
184	4.7649	0.0097

185	4.7746	0.0096
186	4.7841	0.0096
187	4.7937	0.0096
188	4.8032	0.0095
189	4.8127	0.0095
190	4.8222	0.0095
191	4.8316	0.0094
192	4.8410	0.0094
193	4.8504	0.0094
194	4.8598	0.0093
195	4.8691	0.0093
196	4.8783	0.0093
197	4.8876	0.0093
198	4.8968	0.0092
199	4.9060	0.0092
200	4.9152	0.0092
201	4.9243	0.0091
202	4.9334	0.0091
203	4.9425	0.0091
204	4.9516	0.0091
205	4.9606	0.0090
206	4.9696	0.0090
207	4.9785	0.0090
208	4.9875	0.0089
209	4.9964	0.0089
210	5.0053	0.0089
211	5.0142	0.0089
212	5.0230	0.0088
213	5.0318	0.0088
214	5.0406	0.0088
215	5.0493	0.0088
216	5.0581	0.0087
217	5.0668	0.0087
218	5.0755	0.0087
219	5.0841	0.0087
220	5.0927	0.0086
221	5.1014	0.0086
222	5.1099	0.0086
223	5.1185	0.0086
224	5.1270	0.0085
225	5.1355	0.0085
226	5.1440	0.0085
227	5.1525	0.0085
228	5.1609	0.0084
229	5.1693	0.0084
230	5.1777	0.0084
231	5.1861	0.0084
232	5.1945	0.0083
233	5.2028	0.0083
234	5.2111	0.0083
235	5.2194	0.0083
236	5.2276	0.0083
237	5.2359	0.0082
238	5.2441	0.0082
239	5.2523	0.0082
240	5.2604	0.0082
241	5.2686	0.0082
242	5.2767	0.0081
243	5.2848	0.0081
244	5.2929	0.0081
245	5.3010	0.0081
246	5.3090	0.0080
247	5.3171	0.0080
248	5.3251	0.0080
249	5.3330	0.0080
250	5.3410	0.0080
251	5.3490	0.0079
252	5.3569	0.0079
253	5.3648	0.0079
254	5.3727	0.0079
255	5.3805	0.0079

256	5.3884	0.0078
257	5.3962	0.0078
258	5.4040	0.0078
259	5.4118	0.0078
260	5.4196	0.0078
261	5.4273	0.0078
262	5.4351	0.0077
263	5.4428	0.0077
264	5.4505	0.0077
265	5.4582	0.0077
266	5.4658	0.0077
267	5.4735	0.0076
268	5.4811	0.0076
269	5.4887	0.0076
270	5.4963	0.0076
271	5.5039	0.0076
272	5.5114	0.0076
273	5.5189	0.0075
274	5.5265	0.0075
275	5.5340	0.0075
276	5.5414	0.0075
277	5.5489	0.0075
278	5.5564	0.0075
279	5.5638	0.0074
280	5.5712	0.0074
281	5.5786	0.0074
282	5.5860	0.0074
283	5.5934	0.0074
284	5.6007	0.0074
285	5.6081	0.0073
286	5.6154	0.0073
287	5.6227	0.0073
288	5.6300	0.0073

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0073	0.0005	0.0068
2	0.0073	0.0005	0.0068
3	0.0073	0.0005	0.0068
4	0.0074	0.0005	0.0068
5	0.0074	0.0005	0.0069
6	0.0074	0.0005	0.0069
7	0.0074	0.0005	0.0069
8	0.0075	0.0005	0.0069
9	0.0075	0.0005	0.0070
10	0.0075	0.0005	0.0070
11	0.0075	0.0005	0.0070
12	0.0076	0.0005	0.0070
13	0.0076	0.0005	0.0070
14	0.0076	0.0005	0.0071
15	0.0076	0.0005	0.0071
16	0.0077	0.0005	0.0071
17	0.0077	0.0005	0.0071
18	0.0077	0.0005	0.0072
19	0.0078	0.0006	0.0072
20	0.0078	0.0006	0.0072
21	0.0078	0.0006	0.0073
22	0.0078	0.0006	0.0073
23	0.0079	0.0006	0.0073
24	0.0079	0.0006	0.0073
25	0.0079	0.0006	0.0074
26	0.0079	0.0006	0.0074
27	0.0080	0.0006	0.0074
28	0.0080	0.0006	0.0074
29	0.0080	0.0006	0.0075
30	0.0081	0.0006	0.0075
31	0.0081	0.0006	0.0075
32	0.0081	0.0006	0.0076
33	0.0082	0.0006	0.0076

34	0.0082	0.0006	0.0076
35	0.0082	0.0006	0.0077
36	0.0083	0.0006	0.0077
37	0.0083	0.0006	0.0077
38	0.0083	0.0006	0.0077
39	0.0084	0.0006	0.0078
40	0.0084	0.0006	0.0078
41	0.0084	0.0006	0.0078
42	0.0085	0.0006	0.0079
43	0.0085	0.0006	0.0079
44	0.0085	0.0006	0.0079
45	0.0086	0.0006	0.0080
46	0.0086	0.0006	0.0080
47	0.0087	0.0006	0.0080
48	0.0087	0.0006	0.0081
49	0.0087	0.0006	0.0081
50	0.0088	0.0006	0.0081
51	0.0088	0.0006	0.0082
52	0.0088	0.0006	0.0082
53	0.0089	0.0006	0.0083
54	0.0089	0.0006	0.0083
55	0.0090	0.0006	0.0083
56	0.0090	0.0006	0.0084
57	0.0091	0.0006	0.0084
58	0.0091	0.0006	0.0084
59	0.0091	0.0006	0.0085
60	0.0092	0.0007	0.0085
61	0.0092	0.0007	0.0086
62	0.0093	0.0007	0.0086
63	0.0093	0.0007	0.0087
64	0.0093	0.0007	0.0087
65	0.0094	0.0007	0.0087
66	0.0094	0.0007	0.0088
67	0.0095	0.0007	0.0088
68	0.0095	0.0007	0.0089
69	0.0096	0.0007	0.0089
70	0.0096	0.0007	0.0089
71	0.0097	0.0007	0.0090
72	0.0097	0.0007	0.0090
73	0.0098	0.0007	0.0091
74	0.0098	0.0007	0.0091
75	0.0099	0.0007	0.0092
76	0.0099	0.0007	0.0092
77	0.0100	0.0007	0.0093
78	0.0100	0.0007	0.0093
79	0.0101	0.0007	0.0094
80	0.0102	0.0007	0.0094
81	0.0102	0.0007	0.0095
82	0.0103	0.0007	0.0095
83	0.0103	0.0007	0.0096
84	0.0104	0.0007	0.0096
85	0.0105	0.0007	0.0097
86	0.0105	0.0007	0.0098
87	0.0106	0.0008	0.0098
88	0.0106	0.0008	0.0099
89	0.0107	0.0008	0.0100
90	0.0108	0.0008	0.0100
91	0.0108	0.0008	0.0101
92	0.0109	0.0008	0.0101
93	0.0110	0.0008	0.0102
94	0.0110	0.0008	0.0102
95	0.0111	0.0008	0.0103
96	0.0112	0.0008	0.0104
97	0.0113	0.0008	0.0105
98	0.0113	0.0008	0.0105
99	0.0114	0.0008	0.0106
100	0.0115	0.0008	0.0107
101	0.0116	0.0008	0.0108
102	0.0116	0.0008	0.0108
103	0.0117	0.0008	0.0109
104	0.0118	0.0008	0.0110

105	0.0119	0.0008	0.0111
106	0.0120	0.0008	0.0111
107	0.0121	0.0009	0.0112
108	0.0121	0.0009	0.0113
109	0.0123	0.0009	0.0114
110	0.0123	0.0009	0.0114
111	0.0124	0.0009	0.0116
112	0.0125	0.0009	0.0116
113	0.0126	0.0009	0.0117
114	0.0127	0.0009	0.0118
115	0.0128	0.0009	0.0119
116	0.0129	0.0009	0.0120
117	0.0131	0.0009	0.0121
118	0.0131	0.0009	0.0122
119	0.0133	0.0009	0.0123
120	0.0134	0.0009	0.0124
121	0.0135	0.0010	0.0126
122	0.0136	0.0010	0.0126
123	0.0138	0.0010	0.0128
124	0.0138	0.0010	0.0129
125	0.0140	0.0010	0.0130
126	0.0141	0.0010	0.0131
127	0.0143	0.0010	0.0133
128	0.0144	0.0010	0.0133
129	0.0146	0.0010	0.0135
130	0.0146	0.0010	0.0136
131	0.0148	0.0011	0.0138
132	0.0149	0.0011	0.0139
133	0.0152	0.0011	0.0141
134	0.0153	0.0011	0.0142
135	0.0155	0.0011	0.0144
136	0.0156	0.0011	0.0145
137	0.0158	0.0011	0.0147
138	0.0160	0.0011	0.0148
139	0.0162	0.0012	0.0150
140	0.0163	0.0012	0.0152
141	0.0166	0.0012	0.0154
142	0.0167	0.0012	0.0155
143	0.0170	0.0012	0.0158
144	0.0172	0.0012	0.0159
145	0.0219	0.0016	0.0203
146	0.0221	0.0016	0.0205
147	0.0224	0.0016	0.0208
148	0.0226	0.0016	0.0210
149	0.0229	0.0016	0.0213
150	0.0231	0.0016	0.0215
151	0.0235	0.0017	0.0219
152	0.0237	0.0017	0.0220
153	0.0241	0.0017	0.0224
154	0.0244	0.0017	0.0226
155	0.0248	0.0018	0.0231
156	0.0251	0.0018	0.0233
157	0.0256	0.0018	0.0237
158	0.0258	0.0018	0.0240
159	0.0264	0.0019	0.0245
160	0.0266	0.0019	0.0247
161	0.0272	0.0019	0.0253
162	0.0275	0.0020	0.0256
163	0.0282	0.0020	0.0262
164	0.0285	0.0020	0.0265
165	0.0293	0.0021	0.0272
166	0.0296	0.0021	0.0275
167	0.0304	0.0022	0.0283
168	0.0309	0.0022	0.0287
169	0.0320	0.0023	0.0297
170	0.0325	0.0023	0.0302
171	0.0335	0.0024	0.0311
172	0.0341	0.0024	0.0316
173	0.0353	0.0025	0.0328
174	0.0359	0.0026	0.0334
175	0.0373	0.0027	0.0347

176	0.0381	0.0027	0.0354
177	0.0398	0.0028	0.0370
178	0.0407	0.0028	0.0379
179	0.0428	0.0028	0.0400
180	0.0439	0.0028	0.0412
181	0.0465	0.0028	0.0437
182	0.0480	0.0028	0.0452
183	0.0514	0.0028	0.0486
184	0.0534	0.0028	0.0506
185	0.0510	0.0028	0.0482
186	0.0538	0.0028	0.0511
187	0.0610	0.0028	0.0582
188	0.0656	0.0028	0.0629
189	0.0791	0.0028	0.0763
190	0.0890	0.0028	0.0862
191	0.1262	0.0028	0.1234
192	0.1723	0.0028	0.1696
193	0.5199	0.0028	0.5171
194	0.1033	0.0028	0.1005
195	0.0714	0.0028	0.0686
196	0.0571	0.0028	0.0543
197	0.0556	0.0028	0.0528
198	0.0496	0.0028	0.0468
199	0.0452	0.0028	0.0424
200	0.0417	0.0028	0.0389
201	0.0389	0.0028	0.0362
202	0.0366	0.0026	0.0340
203	0.0347	0.0025	0.0322
204	0.0330	0.0023	0.0306
205	0.0313	0.0022	0.0291
206	0.0300	0.0021	0.0279
207	0.0289	0.0021	0.0268
208	0.0279	0.0020	0.0259
209	0.0269	0.0019	0.0250
210	0.0261	0.0019	0.0242
211	0.0253	0.0018	0.0235
212	0.0246	0.0017	0.0228
213	0.0239	0.0017	0.0222
214	0.0233	0.0017	0.0217
215	0.0228	0.0016	0.0211
216	0.0222	0.0016	0.0207
217	0.0173	0.0012	0.0161
218	0.0169	0.0012	0.0157
219	0.0165	0.0012	0.0153
220	0.0161	0.0011	0.0149
221	0.0157	0.0011	0.0146
222	0.0154	0.0011	0.0143
223	0.0151	0.0011	0.0140
224	0.0147	0.0010	0.0137
225	0.0145	0.0010	0.0134
226	0.0142	0.0010	0.0132
227	0.0139	0.0010	0.0129
228	0.0137	0.0010	0.0127
229	0.0134	0.0010	0.0125
230	0.0132	0.0009	0.0123
231	0.0130	0.0009	0.0121
232	0.0128	0.0009	0.0119
233	0.0126	0.0009	0.0117
234	0.0124	0.0009	0.0115
235	0.0122	0.0009	0.0113
236	0.0120	0.0009	0.0112
237	0.0118	0.0008	0.0110
238	0.0117	0.0008	0.0109
239	0.0115	0.0008	0.0107
240	0.0114	0.0008	0.0106
241	0.0112	0.0008	0.0104
242	0.0111	0.0008	0.0103
243	0.0109	0.0008	0.0102
244	0.0108	0.0008	0.0100
245	0.0107	0.0008	0.0099
246	0.0105	0.0007	0.0098

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      247              0.0104           0.0007              0.0097
      248              0.0103           0.0007              0.0096
      249              0.0102           0.0007              0.0095
      250              0.0101           0.0007              0.0094
      251              0.0100           0.0007              0.0093
      252              0.0099           0.0007              0.0092
      253              0.0098           0.0007              0.0091
      254              0.0097           0.0007              0.0090
      255              0.0096           0.0007              0.0089
      256              0.0095           0.0007              0.0088
      257              0.0094           0.0007              0.0087
      258              0.0093           0.0007              0.0086
      259              0.0092           0.0007              0.0085
      260              0.0091           0.0006              0.0085
      261              0.0090           0.0006              0.0084
      262              0.0089           0.0006              0.0083
      263              0.0089           0.0006              0.0082
      264              0.0088           0.0006              0.0082
      265              0.0087           0.0006              0.0081
      266              0.0086           0.0006              0.0080
      267              0.0086           0.0006              0.0080
      268              0.0085           0.0006              0.0079
      269              0.0084           0.0006              0.0078
      270              0.0083           0.0006              0.0078
      271              0.0083           0.0006              0.0077
      272              0.0082           0.0006              0.0076
      273              0.0082           0.0006              0.0076
      274              0.0081           0.0006              0.0075
      275              0.0080           0.0006              0.0075
      276              0.0080           0.0006              0.0074
      277              0.0079           0.0006              0.0073
      278              0.0078           0.0006              0.0073
      279              0.0078           0.0006              0.0072
      280              0.0077           0.0005              0.0072
      281              0.0077           0.0005              0.0071
      282              0.0076           0.0005              0.0071
      283              0.0076           0.0005              0.0070
      284              0.0075           0.0005              0.0070
      285              0.0075           0.0005              0.0069
      286              0.0074           0.0005              0.0069
      287              0.0074           0.0005              0.0068
      288              0.0073           0.0005              0.0068
      ------------------------------------------------------------------------
      ------------------------------------------------------------------------
      Total soil rain loss =      0.32(In)
      Total effective rainfall =      5.31(In)
      Peak flow rate in flood hydrograph =     24.04(CFS)
      ------------------------------------------------------------------------
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          24 - H O U R    S T O R M
                     R u n o f f      H y d r o g r a p h
      ------------------------------------------------------------------------
                  Hydrograph in   5   Minute intervals ((CFS))

      ------------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0        7.5      15.0      22.5      30.0
------------------------------------------------------------------------
  0+ 5       0.0004      0.06  Q         |         |         |         |
  0+10       0.0026      0.32  Q         |         |         |         |
  0+15       0.0055      0.41  Q         |         |         |         |
  0+20       0.0086      0.45  Q         |         |         |         |
  0+25       0.0118      0.47  Q         |         |         |         |
  0+30       0.0151      0.48  Q         |         |         |         |
  0+35       0.0184      0.48  Q         |         |         |         |
  0+40       0.0217      0.48  Q         |         |         |         |
  0+45       0.0250      0.48  Q         |         |         |         |
  0+50       0.0284      0.49  Q         |         |         |         |
  0+55       0.0317      0.49  Q         |         |         |         |
  1+ 0       0.0351      0.49  Q         |         |         |         |
  1+ 5       0.0385      0.49  Q         |         |         |         |
  1+10       0.0419      0.49  Q         |         |         |         |
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1+15       0.0453      0.49  Q          |          |          |          |
1+20       0.0487      0.50  Q          |          |          |          |
1+25       0.0521      0.50  Q          |          |          |          |
1+30       0.0556      0.50  Q          |          |          |          |
1+35       0.0590      0.50  Q          |          |          |          |
1+40       0.0625      0.50  Q          |          |          |          |
1+45       0.0660      0.50  QV         |          |          |          |
1+50       0.0695      0.51  QV         |          |          |          |
1+55       0.0730      0.51  QV         |          |          |          |
2+ 0       0.0765      0.51  QV         |          |          |          |
2+ 5       0.0800      0.51  QV         |          |          |          |
2+10       0.0836      0.51  QV         |          |          |          |
2+15       0.0871      0.52  QV         |          |          |          |
2+20       0.0907      0.52  QV         |          |          |          |
2+25       0.0943      0.52  QV         |          |          |          |
2+30       0.0979      0.52  QV         |          |          |          |
2+35       0.1015      0.52  QV         |          |          |          |
2+40       0.1051      0.53  QV         |          |          |          |
2+45       0.1087      0.53  QV         |          |          |          |
2+50       0.1124      0.53  QV         |          |          |          |
2+55       0.1161      0.53  QV         |          |          |          |
3+ 0       0.1197      0.53  QV         |          |          |          |
3+ 5       0.1234      0.54  QV         |          |          |          |
3+10       0.1271      0.54  QV         |          |          |          |
3+15       0.1309      0.54  Q V        |          |          |          |
3+20       0.1346      0.54  Q V        |          |          |          |
3+25       0.1384      0.55  Q V        |          |          |          |
3+30       0.1421      0.55  Q V        |          |          |          |
3+35       0.1459      0.55  Q V        |          |          |          |
3+40       0.1497      0.55  Q V        |          |          |          |
3+45       0.1535      0.55  Q V        |          |          |          |
3+50       0.1574      0.56  Q V        |          |          |          |
3+55       0.1612      0.56  Q V        |          |          |          |
4+ 0       0.1651      0.56  Q V        |          |          |          |
4+ 5       0.1690      0.56  Q V        |          |          |          |
4+10       0.1729      0.57  Q V        |          |          |          |
4+15       0.1768      0.57  Q V        |          |          |          |
4+20       0.1807      0.57  Q V        |          |          |          |
4+25       0.1847      0.57  Q V        |          |          |          |
4+30       0.1887      0.58  Q V        |          |          |          |
4+35       0.1927      0.58  Q  V       |          |          |          |
4+40       0.1967      0.58  Q  V       |          |          |          |
4+45       0.2007      0.58  Q  V       |          |          |          |
4+50       0.2047      0.59  Q  V       |          |          |          |
4+55       0.2088      0.59  Q  V       |          |          |          |
5+ 0       0.2129      0.59  Q  V       |          |          |          |
5+ 5       0.2170      0.60  Q  V       |          |          |          |
5+10       0.2211      0.60  Q  V       |          |          |          |
5+15       0.2252      0.60  Q  V       |          |          |          |
5+20       0.2294      0.60  Q  V       |          |          |          |
5+25       0.2336      0.61  Q  V       |          |          |          |
5+30       0.2378      0.61  Q  V       |          |          |          |
5+35       0.2420      0.61  Q  V       |          |          |          |
5+40       0.2463      0.62  Q  V       |          |          |          |
5+45       0.2505      0.62  Q  V       |          |          |          |
5+50       0.2548      0.62  Q  V       |          |          |          |
5+55       0.2591      0.63  Q   V      |          |          |          |
6+ 0       0.2634      0.63  Q   V      |          |          |          |
6+ 5       0.2678      0.63  Q   V      |          |          |          |
6+10       0.2722      0.64  Q   V      |          |          |          |
6+15       0.2766      0.64  Q   V      |          |          |          |
6+20       0.2810      0.64  Q   V      |          |          |          |
6+25       0.2854      0.65  Q   V      |          |          |          |
6+30       0.2899      0.65  Q   V      |          |          |          |
6+35       0.2944      0.65  Q   V      |          |          |          |
6+40       0.2989      0.66  Q   V      |          |          |          |
6+45       0.3034      0.66  Q   V      |          |          |          |
6+50       0.3080      0.66  Q   V      |          |          |          |
6+55       0.3126      0.67  Q   V      |          |          |          |
7+ 0       0.3172      0.67  Q   V      |          |          |          |
7+ 5       0.3219      0.67  Q    V     |          |          |          |
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 7+10      0.3265      0.68  Q    V    |         |         |         |
 7+15      0.3312      0.68  Q    V    |         |         |         |
 7+20      0.3360      0.69  Q    V    |         |         |         |
 7+25      0.3407      0.69  Q    V    |         |         |         |
 7+30      0.3455      0.69  Q    V    |         |         |         |
 7+35      0.3503      0.70  Q    V    |         |         |         |
 7+40      0.3552      0.70  Q    V    |         |         |         |
 7+45      0.3600      0.71  Q    V    |         |         |         |
 7+50      0.3650      0.71  Q    V    |         |         |         |
 7+55      0.3699      0.72  Q    V    |         |         |         |
 8+ 0      0.3749      0.72  Q    V    |         |         |         |
 8+ 5      0.3798      0.73  Q    V    |         |         |         |
 8+10      0.3849      0.73  Q     V   |         |         |         |
 8+15      0.3899      0.73  Q     V   |         |         |         |
 8+20      0.3950      0.74  Q     V   |         |         |         |
 8+25      0.4002      0.74  Q     V   |         |         |         |
 8+30      0.4053      0.75  |Q    V   |         |         |         |
 8+35      0.4105      0.76  |Q    V   |         |         |         |
 8+40      0.4158      0.76  |Q    V   |         |         |         |
 8+45      0.4211      0.77  |Q    V   |         |         |         |
 8+50      0.4264      0.77  |Q    V   |         |         |         |
 8+55      0.4317      0.78  |Q    V   |         |         |         |
 9+ 0      0.4371      0.78  |Q    V   |         |         |         |
 9+ 5      0.4425      0.79  |Q    V   |         |         |         |
 9+10      0.4480      0.79  |Q     V  |         |         |         |
 9+15      0.4535      0.80  |Q     V  |         |         |         |
 9+20      0.4591      0.81  |Q     V  |         |         |         |
 9+25      0.4647      0.81  |Q     V  |         |         |         |
 9+30      0.4703      0.82  |Q     V  |         |         |         |
 9+35      0.4760      0.82  |Q     V  |         |         |         |
 9+40      0.4817      0.83  |Q     V  |         |         |         |
 9+45      0.4875      0.84  |Q     V  |         |         |         |
 9+50      0.4933      0.85  |Q     V  |         |         |         |
 9+55      0.4992      0.85  |Q     V  |         |         |         |
10+ 0      0.5051      0.86  |Q     V  |         |         |         |
10+ 5      0.5111      0.87  |Q     V  |         |         |         |
10+10      0.5171      0.87  |Q      V |         |         |         |
10+15      0.5232      0.88  |Q      V |         |         |         |
10+20      0.5293      0.89  |Q      V |         |         |         |
10+25      0.5355      0.90  |Q      V |         |         |         |
10+30      0.5417      0.91  |Q      V |         |         |         |
10+35      0.5480      0.91  |Q      V |         |         |         |
10+40      0.5544      0.92  |Q      V |         |         |         |
10+45      0.5608      0.93  |Q      V |         |         |         |
10+50      0.5673      0.94  |Q      V |         |         |         |
10+55      0.5738      0.95  |Q      V |         |         |         |
11+ 0      0.5805      0.96  |Q       V|         |         |         |
11+ 5      0.5871      0.97  |Q       V|         |         |         |
11+10      0.5939      0.98  |Q       V|         |         |         |
11+15      0.6007      0.99  |Q       V|         |         |         |
11+20      0.6076      1.00  |Q       V|         |         |         |
11+25      0.6146      1.01  |Q       V|         |         |         |
11+30      0.6216      1.02  |Q       V|         |         |         |
11+35      0.6287      1.03  |Q       V|         |         |         |
11+40      0.6360      1.05  |Q       V|         |         |         |
11+45      0.6433      1.06  |Q        V         |         |         |
11+50      0.6506      1.07  |Q        V         |         |         |
11+55      0.6581      1.08  |Q        V         |         |         |
12+ 0      0.6657      1.10  |Q        V         |         |         |
12+ 5      0.6736      1.15  |Q        V         |         |         |
12+10      0.6827      1.32  |Q        V         |         |         |
12+15      0.6923      1.39  |Q        V         |         |         |
12+20      0.7022      1.43  |Q        V         |         |         |
12+25      0.7122      1.46  |Q        |V        |         |         |
12+30      0.7224      1.48  |Q        |V        |         |         |
12+35      0.7327      1.50  |Q        |V        |         |         |
12+40      0.7432      1.52  | Q       |V        |         |         |
12+45      0.7538      1.54  | Q       |V        |         |         |
12+50      0.7645      1.56  | Q       |V        |         |         |
12+55      0.7754      1.58  | Q       | V       |         |         |
13+ 0      0.7865      1.60  | Q       | V       |         |         |
```

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13+ 5       0.7976      1.62  | Q       | V       |         |         |
13+10       0.8090      1.65  | Q       | V       |         |         |
13+15       0.8205      1.67  | Q       | V       |         |         |
13+20       0.8322      1.70  | Q       |  V      |         |         |
13+25       0.8441      1.73  | Q       |  V      |         |         |
13+30       0.8562      1.76  | Q       |  V      |         |         |
13+35       0.8685      1.78  | Q       |  V      |         |         |
13+40       0.8810      1.82  | Q       |  V      |         |         |
13+45       0.8937      1.85  | Q       |  V      |         |         |
13+50       0.9067      1.89  | Q       |   V     |         |         |
13+55       0.9199      1.92  | Q       |   V     |         |         |
14+ 0       0.9334      1.96  | Q       |   V     |         |         |
14+ 5       0.9472      2.00  | Q       |   V     |         |         |
14+10       0.9613      2.05  | Q       |    V    |         |         |
14+15       0.9758      2.10  | Q       |    V    |         |         |
14+20       0.9906      2.15  | Q       |    V    |         |         |
14+25       1.0058      2.20  | Q       |    V    |         |         |
14+30       1.0214      2.26  |  Q      |    V    |         |         |
14+35       1.0374      2.32  |  Q      |     V   |         |         |
14+40       1.0538      2.39  |  Q      |     V   |         |         |
14+45       1.0708      2.46  |  Q      |     V   |         |         |
14+50       1.0884      2.55  |  Q      |      V  |         |         |
14+55       1.1065      2.63  |  Q      |      V  |         |         |
15+ 0       1.1254      2.75  |  Q      |      V  |         |         |
15+ 5       1.1451      2.85  |  Q      |      V  |         |         |
15+10       1.1657      3.00  |  Q      |       V |         |         |
15+15       1.1873      3.13  |   Q     |       V |         |         |
15+20       1.2101      3.32  |   Q     |       V |         |         |
15+25       1.2338      3.44  |   Q     |        V|         |         |
15+30       1.2574      3.42  |   Q     |        V|         |         |
15+35       1.2820      3.58  |   Q     |         V         |         |
15+40       1.3091      3.93  |    Q    |         V         |         |
15+45       1.3390      4.34  |    Q    |         V         |         |
15+50       1.3738      5.05  |     Q   |         |V        |         |
15+55       1.4150      5.99  |      Q  |         | V       |         |
16+ 0       1.4704      8.05  |         Q         | V       |         |
16+ 5       1.5631     13.46  |         |      Q  |   V     |         |
16+10       1.7287     24.04  |         |         |      V  | Q       |
16+15       1.8175     12.90  |         |      Q  |       V |         |
16+20       1.8721      7.92  |         Q         |        V|         |
16+25       1.9091      5.37  |       Q |         |        V|         |
16+30       1.9382      4.24  |    Q    |         |         V         |
16+35       1.9636      3.68  |   Q     |         |         V         |
16+40       1.9857      3.22  |   Q     |         |         |V        |
16+45       2.0054      2.86  |  Q      |         |         |V        |
16+50       2.0236      2.64  |  Q      |         |         |V        |
16+55       2.0405      2.46  |  Q      |         |         |V        |
17+ 0       2.0565      2.32  |  Q      |         |         | V       |
17+ 5       2.0717      2.20  | Q       |         |         | V       |
17+10       2.0860      2.09  | Q       |         |         | V       |
17+15       2.0998      2.00  | Q       |         |         | V       |
17+20       2.1130      1.92  | Q       |         |         |  V      |
17+25       2.1257      1.84  | Q       |         |         |  V      |
17+30       2.1379      1.78  | Q       |         |         |  V      |
17+35       2.1498      1.72  | Q       |         |         |  V      |
17+40       2.1613      1.67  | Q       |         |         |  V      |
17+45       2.1724      1.62  | Q       |         |         |  V      |
17+50       2.1833      1.58  | Q       |         |         |   V     |
17+55       2.1939      1.54  | Q       |         |         |   V     |
18+ 0       2.2042      1.50  |Q        |         |         |   V     |
18+ 5       2.2140      1.43  |Q        |         |         |   V     |
18+10       2.2225      1.23  |Q        |         |         |   V     |
18+15       2.2304      1.15  |Q        |         |         |   V     |
18+20       2.2380      1.10  |Q        |         |         |   V     |
18+25       2.2453      1.06  |Q        |         |         |    V    |
18+30       2.2524      1.04  |Q        |         |         |    V    |
18+35       2.2594      1.01  |Q        |         |         |    V    |
18+40       2.2662      0.99  |Q        |         |         |    V    |
18+45       2.2728      0.97  |Q        |         |         |    V    |
18+50       2.2794      0.95  |Q        |         |         |    V    |
18+55       2.2858      0.93  |Q        |         |         |    V    |
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  19+ 0       2.2921      0.91  |Q        |         |         |    V    |
  19+ 5       2.2982      0.90  |Q        |         |         |    V    |
  19+10       2.3043      0.88  |Q        |         |         |     V   |
  19+15       2.3103      0.87  |Q        |         |         |     V   |
  19+20       2.3161      0.85  |Q        |         |         |     V   |
  19+25       2.3219      0.84  |Q        |         |         |     V   |
  19+30       2.3276      0.82  |Q        |         |         |     V   |
  19+35       2.3332      0.81  |Q        |         |         |     V   |
  19+40       2.3387      0.80  |Q        |         |         |     V   |
  19+45       2.3441      0.79  |Q        |         |         |     V   |
  19+50       2.3494      0.78  |Q        |         |         |     V   |
  19+55       2.3547      0.76  |Q        |         |         |     V   |
  20+ 0       2.3599      0.75  |Q        |         |         |     V   |
  20+ 5       2.3650      0.74  Q         |         |         |     V   |
  20+10       2.3701      0.73  Q         |         |         |      V  |
  20+15       2.3750      0.72  Q         |         |         |      V  |
  20+20       2.3800      0.72  Q         |         |         |      V  |
  20+25       2.3848      0.71  Q         |         |         |      V  |
  20+30       2.3896      0.70  Q         |         |         |      V  |
  20+35       2.3944      0.69  Q         |         |         |      V  |
  20+40       2.3991      0.68  Q         |         |         |      V  |
  20+45       2.4037      0.67  Q         |         |         |      V  |
  20+50       2.4083      0.67  Q         |         |         |      V  |
  20+55       2.4128      0.66  Q         |         |         |      V  |
  21+ 0       2.4173      0.65  Q         |         |         |      V  |
  21+ 5       2.4218      0.64  Q         |         |         |      V  |
  21+10       2.4262      0.64  Q         |         |         |      V  |
  21+15       2.4305      0.63  Q         |         |         |      V  |
  21+20       2.4348      0.62  Q         |         |         |       V |
  21+25       2.4391      0.62  Q         |         |         |       V |
  21+30       2.4433      0.61  Q         |         |         |       V |
  21+35       2.4475      0.61  Q         |         |         |       V |
  21+40       2.4516      0.60  Q         |         |         |       V |
  21+45       2.4557      0.59  Q         |         |         |       V |
  21+50       2.4598      0.59  Q         |         |         |       V |
  21+55       2.4638      0.58  Q         |         |         |       V |
  22+ 0       2.4678      0.58  Q         |         |         |       V |
  22+ 5       2.4717      0.57  Q         |         |         |       V |
  22+10       2.4756      0.57  Q         |         |         |       V |
  22+15       2.4795      0.56  Q         |         |         |       V |
  22+20       2.4834      0.56  Q         |         |         |       V |
  22+25       2.4872      0.55  Q         |         |         |       V |
  22+30       2.4910      0.55  Q         |         |         |       V |
  22+35       2.4947      0.54  Q         |         |         |       V |
  22+40       2.4984      0.54  Q         |         |         |        V|
  22+45       2.5021      0.54  Q         |         |         |        V|
  22+50       2.5058      0.53  Q         |         |         |        V|
  22+55       2.5094      0.53  Q         |         |         |        V|
  23+ 0       2.5130      0.52  Q         |         |         |        V|
  23+ 5       2.5166      0.52  Q         |         |         |        V|
  23+10       2.5202      0.52  Q         |         |         |        V|
  23+15       2.5237      0.51  Q         |         |         |        V|
  23+20       2.5272      0.51  Q         |         |         |        V|
  23+25       2.5307      0.50  Q         |         |         |        V|
  23+30       2.5341      0.50  Q         |         |         |        V|
  23+35       2.5375      0.50  Q         |         |         |        V|
  23+40       2.5409      0.49  Q         |         |         |        V|
  23+45       2.5443      0.49  Q         |         |         |        V|
  23+50       2.5477      0.49  Q         |         |         |        V|
  23+55       2.5510      0.48  Q         |         |         |        V|
  24+ 0       2.5543      0.48  Q         |         |         |        V|
  24+ 5       2.5572      0.42  Q         |         |         |        V|
  24+10       2.5583      0.16  Q         |         |         |        V|
  24+15       2.5587      0.06  Q         |         |         |        V|
  24+20       2.5589      0.02  Q         |         |         |        V|
  24+25       2.5589      0.01  Q         |         |         |        V|
  24+30       2.5590      0.00  Q         |         |         |        V|
  24+35       2.5590      0.00  Q         |         |         |         V
----------------------------------------------------------------------
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Area 'F' Calculations

- 2 Year Pre-Development Rational Method – Area 'F'

```
                    Orange County Rational Hydrology Program

                (Hydrology Manual Date(s) October 1986 & November 1996)

 CIVILCADD/CIVILDESIGN  Engineering Software, (c) 1989-2012 Version 8.2
       Rational Hydrology Study, Date: 10/12/16  File Name: exf002.roc
--------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION RATIONAL METHOD - AREA 'F' - 2 YEAR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
--------------------------------------------------------------------------


Program License Serial Number 4094

--------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

--------------------------------------------------------------------------

Rational hydrology study storm event year is     2.0

Decimal fraction of study above 2000 ft., 600M  =     0.0000
English Units Used for input data


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      601.000 to Point/Station      602.000
**** INITIAL AREA EVALUATION ****
__________________________________________________________________________
SCS curve number for soil(AMC 2)  = 74.40
Pervious ratio(Ap) = 0.1000  Max loss rate(Fp)=     0.205(In/Hr)
Max Catchment Loss (Fm) =     0.021(In/Hr)
Initial subarea data:
Initial area flow distance =   255.000(Ft.)
Top (of initial area) elevation =   310.000(Ft.)
Bottom (of initial area) elevation =   301.000(Ft.)
Difference in elevation =     9.000(Ft.)
Slope =    0.03529  s(%)=       3.53
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.444 min.
Rainfall intensity =      2.156(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.891
Subarea runoff =      3.228(CFS)
Total initial stream area =        1.680(Ac.)
End of computations, total study area =            1.68 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged SCS curve number (AMC 2) =  74.4
```

- 5 Year Pre-Development Rational Method – Area 'F'

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                    Orange County Rational Hydrology Program

                (Hydrology Manual Date(s) October 1986 & November 1996)

 CIVILCADD/CIVILDESIGN  Engineering Software, (c) 1989-2012 Version 8.2
       Rational Hydrology Study, Date: 10/12/16  File Name: EXF005.roc
---------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION RATIONAL METHOD - AREA 'F' - 5 YEAR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
---------------------------------------------------------------------------


Program License Serial Number 4094

---------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

---------------------------------------------------------------------------

Rational hydrology study storm event year is     5.0

Decimal fraction of study above 2000 ft., 600M  =     0.0000
English Units Used for input data


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      601.000 to Point/Station      602.000
**** INITIAL AREA EVALUATION ****
___________________________________________________________________________
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.100
Decimal fraction soil group D = 0.900
SCS curve number for soil(AMC 2)  = 74.40
Pervious ratio(Ap) = 0.1000  Max loss rate(Fp)=     0.205(In/Hr)
Max Catchment Loss (Fm) =     0.021(In/Hr)
Initial subarea data:
Initial area flow distance =   255.000(Ft.)
Top (of initial area) elevation =   310.000(Ft.)
Bottom (of initial area) elevation =   301.000(Ft.)
Difference in elevation =     9.000(Ft.)
Slope =    0.03529  s(%)=       3.53
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.444 min.
Rainfall intensity =      3.036(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.894
Subarea runoff =      4.560(CFS)
Total initial stream area =        1.680(Ac.)
End of computations, total study area =            1.68 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged SCS curve number (AMC 2) =  74.4
```

- 25 Year Pre-Development Rational Method – Area 'F'

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                    Orange County Rational Hydrology Program

                (Hydrology Manual Date(s) October 1986 & November 1996)

 CIVILCADD/CIVILDESIGN  Engineering Software, (c) 1989-2012 Version 8.2
       Rational Hydrology Study, Date: 10/12/16  File Name: EXF025.roc
---------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION RATIONAL METHOD - AREA 'F' - 25 YEAR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
---------------------------------------------------------------------------


Program License Serial Number 4094

---------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

---------------------------------------------------------------------------

Rational hydrology study storm event year is    25.0

Decimal fraction of study above 2000 ft., 600M  =     0.0000
English Units Used for input data


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      601.000 to Point/Station      602.000
**** INITIAL AREA EVALUATION ****
___________________________________________________________________________
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.100
Decimal fraction soil group D = 0.900
SCS curve number for soil(AMC 2)  = 74.40
Pervious ratio(Ap) = 0.1000  Max loss rate(Fp)=     0.205(In/Hr)
Max Catchment Loss (Fm) =     0.021(In/Hr)
Initial subarea data:
Initial area flow distance =   255.000(Ft.)
Top (of initial area) elevation =   310.000(Ft.)
Bottom (of initial area) elevation =   301.000(Ft.)
Difference in elevation =     9.000(Ft.)
Slope =    0.03529  s(%)=       3.53
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.444 min.
Rainfall intensity =      4.597(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.896
Subarea runoff =      6.919(CFS)
Total initial stream area =        1.680(Ac.)
End of computations, total study area =            1.68 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged SCS curve number (AMC 2) =  74.4
```

- 100 Year Pre-Development Rational Method – Area 'F'

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                    Orange County Rational Hydrology Program

                (Hydrology Manual Date(s) October 1986 & November 1996)

 CIVILCADD/CIVILDESIGN  Engineering Software, (c) 1989-2012 Version 8.2
       Rational Hydrology Study, Date: 10/12/16  File Name: EXF100.roc
---------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
EXISTING CONDITION RATIONAL METHOD - AREA 'F' - 100 YEAR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
---------------------------------------------------------------------------


Program License Serial Number 4094

---------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

---------------------------------------------------------------------------

Rational hydrology study storm event year is   100.0

Decimal fraction of study above 2000 ft., 600M  =     0.0000
English Units Used for input data


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      601.000 to Point/Station      602.000
**** INITIAL AREA EVALUATION ****
___________________________________________________________________________
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.100
Decimal fraction soil group D = 0.900
SCS curve number for soil(AMC 2)  = 74.40
Pervious ratio(Ap) = 0.1000  Max loss rate(Fp)=     0.205(In/Hr)
Max Catchment Loss (Fm) =     0.021(In/Hr)
Initial subarea data:
Initial area flow distance =   255.000(Ft.)
Top (of initial area) elevation =   310.000(Ft.)
Bottom (of initial area) elevation =   301.000(Ft.)
Difference in elevation =     9.000(Ft.)
Slope =    0.03529  s(%)=       3.53
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.444 min.
Rainfall intensity =      5.893(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.897
Subarea runoff =      8.879(CFS)
Total initial stream area =        1.680(Ac.)
End of computations, total study area =            1.68 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged SCS curve number (AMC 2) =  74.4
```

- 2 Year Post-Development Rational Method – Area 'F'

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                    Orange County Rational Hydrology Program

                (Hydrology Manual Date(s) October 1986 & November 1996)

 CIVILCADD/CIVILDESIGN  Engineering Software, (c) 1989-2012 Version 8.2
       Rational Hydrology Study, Date: 10/13/16  File Name: PRF002.roc
---------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION RATIONAL METHOD - AREA 'F' - 2 YEAR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
---------------------------------------------------------------------------


Program License Serial Number 4094

---------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

---------------------------------------------------------------------------

Rational hydrology study storm event year is     2.0

Decimal fraction of study above 2000 ft., 600M  =     0.0000
English Units Used for input data


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      601.000 to Point/Station      602.000
**** INITIAL AREA EVALUATION ****
____________________________________________________________________________
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.100
Decimal fraction soil group D = 0.900
SCS curve number for soil(AMC 2)  = 74.40
Pervious ratio(Ap) = 0.1000  Max loss rate(Fp)=     0.205(In/Hr)
Max Catchment Loss (Fm) =     0.021(In/Hr)
Initial subarea data:
Initial area flow distance =   255.000(Ft.)
Top (of initial area) elevation =   310.000(Ft.)
Bottom (of initial area) elevation =   301.000(Ft.)
Difference in elevation =     9.000(Ft.)
Slope =    0.03529  s(%)=       3.53
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.444 min.
Rainfall intensity =      2.156(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.891
Subarea runoff =      3.228(CFS)
Total initial stream area =        1.680(Ac.)
End of computations, total study area =            1.68 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged SCS curve number (AMC 2) =  74.4
```

- 5 Year Post-Development Rational Method – Area 'F'

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                  Orange County Rational Hydrology Program

               (Hydrology Manual Date(s) October 1986 & November 1996)

 CIVILCADD/CIVILDESIGN  Engineering Software, (c) 1989-2012 Version 8.2
       Rational Hydrology Study, Date: 10/13/16  File Name: PRF005.roc
--------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION RATIONAL METHOD - AREA 'F' - 5 YEAR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
--------------------------------------------------------------------------


Program License Serial Number 4094

--------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

--------------------------------------------------------------------------

Rational hydrology study storm event year is     5.0

Decimal fraction of study above 2000 ft., 600M  =     0.0000
English Units Used for input data


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      601.000 to Point/Station      602.000
**** INITIAL AREA EVALUATION ****
__________________________________________________________________________
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.100
Decimal fraction soil group D = 0.900
SCS curve number for soil(AMC 2)  = 74.40
Pervious ratio(Ap) = 0.1000  Max loss rate(Fp)=     0.205(In/Hr)
Max Catchment Loss (Fm) =     0.021(In/Hr)
Initial subarea data:
Initial area flow distance =   255.000(Ft.)
Top (of initial area) elevation =   310.000(Ft.)
Bottom (of initial area) elevation =   301.000(Ft.)
Difference in elevation =     9.000(Ft.)
Slope =    0.03529  s(%)=       3.53
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.444 min.
Rainfall intensity =      3.036(In/Hr) for a     5.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.894
Subarea runoff =      4.560(CFS)
Total initial stream area =        1.680(Ac.)
End of computations, total study area =            1.68 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged SCS curve number (AMC 2) =  74.4
```

- 25 Year Post-Development Rational Method – Area 'F'

```
                    Orange County Rational Hydrology Program

                (Hydrology Manual Date(s) October 1986 & November 1996)

 CIVILCADD/CIVILDESIGN  Engineering Software, (c) 1989-2012 Version 8.2
       Rational Hydrology Study, Date: 10/13/16  File Name: PRF025.roc
---------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION RATIONAL METHOD - AREA 'F' - 25 YEAR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
---------------------------------------------------------------------------


Program License Serial Number 4094

---------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

---------------------------------------------------------------------------

Rational hydrology study storm event year is    25.0

Decimal fraction of study above 2000 ft., 600M  =     0.0000
English Units Used for input data


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      601.000 to Point/Station      602.000
**** INITIAL AREA EVALUATION ****
___________________________________________________________________________
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.100
Decimal fraction soil group D = 0.900
SCS curve number for soil(AMC 2)  = 74.40
Pervious ratio(Ap) = 0.1000  Max loss rate(Fp)=     0.205(In/Hr)
Max Catchment Loss (Fm) =     0.021(In/Hr)
Initial subarea data:
Initial area flow distance =   255.000(Ft.)
Top (of initial area) elevation =   310.000(Ft.)
Bottom (of initial area) elevation =   301.000(Ft.)
Difference in elevation =     9.000(Ft.)
Slope =    0.03529  s(%)=       3.53
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.444 min.
Rainfall intensity =      4.597(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.896
Subarea runoff =      6.919(CFS)
Total initial stream area =        1.680(Ac.)
End of computations, total study area =            1.68 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged SCS curve number (AMC 2) =  74.4
```

- 100 Year Post-Development Rational Method – Area 'F'

```
                  Orange County Rational Hydrology Program

               (Hydrology Manual Date(s) October 1986 & November 1996)

 CIVILCADD/CIVILDESIGN  Engineering Software, (c) 1989-2012 Version 8.2
       Rational Hydrology Study, Date: 10/13/16  File Name: PRF100.roc
--------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION RATIONAL METHOD - AREA 'F' - 100 YEAR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
--------------------------------------------------------------------------


Program License Serial Number 4094

--------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

--------------------------------------------------------------------------

Rational hydrology study storm event year is   100.0

Decimal fraction of study above 2000 ft., 600M  =     0.0000
English Units Used for input data


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      601.000 to Point/Station      602.000
**** INITIAL AREA EVALUATION ****
__________________________________________________________________________
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.100
Decimal fraction soil group D = 0.900
SCS curve number for soil(AMC 2)  = 74.40
Pervious ratio(Ap) = 0.1000  Max loss rate(Fp)=     0.205(In/Hr)
Max Catchment Loss (Fm) =     0.021(In/Hr)
Initial subarea data:
Initial area flow distance =   255.000(Ft.)
Top (of initial area) elevation =   310.000(Ft.)
Bottom (of initial area) elevation =   301.000(Ft.)
Difference in elevation =     9.000(Ft.)
Slope =    0.03529  s(%)=       3.53
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.444 min.
Rainfall intensity =      5.893(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.897
Subarea runoff =      8.879(CFS)
Total initial stream area =        1.680(Ac.)
End of computations, total study area =            1.68 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged SCS curve number (AMC 2) =  74.4
```

- 2 Year 3 Hour Pre-Development Unit Hydrograph – Area 'F'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/13/16   File Name EXF00203.out


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
WESTRIDGE HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'F' - 2 YEAR 3 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 2

       Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 74.4       1.7          1.00     D     0.200     0.100    0.020

Area-averaged adjusted loss rate Fm (In/Hr) =  0.020

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
     0.17   0.100         74.4      56.3       7.77     0.015
     1.51   0.900         98.0      98.0       0.20     0.890

Area-averaged catchment yield fraction, Y =  0.802
Area-averaged low loss fraction, Yb =  0.198
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.091 (hours)
Watershed area =       1.68(Ac.)
Catchment Lag time =   0.073 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 114.8475
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.020(In/Hr)
Average low loss rate fraction (Yb) = 0.198 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.190(In)
Computed peak 30-minute rainfall =  0.400(In)
Specified peak 1-hour rainfall =  0.530(In)
Computed peak 3-hour rainfall =  0.890(In)
Specified peak 6-hour rainfall =  1.220(In)
Specified peak 24-hour rainfall =  2.050(In)


Rainfall depth area reduction factors:
Using a total area of       1.68(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000     Adjusted rainfall =  0.190(In)
```

```
30-minute factor = 1.000    Adjusted rainfall =  0.400(In)
1-hour factor = 1.000       Adjusted rainfall =  0.530(In)
3-hour factor = 1.000       Adjusted rainfall =  0.890(In)
6-hour factor = 1.000       Adjusted rainfall =  1.220(In)
24-hour factor = 1.000 Adjusted rainfall =  2.050(In)
--------------------------------------------------------------------

                     U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------
               (K =        20.32 (CFS))

  1               19.656                   3.994
  2               75.825                  11.412
  3               92.019                   3.290
  4               97.659                   1.146
  5               99.077                   0.288
  6               99.802                   0.147
  7              100.000                   0.040
--------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.1900               0.1900
  2              0.2534               0.0634
  3              0.2999               0.0465
  4              0.3380               0.0381
  5              0.3708               0.0328
  6              0.4000               0.0292
  7              0.4258               0.0258
  8              0.4495               0.0237
  9              0.4715               0.0220
 10              0.4921               0.0206
 11              0.5116               0.0194
 12              0.5300               0.0184
 13              0.5504               0.0204
 14              0.5699               0.0196
 15              0.5888               0.0189
 16              0.6070               0.0182
 17              0.6246               0.0176
 18              0.6417               0.0171
 19              0.6583               0.0166
 20              0.6744               0.0161
 21              0.6901               0.0157
 22              0.7054               0.0153
 23              0.7204               0.0150
 24              0.7350               0.0146
 25              0.7493               0.0143
 26              0.7633               0.0140
 27              0.7770               0.0137
 28              0.7905               0.0134
 29              0.8037               0.0132
 30              0.8166               0.0130
 31              0.8294               0.0127
 32              0.8419               0.0125
 33              0.8542               0.0123
 34              0.8663               0.0121
 35              0.8782               0.0119
 36              0.8900               0.0118
--------------------------------------------------------------------
Unit              Unit             Unit             Effective
Period            Rainfall         Soil-Loss        Rainfall
(number)            (In)           (In)               (In)
--------------------------------------------------------------------
  1              0.0118           0.0017             0.0101
  2              0.0119           0.0017             0.0103
  3              0.0123           0.0017             0.0106
  4              0.0125           0.0017             0.0109
  5              0.0130           0.0017             0.0113
  6              0.0132           0.0017             0.0115
```

7	0.0137	0.0017	0.0120
8	0.0140	0.0017	0.0123
9	0.0146	0.0017	0.0129
10	0.0150	0.0017	0.0133
11	0.0157	0.0017	0.0140
12	0.0161	0.0017	0.0145
13	0.0171	0.0017	0.0154
14	0.0176	0.0017	0.0159
15	0.0189	0.0017	0.0172
16	0.0196	0.0017	0.0179
17	0.0184	0.0017	0.0167
18	0.0194	0.0017	0.0178
19	0.0220	0.0017	0.0204
20	0.0237	0.0017	0.0221
21	0.0292	0.0017	0.0275
22	0.0328	0.0017	0.0312
23	0.0465	0.0017	0.0448
24	0.0634	0.0017	0.0617
25	0.1900	0.0017	0.1883
26	0.0381	0.0017	0.0364
27	0.0258	0.0017	0.0242
28	0.0206	0.0017	0.0189
29	0.0204	0.0017	0.0187
30	0.0182	0.0017	0.0165
31	0.0166	0.0017	0.0149
32	0.0153	0.0017	0.0137
33	0.0143	0.0017	0.0126
34	0.0134	0.0017	0.0118
35	0.0127	0.0017	0.0111
36	0.0121	0.0017	0.0105

Total soil rain loss = 0.06(In)
Total effective rainfall = 0.83(In)
Peak flow rate in flood hydrograph = 2.56(CFS)

++

3 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0 2.5 5.0 7.5 10.0
0+ 5	0.0003	0.04	Q | | | |
0+10	0.0014	0.16	Q | | | |
0+15	0.0027	0.19	Q | | | |
0+20	0.0041	0.21	QV | | | |
0+25	0.0056	0.22	QV | | | |
0+30	0.0072	0.23	Q V | | | |
0+35	0.0088	0.23	Q V | | | |
0+40	0.0105	0.24	Q V | | | |
0+45	0.0122	0.25	|Q V | | | |
0+50	0.0140	0.26	|Q V | | | |
0+55	0.0159	0.27	|Q V | | | |
1+ 0	0.0178	0.28	|Q V | | | |
1+ 5	0.0198	0.29	|Q V | | | |
1+10	0.0220	0.31	|Q V | | | |
1+15	0.0242	0.32	|Q V | | | |
1+20	0.0266	0.34	|Q V| | | |
1+25	0.0290	0.35	|Q V| | | |
1+30	0.0314	0.35	|Q V | | |
1+35	0.0339	0.37	|Q |V | | |
1+40	0.0367	0.41	|Q | V | | |
1+45	0.0399	0.46	|Q | V | | |
1+50	0.0436	0.54	| Q | V | | |
1+55	0.0482	0.66	| Q | V | | |
2+ 0	0.0544	0.90	| Q | V | |
2+ 5	0.0657	1.65	| Q | | V | |
2+10	0.0834	2.56	| Q | | V |

```
    2+15       0.0918      1.22  |   Q     |         |         |V        |
    2+20       0.0967      0.71  | Q       |         |         |  V      |
    2+25       0.1000      0.48  |Q        |         |         |   V     |
    2+30       0.1028      0.41  |Q        |         |         |    V    |
    2+35       0.1053      0.35  |Q        |         |         |     V   |
    2+40       0.1074      0.31  |Q        |         |         |     V   |
    2+45       0.1093      0.28  |Q        |         |         |      V  |
    2+50       0.1111      0.26  |Q        |         |         |       V |
    2+55       0.1128      0.24  Q         |         |         |       V |
    3+ 0       0.1144      0.23  Q         |         |         |        V|
    3+ 5       0.1156      0.18  Q         |         |         |        V|
    3+10       0.1160      0.05  Q         |         |         |        V|
    3+15       0.1161      0.02  Q         |         |         |        V|
    3+20       0.1161      0.01  Q         |         |         |        V|
    3+25       0.1161      0.00  Q         |         |         |        V|
    3+30       0.1161      0.00  Q         |         |         |         V
-------------------------------------------------------------------------
```

- 2 Year 6 Hour Pre-Development Unit Hydrograph – Area 'F'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/13/16   File Name EXF00206.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
WESTRIDGE HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'F' - 2 YEAR 6 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 2

       Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 74.4       1.7          1.00     D     0.200     0.100    0.020

Area-averaged adjusted loss rate Fm (In/Hr) =  0.020

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
     0.17   0.100         74.4      56.3       7.77     0.015
     1.51   0.900         98.0      98.0       0.20     0.890

Area-averaged catchment yield fraction, Y =  0.802
Area-averaged low loss fraction, Yb =  0.198
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.091 (hours)
Watershed area =       1.68(Ac.)
Catchment Lag time =   0.073 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 114.8475
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.020(In/Hr)
Average low loss rate fraction (Yb) = 0.198 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.190(In)
Computed peak 30-minute rainfall =  0.400(In)
Specified peak 1-hour rainfall =  0.530(In)
Computed peak 3-hour rainfall =  0.890(In)
Specified peak 6-hour rainfall =  1.220(In)
Specified peak 24-hour rainfall =  2.050(In)


Rainfall depth area reduction factors:
Using a total area of       1.68(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000     Adjusted rainfall =  0.190(In)
```

```
30-minute factor = 1.000    Adjusted rainfall =  0.400(In)
1-hour factor = 1.000       Adjusted rainfall =  0.530(In)
3-hour factor = 1.000       Adjusted rainfall =  0.890(In)
6-hour factor = 1.000       Adjusted rainfall =  1.220(In)
24-hour factor = 1.000 Adjusted rainfall =  2.050(In)
------------------------------------------------------------------------

                      U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
------------------------------------------------------------------------
               (K =        20.32 (CFS))

  1               19.656                   3.994
  2               75.825                  11.412
  3               92.019                   3.290
  4               97.659                   1.146
  5               99.077                   0.288
  6               99.802                   0.147
  7              100.000                   0.040
------------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.1900               0.1900
  2              0.2534               0.0634
  3              0.2999               0.0465
  4              0.3380               0.0381
  5              0.3708               0.0328
  6              0.4000               0.0292
  7              0.4258               0.0258
  8              0.4495               0.0237
  9              0.4715               0.0220
 10              0.4921               0.0206
 11              0.5116               0.0194
 12              0.5300               0.0184
 13              0.5504               0.0204
 14              0.5699               0.0196
 15              0.5888               0.0189
 16              0.6070               0.0182
 17              0.6246               0.0176
 18              0.6417               0.0171
 19              0.6583               0.0166
 20              0.6744               0.0161
 21              0.6901               0.0157
 22              0.7054               0.0153
 23              0.7204               0.0150
 24              0.7350               0.0146
 25              0.7493               0.0143
 26              0.7633               0.0140
 27              0.7770               0.0137
 28              0.7905               0.0134
 29              0.8037               0.0132
 30              0.8166               0.0130
 31              0.8294               0.0127
 32              0.8419               0.0125
 33              0.8542               0.0123
 34              0.8663               0.0121
 35              0.8782               0.0119
 36              0.8900               0.0118
 37              0.9012               0.0112
 38              0.9122               0.0110
 39              0.9230               0.0108
 40              0.9337               0.0107
 41              0.9442               0.0105
 42              0.9547               0.0104
 43              0.9649               0.0103
 44              0.9751               0.0101
 45              0.9851               0.0100
 46              0.9950               0.0099
 47              1.0048               0.0098
```

48	1.0145	0.0097
49	1.0240	0.0096
50	1.0335	0.0095
51	1.0428	0.0094
52	1.0521	0.0093
53	1.0612	0.0092
54	1.0703	0.0091
55	1.0793	0.0090
56	1.0882	0.0089
57	1.0970	0.0088
58	1.1057	0.0087
59	1.1143	0.0086
60	1.1229	0.0086
61	1.1313	0.0085
62	1.1397	0.0084
63	1.1481	0.0083
64	1.1563	0.0083
65	1.1645	0.0082
66	1.1726	0.0081
67	1.1807	0.0081
68	1.1887	0.0080
69	1.1966	0.0079
70	1.2045	0.0079
71	1.2123	0.0078
72	1.2200	0.0077

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0077	0.0015	0.0062
2	0.0078	0.0015	0.0063
3	0.0079	0.0016	0.0064
4	0.0080	0.0016	0.0064
5	0.0081	0.0016	0.0065
6	0.0082	0.0016	0.0066
7	0.0083	0.0016	0.0067
8	0.0084	0.0017	0.0067
9	0.0086	0.0017	0.0069
10	0.0086	0.0017	0.0070
11	0.0088	0.0017	0.0071
12	0.0089	0.0017	0.0072
13	0.0091	0.0017	0.0074
14	0.0092	0.0017	0.0075
15	0.0094	0.0017	0.0077
16	0.0095	0.0017	0.0078
17	0.0097	0.0017	0.0080
18	0.0098	0.0017	0.0081
19	0.0100	0.0017	0.0084
20	0.0101	0.0017	0.0085
21	0.0104	0.0017	0.0087
22	0.0105	0.0017	0.0089
23	0.0108	0.0017	0.0092
24	0.0110	0.0017	0.0093
25	0.0118	0.0017	0.0101
26	0.0119	0.0017	0.0103
27	0.0123	0.0017	0.0106
28	0.0125	0.0017	0.0109
29	0.0130	0.0017	0.0113
30	0.0132	0.0017	0.0115
31	0.0137	0.0017	0.0120
32	0.0140	0.0017	0.0123
33	0.0146	0.0017	0.0129
34	0.0150	0.0017	0.0133
35	0.0157	0.0017	0.0140
36	0.0161	0.0017	0.0145
37	0.0171	0.0017	0.0154
38	0.0176	0.0017	0.0159
39	0.0189	0.0017	0.0172
40	0.0196	0.0017	0.0179
41	0.0184	0.0017	0.0167

```
       42              0.0194          0.0017              0.0178
       43              0.0220          0.0017              0.0204
       44              0.0237          0.0017              0.0221
       45              0.0292          0.0017              0.0275
       46              0.0328          0.0017              0.0312
       47              0.0465          0.0017              0.0448
       48              0.0634          0.0017              0.0617
       49              0.1900          0.0017              0.1883
       50              0.0381          0.0017              0.0364
       51              0.0258          0.0017              0.0242
       52              0.0206          0.0017              0.0189
       53              0.0204          0.0017              0.0187
       54              0.0182          0.0017              0.0165
       55              0.0166          0.0017              0.0149
       56              0.0153          0.0017              0.0137
       57              0.0143          0.0017              0.0126
       58              0.0134          0.0017              0.0118
       59              0.0127          0.0017              0.0111
       60              0.0121          0.0017              0.0105
       61              0.0112          0.0017              0.0095
       62              0.0107          0.0017              0.0090
       63              0.0103          0.0017              0.0086
       64              0.0099          0.0017              0.0082
       65              0.0096          0.0017              0.0079
       66              0.0093          0.0017              0.0076
       67              0.0090          0.0017              0.0073
       68              0.0087          0.0017              0.0070
       69              0.0085          0.0017              0.0068
       70              0.0083          0.0016              0.0066
       71              0.0081          0.0016              0.0065
       72              0.0079          0.0016              0.0063
      ---------------------------------------------------------------------
      ---------------------------------------------------------------------
      Total soil rain loss =      0.12(In)
      Total effective rainfall =      1.10(In)
      Peak flow rate in flood hydrograph =      2.56(CFS)
      ---------------------------------------------------------------------
      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                        6 - H O U R    S T O R M
                   R u n o f f      H y d r o g r a p h
      ---------------------------------------------------------------------
                Hydrograph in   5   Minute intervals ((CFS))

      ---------------------------------------------------------------------
 Time(h+m) Volume Ac.Ft   Q(CFS)  0        2.5       5.0       7.5      10.0
 ---------------------------------------------------------------------------
   0+ 5       0.0002      0.02  Q         |         |         |         |
   0+10       0.0008      0.10  Q         |         |         |         |
   0+15       0.0016      0.12  Q         |         |         |         |
   0+20       0.0025      0.13  Q         |         |         |         |
   0+25       0.0034      0.13  Q         |         |         |         |
   0+30       0.0043      0.13  QV        |         |         |         |
   0+35       0.0052      0.13  QV        |         |         |         |
   0+40       0.0061      0.14  QV        |         |         |         |
   0+45       0.0071      0.14  QV        |         |         |         |
   0+50       0.0081      0.14  Q V       |         |         |         |
   0+55       0.0090      0.14  Q V       |         |         |         |
   1+ 0       0.0100      0.14  Q V       |         |         |         |
   1+ 5       0.0110      0.15  Q V       |         |         |         |
   1+10       0.0121      0.15  Q  V      |         |         |         |
   1+15       0.0131      0.15  Q  V      |         |         |         |
   1+20       0.0142      0.16  Q  V      |         |         |         |
   1+25       0.0153      0.16  Q  V      |         |         |         |
   1+30       0.0164      0.16  Q   V     |         |         |         |
   1+35       0.0175      0.16  Q   V     |         |         |         |
   1+40       0.0187      0.17  Q   V     |         |         |         |
   1+45       0.0199      0.17  Q    V    |         |         |         |
   1+50       0.0211      0.18  Q    V    |         |         |         |
   1+55       0.0223      0.18  Q    V    |         |         |         |
   2+ 0       0.0236      0.19  Q     V   |         |         |         |
   2+ 5       0.0249      0.19  Q     V   |         |         |         |
```

```
   2+10       0.0263      0.20  Q     V   |         |          |         |
   2+15       0.0277      0.21  Q      V  |         |          |         |
   2+20       0.0292      0.21  Q      V  |         |          |         |
   2+25       0.0307      0.22  Q      V  |         |          |         |
   2+30       0.0323      0.23  Q       V |         |          |         |
   2+35       0.0339      0.23  Q       V |         |          |         |
   2+40       0.0356      0.24  Q        V|         |          |         |
   2+45       0.0373      0.25  |Q       V|         |          |         |
   2+50       0.0391      0.26  |Q        V         |          |         |
   2+55       0.0410      0.27  |Q        V         |          |         |
   3+ 0       0.0429      0.28  |Q        |V        |          |         |
   3+ 5       0.0449      0.29  |Q        |V        |          |         |
   3+10       0.0471      0.31  |Q        | V       |          |         |
   3+15       0.0493      0.32  |Q        | V       |          |         |
   3+20       0.0517      0.34  |Q        |  V      |          |         |
   3+25       0.0541      0.35  |Q        |   V     |          |         |
   3+30       0.0565      0.35  |Q        |   V     |          |         |
   3+35       0.0590      0.37  |Q        |    V    |          |         |
   3+40       0.0618      0.41  |Q        |     V   |          |         |
   3+45       0.0650      0.46  |Q        |     V   |          |         |
   3+50       0.0687      0.54  | Q       |      V  |          |         |
   3+55       0.0733      0.66  | Q       |        V|          |         |
   4+ 0       0.0795      0.90  |  Q      |         V          |         |
   4+ 5       0.0909      1.65  |     Q   |          |  V      |         |
   4+10       0.1085      2.56  |         Q          |      V  |         |
   4+15       0.1169      1.22  |   Q     |          |        V|         |
   4+20       0.1218      0.71  | Q       |          |         |V        |
   4+25       0.1251      0.48  |Q        |          |         | V       |
   4+30       0.1279      0.41  |Q        |          |         |  V      |
   4+35       0.1304      0.35  |Q        |          |         |  V      |
   4+40       0.1325      0.31  |Q        |          |         |   V     |
   4+45       0.1344      0.28  |Q        |          |         |   V     |
   4+50       0.1363      0.26  |Q        |          |         |    V    |
   4+55       0.1379      0.24  Q         |          |         |    V    |
   5+ 0       0.1395      0.23  Q         |          |         |     V   |
   5+ 5       0.1410      0.21  Q         |          |         |     V   |
   5+10       0.1423      0.20  Q         |          |         |     V   |
   5+15       0.1436      0.19  Q         |          |         |      V  |
   5+20       0.1448      0.18  Q         |          |         |      V  |
   5+25       0.1460      0.17  Q         |          |         |      V  |
   5+30       0.1471      0.16  Q         |          |         |       V |
   5+35       0.1482      0.16  Q         |          |         |       V |
   5+40       0.1492      0.15  Q         |          |         |       V |
   5+45       0.1502      0.14  Q         |          |         |        V|
   5+50       0.1512      0.14  Q         |          |         |        V|
   5+55       0.1521      0.14  Q         |          |         |        V|
   6+ 0       0.1530      0.13  Q         |          |         |        V|
   6+ 5       0.1537      0.10  Q         |          |         |        V|
   6+10       0.1539      0.03  Q         |          |         |        V|
   6+15       0.1540      0.01  Q         |          |         |        V|
   6+20       0.1540      0.00  Q         |          |         |        V|
   6+25       0.1540      0.00  Q         |          |         |        V|
   6+30       0.1540      0.00  Q         |          |         |         V
------------------------------------------------------------------------
```

- 2 Year 12 Hour Pre-Development Unit Hydrograph – Area 'F'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/13/16   File Name EXF00212.out


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------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
WESTRIDGE HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'F' - 2 YEAR 12 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 2

       Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 74.4       1.7          1.00     D     0.200     0.100    0.020

Area-averaged adjusted loss rate Fm (In/Hr) =  0.020

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
     0.17   0.100         74.4      56.3       7.77     0.015
     1.51   0.900         98.0      98.0       0.20     0.890

Area-averaged catchment yield fraction, Y =  0.802
Area-averaged low loss fraction, Yb =  0.198
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.091 (hours)
Watershed area =       1.68(Ac.)
Catchment Lag time =   0.073 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 114.8475
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.020(In/Hr)
Average low loss rate fraction (Yb) = 0.198 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.190(In)
Computed peak 30-minute rainfall =  0.400(In)
Specified peak 1-hour rainfall =  0.530(In)
Computed peak 3-hour rainfall =  0.890(In)
Specified peak 6-hour rainfall =  1.220(In)
Specified peak 24-hour rainfall =  2.050(In)


Rainfall depth area reduction factors:
Using a total area of       1.68(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000     Adjusted rainfall =  0.190(In)
```

```
30-minute factor = 1.000    Adjusted rainfall =  0.400(In)
1-hour factor = 1.000       Adjusted rainfall =  0.530(In)
3-hour factor = 1.000       Adjusted rainfall =  0.890(In)
6-hour factor = 1.000       Adjusted rainfall =  1.220(In)
24-hour factor = 1.000 Adjusted rainfall =  2.050(In)
------------------------------------------------------------------------

                      U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
------------------------------------------------------------------------
               (K =        20.32 (CFS))

  1               19.656                   3.994
  2               75.825                  11.412
  3               92.019                   3.290
  4               97.659                   1.146
  5               99.077                   0.288
  6               99.802                   0.147
  7              100.000                   0.040
------------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.1900               0.1900
  2              0.2534               0.0634
  3              0.2999               0.0465
  4              0.3380               0.0381
  5              0.3708               0.0328
  6              0.4000               0.0292
  7              0.4258               0.0258
  8              0.4495               0.0237
  9              0.4715               0.0220
 10              0.4921               0.0206
 11              0.5116               0.0194
 12              0.5300               0.0184
 13              0.5504               0.0204
 14              0.5699               0.0196
 15              0.5888               0.0189
 16              0.6070               0.0182
 17              0.6246               0.0176
 18              0.6417               0.0171
 19              0.6583               0.0166
 20              0.6744               0.0161
 21              0.6901               0.0157
 22              0.7054               0.0153
 23              0.7204               0.0150
 24              0.7350               0.0146
 25              0.7493               0.0143
 26              0.7633               0.0140
 27              0.7770               0.0137
 28              0.7905               0.0134
 29              0.8037               0.0132
 30              0.8166               0.0130
 31              0.8294               0.0127
 32              0.8419               0.0125
 33              0.8542               0.0123
 34              0.8663               0.0121
 35              0.8782               0.0119
 36              0.8900               0.0118
 37              0.9012               0.0112
 38              0.9122               0.0110
 39              0.9230               0.0108
 40              0.9337               0.0107
 41              0.9442               0.0105
 42              0.9547               0.0104
 43              0.9649               0.0103
 44              0.9751               0.0101
 45              0.9851               0.0100
 46              0.9950               0.0099
 47              1.0048               0.0098
```

48	1.0145	0.0097
49	1.0240	0.0096
50	1.0335	0.0095
51	1.0428	0.0094
52	1.0521	0.0093
53	1.0612	0.0092
54	1.0703	0.0091
55	1.0793	0.0090
56	1.0882	0.0089
57	1.0970	0.0088
58	1.1057	0.0087
59	1.1143	0.0086
60	1.1229	0.0086
61	1.1313	0.0085
62	1.1397	0.0084
63	1.1481	0.0083
64	1.1563	0.0083
65	1.1645	0.0082
66	1.1726	0.0081
67	1.1807	0.0081
68	1.1887	0.0080
69	1.1966	0.0079
70	1.2045	0.0079
71	1.2123	0.0078
72	1.2200	0.0077
73	1.2263	0.0063
74	1.2326	0.0063
75	1.2388	0.0062
76	1.2449	0.0062
77	1.2510	0.0061
78	1.2571	0.0061
79	1.2631	0.0060
80	1.2691	0.0060
81	1.2750	0.0059
82	1.2809	0.0059
83	1.2867	0.0058
84	1.2925	0.0058
85	1.2982	0.0057
86	1.3039	0.0057
87	1.3096	0.0057
88	1.3152	0.0056
89	1.3208	0.0056
90	1.3263	0.0055
91	1.3318	0.0055
92	1.3372	0.0055
93	1.3427	0.0054
94	1.3481	0.0054
95	1.3534	0.0054
96	1.3587	0.0053
97	1.3640	0.0053
98	1.3693	0.0052
99	1.3745	0.0052
100	1.3796	0.0052
101	1.3848	0.0051
102	1.3899	0.0051
103	1.3950	0.0051
104	1.4001	0.0051
105	1.4051	0.0050
106	1.4101	0.0050
107	1.4150	0.0050
108	1.4200	0.0049
109	1.4249	0.0049
110	1.4298	0.0049
111	1.4346	0.0049
112	1.4394	0.0048
113	1.4442	0.0048
114	1.4490	0.0048
115	1.4538	0.0047
116	1.4585	0.0047
117	1.4632	0.0047
118	1.4678	0.0047

119	1.4725	0.0046
120	1.4771	0.0046
121	1.4817	0.0046
122	1.4863	0.0046
123	1.4908	0.0045
124	1.4954	0.0045
125	1.4999	0.0045
126	1.5043	0.0045
127	1.5088	0.0045
128	1.5132	0.0044
129	1.5176	0.0044
130	1.5220	0.0044
131	1.5264	0.0044
132	1.5308	0.0044
133	1.5351	0.0043
134	1.5394	0.0043
135	1.5437	0.0043
136	1.5480	0.0043
137	1.5522	0.0043
138	1.5565	0.0042
139	1.5607	0.0042
140	1.5649	0.0042
141	1.5690	0.0042
142	1.5732	0.0042
143	1.5773	0.0041
144	1.5814	0.0041

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0041	0.0008	0.0033
2	0.0041	0.0008	0.0033
3	0.0042	0.0008	0.0033
4	0.0042	0.0008	0.0034
5	0.0042	0.0008	0.0034
6	0.0043	0.0008	0.0034
7	0.0043	0.0008	0.0034
8	0.0043	0.0009	0.0035
9	0.0044	0.0009	0.0035
10	0.0044	0.0009	0.0035
11	0.0044	0.0009	0.0035
12	0.0044	0.0009	0.0036
13	0.0045	0.0009	0.0036
14	0.0045	0.0009	0.0036
15	0.0045	0.0009	0.0036
16	0.0046	0.0009	0.0037
17	0.0046	0.0009	0.0037
18	0.0046	0.0009	0.0037
19	0.0047	0.0009	0.0038
20	0.0047	0.0009	0.0038
21	0.0048	0.0009	0.0038
22	0.0048	0.0009	0.0038
23	0.0049	0.0010	0.0039
24	0.0049	0.0010	0.0039
25	0.0049	0.0010	0.0040
26	0.0050	0.0010	0.0040
27	0.0050	0.0010	0.0040
28	0.0051	0.0010	0.0041
29	0.0051	0.0010	0.0041
30	0.0051	0.0010	0.0041
31	0.0052	0.0010	0.0042
32	0.0052	0.0010	0.0042
33	0.0053	0.0011	0.0043
34	0.0054	0.0011	0.0043
35	0.0054	0.0011	0.0044
36	0.0055	0.0011	0.0044
37	0.0055	0.0011	0.0044
38	0.0056	0.0011	0.0045
39	0.0057	0.0011	0.0045
40	0.0057	0.0011	0.0046

41	0.0058	0.0011	0.0046
42	0.0058	0.0012	0.0047
43	0.0059	0.0012	0.0047
44	0.0060	0.0012	0.0048
45	0.0061	0.0012	0.0049
46	0.0061	0.0012	0.0049
47	0.0062	0.0012	0.0050
48	0.0063	0.0012	0.0050
49	0.0077	0.0015	0.0062
50	0.0078	0.0015	0.0063
51	0.0079	0.0016	0.0064
52	0.0080	0.0016	0.0064
53	0.0081	0.0016	0.0065
54	0.0082	0.0016	0.0066
55	0.0083	0.0016	0.0067
56	0.0084	0.0017	0.0067
57	0.0086	0.0017	0.0069
58	0.0086	0.0017	0.0070
59	0.0088	0.0017	0.0071
60	0.0089	0.0017	0.0072
61	0.0091	0.0017	0.0074
62	0.0092	0.0017	0.0075
63	0.0094	0.0017	0.0077
64	0.0095	0.0017	0.0078
65	0.0097	0.0017	0.0080
66	0.0098	0.0017	0.0081
67	0.0100	0.0017	0.0084
68	0.0101	0.0017	0.0085
69	0.0104	0.0017	0.0087
70	0.0105	0.0017	0.0089
71	0.0108	0.0017	0.0092
72	0.0110	0.0017	0.0093
73	0.0118	0.0017	0.0101
74	0.0119	0.0017	0.0103
75	0.0123	0.0017	0.0106
76	0.0125	0.0017	0.0109
77	0.0130	0.0017	0.0113
78	0.0132	0.0017	0.0115
79	0.0137	0.0017	0.0120
80	0.0140	0.0017	0.0123
81	0.0146	0.0017	0.0129
82	0.0150	0.0017	0.0133
83	0.0157	0.0017	0.0140
84	0.0161	0.0017	0.0145
85	0.0171	0.0017	0.0154
86	0.0176	0.0017	0.0159
87	0.0189	0.0017	0.0172
88	0.0196	0.0017	0.0179
89	0.0184	0.0017	0.0167
90	0.0194	0.0017	0.0178
91	0.0220	0.0017	0.0204
92	0.0237	0.0017	0.0221
93	0.0292	0.0017	0.0275
94	0.0328	0.0017	0.0312
95	0.0465	0.0017	0.0448
96	0.0634	0.0017	0.0617
97	0.1900	0.0017	0.1883
98	0.0381	0.0017	0.0364
99	0.0258	0.0017	0.0242
100	0.0206	0.0017	0.0189
101	0.0204	0.0017	0.0187
102	0.0182	0.0017	0.0165
103	0.0166	0.0017	0.0149
104	0.0153	0.0017	0.0137
105	0.0143	0.0017	0.0126
106	0.0134	0.0017	0.0118
107	0.0127	0.0017	0.0111
108	0.0121	0.0017	0.0105
109	0.0112	0.0017	0.0095
110	0.0107	0.0017	0.0090
111	0.0103	0.0017	0.0086

112	0.0099	0.0017	0.0082
113	0.0096	0.0017	0.0079
114	0.0093	0.0017	0.0076
115	0.0090	0.0017	0.0073
116	0.0087	0.0017	0.0070
117	0.0085	0.0017	0.0068
118	0.0083	0.0016	0.0066
119	0.0081	0.0016	0.0065
120	0.0079	0.0016	0.0063
121	0.0063	0.0012	0.0051
122	0.0062	0.0012	0.0049
123	0.0060	0.0012	0.0048
124	0.0059	0.0012	0.0047
125	0.0057	0.0011	0.0046
126	0.0056	0.0011	0.0045
127	0.0055	0.0011	0.0044
128	0.0054	0.0011	0.0043
129	0.0053	0.0010	0.0042
130	0.0052	0.0010	0.0042
131	0.0051	0.0010	0.0041
132	0.0050	0.0010	0.0040
133	0.0049	0.0010	0.0039
134	0.0048	0.0010	0.0039
135	0.0047	0.0009	0.0038
136	0.0047	0.0009	0.0037
137	0.0046	0.0009	0.0037
138	0.0045	0.0009	0.0036
139	0.0045	0.0009	0.0036
140	0.0044	0.0009	0.0035
141	0.0043	0.0009	0.0035
142	0.0043	0.0008	0.0034
143	0.0042	0.0008	0.0034
144	0.0042	0.0008	0.0033

Total soil rain loss = 0.19(In)
Total effective rainfall = 1.39(In)
Peak flow rate in flood hydrograph = 2.56(CFS)

++

12 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0001	0.01	Q				
0+10	0.0004	0.05	Q				
0+15	0.0009	0.06	Q				
0+20	0.0013	0.07	Q				
0+25	0.0018	0.07	Q				
0+30	0.0023	0.07	Q				
0+35	0.0027	0.07	Q				
0+40	0.0032	0.07	Q				
0+45	0.0037	0.07	Q				
0+50	0.0042	0.07	Q				
0+55	0.0047	0.07	Q				
1+ 0	0.0052	0.07	QV				
1+ 5	0.0057	0.07	QV				
1+10	0.0062	0.07	QV				
1+15	0.0067	0.07	QV				
1+20	0.0072	0.07	QV				
1+25	0.0077	0.07	QV				
1+30	0.0082	0.08	QV				
1+35	0.0087	0.08	QV				
1+40	0.0093	0.08	QV				
1+45	0.0098	0.08	Q V				
1+50	0.0103	0.08	Q V				
1+55	0.0109	0.08	Q V				

```
2+ 0       0.0114      0.08  Q V       |         |         |         |
2+ 5       0.0120      0.08  Q V       |         |         |         |
2+10       0.0125      0.08  Q V       |         |         |         |
2+15       0.0131      0.08  Q V       |         |         |         |
2+20       0.0136      0.08  Q V       |         |         |         |
2+25       0.0142      0.08  Q V       |         |         |         |
2+30       0.0148      0.08  Q  V      |         |         |         |
2+35       0.0154      0.08  Q  V      |         |         |         |
2+40       0.0159      0.08  Q  V      |         |         |         |
2+45       0.0165      0.09  Q  V      |         |         |         |
2+50       0.0171      0.09  Q  V      |         |         |         |
2+55       0.0177      0.09  Q  V      |         |         |         |
3+ 0       0.0183      0.09  Q  V      |         |         |         |
3+ 5       0.0189      0.09  Q  V      |         |         |         |
3+10       0.0196      0.09  Q   V     |         |         |         |
3+15       0.0202      0.09  Q   V     |         |         |         |
3+20       0.0208      0.09  Q   V     |         |         |         |
3+25       0.0215      0.09  Q   V     |         |         |         |
3+30       0.0221      0.09  Q   V     |         |         |         |
3+35       0.0228      0.09  Q   V     |         |         |         |
3+40       0.0234      0.10  Q   V     |         |         |         |
3+45       0.0241      0.10  Q   V     |         |         |         |
3+50       0.0248      0.10  Q    V    |         |         |         |
3+55       0.0255      0.10  Q    V    |         |         |         |
4+ 0       0.0262      0.10  Q    V    |         |         |         |
4+ 5       0.0269      0.11  Q    V    |         |         |         |
4+10       0.0277      0.12  Q    V    |         |         |         |
4+15       0.0286      0.13  Q    V    |         |         |         |
4+20       0.0295      0.13  Q     V   |         |         |         |
4+25       0.0304      0.13  Q     V   |         |         |         |
4+30       0.0313      0.13  Q     V   |         |         |         |
4+35       0.0322      0.13  Q     V   |         |         |         |
4+40       0.0331      0.14  Q     V   |         |         |         |
4+45       0.0341      0.14  Q      V  |         |         |         |
4+50       0.0350      0.14  Q      V  |         |         |         |
4+55       0.0360      0.14  Q      V  |         |         |         |
5+ 0       0.0370      0.14  Q      V  |         |         |         |
5+ 5       0.0380      0.15  Q      V  |         |         |         |
5+10       0.0390      0.15  Q       V |         |         |         |
5+15       0.0401      0.15  Q       V |         |         |         |
5+20       0.0411      0.16  Q       V |         |         |         |
5+25       0.0422      0.16  Q       V |         |         |         |
5+30       0.0433      0.16  Q       V |         |         |         |
5+35       0.0445      0.16  Q        V|         |         |         |
5+40       0.0456      0.17  Q        V|         |         |         |
5+45       0.0468      0.17  Q        V|         |         |         |
5+50       0.0480      0.18  Q        V|         |         |         |
5+55       0.0493      0.18  Q         V         |         |         |
6+ 0       0.0506      0.19  Q         V         |         |         |
6+ 5       0.0519      0.19  Q         V         |         |         |
6+10       0.0533      0.20  Q         V         |         |         |
6+15       0.0547      0.21  Q         |V        |         |         |
6+20       0.0562      0.21  Q         |V        |         |         |
6+25       0.0577      0.22  Q         |V        |         |         |
6+30       0.0593      0.23  Q         | V       |         |         |
6+35       0.0609      0.23  Q         | V       |         |         |
6+40       0.0626      0.24  Q         | V       |         |         |
6+45       0.0643      0.25  |Q        |  V       |         |         |
6+50       0.0661      0.26  |Q        |  V       |         |         |
6+55       0.0679      0.27  |Q        |  V       |         |         |
7+ 0       0.0699      0.28  |Q        |   V      |         |         |
7+ 5       0.0719      0.29  |Q        |   V      |         |         |
7+10       0.0740      0.31  |Q        |    V     |         |         |
7+15       0.0763      0.32  |Q        |    V     |         |         |
7+20       0.0786      0.34  |Q        |     V    |         |         |
7+25       0.0811      0.35  |Q        |     V    |         |         |
7+30       0.0835      0.35  |Q        |      V   |         |         |
7+35       0.0860      0.37  |Q        |      V   |         |         |
7+40       0.0888      0.41  |Q        |       V  |         |         |
7+45       0.0919      0.46  |Q        |       V  |         |         |
7+50       0.0957      0.54  | Q       |        V |         |         |
```

```
   7+55       0.1002      0.66  | Q       |         V         |         |
   8+ 0       0.1064      0.90  |  Q      |         |V        |         |
   8+ 5       0.1178      1.65  |     Q   |         |   V     |         |
   8+10       0.1355      2.56  |         Q         |      V  |         |
   8+15       0.1439      1.22  |    Q    |         |         V|         |
   8+20       0.1488      0.71  | Q       |         |          V         |
   8+25       0.1521      0.48  |Q        |         |          |V        |
   8+30       0.1549      0.41  |Q        |         |          |V        |
   8+35       0.1573      0.35  |Q        |         |          | V       |
   8+40       0.1595      0.31  |Q        |         |          | V       |
   8+45       0.1614      0.28  |Q        |         |          |  V      |
   8+50       0.1632      0.26  |Q        |         |          |  V      |
   8+55       0.1649      0.24  Q         |         |          |  V      |
   9+ 0       0.1665      0.23  Q         |         |          |   V     |
   9+ 5       0.1679      0.21  Q         |         |          |   V     |
   9+10       0.1693      0.20  Q         |         |          |   V     |
   9+15       0.1706      0.19  Q         |         |          |    V    |
   9+20       0.1718      0.18  Q         |         |          |    V    |
   9+25       0.1730      0.17  Q         |         |          |    V    |
   9+30       0.1741      0.16  Q         |         |          |    V    |
   9+35       0.1751      0.16  Q         |         |          |    V    |
   9+40       0.1762      0.15  Q         |         |          |     V   |
   9+45       0.1772      0.14  Q         |         |          |     V   |
   9+50       0.1781      0.14  Q         |         |          |     V   |
   9+55       0.1791      0.14  Q         |         |          |     V   |
  10+ 0       0.1800      0.13  Q         |         |          |     V   |
  10+ 5       0.1808      0.12  Q         |         |          |      V  |
  10+10       0.1816      0.11  Q         |         |          |      V  |
  10+15       0.1823      0.10  Q         |         |          |      V  |
  10+20       0.1830      0.10  Q         |         |          |      V  |
  10+25       0.1836      0.10  Q         |         |          |      V  |
  10+30       0.1843      0.09  Q         |         |          |      V  |
  10+35       0.1849      0.09  Q         |         |          |       V |
  10+40       0.1855      0.09  Q         |         |          |       V |
  10+45       0.1861      0.09  Q         |         |          |       V |
  10+50       0.1867      0.09  Q         |         |          |       V |
  10+55       0.1873      0.08  Q         |         |          |       V |
  11+ 0       0.1879      0.08  Q         |         |          |       V |
  11+ 5       0.1884      0.08  Q         |         |          |       V |
  11+10       0.1890      0.08  Q         |         |          |       V |
  11+15       0.1895      0.08  Q         |         |          |       V |
  11+20       0.1901      0.08  Q         |         |          |        V|
  11+25       0.1906      0.08  Q         |         |          |        V|
  11+30       0.1911      0.08  Q         |         |          |        V|
  11+35       0.1916      0.07  Q         |         |          |        V|
  11+40       0.1921      0.07  Q         |         |          |        V|
  11+45       0.1926      0.07  Q         |         |          |        V|
  11+50       0.1931      0.07  Q         |         |          |        V|
  11+55       0.1936      0.07  Q         |         |          |        V|
  12+ 0       0.1941      0.07  Q         |         |          |        V|
  12+ 5       0.1944      0.05  Q         |         |          |        V|
  12+10       0.1946      0.02  Q         |         |          |        V|
  12+15       0.1946      0.01  Q         |         |          |        V|
  12+20       0.1946      0.00  Q         |         |          |        V|
  12+25       0.1946      0.00  Q         |         |          |        V|
  12+30       0.1946      0.00  Q         |         |          |         V
-------------------------------------------------------------------------
```

- 2 Year 24 Hour Pre-Development Unit Hydrograph – Area 'F'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989-2012, Version 7.2

       Study date  10/13/16   File Name EXF00224.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
WESTRIDGE HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'F' - 2 YEAR 24 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 2

       Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 74.4       1.7          1.00     D     0.200     0.100    0.020

Area-averaged adjusted loss rate Fm (In/Hr) =  0.020

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
     0.17   0.100         74.4      56.3       7.77     0.015
     1.51   0.900         98.0      98.0       0.20     0.890

Area-averaged catchment yield fraction, Y =  0.802
Area-averaged low loss fraction, Yb =  0.198
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.091 (hours)
Watershed area =       1.68(Ac.)
Catchment Lag time =   0.073 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 114.8475
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.020(In/Hr)
Average low loss rate fraction (Yb) = 0.198 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.190(In)
Computed peak 30-minute rainfall =  0.400(In)
Specified peak 1-hour rainfall =  0.530(In)
Computed peak 3-hour rainfall =  0.890(In)
Specified peak 6-hour rainfall =  1.220(In)
Specified peak 24-hour rainfall =  2.050(In)


Rainfall depth area reduction factors:
Using a total area of       1.68(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000     Adjusted rainfall =  0.190(In)
```

```
30-minute factor = 1.000    Adjusted rainfall =  0.400(In)
1-hour factor = 1.000       Adjusted rainfall =  0.530(In)
3-hour factor = 1.000       Adjusted rainfall =  0.890(In)
6-hour factor = 1.000       Adjusted rainfall =  1.220(In)
24-hour factor = 1.000 Adjusted rainfall =  2.050(In)
------------------------------------------------------------------------

                      U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
------------------------------------------------------------------------
               (K =        20.32 (CFS))

  1               19.656                   3.994
  2               75.825                  11.412
  3               92.019                   3.290
  4               97.659                   1.146
  5               99.077                   0.288
  6               99.802                   0.147
  7              100.000                   0.040
------------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.1900               0.1900
  2              0.2534               0.0634
  3              0.2999               0.0465
  4              0.3380               0.0381
  5              0.3708               0.0328
  6              0.4000               0.0292
  7              0.4258               0.0258
  8              0.4495               0.0237
  9              0.4715               0.0220
 10              0.4921               0.0206
 11              0.5116               0.0194
 12              0.5300               0.0184
 13              0.5504               0.0204
 14              0.5699               0.0196
 15              0.5888               0.0189
 16              0.6070               0.0182
 17              0.6246               0.0176
 18              0.6417               0.0171
 19              0.6583               0.0166
 20              0.6744               0.0161
 21              0.6901               0.0157
 22              0.7054               0.0153
 23              0.7204               0.0150
 24              0.7350               0.0146
 25              0.7493               0.0143
 26              0.7633               0.0140
 27              0.7770               0.0137
 28              0.7905               0.0134
 29              0.8037               0.0132
 30              0.8166               0.0130
 31              0.8294               0.0127
 32              0.8419               0.0125
 33              0.8542               0.0123
 34              0.8663               0.0121
 35              0.8782               0.0119
 36              0.8900               0.0118
 37              0.9012               0.0112
 38              0.9122               0.0110
 39              0.9230               0.0108
 40              0.9337               0.0107
 41              0.9442               0.0105
 42              0.9547               0.0104
 43              0.9649               0.0103
 44              0.9751               0.0101
 45              0.9851               0.0100
 46              0.9950               0.0099
 47              1.0048               0.0098
```

48	1.0145	0.0097
49	1.0240	0.0096
50	1.0335	0.0095
51	1.0428	0.0094
52	1.0521	0.0093
53	1.0612	0.0092
54	1.0703	0.0091
55	1.0793	0.0090
56	1.0882	0.0089
57	1.0970	0.0088
58	1.1057	0.0087
59	1.1143	0.0086
60	1.1229	0.0086
61	1.1313	0.0085
62	1.1397	0.0084
63	1.1481	0.0083
64	1.1563	0.0083
65	1.1645	0.0082
66	1.1726	0.0081
67	1.1807	0.0081
68	1.1887	0.0080
69	1.1966	0.0079
70	1.2045	0.0079
71	1.2123	0.0078
72	1.2200	0.0077
73	1.2263	0.0063
74	1.2326	0.0063
75	1.2388	0.0062
76	1.2449	0.0062
77	1.2510	0.0061
78	1.2571	0.0061
79	1.2631	0.0060
80	1.2691	0.0060
81	1.2750	0.0059
82	1.2809	0.0059
83	1.2867	0.0058
84	1.2925	0.0058
85	1.2982	0.0057
86	1.3039	0.0057
87	1.3096	0.0057
88	1.3152	0.0056
89	1.3208	0.0056
90	1.3263	0.0055
91	1.3318	0.0055
92	1.3372	0.0055
93	1.3427	0.0054
94	1.3481	0.0054
95	1.3534	0.0054
96	1.3587	0.0053
97	1.3640	0.0053
98	1.3693	0.0052
99	1.3745	0.0052
100	1.3796	0.0052
101	1.3848	0.0051
102	1.3899	0.0051
103	1.3950	0.0051
104	1.4001	0.0051
105	1.4051	0.0050
106	1.4101	0.0050
107	1.4150	0.0050
108	1.4200	0.0049
109	1.4249	0.0049
110	1.4298	0.0049
111	1.4346	0.0049
112	1.4394	0.0048
113	1.4442	0.0048
114	1.4490	0.0048
115	1.4538	0.0047
116	1.4585	0.0047
117	1.4632	0.0047
118	1.4678	0.0047

119	1.4725	0.0046
120	1.4771	0.0046
121	1.4817	0.0046
122	1.4863	0.0046
123	1.4908	0.0045
124	1.4954	0.0045
125	1.4999	0.0045
126	1.5043	0.0045
127	1.5088	0.0045
128	1.5132	0.0044
129	1.5176	0.0044
130	1.5220	0.0044
131	1.5264	0.0044
132	1.5308	0.0044
133	1.5351	0.0043
134	1.5394	0.0043
135	1.5437	0.0043
136	1.5480	0.0043
137	1.5522	0.0043
138	1.5565	0.0042
139	1.5607	0.0042
140	1.5649	0.0042
141	1.5690	0.0042
142	1.5732	0.0042
143	1.5773	0.0041
144	1.5814	0.0041
145	1.5856	0.0041
146	1.5896	0.0041
147	1.5937	0.0041
148	1.5978	0.0041
149	1.6018	0.0040
150	1.6058	0.0040
151	1.6098	0.0040
152	1.6138	0.0040
153	1.6178	0.0040
154	1.6217	0.0040
155	1.6256	0.0039
156	1.6296	0.0039
157	1.6335	0.0039
158	1.6373	0.0039
159	1.6412	0.0039
160	1.6451	0.0039
161	1.6489	0.0038
162	1.6527	0.0038
163	1.6566	0.0038
164	1.6604	0.0038
165	1.6641	0.0038
166	1.6679	0.0038
167	1.6717	0.0038
168	1.6754	0.0037
169	1.6791	0.0037
170	1.6828	0.0037
171	1.6865	0.0037
172	1.6902	0.0037
173	1.6939	0.0037
174	1.6976	0.0037
175	1.7012	0.0036
176	1.7048	0.0036
177	1.7085	0.0036
178	1.7121	0.0036
179	1.7157	0.0036
180	1.7192	0.0036
181	1.7228	0.0036
182	1.7264	0.0036
183	1.7299	0.0035
184	1.7334	0.0035
185	1.7370	0.0035
186	1.7405	0.0035
187	1.7440	0.0035
188	1.7475	0.0035
189	1.7509	0.0035

190	1.7544	0.0035
191	1.7578	0.0035
192	1.7613	0.0034
193	1.7647	0.0034
194	1.7681	0.0034
195	1.7715	0.0034
196	1.7749	0.0034
197	1.7783	0.0034
198	1.7817	0.0034
199	1.7851	0.0034
200	1.7884	0.0034
201	1.7917	0.0033
202	1.7951	0.0033
203	1.7984	0.0033
204	1.8017	0.0033
205	1.8050	0.0033
206	1.8083	0.0033
207	1.8116	0.0033
208	1.8149	0.0033
209	1.8181	0.0033
210	1.8214	0.0033
211	1.8246	0.0032
212	1.8278	0.0032
213	1.8311	0.0032
214	1.8343	0.0032
215	1.8375	0.0032
216	1.8407	0.0032
217	1.8439	0.0032
218	1.8470	0.0032
219	1.8502	0.0032
220	1.8534	0.0032
221	1.8565	0.0031
222	1.8597	0.0031
223	1.8628	0.0031
224	1.8659	0.0031
225	1.8690	0.0031
226	1.8721	0.0031
227	1.8752	0.0031
228	1.8783	0.0031
229	1.8814	0.0031
230	1.8845	0.0031
231	1.8875	0.0031
232	1.8906	0.0031
233	1.8936	0.0030
234	1.8967	0.0030
235	1.8997	0.0030
236	1.9027	0.0030
237	1.9057	0.0030
238	1.9087	0.0030
239	1.9117	0.0030
240	1.9147	0.0030
241	1.9177	0.0030
242	1.9207	0.0030
243	1.9237	0.0030
244	1.9266	0.0030
245	1.9296	0.0030
246	1.9325	0.0029
247	1.9355	0.0029
248	1.9384	0.0029
249	1.9413	0.0029
250	1.9442	0.0029
251	1.9471	0.0029
252	1.9500	0.0029
253	1.9529	0.0029
254	1.9558	0.0029
255	1.9587	0.0029
256	1.9616	0.0029
257	1.9644	0.0029
258	1.9673	0.0029
259	1.9701	0.0029
260	1.9730	0.0028

261	1.9758	0.0028
262	1.9787	0.0028
263	1.9815	0.0028
264	1.9843	0.0028
265	1.9871	0.0028
266	1.9899	0.0028
267	1.9927	0.0028
268	1.9955	0.0028
269	1.9983	0.0028
270	2.0011	0.0028
271	2.0038	0.0028
272	2.0066	0.0028
273	2.0094	0.0028
274	2.0121	0.0028
275	2.0149	0.0027
276	2.0176	0.0027
277	2.0203	0.0027
278	2.0231	0.0027
279	2.0258	0.0027
280	2.0285	0.0027
281	2.0312	0.0027
282	2.0339	0.0027
283	2.0366	0.0027
284	2.0393	0.0027
285	2.0420	0.0027
286	2.0447	0.0027
287	2.0473	0.0027
288	2.0500	0.0027

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0027	0.0005	0.0021
2	0.0027	0.0005	0.0021
3	0.0027	0.0005	0.0022
4	0.0027	0.0005	0.0022
5	0.0027	0.0005	0.0022
6	0.0027	0.0005	0.0022
7	0.0027	0.0005	0.0022
8	0.0027	0.0005	0.0022
9	0.0027	0.0005	0.0022
10	0.0027	0.0005	0.0022
11	0.0028	0.0005	0.0022
12	0.0028	0.0005	0.0022
13	0.0028	0.0005	0.0022
14	0.0028	0.0006	0.0022
15	0.0028	0.0006	0.0022
16	0.0028	0.0006	0.0022
17	0.0028	0.0006	0.0023
18	0.0028	0.0006	0.0023
19	0.0028	0.0006	0.0023
20	0.0028	0.0006	0.0023
21	0.0029	0.0006	0.0023
22	0.0029	0.0006	0.0023
23	0.0029	0.0006	0.0023
24	0.0029	0.0006	0.0023
25	0.0029	0.0006	0.0023
26	0.0029	0.0006	0.0023
27	0.0029	0.0006	0.0023
28	0.0029	0.0006	0.0024
29	0.0029	0.0006	0.0024
30	0.0030	0.0006	0.0024
31	0.0030	0.0006	0.0024
32	0.0030	0.0006	0.0024
33	0.0030	0.0006	0.0024
34	0.0030	0.0006	0.0024
35	0.0030	0.0006	0.0024
36	0.0030	0.0006	0.0024
37	0.0030	0.0006	0.0024
38	0.0030	0.0006	0.0024

39	0.0031	0.0006	0.0025
40	0.0031	0.0006	0.0025
41	0.0031	0.0006	0.0025
42	0.0031	0.0006	0.0025
43	0.0031	0.0006	0.0025
44	0.0031	0.0006	0.0025
45	0.0031	0.0006	0.0025
46	0.0031	0.0006	0.0025
47	0.0032	0.0006	0.0025
48	0.0032	0.0006	0.0025
49	0.0032	0.0006	0.0026
50	0.0032	0.0006	0.0026
51	0.0032	0.0006	0.0026
52	0.0032	0.0006	0.0026
53	0.0033	0.0006	0.0026
54	0.0033	0.0006	0.0026
55	0.0033	0.0006	0.0026
56	0.0033	0.0007	0.0026
57	0.0033	0.0007	0.0027
58	0.0033	0.0007	0.0027
59	0.0033	0.0007	0.0027
60	0.0034	0.0007	0.0027
61	0.0034	0.0007	0.0027
62	0.0034	0.0007	0.0027
63	0.0034	0.0007	0.0027
64	0.0034	0.0007	0.0027
65	0.0034	0.0007	0.0028
66	0.0035	0.0007	0.0028
67	0.0035	0.0007	0.0028
68	0.0035	0.0007	0.0028
69	0.0035	0.0007	0.0028
70	0.0035	0.0007	0.0028
71	0.0035	0.0007	0.0028
72	0.0036	0.0007	0.0029
73	0.0036	0.0007	0.0029
74	0.0036	0.0007	0.0029
75	0.0036	0.0007	0.0029
76	0.0036	0.0007	0.0029
77	0.0037	0.0007	0.0029
78	0.0037	0.0007	0.0029
79	0.0037	0.0007	0.0030
80	0.0037	0.0007	0.0030
81	0.0037	0.0007	0.0030
82	0.0038	0.0007	0.0030
83	0.0038	0.0007	0.0030
84	0.0038	0.0008	0.0030
85	0.0038	0.0008	0.0031
86	0.0038	0.0008	0.0031
87	0.0039	0.0008	0.0031
88	0.0039	0.0008	0.0031
89	0.0039	0.0008	0.0031
90	0.0039	0.0008	0.0032
91	0.0040	0.0008	0.0032
92	0.0040	0.0008	0.0032
93	0.0040	0.0008	0.0032
94	0.0040	0.0008	0.0032
95	0.0041	0.0008	0.0033
96	0.0041	0.0008	0.0033
97	0.0041	0.0008	0.0033
98	0.0041	0.0008	0.0033
99	0.0042	0.0008	0.0033
100	0.0042	0.0008	0.0034
101	0.0042	0.0008	0.0034
102	0.0043	0.0008	0.0034
103	0.0043	0.0008	0.0034
104	0.0043	0.0009	0.0035
105	0.0044	0.0009	0.0035
106	0.0044	0.0009	0.0035
107	0.0044	0.0009	0.0035
108	0.0044	0.0009	0.0036
109	0.0045	0.0009	0.0036

110	0.0045	0.0009	0.0036
111	0.0045	0.0009	0.0036
112	0.0046	0.0009	0.0037
113	0.0046	0.0009	0.0037
114	0.0046	0.0009	0.0037
115	0.0047	0.0009	0.0038
116	0.0047	0.0009	0.0038
117	0.0048	0.0009	0.0038
118	0.0048	0.0009	0.0038
119	0.0049	0.0010	0.0039
120	0.0049	0.0010	0.0039
121	0.0049	0.0010	0.0040
122	0.0050	0.0010	0.0040
123	0.0050	0.0010	0.0040
124	0.0051	0.0010	0.0041
125	0.0051	0.0010	0.0041
126	0.0051	0.0010	0.0041
127	0.0052	0.0010	0.0042
128	0.0052	0.0010	0.0042
129	0.0053	0.0011	0.0043
130	0.0054	0.0011	0.0043
131	0.0054	0.0011	0.0044
132	0.0055	0.0011	0.0044
133	0.0055	0.0011	0.0044
134	0.0056	0.0011	0.0045
135	0.0057	0.0011	0.0045
136	0.0057	0.0011	0.0046
137	0.0058	0.0011	0.0046
138	0.0058	0.0012	0.0047
139	0.0059	0.0012	0.0047
140	0.0060	0.0012	0.0048
141	0.0061	0.0012	0.0049
142	0.0061	0.0012	0.0049
143	0.0062	0.0012	0.0050
144	0.0063	0.0012	0.0050
145	0.0077	0.0015	0.0062
146	0.0078	0.0015	0.0063
147	0.0079	0.0016	0.0064
148	0.0080	0.0016	0.0064
149	0.0081	0.0016	0.0065
150	0.0082	0.0016	0.0066
151	0.0083	0.0016	0.0067
152	0.0084	0.0017	0.0067
153	0.0086	0.0017	0.0069
154	0.0086	0.0017	0.0070
155	0.0088	0.0017	0.0071
156	0.0089	0.0017	0.0072
157	0.0091	0.0017	0.0074
158	0.0092	0.0017	0.0075
159	0.0094	0.0017	0.0077
160	0.0095	0.0017	0.0078
161	0.0097	0.0017	0.0080
162	0.0098	0.0017	0.0081
163	0.0100	0.0017	0.0084
164	0.0101	0.0017	0.0085
165	0.0104	0.0017	0.0087
166	0.0105	0.0017	0.0089
167	0.0108	0.0017	0.0092
168	0.0110	0.0017	0.0093
169	0.0118	0.0017	0.0101
170	0.0119	0.0017	0.0103
171	0.0123	0.0017	0.0106
172	0.0125	0.0017	0.0109
173	0.0130	0.0017	0.0113
174	0.0132	0.0017	0.0115
175	0.0137	0.0017	0.0120
176	0.0140	0.0017	0.0123
177	0.0146	0.0017	0.0129
178	0.0150	0.0017	0.0133
179	0.0157	0.0017	0.0140
180	0.0161	0.0017	0.0145

181	0.0171	0.0017	0.0154
182	0.0176	0.0017	0.0159
183	0.0189	0.0017	0.0172
184	0.0196	0.0017	0.0179
185	0.0184	0.0017	0.0167
186	0.0194	0.0017	0.0178
187	0.0220	0.0017	0.0204
188	0.0237	0.0017	0.0221
189	0.0292	0.0017	0.0275
190	0.0328	0.0017	0.0312
191	0.0465	0.0017	0.0448
192	0.0634	0.0017	0.0617
193	0.1900	0.0017	0.1883
194	0.0381	0.0017	0.0364
195	0.0258	0.0017	0.0242
196	0.0206	0.0017	0.0189
197	0.0204	0.0017	0.0187
198	0.0182	0.0017	0.0165
199	0.0166	0.0017	0.0149
200	0.0153	0.0017	0.0137
201	0.0143	0.0017	0.0126
202	0.0134	0.0017	0.0118
203	0.0127	0.0017	0.0111
204	0.0121	0.0017	0.0105
205	0.0112	0.0017	0.0095
206	0.0107	0.0017	0.0090
207	0.0103	0.0017	0.0086
208	0.0099	0.0017	0.0082
209	0.0096	0.0017	0.0079
210	0.0093	0.0017	0.0076
211	0.0090	0.0017	0.0073
212	0.0087	0.0017	0.0070
213	0.0085	0.0017	0.0068
214	0.0083	0.0016	0.0066
215	0.0081	0.0016	0.0065
216	0.0079	0.0016	0.0063
217	0.0063	0.0012	0.0051
218	0.0062	0.0012	0.0049
219	0.0060	0.0012	0.0048
220	0.0059	0.0012	0.0047
221	0.0057	0.0011	0.0046
222	0.0056	0.0011	0.0045
223	0.0055	0.0011	0.0044
224	0.0054	0.0011	0.0043
225	0.0053	0.0010	0.0042
226	0.0052	0.0010	0.0042
227	0.0051	0.0010	0.0041
228	0.0050	0.0010	0.0040
229	0.0049	0.0010	0.0039
230	0.0048	0.0010	0.0039
231	0.0047	0.0009	0.0038
232	0.0047	0.0009	0.0037
233	0.0046	0.0009	0.0037
234	0.0045	0.0009	0.0036
235	0.0045	0.0009	0.0036
236	0.0044	0.0009	0.0035
237	0.0043	0.0009	0.0035
238	0.0043	0.0008	0.0034
239	0.0042	0.0008	0.0034
240	0.0042	0.0008	0.0033
241	0.0041	0.0008	0.0033
242	0.0041	0.0008	0.0032
243	0.0040	0.0008	0.0032
244	0.0040	0.0008	0.0032
245	0.0039	0.0008	0.0031
246	0.0039	0.0008	0.0031
247	0.0038	0.0008	0.0031
248	0.0038	0.0007	0.0030
249	0.0037	0.0007	0.0030
250	0.0037	0.0007	0.0030
251	0.0036	0.0007	0.0029

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      252              0.0036           0.0007              0.0029
      253              0.0036           0.0007              0.0029
      254              0.0035           0.0007              0.0028
      255              0.0035           0.0007              0.0028
      256              0.0035           0.0007              0.0028
      257              0.0034           0.0007              0.0028
      258              0.0034           0.0007              0.0027
      259              0.0034           0.0007              0.0027
      260              0.0033           0.0007              0.0027
      261              0.0033           0.0007              0.0026
      262              0.0033           0.0006              0.0026
      263              0.0032           0.0006              0.0026
      264              0.0032           0.0006              0.0026
      265              0.0032           0.0006              0.0026
      266              0.0032           0.0006              0.0025
      267              0.0031           0.0006              0.0025
      268              0.0031           0.0006              0.0025
      269              0.0031           0.0006              0.0025
      270              0.0031           0.0006              0.0025
      271              0.0030           0.0006              0.0024
      272              0.0030           0.0006              0.0024
      273              0.0030           0.0006              0.0024
      274              0.0030           0.0006              0.0024
      275              0.0029           0.0006              0.0024
      276              0.0029           0.0006              0.0023
      277              0.0029           0.0006              0.0023
      278              0.0029           0.0006              0.0023
      279              0.0029           0.0006              0.0023
      280              0.0028           0.0006              0.0023
      281              0.0028           0.0006              0.0023
      282              0.0028           0.0006              0.0022
      283              0.0028           0.0005              0.0022
      284              0.0028           0.0005              0.0022
      285              0.0027           0.0005              0.0022
      286              0.0027           0.0005              0.0022
      287              0.0027           0.0005              0.0022
      288              0.0027           0.0005              0.0021
      ---------------------------------------------------------------------
      ---------------------------------------------------------------------
      Total soil rain loss =      0.28(In)
      Total effective rainfall =      1.77(In)
      Peak flow rate in flood hydrograph =      2.56(CFS)
      ---------------------------------------------------------------------
      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                        24 - H O U R    S T O R M
                   R u n o f f      H y d r o g r a p h
      ---------------------------------------------------------------------
                Hydrograph in   5   Minute intervals ((CFS))

      ---------------------------------------------------------------------
 Time(h+m) Volume Ac.Ft   Q(CFS)  0        2.5       5.0       7.5      10.0
 ------------------------------------------------------------------------
   0+ 5       0.0001      0.01  Q         |         |         |         |
   0+10       0.0003      0.03  Q         |         |         |         |
   0+15       0.0006      0.04  Q         |         |         |         |
   0+20       0.0009      0.04  Q         |         |         |         |
   0+25       0.0012      0.04  Q         |         |         |         |
   0+30       0.0015      0.04  Q         |         |         |         |
   0+35       0.0018      0.04  Q         |         |         |         |
   0+40       0.0021      0.04  Q         |         |         |         |
   0+45       0.0024      0.04  Q         |         |         |         |
   0+50       0.0027      0.04  Q         |         |         |         |
   0+55       0.0030      0.04  Q         |         |         |         |
   1+ 0       0.0033      0.04  Q         |         |         |         |
   1+ 5       0.0036      0.05  Q         |         |         |         |
   1+10       0.0039      0.05  Q         |         |         |         |
   1+15       0.0042      0.05  Q         |         |         |         |
   1+20       0.0045      0.05  Q         |         |         |         |
   1+25       0.0049      0.05  Q         |         |         |         |
   1+30       0.0052      0.05  Q         |         |         |         |
   1+35       0.0055      0.05  Q         |         |         |         |
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1+40       0.0058      0.05  Q          |          |          |          |
1+45       0.0061      0.05  Q          |          |          |          |
1+50       0.0065      0.05  QV         |          |          |          |
1+55       0.0068      0.05  QV         |          |          |          |
2+ 0       0.0071      0.05  QV         |          |          |          |
2+ 5       0.0074      0.05  QV         |          |          |          |
2+10       0.0077      0.05  QV         |          |          |          |
2+15       0.0081      0.05  QV         |          |          |          |
2+20       0.0084      0.05  QV         |          |          |          |
2+25       0.0087      0.05  QV         |          |          |          |
2+30       0.0091      0.05  QV         |          |          |          |
2+35       0.0094      0.05  QV         |          |          |          |
2+40       0.0097      0.05  QV         |          |          |          |
2+45       0.0101      0.05  QV         |          |          |          |
2+50       0.0104      0.05  QV         |          |          |          |
2+55       0.0107      0.05  QV         |          |          |          |
3+ 0       0.0111      0.05  QV         |          |          |          |
3+ 5       0.0114      0.05  QV         |          |          |          |
3+10       0.0117      0.05  QV         |          |          |          |
3+15       0.0121      0.05  QV         |          |          |          |
3+20       0.0124      0.05  Q V        |          |          |          |
3+25       0.0128      0.05  Q V        |          |          |          |
3+30       0.0131      0.05  Q V        |          |          |          |
3+35       0.0135      0.05  Q V        |          |          |          |
3+40       0.0138      0.05  Q V        |          |          |          |
3+45       0.0142      0.05  Q V        |          |          |          |
3+50       0.0145      0.05  Q V        |          |          |          |
3+55       0.0149      0.05  Q V        |          |          |          |
4+ 0       0.0152      0.05  Q V        |          |          |          |
4+ 5       0.0156      0.05  Q V        |          |          |          |
4+10       0.0159      0.05  Q V        |          |          |          |
4+15       0.0163      0.05  Q V        |          |          |          |
4+20       0.0167      0.05  Q V        |          |          |          |
4+25       0.0170      0.05  Q V        |          |          |          |
4+30       0.0174      0.05  Q V        |          |          |          |
4+35       0.0178      0.05  Q V        |          |          |          |
4+40       0.0181      0.05  Q V        |          |          |          |
4+45       0.0185      0.05  Q V        |          |          |          |
4+50       0.0189      0.05  Q  V       |          |          |          |
4+55       0.0192      0.05  Q  V       |          |          |          |
5+ 0       0.0196      0.05  Q  V       |          |          |          |
5+ 5       0.0200      0.05  Q  V       |          |          |          |
5+10       0.0204      0.05  Q  V       |          |          |          |
5+15       0.0208      0.06  Q  V       |          |          |          |
5+20       0.0211      0.06  Q  V       |          |          |          |
5+25       0.0215      0.06  Q  V       |          |          |          |
5+30       0.0219      0.06  Q  V       |          |          |          |
5+35       0.0223      0.06  Q  V       |          |          |          |
5+40       0.0227      0.06  Q  V       |          |          |          |
5+45       0.0231      0.06  Q  V       |          |          |          |
5+50       0.0235      0.06  Q  V       |          |          |          |
5+55       0.0239      0.06  Q  V       |          |          |          |
6+ 0       0.0243      0.06  Q  V       |          |          |          |
6+ 5       0.0247      0.06  Q  V       |          |          |          |
6+10       0.0251      0.06  Q   V      |          |          |          |
6+15       0.0255      0.06  Q   V      |          |          |          |
6+20       0.0259      0.06  Q   V      |          |          |          |
6+25       0.0263      0.06  Q   V      |          |          |          |
6+30       0.0267      0.06  Q   V      |          |          |          |
6+35       0.0271      0.06  Q   V      |          |          |          |
6+40       0.0275      0.06  Q   V      |          |          |          |
6+45       0.0279      0.06  Q   V      |          |          |          |
6+50       0.0283      0.06  Q   V      |          |          |          |
6+55       0.0288      0.06  Q   V      |          |          |          |
7+ 0       0.0292      0.06  Q   V      |          |          |          |
7+ 5       0.0296      0.06  Q   V      |          |          |          |
7+10       0.0300      0.06  Q   V      |          |          |          |
7+15       0.0305      0.06  Q   V      |          |          |          |
7+20       0.0309      0.06  Q    V     |          |          |          |
7+25       0.0313      0.06  Q    V     |          |          |          |
7+30       0.0318      0.06  Q    V     |          |          |          |
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 7+35      0.0322      0.06  Q    V    |         |         |         |
 7+40      0.0327      0.06  Q    V    |         |         |         |
 7+45      0.0331      0.06  Q    V    |         |         |         |
 7+50      0.0336      0.07  Q    V    |         |         |         |
 7+55      0.0340      0.07  Q    V    |         |         |         |
 8+ 0      0.0345      0.07  Q    V    |         |         |         |
 8+ 5      0.0349      0.07  Q    V    |         |         |         |
 8+10      0.0354      0.07  Q    V    |         |         |         |
 8+15      0.0359      0.07  Q    V    |         |         |         |
 8+20      0.0363      0.07  Q    V    |         |         |         |
 8+25      0.0368      0.07  Q    V    |         |         |         |
 8+30      0.0373      0.07  Q     V   |         |         |         |
 8+35      0.0378      0.07  Q     V   |         |         |         |
 8+40      0.0382      0.07  Q     V   |         |         |         |
 8+45      0.0387      0.07  Q     V   |         |         |         |
 8+50      0.0392      0.07  Q     V   |         |         |         |
 8+55      0.0397      0.07  Q     V   |         |         |         |
 9+ 0      0.0402      0.07  Q     V   |         |         |         |
 9+ 5      0.0407      0.07  Q     V   |         |         |         |
 9+10      0.0412      0.07  Q     V   |         |         |         |
 9+15      0.0417      0.07  Q     V   |         |         |         |
 9+20      0.0422      0.07  Q     V   |         |         |         |
 9+25      0.0427      0.07  Q     V   |         |         |         |
 9+30      0.0432      0.08  Q     V   |         |         |         |
 9+35      0.0438      0.08  Q      V  |         |         |         |
 9+40      0.0443      0.08  Q      V  |         |         |         |
 9+45      0.0448      0.08  Q      V  |         |         |         |
 9+50      0.0453      0.08  Q      V  |         |         |         |
 9+55      0.0459      0.08  Q      V  |         |         |         |
10+ 0      0.0464      0.08  Q      V  |         |         |         |
10+ 5      0.0470      0.08  Q      V  |         |         |         |
10+10      0.0475      0.08  Q      V  |         |         |         |
10+15      0.0481      0.08  Q      V  |         |         |         |
10+20      0.0486      0.08  Q      V  |         |         |         |
10+25      0.0492      0.08  Q      V  |         |         |         |
10+30      0.0498      0.08  Q       V |         |         |         |
10+35      0.0504      0.08  Q       V |         |         |         |
10+40      0.0510      0.08  Q       V |         |         |         |
10+45      0.0515      0.09  Q       V |         |         |         |
10+50      0.0521      0.09  Q       V |         |         |         |
10+55      0.0527      0.09  Q       V |         |         |         |
11+ 0      0.0533      0.09  Q       V |         |         |         |
11+ 5      0.0540      0.09  Q       V |         |         |         |
11+10      0.0546      0.09  Q       V |         |         |         |
11+15      0.0552      0.09  Q       V |         |         |         |
11+20      0.0558      0.09  Q        V|         |         |         |
11+25      0.0565      0.09  Q        V|         |         |         |
11+30      0.0571      0.09  Q        V|         |         |         |
11+35      0.0578      0.09  Q        V|         |         |         |
11+40      0.0584      0.10  Q        V|         |         |         |
11+45      0.0591      0.10  Q        V|         |         |         |
11+50      0.0598      0.10  Q        V|         |         |         |
11+55      0.0605      0.10  Q        V|         |         |         |
12+ 0      0.0612      0.10  Q        V|         |         |         |
12+ 5      0.0619      0.11  Q         V         |         |         |
12+10      0.0627      0.12  Q         V         |         |         |
12+15      0.0636      0.13  Q         V         |         |         |
12+20      0.0645      0.13  Q         V         |         |         |
12+25      0.0654      0.13  Q         V         |         |         |
12+30      0.0663      0.13  Q         V         |         |         |
12+35      0.0672      0.13  Q         V         |         |         |
12+40      0.0681      0.14  Q          |V        |         |         |
12+45      0.0691      0.14  Q          |V        |         |         |
12+50      0.0700      0.14  Q          |V        |         |         |
12+55      0.0710      0.14  Q          |V        |         |         |
13+ 0      0.0720      0.14  Q          |V        |         |         |
13+ 5      0.0730      0.15  Q          |V        |         |         |
13+10      0.0740      0.15  Q          |V        |         |         |
13+15      0.0751      0.15  Q          | V       |         |         |
13+20      0.0762      0.16  Q          | V       |         |         |
13+25      0.0772      0.16  Q          | V       |         |         |
```

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13+30       0.0784      0.16  Q          | V       |          |          |
13+35       0.0795      0.16  Q          | V       |          |          |
13+40       0.0807      0.17  Q          |  V      |          |          |
13+45       0.0818      0.17  Q          |  V      |          |          |
13+50       0.0831      0.18  Q          |  V      |          |          |
13+55       0.0843      0.18  Q          |  V      |          |          |
14+ 0       0.0856      0.19  Q          |  V      |          |          |
14+ 5       0.0869      0.19  Q          |   V     |          |          |
14+10       0.0883      0.20  Q          |   V     |          |          |
14+15       0.0897      0.21  Q          |   V     |          |          |
14+20       0.0912      0.21  Q          |   V     |          |          |
14+25       0.0927      0.22  Q          |    V    |          |          |
14+30       0.0943      0.23  Q          |    V    |          |          |
14+35       0.0959      0.23  Q          |    V    |          |          |
14+40       0.0976      0.24  Q          |    V    |          |          |
14+45       0.0993      0.25  |Q         |     V   |          |          |
14+50       0.1011      0.26  |Q         |     V   |          |          |
14+55       0.1029      0.27  |Q         |     V   |          |          |
15+ 0       0.1049      0.28  |Q         |     V   |          |          |
15+ 5       0.1069      0.29  |Q         |      V  |          |          |
15+10       0.1090      0.31  |Q         |      V  |          |          |
15+15       0.1113      0.32  |Q         |       V |          |          |
15+20       0.1137      0.34  |Q         |       V |          |          |
15+25       0.1161      0.35  |Q         |       V |          |          |
15+30       0.1185      0.35  |Q         |        V|          |          |
15+35       0.1210      0.37  |Q         |        V|          |          |
15+40       0.1238      0.41  |Q         |         V          |          |
15+45       0.1270      0.46  |Q         |         V          |          |
15+50       0.1307      0.54  | Q        |          V         |          |
15+55       0.1352      0.66  | Q        |          V         |          |
16+ 0       0.1414      0.90  |  Q       |           V        |          |
16+ 5       0.1528      1.65  |     Q    |            V       |          |
16+10       0.1705      2.56  |        Q |              V     |          |
16+15       0.1789      1.22  |    Q     |               V    |          |
16+20       0.1838      0.71  | Q        |                V   |          |
16+25       0.1871      0.48  |Q         |                 V  |          |
16+30       0.1899      0.41  |Q         |                 V  |          |
16+35       0.1923      0.35  |Q         |                  V |          |
16+40       0.1945      0.31  |Q         |                  V |          |
16+45       0.1964      0.28  |Q         |                  V |          |
16+50       0.1982      0.26  |Q         |                   V|          |
16+55       0.1999      0.24  Q          |                   V|          |
17+ 0       0.2015      0.23  Q          |                   V|          |
17+ 5       0.2029      0.21  Q          |                   V|          |
17+10       0.2043      0.20  Q          |                    V          |
17+15       0.2056      0.19  Q          |                    V          |
17+20       0.2068      0.18  Q          |                    V          |
17+25       0.2080      0.17  Q          |                    V          |
17+30       0.2091      0.16  Q          |                    V          |
17+35       0.2101      0.16  Q          |                     V         |
17+40       0.2112      0.15  Q          |                     V         |
17+45       0.2122      0.14  Q          |                     V         |
17+50       0.2131      0.14  Q          |                     V         |
17+55       0.2141      0.14  Q          |                     V         |
18+ 0       0.2150      0.13  Q          |                     V         |
18+ 5       0.2158      0.12  Q          |                     V         |
18+10       0.2166      0.11  Q          |                      V        |
18+15       0.2173      0.10  Q          |                      V        |
18+20       0.2180      0.10  Q          |                      V        |
18+25       0.2186      0.10  Q          |                      V        |
18+30       0.2193      0.09  Q          |                      V        |
18+35       0.2199      0.09  Q          |                      V        |
18+40       0.2205      0.09  Q          |                      V        |
18+45       0.2211      0.09  Q          |                      V        |
18+50       0.2217      0.09  Q          |                      V        |
18+55       0.2223      0.08  Q          |                      V        |
19+ 0       0.2229      0.08  Q          |                       V       |
19+ 5       0.2234      0.08  Q          |                       V       |
19+10       0.2240      0.08  Q          |                       V       |
19+15       0.2245      0.08  Q          |                       V       |
19+20       0.2251      0.08  Q          |                       V       |
```

```
  19+25       0.2256      0.08  Q          |          |          |     V    |
  19+30       0.2261      0.08  Q          |          |          |     V    |
  19+35       0.2266      0.07  Q          |          |          |     V    |
  19+40       0.2271      0.07  Q          |          |          |     V    |
  19+45       0.2276      0.07  Q          |          |          |     V    |
  19+50       0.2281      0.07  Q          |          |          |     V    |
  19+55       0.2286      0.07  Q          |          |          |     V    |
  20+ 0       0.2291      0.07  Q          |          |          |      V   |
  20+ 5       0.2295      0.07  Q          |          |          |      V   |
  20+10       0.2300      0.07  Q          |          |          |      V   |
  20+15       0.2305      0.07  Q          |          |          |      V   |
  20+20       0.2309      0.07  Q          |          |          |      V   |
  20+25       0.2313      0.06  Q          |          |          |      V   |
  20+30       0.2318      0.06  Q          |          |          |      V   |
  20+35       0.2322      0.06  Q          |          |          |      V   |
  20+40       0.2326      0.06  Q          |          |          |      V   |
  20+45       0.2331      0.06  Q          |          |          |      V   |
  20+50       0.2335      0.06  Q          |          |          |      V   |
  20+55       0.2339      0.06  Q          |          |          |      V   |
  21+ 0       0.2343      0.06  Q          |          |          |      V   |
  21+ 5       0.2347      0.06  Q          |          |          |      V   |
  21+10       0.2351      0.06  Q          |          |          |       V  |
  21+15       0.2355      0.06  Q          |          |          |       V  |
  21+20       0.2359      0.06  Q          |          |          |       V  |
  21+25       0.2363      0.06  Q          |          |          |       V  |
  21+30       0.2367      0.06  Q          |          |          |       V  |
  21+35       0.2371      0.06  Q          |          |          |       V  |
  21+40       0.2374      0.05  Q          |          |          |       V  |
  21+45       0.2378      0.05  Q          |          |          |       V  |
  21+50       0.2382      0.05  Q          |          |          |       V  |
  21+55       0.2386      0.05  Q          |          |          |       V  |
  22+ 0       0.2389      0.05  Q          |          |          |       V  |
  22+ 5       0.2393      0.05  Q          |          |          |       V  |
  22+10       0.2396      0.05  Q          |          |          |       V  |
  22+15       0.2400      0.05  Q          |          |          |       V  |
  22+20       0.2404      0.05  Q          |          |          |       V  |
  22+25       0.2407      0.05  Q          |          |          |       V  |
  22+30       0.2410      0.05  Q          |          |          |        V |
  22+35       0.2414      0.05  Q          |          |          |        V |
  22+40       0.2417      0.05  Q          |          |          |        V |
  22+45       0.2421      0.05  Q          |          |          |        V |
  22+50       0.2424      0.05  Q          |          |          |        V |
  22+55       0.2427      0.05  Q          |          |          |        V |
  23+ 0       0.2431      0.05  Q          |          |          |        V |
  23+ 5       0.2434      0.05  Q          |          |          |        V |
  23+10       0.2437      0.05  Q          |          |          |        V |
  23+15       0.2440      0.05  Q          |          |          |        V |
  23+20       0.2444      0.05  Q          |          |          |        V |
  23+25       0.2447      0.05  Q          |          |          |        V |
  23+30       0.2450      0.05  Q          |          |          |        V |
  23+35       0.2453      0.05  Q          |          |          |        V |
  23+40       0.2456      0.05  Q          |          |          |        V |
  23+45       0.2459      0.04  Q          |          |          |        V |
  23+50       0.2462      0.04  Q          |          |          |        V |
  23+55       0.2465      0.04  Q          |          |          |        V |
  24+ 0       0.2468      0.04  Q          |          |          |        V |
  24+ 5       0.2471      0.04  Q          |          |          |        V |
  24+10       0.2472      0.01  Q          |          |          |        V |
  24+15       0.2472      0.00  Q          |          |          |        V |
  24+20       0.2472      0.00  Q          |          |          |        V |
  24+25       0.2472      0.00  Q          |          |          |        V |
  24+30       0.2472      0.00  Q          |          |          |         V
-------------------------------------------------------------------------
```

- 5 Year 3 Hour Pre-Development Unit Hydrograph – Area 'F'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/13/16   File Name exf00503.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

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WESTRIDGE HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'F' - 5 YEAR 3 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 5

       Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 74.4       1.7          1.00     D     0.200     0.100    0.020

Area-averaged adjusted loss rate Fm (In/Hr) =  0.020

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
     0.17   0.100         74.4      56.3       7.77     0.078
     1.51   0.900         98.0      98.0       0.20     0.923

Area-averaged catchment yield fraction, Y =  0.839
Area-averaged low loss fraction, Yb =  0.161
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.091 (hours)
Watershed area =       1.68(Ac.)
Catchment Lag time =   0.073 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 114.8475
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.020(In/Hr)
Average low loss rate fraction (Yb) = 0.161 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.260(In)
Computed peak 30-minute rainfall =  0.590(In)
Specified peak 1-hour rainfall =  0.780(In)
Computed peak 3-hour rainfall =  1.310(In)
Specified peak 6-hour rainfall =  1.810(In)
Specified peak 24-hour rainfall =  3.030(In)


Rainfall depth area reduction factors:
Using a total area of       1.68(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000     Adjusted rainfall =  0.260(In)
```

30-minute factor = 1.000 Adjusted rainfall = 0.590(In)
1-hour factor = 1.000 Adjusted rainfall = 0.780(In)
3-hour factor = 1.000 Adjusted rainfall = 1.310(In)
6-hour factor = 1.000 Adjusted rainfall = 1.810(In)
24-hour factor = 1.000 Adjusted rainfall = 3.030(In)

U n i t H y d r o g r a p h

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
(K = 20.32 (CFS))		
1	19.656	3.994
2	75.825	11.412
3	92.019	3.290
4	97.659	1.146
5	99.077	0.288
6	99.802	0.147
7	100.000	0.040

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.2600	0.2600
2	0.3570	0.0970
3	0.4297	0.0727
4	0.4901	0.0604
5	0.5428	0.0527
6	0.5900	0.0472
7	0.6277	0.0378
8	0.6624	0.0347
9	0.6946	0.0322
10	0.7247	0.0301
11	0.7531	0.0284
12	0.7799	0.0269
13	0.8100	0.0300
14	0.8388	0.0288
15	0.8666	0.0278
16	0.8934	0.0268
17	0.9193	0.0259
18	0.9444	0.0251
19	0.9689	0.0244
20	0.9926	0.0237
21	1.0157	0.0231
22	1.0383	0.0225
23	1.0603	0.0220
24	1.0818	0.0215
25	1.1029	0.0210
26	1.1235	0.0206
27	1.1437	0.0202
28	1.1635	0.0198
29	1.1829	0.0194
30	1.2020	0.0191
31	1.2207	0.0187
32	1.2391	0.0184
33	1.2573	0.0181
34	1.2751	0.0178
35	1.2927	0.0176
36	1.3100	0.0173

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0173	0.0017	0.0156
2	0.0176	0.0017	0.0159
3	0.0181	0.0017	0.0165
4	0.0184	0.0017	0.0168
5	0.0191	0.0017	0.0174
6	0.0194	0.0017	0.0178

7	0.0202	0.0017	0.0185
8	0.0206	0.0017	0.0189
9	0.0215	0.0017	0.0198
10	0.0220	0.0017	0.0203
11	0.0231	0.0017	0.0215
12	0.0237	0.0017	0.0221
13	0.0251	0.0017	0.0235
14	0.0259	0.0017	0.0243
15	0.0278	0.0017	0.0261
16	0.0288	0.0017	0.0272
17	0.0269	0.0017	0.0252
18	0.0284	0.0017	0.0267
19	0.0322	0.0017	0.0305
20	0.0347	0.0017	0.0330
21	0.0472	0.0017	0.0455
22	0.0527	0.0017	0.0510
23	0.0727	0.0017	0.0711
24	0.0970	0.0017	0.0953
25	0.2600	0.0017	0.2583
26	0.0604	0.0017	0.0588
27	0.0378	0.0017	0.0361
28	0.0301	0.0017	0.0284
29	0.0300	0.0017	0.0284
30	0.0268	0.0017	0.0251
31	0.0244	0.0017	0.0227
32	0.0225	0.0017	0.0209
33	0.0210	0.0017	0.0194
34	0.0198	0.0017	0.0181
35	0.0187	0.0017	0.0171
36	0.0178	0.0017	0.0162

Total soil rain loss = 0.06(In)
Total effective rainfall = 1.25(In)
Peak flow rate in flood hydrograph = 3.60(CFS)

++

3 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0 2.5 5.0 7.5 10.0
0+ 5	0.0004	0.06	Q | | | |
0+10	0.0021	0.24	Q | | | |
0+15	0.0042	0.30	VQ | | | |
0+20	0.0064	0.33	|Q | | | |
0+25	0.0087	0.34	|Q | | | |
0+30	0.0111	0.35	|QV | | | |
0+35	0.0136	0.36	|Q V | | | |
0+40	0.0162	0.37	|Q V | | | |
0+45	0.0188	0.38	|Q V | | | |
0+50	0.0216	0.40	|Q V | | | |
0+55	0.0244	0.41	|Q V | | | |
1+ 0	0.0274	0.43	|Q V | | | |
1+ 5	0.0305	0.45	|Q V | | | |
1+10	0.0338	0.47	|Q V | | | |
1+15	0.0372	0.49	|Q V | | | |
1+20	0.0408	0.52	| Q V| | | |
1+25	0.0444	0.54	| Q V | | |
1+30	0.0481	0.52	| Q V | | |
1+35	0.0519	0.55	| Q |V | | |
1+40	0.0561	0.61	| Q | V | | |
1+45	0.0609	0.70	| Q | V | | |
1+50	0.0670	0.88	| Q | V | | |
1+55	0.0743	1.07	| Q | V | | |
2+ 0	0.0841	1.43	| Q | V| | |
2+ 5	0.1009	2.43	| Q| | V | |
2+10	0.1257	3.60	| | Q | V | |

```
    2+15       0.1381      1.80  |      Q  |         |         |V        |
    2+20       0.1453      1.06  |    Q    |         |         |  V      |
    2+25       0.1503      0.72  |  Q      |         |         |   V     |
    2+30       0.1545      0.62  |  Q      |         |         |    V    |
    2+35       0.1582      0.53  |  Q      |         |         |     V   |
    2+40       0.1615      0.47  |Q        |         |         |     V   |
    2+45       0.1645      0.43  |Q        |         |         |      V  |
    2+50       0.1672      0.40  |Q        |         |         |       V |
    2+55       0.1698      0.37  |Q        |         |         |       V |
    3+ 0       0.1722      0.35  |Q        |         |         |        V|
    3+ 5       0.1741      0.27  |Q        |         |         |        V|
    3+10       0.1746      0.08  Q         |         |         |        V|
    3+15       0.1748      0.03  Q         |         |         |        V|
    3+20       0.1749      0.01  Q         |         |         |        V|
    3+25       0.1749      0.00  Q         |         |         |        V|
    3+30       0.1749      0.00  Q         |         |         |        V|
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- 5 Year 6 Hour Pre-Development Unit Hydrograph – Area 'F'

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       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/13/16   File Name exf00506.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

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WESTRIDGE HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'F' - 5 YEAR 6 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 5

       Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 74.4       1.7          1.00     D     0.200     0.100    0.020

Area-averaged adjusted loss rate Fm (In/Hr) =  0.020

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
     0.17   0.100         74.4      56.3       7.77     0.078
     1.51   0.900         98.0      98.0       0.20     0.923

Area-averaged catchment yield fraction, Y =  0.839
Area-averaged low loss fraction, Yb =  0.161
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.091 (hours)
Watershed area =       1.68(Ac.)
Catchment Lag time =   0.073 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 114.8475
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.020(In/Hr)
Average low loss rate fraction (Yb) = 0.161 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.260(In)
Computed peak 30-minute rainfall =  0.590(In)
Specified peak 1-hour rainfall =  0.780(In)
Computed peak 3-hour rainfall =  1.310(In)
Specified peak 6-hour rainfall =  1.810(In)
Specified peak 24-hour rainfall =  3.030(In)


Rainfall depth area reduction factors:
Using a total area of       1.68(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000     Adjusted rainfall =  0.260(In)
```

```
30-minute factor = 1.000    Adjusted rainfall =  0.590(In)
1-hour factor = 1.000       Adjusted rainfall =  0.780(In)
3-hour factor = 1.000       Adjusted rainfall =  1.310(In)
6-hour factor = 1.000       Adjusted rainfall =  1.810(In)
24-hour factor = 1.000 Adjusted rainfall =  3.030(In)
--------------------------------------------------------------------

                     U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------
               (K =        20.32 (CFS))

  1               19.656                   3.994
  2               75.825                  11.412
  3               92.019                   3.290
  4               97.659                   1.146
  5               99.077                   0.288
  6               99.802                   0.147
  7              100.000                   0.040
--------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.2600               0.2600
  2              0.3570               0.0970
  3              0.4297               0.0727
  4              0.4901               0.0604
  5              0.5428               0.0527
  6              0.5900               0.0472
  7              0.6277               0.0378
  8              0.6624               0.0347
  9              0.6946               0.0322
 10              0.7247               0.0301
 11              0.7531               0.0284
 12              0.7799               0.0269
 13              0.8100               0.0300
 14              0.8388               0.0288
 15              0.8666               0.0278
 16              0.8934               0.0268
 17              0.9193               0.0259
 18              0.9444               0.0251
 19              0.9689               0.0244
 20              0.9926               0.0237
 21              1.0157               0.0231
 22              1.0383               0.0225
 23              1.0603               0.0220
 24              1.0818               0.0215
 25              1.1029               0.0210
 26              1.1235               0.0206
 27              1.1437               0.0202
 28              1.1635               0.0198
 29              1.1829               0.0194
 30              1.2020               0.0191
 31              1.2207               0.0187
 32              1.2391               0.0184
 33              1.2573               0.0181
 34              1.2751               0.0178
 35              1.2927               0.0176
 36              1.3100               0.0173
 37              1.3268               0.0168
 38              1.3434               0.0166
 39              1.3598               0.0164
 40              1.3760               0.0162
 41              1.3919               0.0159
 42              1.4076               0.0157
 43              1.4232               0.0155
 44              1.4385               0.0153
 45              1.4537               0.0152
 46              1.4687               0.0150
 47              1.4835               0.0148
```

48	1.4981	0.0146
49	1.5126	0.0145
50	1.5269	0.0143
51	1.5411	0.0142
52	1.5551	0.0140
53	1.5690	0.0139
54	1.5827	0.0137
55	1.5963	0.0136
56	1.6098	0.0135
57	1.6231	0.0133
58	1.6364	0.0132
59	1.6495	0.0131
60	1.6624	0.0130
61	1.6753	0.0129
62	1.6881	0.0128
63	1.7007	0.0126
64	1.7132	0.0125
65	1.7257	0.0124
66	1.7380	0.0123
67	1.7502	0.0122
68	1.7624	0.0121
69	1.7744	0.0120
70	1.7864	0.0119
71	1.7982	0.0119
72	1.8100	0.0118

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0118	0.0017	0.0101
2	0.0119	0.0017	0.0102
3	0.0120	0.0017	0.0104
4	0.0121	0.0017	0.0105
5	0.0123	0.0017	0.0107
6	0.0124	0.0017	0.0108
7	0.0126	0.0017	0.0110
8	0.0128	0.0017	0.0111
9	0.0130	0.0017	0.0113
10	0.0131	0.0017	0.0114
11	0.0133	0.0017	0.0117
12	0.0135	0.0017	0.0118
13	0.0137	0.0017	0.0121
14	0.0139	0.0017	0.0122
15	0.0142	0.0017	0.0125
16	0.0143	0.0017	0.0127
17	0.0146	0.0017	0.0130
18	0.0148	0.0017	0.0131
19	0.0152	0.0017	0.0135
20	0.0153	0.0017	0.0137
21	0.0157	0.0017	0.0141
22	0.0159	0.0017	0.0143
23	0.0164	0.0017	0.0147
24	0.0166	0.0017	0.0149
25	0.0173	0.0017	0.0156
26	0.0176	0.0017	0.0159
27	0.0181	0.0017	0.0165
28	0.0184	0.0017	0.0168
29	0.0191	0.0017	0.0174
30	0.0194	0.0017	0.0178
31	0.0202	0.0017	0.0185
32	0.0206	0.0017	0.0189
33	0.0215	0.0017	0.0198
34	0.0220	0.0017	0.0203
35	0.0231	0.0017	0.0215
36	0.0237	0.0017	0.0221
37	0.0251	0.0017	0.0235
38	0.0259	0.0017	0.0243
39	0.0278	0.0017	0.0261
40	0.0288	0.0017	0.0272
41	0.0269	0.0017	0.0252

```
       42              0.0284          0.0017              0.0267
       43              0.0322          0.0017              0.0305
       44              0.0347          0.0017              0.0330
       45              0.0472          0.0017              0.0455
       46              0.0527          0.0017              0.0510
       47              0.0727          0.0017              0.0711
       48              0.0970          0.0017              0.0953
       49              0.2600          0.0017              0.2583
       50              0.0604          0.0017              0.0588
       51              0.0378          0.0017              0.0361
       52              0.0301          0.0017              0.0284
       53              0.0300          0.0017              0.0284
       54              0.0268          0.0017              0.0251
       55              0.0244          0.0017              0.0227
       56              0.0225          0.0017              0.0209
       57              0.0210          0.0017              0.0194
       58              0.0198          0.0017              0.0181
       59              0.0187          0.0017              0.0171
       60              0.0178          0.0017              0.0162
       61              0.0168          0.0017              0.0152
       62              0.0162          0.0017              0.0145
       63              0.0155          0.0017              0.0139
       64              0.0150          0.0017              0.0133
       65              0.0145          0.0017              0.0128
       66              0.0140          0.0017              0.0124
       67              0.0136          0.0017              0.0119
       68              0.0132          0.0017              0.0116
       69              0.0129          0.0017              0.0112
       70              0.0125          0.0017              0.0109
       71              0.0122          0.0017              0.0106
       72              0.0119          0.0017              0.0103
      ------------------------------------------------------------------------
      ------------------------------------------------------------------------
      Total soil rain loss =      0.12(In)
      Total effective rainfall =      1.69(In)
      Peak flow rate in flood hydrograph =      3.60(CFS)
      ------------------------------------------------------------------------
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          6 - H O U R    S T O R M
                     R u n o f f      H y d r o g r a p h
      ------------------------------------------------------------------------
                  Hydrograph in   5   Minute intervals ((CFS))

      ------------------------------------------------------------------------
 Time(h+m) Volume Ac.Ft   Q(CFS)  0        2.5       5.0       7.5      10.0
 ------------------------------------------------------------------------
   0+ 5       0.0003      0.04  Q         |         |         |         |
   0+10       0.0014      0.16  Q         |         |         |         |
   0+15       0.0027      0.19  Q         |         |         |         |
   0+20       0.0041      0.21  Q         |         |         |         |
   0+25       0.0055      0.21  Q         |         |         |         |
   0+30       0.0070      0.22  QV        |         |         |         |
   0+35       0.0085      0.22  QV        |         |         |         |
   0+40       0.0101      0.22  QV        |         |         |         |
   0+45       0.0116      0.23  QV        |         |         |         |
   0+50       0.0132      0.23  Q V       |         |         |         |
   0+55       0.0148      0.23  Q V       |         |         |         |
   1+ 0       0.0164      0.24  Q V       |         |         |         |
   1+ 5       0.0181      0.24  Q  V      |         |         |         |
   1+10       0.0197      0.24  Q  V      |         |         |         |
   1+15       0.0214      0.25  Q  V      |         |         |         |
   1+20       0.0232      0.25  |Q V      |         |         |         |
   1+25       0.0250      0.26  |Q  V     |         |         |         |
   1+30       0.0268      0.26  |Q  V     |         |         |         |
   1+35       0.0286      0.27  |Q  V     |         |         |         |
   1+40       0.0305      0.27  |Q   V    |         |         |         |
   1+45       0.0324      0.28  |Q   V    |         |         |         |
   1+50       0.0344      0.28  |Q   V    |         |         |         |
   1+55       0.0363      0.29  |Q    V   |         |         |         |
   2+ 0       0.0384      0.30  |Q    V   |         |         |         |
   2+ 5       0.0405      0.30  |Q    V   |         |         |         |
```

```
   2+10       0.0427      0.31  |Q     V  |          |          |          |
   2+15       0.0449      0.32  |Q     V  |          |          |          |
   2+20       0.0472      0.33  |Q     V  |          |          |          |
   2+25       0.0495      0.34  |Q      V |          |          |          |
   2+30       0.0519      0.35  |Q      V |          |          |          |
   2+35       0.0544      0.36  |Q       V|          |          |          |
   2+40       0.0570      0.37  |Q       V|          |          |          |
   2+45       0.0596      0.38  |Q        V          |          |          |
   2+50       0.0624      0.40  |Q        V          |          |          |
   2+55       0.0652      0.41  |Q         |V         |          |          |
   3+ 0       0.0682      0.43  |Q         |V         |          |          |
   3+ 5       0.0713      0.45  |Q         | V        |          |          |
   3+10       0.0746      0.47  |Q         | V        |          |          |
   3+15       0.0780      0.49  |Q         |  V       |          |          |
   3+20       0.0816      0.52  | Q        |  V       |          |          |
   3+25       0.0852      0.54  | Q        |   V      |          |          |
   3+30       0.0889      0.52  | Q        |    V     |          |          |
   3+35       0.0927      0.55  | Q        |    V     |          |          |
   3+40       0.0969      0.61  | Q        |     V    |          |          |
   3+45       0.1017      0.70  | Q        |      V   |          |          |
   3+50       0.1078      0.88  |  Q       |       V  |          |          |
   3+55       0.1151      1.07  |   Q      |        V |          |          |
   4+ 0       0.1249      1.43  |    Q     |          |V         |          |
   4+ 5       0.1417      2.43  |         Q|          |  V       |          |
   4+10       0.1665      3.60  |          |   Q      |       V  |          |
   4+15       0.1789      1.80  |       Q  |          |         V          |
   4+20       0.1861      1.06  |   Q      |          |          |V         |
   4+25       0.1911      0.72  | Q        |          |          | V        |
   4+30       0.1953      0.62  | Q        |          |          |  V       |
   4+35       0.1990      0.53  | Q        |          |          |  V       |
   4+40       0.2023      0.47  |Q         |          |          |   V      |
   4+45       0.2053      0.43  |Q         |          |          |   V      |
   4+50       0.2080      0.40  |Q         |          |          |    V     |
   4+55       0.2106      0.37  |Q         |          |          |    V     |
   5+ 0       0.2130      0.35  |Q         |          |          |     V    |
   5+ 5       0.2153      0.33  |Q         |          |          |     V    |
   5+10       0.2175      0.31  |Q         |          |          |     V    |
   5+15       0.2195      0.30  |Q         |          |          |      V   |
   5+20       0.2215      0.28  |Q         |          |          |      V   |
   5+25       0.2233      0.27  |Q         |          |          |      V   |
   5+30       0.2251      0.26  |Q         |          |          |       V  |
   5+35       0.2269      0.25  |Q         |          |          |       V  |
   5+40       0.2286      0.24  Q          |          |          |       V  |
   5+45       0.2302      0.24  Q          |          |          |       V  |
   5+50       0.2318      0.23  Q          |          |          |        V |
   5+55       0.2333      0.22  Q          |          |          |        V |
   6+ 0       0.2348      0.22  Q          |          |          |        V |
   6+ 5       0.2360      0.17  Q          |          |          |        V |
   6+10       0.2363      0.05  Q          |          |          |        V |
   6+15       0.2364      0.02  Q          |          |          |        V |
   6+20       0.2365      0.00  Q          |          |          |        V |
   6+25       0.2365      0.00  Q          |          |          |        V |
   6+30       0.2365      0.00  Q          |          |          |        V |
-------------------------------------------------------------------------
```

- 5 Year 12 Hour Pre-Development Unit Hydrograph – Area 'F'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/13/16   File Name exf00524.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
WESTRIDGE HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'F' - 5 YEAR 24 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 5

       Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 74.4       1.7          1.00     D     0.200     0.100    0.020

Area-averaged adjusted loss rate Fm (In/Hr) =  0.020

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
     0.17   0.100         74.4      56.3       7.77     0.078
     1.51   0.900         98.0      98.0       0.20     0.923

Area-averaged catchment yield fraction, Y =  0.839
Area-averaged low loss fraction, Yb =  0.161
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.091 (hours)
Watershed area =       1.68(Ac.)
Catchment Lag time =   0.073 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 114.8475
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.020(In/Hr)
Average low loss rate fraction (Yb) = 0.161 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.260(In)
Computed peak 30-minute rainfall =  0.590(In)
Specified peak 1-hour rainfall =  0.780(In)
Computed peak 3-hour rainfall =  1.310(In)
Specified peak 6-hour rainfall =  1.810(In)
Specified peak 24-hour rainfall =  3.030(In)


Rainfall depth area reduction factors:
Using a total area of       1.68(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000     Adjusted rainfall =  0.260(In)
```

```
30-minute factor = 1.000    Adjusted rainfall =  0.590(In)
1-hour factor = 1.000       Adjusted rainfall =  0.780(In)
3-hour factor = 1.000       Adjusted rainfall =  1.310(In)
6-hour factor = 1.000       Adjusted rainfall =  1.810(In)
24-hour factor = 1.000 Adjusted rainfall =  3.030(In)
------------------------------------------------------------------------

                      U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
------------------------------------------------------------------------
               (K =        20.32 (CFS))

  1               19.656                   3.994
  2               75.825                  11.412
  3               92.019                   3.290
  4               97.659                   1.146
  5               99.077                   0.288
  6               99.802                   0.147
  7              100.000                   0.040
------------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.2600               0.2600
  2              0.3570               0.0970
  3              0.4297               0.0727
  4              0.4901               0.0604
  5              0.5428               0.0527
  6              0.5900               0.0472
  7              0.6277               0.0378
  8              0.6624               0.0347
  9              0.6946               0.0322
 10              0.7247               0.0301
 11              0.7531               0.0284
 12              0.7799               0.0269
 13              0.8100               0.0300
 14              0.8388               0.0288
 15              0.8666               0.0278
 16              0.8934               0.0268
 17              0.9193               0.0259
 18              0.9444               0.0251
 19              0.9689               0.0244
 20              0.9926               0.0237
 21              1.0157               0.0231
 22              1.0383               0.0225
 23              1.0603               0.0220
 24              1.0818               0.0215
 25              1.1029               0.0210
 26              1.1235               0.0206
 27              1.1437               0.0202
 28              1.1635               0.0198
 29              1.1829               0.0194
 30              1.2020               0.0191
 31              1.2207               0.0187
 32              1.2391               0.0184
 33              1.2573               0.0181
 34              1.2751               0.0178
 35              1.2927               0.0176
 36              1.3100               0.0173
 37              1.3268               0.0168
 38              1.3434               0.0166
 39              1.3598               0.0164
 40              1.3760               0.0162
 41              1.3919               0.0159
 42              1.4076               0.0157
 43              1.4232               0.0155
 44              1.4385               0.0153
 45              1.4537               0.0152
 46              1.4687               0.0150
 47              1.4835               0.0148
```

48	1.4981	0.0146
49	1.5126	0.0145
50	1.5269	0.0143
51	1.5411	0.0142
52	1.5551	0.0140
53	1.5690	0.0139
54	1.5827	0.0137
55	1.5963	0.0136
56	1.6098	0.0135
57	1.6231	0.0133
58	1.6364	0.0132
59	1.6495	0.0131
60	1.6624	0.0130
61	1.6753	0.0129
62	1.6881	0.0128
63	1.7007	0.0126
64	1.7132	0.0125
65	1.7257	0.0124
66	1.7380	0.0123
67	1.7502	0.0122
68	1.7624	0.0121
69	1.7744	0.0120
70	1.7864	0.0119
71	1.7982	0.0119
72	1.8100	0.0118
73	1.8193	0.0093
74	1.8285	0.0092
75	1.8377	0.0091
76	1.8467	0.0091
77	1.8557	0.0090
78	1.8646	0.0089
79	1.8735	0.0088
80	1.8823	0.0088
81	1.8910	0.0087
82	1.8996	0.0086
83	1.9082	0.0086
84	1.9167	0.0085
85	1.9252	0.0084
86	1.9336	0.0084
87	1.9419	0.0083
88	1.9501	0.0083
89	1.9584	0.0082
90	1.9665	0.0081
91	1.9746	0.0081
92	1.9826	0.0080
93	1.9906	0.0080
94	1.9985	0.0079
95	2.0064	0.0079
96	2.0142	0.0078
97	2.0220	0.0078
98	2.0297	0.0077
99	2.0374	0.0077
100	2.0450	0.0076
101	2.0526	0.0076
102	2.0601	0.0075
103	2.0676	0.0075
104	2.0751	0.0074
105	2.0825	0.0074
106	2.0898	0.0073
107	2.0971	0.0073
108	2.1044	0.0073
109	2.1116	0.0072
110	2.1188	0.0072
111	2.1259	0.0071
112	2.1330	0.0071
113	2.1401	0.0071
114	2.1471	0.0070
115	2.1541	0.0070
116	2.1610	0.0069
117	2.1679	0.0069
118	2.1748	0.0069

119	2.1816	0.0068
120	2.1884	0.0068
121	2.1952	0.0068
122	2.2019	0.0067
123	2.2086	0.0067
124	2.2152	0.0067
125	2.2219	0.0066
126	2.2285	0.0066
127	2.2350	0.0066
128	2.2415	0.0065
129	2.2480	0.0065
130	2.2545	0.0065
131	2.2609	0.0064
132	2.2673	0.0064
133	2.2737	0.0064
134	2.2800	0.0063
135	2.2863	0.0063
136	2.2926	0.0063
137	2.2989	0.0063
138	2.3051	0.0062
139	2.3113	0.0062
140	2.3175	0.0062
141	2.3236	0.0061
142	2.3297	0.0061
143	2.3358	0.0061
144	2.3418	0.0061
145	2.3479	0.0060
146	2.3539	0.0060
147	2.3599	0.0060
148	2.3658	0.0060
149	2.3717	0.0059
150	2.3777	0.0059
151	2.3835	0.0059
152	2.3894	0.0059
153	2.3952	0.0058
154	2.4010	0.0058
155	2.4068	0.0058
156	2.4126	0.0058
157	2.4183	0.0057
158	2.4240	0.0057
159	2.4297	0.0057
160	2.4354	0.0057
161	2.4410	0.0056
162	2.4466	0.0056
163	2.4522	0.0056
164	2.4578	0.0056
165	2.4634	0.0056
166	2.4689	0.0055
167	2.4744	0.0055
168	2.4799	0.0055
169	2.4854	0.0055
170	2.4909	0.0055
171	2.4963	0.0054
172	2.5017	0.0054
173	2.5071	0.0054
174	2.5125	0.0054
175	2.5179	0.0054
176	2.5232	0.0053
177	2.5285	0.0053
178	2.5338	0.0053
179	2.5391	0.0053
180	2.5444	0.0053
181	2.5496	0.0052
182	2.5548	0.0052
183	2.5600	0.0052
184	2.5652	0.0052
185	2.5704	0.0052
186	2.5755	0.0052
187	2.5807	0.0051
188	2.5858	0.0051
189	2.5909	0.0051

190	2.5960	0.0051
191	2.6011	0.0051
192	2.6061	0.0051
193	2.6112	0.0050
194	2.6162	0.0050
195	2.6212	0.0050
196	2.6262	0.0050
197	2.6311	0.0050
198	2.6361	0.0050
199	2.6410	0.0049
200	2.6460	0.0049
201	2.6509	0.0049
202	2.6558	0.0049
203	2.6606	0.0049
204	2.6655	0.0049
205	2.6704	0.0048
206	2.6752	0.0048
207	2.6800	0.0048
208	2.6848	0.0048
209	2.6896	0.0048
210	2.6944	0.0048
211	2.6991	0.0048
212	2.7039	0.0047
213	2.7086	0.0047
214	2.7133	0.0047
215	2.7180	0.0047
216	2.7227	0.0047
217	2.7274	0.0047
218	2.7321	0.0047
219	2.7367	0.0047
220	2.7414	0.0046
221	2.7460	0.0046
222	2.7506	0.0046
223	2.7552	0.0046
224	2.7598	0.0046
225	2.7644	0.0046
226	2.7689	0.0046
227	2.7735	0.0045
228	2.7780	0.0045
229	2.7825	0.0045
230	2.7870	0.0045
231	2.7915	0.0045
232	2.7960	0.0045
233	2.8005	0.0045
234	2.8050	0.0045
235	2.8094	0.0044
236	2.8138	0.0044
237	2.8183	0.0044
238	2.8227	0.0044
239	2.8271	0.0044
240	2.8315	0.0044
241	2.8359	0.0044
242	2.8402	0.0044
243	2.8446	0.0044
244	2.8489	0.0043
245	2.8533	0.0043
246	2.8576	0.0043
247	2.8619	0.0043
248	2.8662	0.0043
249	2.8705	0.0043
250	2.8748	0.0043
251	2.8790	0.0043
252	2.8833	0.0043
253	2.8875	0.0042
254	2.8918	0.0042
255	2.8960	0.0042
256	2.9002	0.0042
257	2.9044	0.0042
258	2.9086	0.0042
259	2.9128	0.0042
260	2.9170	0.0042

261	2.9211	0.0042
262	2.9253	0.0042
263	2.9294	0.0041
264	2.9336	0.0041
265	2.9377	0.0041
266	2.9418	0.0041
267	2.9459	0.0041
268	2.9500	0.0041
269	2.9541	0.0041
270	2.9582	0.0041
271	2.9622	0.0041
272	2.9663	0.0041
273	2.9704	0.0040
274	2.9744	0.0040
275	2.9784	0.0040
276	2.9824	0.0040
277	2.9865	0.0040
278	2.9905	0.0040
279	2.9945	0.0040
280	2.9984	0.0040
281	3.0024	0.0040
282	3.0064	0.0040
283	3.0103	0.0040
284	3.0143	0.0039
285	3.0182	0.0039
286	3.0222	0.0039
287	3.0261	0.0039
288	3.0300	0.0039

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0039	0.0006	0.0033
2	0.0039	0.0006	0.0033
3	0.0039	0.0006	0.0033
4	0.0039	0.0006	0.0033
5	0.0040	0.0006	0.0033
6	0.0040	0.0006	0.0033
7	0.0040	0.0006	0.0034
8	0.0040	0.0006	0.0034
9	0.0040	0.0006	0.0034
10	0.0040	0.0006	0.0034
11	0.0040	0.0007	0.0034
12	0.0041	0.0007	0.0034
13	0.0041	0.0007	0.0034
14	0.0041	0.0007	0.0034
15	0.0041	0.0007	0.0034
16	0.0041	0.0007	0.0035
17	0.0041	0.0007	0.0035
18	0.0041	0.0007	0.0035
19	0.0042	0.0007	0.0035
20	0.0042	0.0007	0.0035
21	0.0042	0.0007	0.0035
22	0.0042	0.0007	0.0035
23	0.0042	0.0007	0.0035
24	0.0042	0.0007	0.0036
25	0.0043	0.0007	0.0036
26	0.0043	0.0007	0.0036
27	0.0043	0.0007	0.0036
28	0.0043	0.0007	0.0036
29	0.0043	0.0007	0.0036
30	0.0043	0.0007	0.0036
31	0.0044	0.0007	0.0037
32	0.0044	0.0007	0.0037
33	0.0044	0.0007	0.0037
34	0.0044	0.0007	0.0037
35	0.0044	0.0007	0.0037
36	0.0044	0.0007	0.0037
37	0.0045	0.0007	0.0037
38	0.0045	0.0007	0.0038

39	0.0045	0.0007	0.0038
40	0.0045	0.0007	0.0038
41	0.0045	0.0007	0.0038
42	0.0045	0.0007	0.0038
43	0.0046	0.0007	0.0038
44	0.0046	0.0007	0.0038
45	0.0046	0.0007	0.0039
46	0.0046	0.0007	0.0039
47	0.0047	0.0007	0.0039
48	0.0047	0.0008	0.0039
49	0.0047	0.0008	0.0039
50	0.0047	0.0008	0.0039
51	0.0047	0.0008	0.0040
52	0.0047	0.0008	0.0040
53	0.0048	0.0008	0.0040
54	0.0048	0.0008	0.0040
55	0.0048	0.0008	0.0040
56	0.0048	0.0008	0.0041
57	0.0049	0.0008	0.0041
58	0.0049	0.0008	0.0041
59	0.0049	0.0008	0.0041
60	0.0049	0.0008	0.0041
61	0.0050	0.0008	0.0042
62	0.0050	0.0008	0.0042
63	0.0050	0.0008	0.0042
64	0.0050	0.0008	0.0042
65	0.0051	0.0008	0.0042
66	0.0051	0.0008	0.0043
67	0.0051	0.0008	0.0043
68	0.0051	0.0008	0.0043
69	0.0052	0.0008	0.0043
70	0.0052	0.0008	0.0043
71	0.0052	0.0008	0.0044
72	0.0052	0.0008	0.0044
73	0.0053	0.0008	0.0044
74	0.0053	0.0009	0.0044
75	0.0053	0.0009	0.0045
76	0.0053	0.0009	0.0045
77	0.0054	0.0009	0.0045
78	0.0054	0.0009	0.0045
79	0.0054	0.0009	0.0046
80	0.0055	0.0009	0.0046
81	0.0055	0.0009	0.0046
82	0.0055	0.0009	0.0046
83	0.0056	0.0009	0.0047
84	0.0056	0.0009	0.0047
85	0.0056	0.0009	0.0047
86	0.0056	0.0009	0.0047
87	0.0057	0.0009	0.0048
88	0.0057	0.0009	0.0048
89	0.0058	0.0009	0.0048
90	0.0058	0.0009	0.0049
91	0.0058	0.0009	0.0049
92	0.0059	0.0009	0.0049
93	0.0059	0.0010	0.0050
94	0.0059	0.0010	0.0050
95	0.0060	0.0010	0.0050
96	0.0060	0.0010	0.0050
97	0.0061	0.0010	0.0051
98	0.0061	0.0010	0.0051
99	0.0061	0.0010	0.0051
100	0.0062	0.0010	0.0052
101	0.0062	0.0010	0.0052
102	0.0063	0.0010	0.0052
103	0.0063	0.0010	0.0053
104	0.0063	0.0010	0.0053
105	0.0064	0.0010	0.0054
106	0.0064	0.0010	0.0054
107	0.0065	0.0010	0.0054
108	0.0065	0.0011	0.0055
109	0.0066	0.0011	0.0055

110	0.0066	0.0011	0.0056
111	0.0067	0.0011	0.0056
112	0.0067	0.0011	0.0056
113	0.0068	0.0011	0.0057
114	0.0068	0.0011	0.0057
115	0.0069	0.0011	0.0058
116	0.0069	0.0011	0.0058
117	0.0070	0.0011	0.0059
118	0.0071	0.0011	0.0059
119	0.0071	0.0011	0.0060
120	0.0072	0.0012	0.0060
121	0.0073	0.0012	0.0061
122	0.0073	0.0012	0.0061
123	0.0074	0.0012	0.0062
124	0.0074	0.0012	0.0062
125	0.0075	0.0012	0.0063
126	0.0076	0.0012	0.0064
127	0.0077	0.0012	0.0064
128	0.0077	0.0012	0.0065
129	0.0078	0.0013	0.0066
130	0.0079	0.0013	0.0066
131	0.0080	0.0013	0.0067
132	0.0080	0.0013	0.0067
133	0.0081	0.0013	0.0068
134	0.0082	0.0013	0.0069
135	0.0083	0.0013	0.0070
136	0.0084	0.0014	0.0070
137	0.0085	0.0014	0.0071
138	0.0086	0.0014	0.0072
139	0.0087	0.0014	0.0073
140	0.0088	0.0014	0.0074
141	0.0089	0.0014	0.0075
142	0.0090	0.0014	0.0075
143	0.0091	0.0015	0.0077
144	0.0092	0.0015	0.0077
145	0.0118	0.0017	0.0101
146	0.0119	0.0017	0.0102
147	0.0120	0.0017	0.0104
148	0.0121	0.0017	0.0105
149	0.0123	0.0017	0.0107
150	0.0124	0.0017	0.0108
151	0.0126	0.0017	0.0110
152	0.0128	0.0017	0.0111
153	0.0130	0.0017	0.0113
154	0.0131	0.0017	0.0114
155	0.0133	0.0017	0.0117
156	0.0135	0.0017	0.0118
157	0.0137	0.0017	0.0121
158	0.0139	0.0017	0.0122
159	0.0142	0.0017	0.0125
160	0.0143	0.0017	0.0127
161	0.0146	0.0017	0.0130
162	0.0148	0.0017	0.0131
163	0.0152	0.0017	0.0135
164	0.0153	0.0017	0.0137
165	0.0157	0.0017	0.0141
166	0.0159	0.0017	0.0143
167	0.0164	0.0017	0.0147
168	0.0166	0.0017	0.0149
169	0.0173	0.0017	0.0156
170	0.0176	0.0017	0.0159
171	0.0181	0.0017	0.0165
172	0.0184	0.0017	0.0168
173	0.0191	0.0017	0.0174
174	0.0194	0.0017	0.0178
175	0.0202	0.0017	0.0185
176	0.0206	0.0017	0.0189
177	0.0215	0.0017	0.0198
178	0.0220	0.0017	0.0203
179	0.0231	0.0017	0.0215
180	0.0237	0.0017	0.0221

181	0.0251	0.0017	0.0235
182	0.0259	0.0017	0.0243
183	0.0278	0.0017	0.0261
184	0.0288	0.0017	0.0272
185	0.0269	0.0017	0.0252
186	0.0284	0.0017	0.0267
187	0.0322	0.0017	0.0305
188	0.0347	0.0017	0.0330
189	0.0472	0.0017	0.0455
190	0.0527	0.0017	0.0510
191	0.0727	0.0017	0.0711
192	0.0970	0.0017	0.0953
193	0.2600	0.0017	0.2583
194	0.0604	0.0017	0.0588
195	0.0378	0.0017	0.0361
196	0.0301	0.0017	0.0284
197	0.0300	0.0017	0.0284
198	0.0268	0.0017	0.0251
199	0.0244	0.0017	0.0227
200	0.0225	0.0017	0.0209
201	0.0210	0.0017	0.0194
202	0.0198	0.0017	0.0181
203	0.0187	0.0017	0.0171
204	0.0178	0.0017	0.0162
205	0.0168	0.0017	0.0152
206	0.0162	0.0017	0.0145
207	0.0155	0.0017	0.0139
208	0.0150	0.0017	0.0133
209	0.0145	0.0017	0.0128
210	0.0140	0.0017	0.0124
211	0.0136	0.0017	0.0119
212	0.0132	0.0017	0.0116
213	0.0129	0.0017	0.0112
214	0.0125	0.0017	0.0109
215	0.0122	0.0017	0.0106
216	0.0119	0.0017	0.0103
217	0.0093	0.0015	0.0078
218	0.0091	0.0015	0.0076
219	0.0088	0.0014	0.0074
220	0.0086	0.0014	0.0073
221	0.0084	0.0014	0.0071
222	0.0083	0.0013	0.0069
223	0.0081	0.0013	0.0068
224	0.0079	0.0013	0.0067
225	0.0078	0.0013	0.0065
226	0.0076	0.0012	0.0064
227	0.0075	0.0012	0.0063
228	0.0073	0.0012	0.0062
229	0.0072	0.0012	0.0061
230	0.0071	0.0011	0.0060
231	0.0070	0.0011	0.0059
232	0.0069	0.0011	0.0058
233	0.0068	0.0011	0.0057
234	0.0067	0.0011	0.0056
235	0.0066	0.0011	0.0055
236	0.0065	0.0010	0.0054
237	0.0064	0.0010	0.0053
238	0.0063	0.0010	0.0053
239	0.0062	0.0010	0.0052
240	0.0061	0.0010	0.0051
241	0.0060	0.0010	0.0051
242	0.0060	0.0010	0.0050
243	0.0059	0.0009	0.0049
244	0.0058	0.0009	0.0049
245	0.0057	0.0009	0.0048
246	0.0057	0.0009	0.0048
247	0.0056	0.0009	0.0047
248	0.0055	0.0009	0.0046
249	0.0055	0.0009	0.0046
250	0.0054	0.0009	0.0045
251	0.0054	0.0009	0.0045

252	0.0053	0.0009	0.0044
253	0.0052	0.0008	0.0044
254	0.0052	0.0008	0.0044
255	0.0051	0.0008	0.0043
256	0.0051	0.0008	0.0043
257	0.0050	0.0008	0.0042
258	0.0050	0.0008	0.0042
259	0.0049	0.0008	0.0041
260	0.0049	0.0008	0.0041
261	0.0048	0.0008	0.0041
262	0.0048	0.0008	0.0040
263	0.0048	0.0008	0.0040
264	0.0047	0.0008	0.0040
265	0.0047	0.0008	0.0039
266	0.0046	0.0007	0.0039
267	0.0046	0.0007	0.0039
268	0.0046	0.0007	0.0038
269	0.0045	0.0007	0.0038
270	0.0045	0.0007	0.0038
271	0.0044	0.0007	0.0037
272	0.0044	0.0007	0.0037
273	0.0044	0.0007	0.0037
274	0.0043	0.0007	0.0036
275	0.0043	0.0007	0.0036
276	0.0043	0.0007	0.0036
277	0.0042	0.0007	0.0036
278	0.0042	0.0007	0.0035
279	0.0042	0.0007	0.0035
280	0.0042	0.0007	0.0035
281	0.0041	0.0007	0.0035
282	0.0041	0.0007	0.0034
283	0.0041	0.0007	0.0034
284	0.0040	0.0007	0.0034
285	0.0040	0.0006	0.0034
286	0.0040	0.0006	0.0033
287	0.0040	0.0006	0.0033
288	0.0039	0.0006	0.0033

Total soil rain loss = 0.32(In)
Total effective rainfall = 2.71(In)
Peak flow rate in flood hydrograph = 3.60(CFS)

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24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0001	0.01	Q	|	|	|	|
0+10	0.0004	0.05	Q	|	|	|	|
0+15	0.0009	0.06	Q	|	|	|	|
0+20	0.0013	0.07	Q	|	|	|	|
0+25	0.0018	0.07	Q	|	|	|	|
0+30	0.0022	0.07	Q	|	|	|	|
0+35	0.0027	0.07	Q	|	|	|	|
0+40	0.0032	0.07	Q	|	|	|	|
0+45	0.0036	0.07	Q	|	|	|	|
0+50	0.0041	0.07	Q	|	|	|	|
0+55	0.0046	0.07	Q	|	|	|	|
1+ 0	0.0051	0.07	Q	|	|	|	|
1+ 5	0.0055	0.07	Q	|	|	|	|
1+10	0.0060	0.07	Q	|	|	|	|
1+15	0.0065	0.07	Q	|	|	|	|
1+20	0.0070	0.07	Q	|	|	|	|
1+25	0.0075	0.07	Q	|	|	|	|
1+30	0.0079	0.07	Q	|	|	|	|
1+35	0.0084	0.07	Q	|	|	|	|

1+40	0.0089	0.07	Q	|	|	|	|
1+45	0.0094	0.07	Q	|	|	|	|
1+50	0.0099	0.07	QV	|	|	|	|
1+55	0.0104	0.07	QV	|	|	|	|
2+ 0	0.0109	0.07	QV	|	|	|	|
2+ 5	0.0114	0.07	QV	|	|	|	|
2+10	0.0119	0.07	QV	|	|	|	|
2+15	0.0124	0.07	QV	|	|	|	|
2+20	0.0129	0.07	QV	|	|	|	|
2+25	0.0134	0.07	QV	|	|	|	|
2+30	0.0139	0.07	QV	|	|	|	|
2+35	0.0144	0.07	QV	|	|	|	|
2+40	0.0149	0.07	QV	|	|	|	|
2+45	0.0154	0.07	QV	|	|	|	|
2+50	0.0160	0.07	QV	|	|	|	|
2+55	0.0165	0.08	QV	|	|	|	|
3+ 0	0.0170	0.08	QV	|	|	|	|
3+ 5	0.0175	0.08	QV	|	|	|	|
3+10	0.0180	0.08	QV	|	|	|	|
3+15	0.0186	0.08	QV	|	|	|	|
3+20	0.0191	0.08	Q V	|	|	|	|
3+25	0.0196	0.08	Q V	|	|	|	|
3+30	0.0201	0.08	Q V	|	|	|	|
3+35	0.0207	0.08	Q V	|	|	|	|
3+40	0.0212	0.08	Q V	|	|	|	|
3+45	0.0218	0.08	Q V	|	|	|	|
3+50	0.0223	0.08	Q V	|	|	|	|
3+55	0.0228	0.08	Q V	|	|	|	|
4+ 0	0.0234	0.08	Q V	|	|	|	|
4+ 5	0.0239	0.08	Q V	|	|	|	|
4+10	0.0245	0.08	Q V	|	|	|	|
4+15	0.0250	0.08	Q V	|	|	|	|
4+20	0.0256	0.08	Q V	|	|	|	|
4+25	0.0261	0.08	Q V	|	|	|	|
4+30	0.0267	0.08	Q V	|	|	|	|
4+35	0.0273	0.08	Q V	|	|	|	|
4+40	0.0278	0.08	Q V	|	|	|	|
4+45	0.0284	0.08	Q V	|	|	|	|
4+50	0.0290	0.08	Q V	|	|	|	|
4+55	0.0295	0.08	Q V	|	|	|	|
5+ 0	0.0301	0.08	Q V	|	|	|	|
5+ 5	0.0307	0.08	Q V	|	|	|	|
5+10	0.0313	0.08	Q V	|	|	|	|
5+15	0.0319	0.08	Q V	|	|	|	|
5+20	0.0324	0.09	Q V	|	|	|	|
5+25	0.0330	0.09	Q V	|	|	|	|
5+30	0.0336	0.09	Q V	|	|	|	|
5+35	0.0342	0.09	Q V	|	|	|	|
5+40	0.0348	0.09	Q V	|	|	|	|
5+45	0.0354	0.09	Q V	|	|	|	|
5+50	0.0360	0.09	Q V	|	|	|	|
5+55	0.0366	0.09	Q V	|	|	|	|
6+ 0	0.0372	0.09	Q V	|	|	|	|
6+ 5	0.0379	0.09	Q V	|	|	|	|
6+10	0.0385	0.09	Q V	|	|	|	|
6+15	0.0391	0.09	Q V	|	|	|	|
6+20	0.0397	0.09	Q V	|	|	|	|
6+25	0.0403	0.09	Q V	|	|	|	|
6+30	0.0410	0.09	Q V	|	|	|	|
6+35	0.0416	0.09	Q V	|	|	|	|
6+40	0.0422	0.09	Q V	|	|	|	|
6+45	0.0429	0.09	Q V	|	|	|	|
6+50	0.0435	0.09	Q V	|	|	|	|
6+55	0.0442	0.09	Q V	|	|	|	|
7+ 0	0.0448	0.09	Q V	|	|	|	|
7+ 5	0.0455	0.10	Q V	|	|	|	|
7+10	0.0461	0.10	Q V	|	|	|	|
7+15	0.0468	0.10	Q V	|	|	|	|
7+20	0.0475	0.10	Q V	|	|	|	|
7+25	0.0481	0.10	Q V	|	|	|	|
7+30	0.0488	0.10	Q V	|	|	|	|

```
 7+35      0.0495      0.10  Q    V    |         |         |         |
 7+40      0.0502      0.10  Q    V    |         |         |         |
 7+45      0.0509      0.10  Q    V    |         |         |         |
 7+50      0.0516      0.10  Q    V    |         |         |         |
 7+55      0.0523      0.10  Q    V    |         |         |         |
 8+ 0      0.0530      0.10  Q    V    |         |         |         |
 8+ 5      0.0537      0.10  Q    V    |         |         |         |
 8+10      0.0544      0.10  Q    V    |         |         |         |
 8+15      0.0551      0.10  Q    V    |         |         |         |
 8+20      0.0558      0.10  Q    V    |         |         |         |
 8+25      0.0565      0.11  Q    V    |         |         |         |
 8+30      0.0573      0.11  Q     V   |         |         |         |
 8+35      0.0580      0.11  Q     V   |         |         |         |
 8+40      0.0587      0.11  Q     V   |         |         |         |
 8+45      0.0595      0.11  Q     V   |         |         |         |
 8+50      0.0602      0.11  Q     V   |         |         |         |
 8+55      0.0610      0.11  Q     V   |         |         |         |
 9+ 0      0.0617      0.11  Q     V   |         |         |         |
 9+ 5      0.0625      0.11  Q     V   |         |         |         |
 9+10      0.0633      0.11  Q     V   |         |         |         |
 9+15      0.0641      0.11  Q     V   |         |         |         |
 9+20      0.0648      0.11  Q     V   |         |         |         |
 9+25      0.0656      0.11  Q     V   |         |         |         |
 9+30      0.0664      0.12  Q     V   |         |         |         |
 9+35      0.0672      0.12  Q      V  |         |         |         |
 9+40      0.0680      0.12  Q      V  |         |         |         |
 9+45      0.0688      0.12  Q      V  |         |         |         |
 9+50      0.0697      0.12  Q      V  |         |         |         |
 9+55      0.0705      0.12  Q      V  |         |         |         |
10+ 0      0.0713      0.12  Q      V  |         |         |         |
10+ 5      0.0722      0.12  Q      V  |         |         |         |
10+10      0.0730      0.12  Q      V  |         |         |         |
10+15      0.0739      0.12  Q      V  |         |         |         |
10+20      0.0747      0.13  Q      V  |         |         |         |
10+25      0.0756      0.13  Q      V  |         |         |         |
10+30      0.0765      0.13  Q       V |         |         |         |
10+35      0.0774      0.13  Q       V |         |         |         |
10+40      0.0783      0.13  Q       V |         |         |         |
10+45      0.0792      0.13  Q       V |         |         |         |
10+50      0.0801      0.13  Q       V |         |         |         |
10+55      0.0810      0.13  Q       V |         |         |         |
11+ 0      0.0820      0.14  Q       V |         |         |         |
11+ 5      0.0829      0.14  Q       V |         |         |         |
11+10      0.0839      0.14  Q       V |         |         |         |
11+15      0.0848      0.14  Q       V |         |         |         |
11+20      0.0858      0.14  Q        V|         |         |         |
11+25      0.0868      0.14  Q        V|         |         |         |
11+30      0.0878      0.14  Q        V|         |         |         |
11+35      0.0888      0.15  Q        V|         |         |         |
11+40      0.0898      0.15  Q        V|         |         |         |
11+45      0.0908      0.15  Q        V|         |         |         |
11+50      0.0919      0.15  Q        V|         |         |         |
11+55      0.0929      0.15  Q        V|         |         |         |
12+ 0      0.0940      0.16  Q        V|         |         |         |
12+ 5      0.0952      0.17  Q         V         |         |         |
12+10      0.0965      0.19  Q         V         |         |         |
12+15      0.0979      0.20  Q         V         |         |         |
12+20      0.0993      0.21  Q         V         |         |         |
12+25      0.1008      0.21  Q         V         |         |         |
12+30      0.1023      0.22  Q         V         |         |         |
12+35      0.1038      0.22  Q         V         |         |         |
12+40      0.1053      0.22  Q          |V        |         |         |
12+45      0.1069      0.23  Q          |V        |         |         |
12+50      0.1084      0.23  Q          |V        |         |         |
12+55      0.1100      0.23  Q          |V        |         |         |
13+ 0      0.1117      0.24  Q          |V        |         |         |
13+ 5      0.1133      0.24  Q          |V        |         |         |
13+10      0.1150      0.24  Q          | V       |         |         |
13+15      0.1167      0.25  Q          | V       |         |         |
13+20      0.1185      0.25  |Q         | V       |         |         |
13+25      0.1202      0.26  |Q         | V       |         |         |
```

```
13+30       0.1220      0.26  |Q        | V       |         |         |
13+35       0.1239      0.27  |Q        |  V      |         |         |
13+40       0.1257      0.27  |Q        |  V      |         |         |
13+45       0.1277      0.28  |Q        |  V      |         |         |
13+50       0.1296      0.28  |Q        |  V      |         |         |
13+55       0.1316      0.29  |Q        |  V      |         |         |
14+ 0       0.1337      0.30  |Q        |   V     |         |         |
14+ 5       0.1358      0.30  |Q        |   V     |         |         |
14+10       0.1379      0.31  |Q        |   V     |         |         |
14+15       0.1401      0.32  |Q        |   V     |         |         |
14+20       0.1424      0.33  |Q        |    V    |         |         |
14+25       0.1448      0.34  |Q        |    V    |         |         |
14+30       0.1472      0.35  |Q        |    V    |         |         |
14+35       0.1497      0.36  |Q        |    V    |         |         |
14+40       0.1523      0.37  |Q        |     V   |         |         |
14+45       0.1549      0.38  |Q        |     V   |         |         |
14+50       0.1577      0.40  |Q        |     V   |         |         |
14+55       0.1605      0.41  |Q        |     V   |         |         |
15+ 0       0.1635      0.43  |Q        |      V  |         |         |
15+ 5       0.1666      0.45  |Q        |      V  |         |         |
15+10       0.1698      0.47  |Q        |      V  |         |         |
15+15       0.1732      0.49  |Q        |       V |         |         |
15+20       0.1768      0.52  | Q       |       V |         |         |
15+25       0.1805      0.54  | Q       |        V|         |         |
15+30       0.1841      0.52  | Q       |        V|         |         |
15+35       0.1879      0.55  | Q       |        V|         |         |
15+40       0.1921      0.61  | Q       |         V         |         |
15+45       0.1970      0.70  | Q       |         V         |         |
15+50       0.2030      0.88  |  Q      |         |V        |         |
15+55       0.2104      1.07  |   Q     |         | V       |         |
16+ 0       0.2202      1.43  |    Q    |         |  V      |         |
16+ 5       0.2369      2.43  |       Q |         |   V     |         |
16+10       0.2617      3.60  |         |   Q     |      V  |         |
16+15       0.2741      1.80  |      Q  |         |       V |         |
16+20       0.2814      1.06  |   Q     |         |        V|         |
16+25       0.2863      0.72  | Q       |         |         V         |
16+30       0.2906      0.62  | Q       |         |         V         |
16+35       0.2943      0.53  | Q       |         |         |V        |
16+40       0.2975      0.47  |Q        |         |         |V        |
16+45       0.3005      0.43  |Q        |         |         |V        |
16+50       0.3033      0.40  |Q        |         |         |V        |
16+55       0.3059      0.37  |Q        |         |         | V       |
17+ 0       0.3083      0.35  |Q        |         |         | V       |
17+ 5       0.3106      0.33  |Q        |         |         | V       |
17+10       0.3127      0.31  |Q        |         |         | V       |
17+15       0.3148      0.30  |Q        |         |         |  V      |
17+20       0.3167      0.28  |Q        |         |         |  V      |
17+25       0.3186      0.27  |Q        |         |         |  V      |
17+30       0.3204      0.26  |Q        |         |         |  V      |
17+35       0.3221      0.25  |Q        |         |         |  V      |
17+40       0.3238      0.24  Q         |         |         |   V     |
17+45       0.3255      0.24  Q         |         |         |   V     |
17+50       0.3270      0.23  Q         |         |         |   V     |
17+55       0.3286      0.22  Q         |         |         |   V     |
18+ 0       0.3300      0.22  Q         |         |         |   V     |
18+ 5       0.3314      0.20  Q         |         |         |   V     |
18+10       0.3326      0.17  Q         |         |         |    V    |
18+15       0.3337      0.16  Q         |         |         |    V    |
18+20       0.3348      0.15  Q         |         |         |    V    |
18+25       0.3358      0.15  Q         |         |         |    V    |
18+30       0.3368      0.14  Q         |         |         |    V    |
18+35       0.3377      0.14  Q         |         |         |    V    |
18+40       0.3387      0.14  Q         |         |         |    V    |
18+45       0.3396      0.14  Q         |         |         |    V    |
18+50       0.3406      0.13  Q         |         |         |    V    |
18+55       0.3414      0.13  Q         |         |         |    V    |
19+ 0       0.3423      0.13  Q         |         |         |     V   |
19+ 5       0.3432      0.13  Q         |         |         |     V   |
19+10       0.3440      0.12  Q         |         |         |     V   |
19+15       0.3449      0.12  Q         |         |         |     V   |
19+20       0.3457      0.12  Q         |         |         |     V   |
```

```
  19+25       0.3465      0.12  Q          |          |          |     V    |
  19+30       0.3473      0.12  Q          |          |          |     V    |
  19+35       0.3481      0.11  Q          |          |          |     V    |
  19+40       0.3489      0.11  Q          |          |          |     V    |
  19+45       0.3496      0.11  Q          |          |          |     V    |
  19+50       0.3504      0.11  Q          |          |          |     V    |
  19+55       0.3511      0.11  Q          |          |          |     V    |
  20+ 0       0.3518      0.11  Q          |          |          |      V   |
  20+ 5       0.3526      0.10  Q          |          |          |      V   |
  20+10       0.3533      0.10  Q          |          |          |      V   |
  20+15       0.3540      0.10  Q          |          |          |      V   |
  20+20       0.3547      0.10  Q          |          |          |      V   |
  20+25       0.3553      0.10  Q          |          |          |      V   |
  20+30       0.3560      0.10  Q          |          |          |      V   |
  20+35       0.3567      0.10  Q          |          |          |      V   |
  20+40       0.3573      0.10  Q          |          |          |      V   |
  20+45       0.3580      0.09  Q          |          |          |      V   |
  20+50       0.3586      0.09  Q          |          |          |      V   |
  20+55       0.3593      0.09  Q          |          |          |      V   |
  21+ 0       0.3599      0.09  Q          |          |          |      V   |
  21+ 5       0.3605      0.09  Q          |          |          |      V   |
  21+10       0.3611      0.09  Q          |          |          |       V  |
  21+15       0.3618      0.09  Q          |          |          |       V  |
  21+20       0.3624      0.09  Q          |          |          |       V  |
  21+25       0.3630      0.09  Q          |          |          |       V  |
  21+30       0.3636      0.09  Q          |          |          |       V  |
  21+35       0.3641      0.09  Q          |          |          |       V  |
  21+40       0.3647      0.08  Q          |          |          |       V  |
  21+45       0.3653      0.08  Q          |          |          |       V  |
  21+50       0.3659      0.08  Q          |          |          |       V  |
  21+55       0.3664      0.08  Q          |          |          |       V  |
  22+ 0       0.3670      0.08  Q          |          |          |       V  |
  22+ 5       0.3675      0.08  Q          |          |          |       V  |
  22+10       0.3681      0.08  Q          |          |          |       V  |
  22+15       0.3686      0.08  Q          |          |          |       V  |
  22+20       0.3692      0.08  Q          |          |          |       V  |
  22+25       0.3697      0.08  Q          |          |          |       V  |
  22+30       0.3702      0.08  Q          |          |          |        V |
  22+35       0.3708      0.08  Q          |          |          |        V |
  22+40       0.3713      0.08  Q          |          |          |        V |
  22+45       0.3718      0.08  Q          |          |          |        V |
  22+50       0.3723      0.07  Q          |          |          |        V |
  22+55       0.3728      0.07  Q          |          |          |        V |
  23+ 0       0.3734      0.07  Q          |          |          |        V |
  23+ 5       0.3739      0.07  Q          |          |          |        V |
  23+10       0.3744      0.07  Q          |          |          |        V |
  23+15       0.3748      0.07  Q          |          |          |        V |
  23+20       0.3753      0.07  Q          |          |          |        V |
  23+25       0.3758      0.07  Q          |          |          |        V |
  23+30       0.3763      0.07  Q          |          |          |        V |
  23+35       0.3768      0.07  Q          |          |          |        V |
  23+40       0.3773      0.07  Q          |          |          |        V |
  23+45       0.3777      0.07  Q          |          |          |        V |
  23+50       0.3782      0.07  Q          |          |          |        V |
  23+55       0.3787      0.07  Q          |          |          |        V |
  24+ 0       0.3792      0.07  Q          |          |          |        V |
  24+ 5       0.3795      0.05  Q          |          |          |        V |
  24+10       0.3796      0.02  Q          |          |          |        V |
  24+15       0.3797      0.01  Q          |          |          |        V |
  24+20       0.3797      0.00  Q          |          |          |        V |
  24+25       0.3797      0.00  Q          |          |          |        V |
  24+30       0.3797      0.00  Q          |          |          |         V
-------------------------------------------------------------------------
```

- 5 Year 24 Hour Pre-Development Unit Hydrograph – Area 'F'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989-2012, Version 7.2

       Study date  10/13/16   File Name exf00524.out


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------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
WESTRIDGE HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'F' - 5 YEAR 24 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 5

       Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 74.4       1.7          1.00     D     0.200     0.100    0.020

Area-averaged adjusted loss rate Fm (In/Hr) =  0.020

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
     0.17   0.100         74.4      56.3       7.77     0.078
     1.51   0.900         98.0      98.0       0.20     0.923

Area-averaged catchment yield fraction, Y =  0.839
Area-averaged low loss fraction, Yb =  0.161
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.091 (hours)
Watershed area =       1.68(Ac.)
Catchment Lag time =   0.073 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 114.8475
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.020(In/Hr)
Average low loss rate fraction (Yb) = 0.161 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.260(In)
Computed peak 30-minute rainfall =  0.590(In)
Specified peak 1-hour rainfall =  0.780(In)
Computed peak 3-hour rainfall =  1.310(In)
Specified peak 6-hour rainfall =  1.810(In)
Specified peak 24-hour rainfall =  3.030(In)


Rainfall depth area reduction factors:
Using a total area of       1.68(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000     Adjusted rainfall =  0.260(In)
```

```
30-minute factor = 1.000    Adjusted rainfall =  0.590(In)
1-hour factor = 1.000       Adjusted rainfall =  0.780(In)
3-hour factor = 1.000       Adjusted rainfall =  1.310(In)
6-hour factor = 1.000       Adjusted rainfall =  1.810(In)
24-hour factor = 1.000 Adjusted rainfall =  3.030(In)
------------------------------------------------------------------------

                     U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
------------------------------------------------------------------------
               (K =        20.32 (CFS))

  1               19.656                   3.994
  2               75.825                  11.412
  3               92.019                   3.290
  4               97.659                   1.146
  5               99.077                   0.288
  6               99.802                   0.147
  7              100.000                   0.040
------------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.2600               0.2600
  2              0.3570               0.0970
  3              0.4297               0.0727
  4              0.4901               0.0604
  5              0.5428               0.0527
  6              0.5900               0.0472
  7              0.6277               0.0378
  8              0.6624               0.0347
  9              0.6946               0.0322
 10              0.7247               0.0301
 11              0.7531               0.0284
 12              0.7799               0.0269
 13              0.8100               0.0300
 14              0.8388               0.0288
 15              0.8666               0.0278
 16              0.8934               0.0268
 17              0.9193               0.0259
 18              0.9444               0.0251
 19              0.9689               0.0244
 20              0.9926               0.0237
 21              1.0157               0.0231
 22              1.0383               0.0225
 23              1.0603               0.0220
 24              1.0818               0.0215
 25              1.1029               0.0210
 26              1.1235               0.0206
 27              1.1437               0.0202
 28              1.1635               0.0198
 29              1.1829               0.0194
 30              1.2020               0.0191
 31              1.2207               0.0187
 32              1.2391               0.0184
 33              1.2573               0.0181
 34              1.2751               0.0178
 35              1.2927               0.0176
 36              1.3100               0.0173
 37              1.3268               0.0168
 38              1.3434               0.0166
 39              1.3598               0.0164
 40              1.3760               0.0162
 41              1.3919               0.0159
 42              1.4076               0.0157
 43              1.4232               0.0155
 44              1.4385               0.0153
 45              1.4537               0.0152
 46              1.4687               0.0150
 47              1.4835               0.0148
```

48	1.4981	0.0146
49	1.5126	0.0145
50	1.5269	0.0143
51	1.5411	0.0142
52	1.5551	0.0140
53	1.5690	0.0139
54	1.5827	0.0137
55	1.5963	0.0136
56	1.6098	0.0135
57	1.6231	0.0133
58	1.6364	0.0132
59	1.6495	0.0131
60	1.6624	0.0130
61	1.6753	0.0129
62	1.6881	0.0128
63	1.7007	0.0126
64	1.7132	0.0125
65	1.7257	0.0124
66	1.7380	0.0123
67	1.7502	0.0122
68	1.7624	0.0121
69	1.7744	0.0120
70	1.7864	0.0119
71	1.7982	0.0119
72	1.8100	0.0118
73	1.8193	0.0093
74	1.8285	0.0092
75	1.8377	0.0091
76	1.8467	0.0091
77	1.8557	0.0090
78	1.8646	0.0089
79	1.8735	0.0088
80	1.8823	0.0088
81	1.8910	0.0087
82	1.8996	0.0086
83	1.9082	0.0086
84	1.9167	0.0085
85	1.9252	0.0084
86	1.9336	0.0084
87	1.9419	0.0083
88	1.9501	0.0083
89	1.9584	0.0082
90	1.9665	0.0081
91	1.9746	0.0081
92	1.9826	0.0080
93	1.9906	0.0080
94	1.9985	0.0079
95	2.0064	0.0079
96	2.0142	0.0078
97	2.0220	0.0078
98	2.0297	0.0077
99	2.0374	0.0077
100	2.0450	0.0076
101	2.0526	0.0076
102	2.0601	0.0075
103	2.0676	0.0075
104	2.0751	0.0074
105	2.0825	0.0074
106	2.0898	0.0073
107	2.0971	0.0073
108	2.1044	0.0073
109	2.1116	0.0072
110	2.1188	0.0072
111	2.1259	0.0071
112	2.1330	0.0071
113	2.1401	0.0071
114	2.1471	0.0070
115	2.1541	0.0070
116	2.1610	0.0069
117	2.1679	0.0069
118	2.1748	0.0069

119	2.1816	0.0068
120	2.1884	0.0068
121	2.1952	0.0068
122	2.2019	0.0067
123	2.2086	0.0067
124	2.2152	0.0067
125	2.2219	0.0066
126	2.2285	0.0066
127	2.2350	0.0066
128	2.2415	0.0065
129	2.2480	0.0065
130	2.2545	0.0065
131	2.2609	0.0064
132	2.2673	0.0064
133	2.2737	0.0064
134	2.2800	0.0063
135	2.2863	0.0063
136	2.2926	0.0063
137	2.2989	0.0063
138	2.3051	0.0062
139	2.3113	0.0062
140	2.3175	0.0062
141	2.3236	0.0061
142	2.3297	0.0061
143	2.3358	0.0061
144	2.3418	0.0061
145	2.3479	0.0060
146	2.3539	0.0060
147	2.3599	0.0060
148	2.3658	0.0060
149	2.3717	0.0059
150	2.3777	0.0059
151	2.3835	0.0059
152	2.3894	0.0059
153	2.3952	0.0058
154	2.4010	0.0058
155	2.4068	0.0058
156	2.4126	0.0058
157	2.4183	0.0057
158	2.4240	0.0057
159	2.4297	0.0057
160	2.4354	0.0057
161	2.4410	0.0056
162	2.4466	0.0056
163	2.4522	0.0056
164	2.4578	0.0056
165	2.4634	0.0056
166	2.4689	0.0055
167	2.4744	0.0055
168	2.4799	0.0055
169	2.4854	0.0055
170	2.4909	0.0055
171	2.4963	0.0054
172	2.5017	0.0054
173	2.5071	0.0054
174	2.5125	0.0054
175	2.5179	0.0054
176	2.5232	0.0053
177	2.5285	0.0053
178	2.5338	0.0053
179	2.5391	0.0053
180	2.5444	0.0053
181	2.5496	0.0052
182	2.5548	0.0052
183	2.5600	0.0052
184	2.5652	0.0052
185	2.5704	0.0052
186	2.5755	0.0052
187	2.5807	0.0051
188	2.5858	0.0051
189	2.5909	0.0051

190	2.5960	0.0051
191	2.6011	0.0051
192	2.6061	0.0051
193	2.6112	0.0050
194	2.6162	0.0050
195	2.6212	0.0050
196	2.6262	0.0050
197	2.6311	0.0050
198	2.6361	0.0050
199	2.6410	0.0049
200	2.6460	0.0049
201	2.6509	0.0049
202	2.6558	0.0049
203	2.6606	0.0049
204	2.6655	0.0049
205	2.6704	0.0048
206	2.6752	0.0048
207	2.6800	0.0048
208	2.6848	0.0048
209	2.6896	0.0048
210	2.6944	0.0048
211	2.6991	0.0048
212	2.7039	0.0047
213	2.7086	0.0047
214	2.7133	0.0047
215	2.7180	0.0047
216	2.7227	0.0047
217	2.7274	0.0047
218	2.7321	0.0047
219	2.7367	0.0047
220	2.7414	0.0046
221	2.7460	0.0046
222	2.7506	0.0046
223	2.7552	0.0046
224	2.7598	0.0046
225	2.7644	0.0046
226	2.7689	0.0046
227	2.7735	0.0045
228	2.7780	0.0045
229	2.7825	0.0045
230	2.7870	0.0045
231	2.7915	0.0045
232	2.7960	0.0045
233	2.8005	0.0045
234	2.8050	0.0045
235	2.8094	0.0044
236	2.8138	0.0044
237	2.8183	0.0044
238	2.8227	0.0044
239	2.8271	0.0044
240	2.8315	0.0044
241	2.8359	0.0044
242	2.8402	0.0044
243	2.8446	0.0044
244	2.8489	0.0043
245	2.8533	0.0043
246	2.8576	0.0043
247	2.8619	0.0043
248	2.8662	0.0043
249	2.8705	0.0043
250	2.8748	0.0043
251	2.8790	0.0043
252	2.8833	0.0043
253	2.8875	0.0042
254	2.8918	0.0042
255	2.8960	0.0042
256	2.9002	0.0042
257	2.9044	0.0042
258	2.9086	0.0042
259	2.9128	0.0042
260	2.9170	0.0042

261	2.9211	0.0042
262	2.9253	0.0042
263	2.9294	0.0041
264	2.9336	0.0041
265	2.9377	0.0041
266	2.9418	0.0041
267	2.9459	0.0041
268	2.9500	0.0041
269	2.9541	0.0041
270	2.9582	0.0041
271	2.9622	0.0041
272	2.9663	0.0041
273	2.9704	0.0040
274	2.9744	0.0040
275	2.9784	0.0040
276	2.9824	0.0040
277	2.9865	0.0040
278	2.9905	0.0040
279	2.9945	0.0040
280	2.9984	0.0040
281	3.0024	0.0040
282	3.0064	0.0040
283	3.0103	0.0040
284	3.0143	0.0039
285	3.0182	0.0039
286	3.0222	0.0039
287	3.0261	0.0039
288	3.0300	0.0039

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0039	0.0006	0.0033
2	0.0039	0.0006	0.0033
3	0.0039	0.0006	0.0033
4	0.0039	0.0006	0.0033
5	0.0040	0.0006	0.0033
6	0.0040	0.0006	0.0033
7	0.0040	0.0006	0.0034
8	0.0040	0.0006	0.0034
9	0.0040	0.0006	0.0034
10	0.0040	0.0006	0.0034
11	0.0040	0.0007	0.0034
12	0.0041	0.0007	0.0034
13	0.0041	0.0007	0.0034
14	0.0041	0.0007	0.0034
15	0.0041	0.0007	0.0034
16	0.0041	0.0007	0.0035
17	0.0041	0.0007	0.0035
18	0.0041	0.0007	0.0035
19	0.0042	0.0007	0.0035
20	0.0042	0.0007	0.0035
21	0.0042	0.0007	0.0035
22	0.0042	0.0007	0.0035
23	0.0042	0.0007	0.0035
24	0.0042	0.0007	0.0036
25	0.0043	0.0007	0.0036
26	0.0043	0.0007	0.0036
27	0.0043	0.0007	0.0036
28	0.0043	0.0007	0.0036
29	0.0043	0.0007	0.0036
30	0.0043	0.0007	0.0036
31	0.0044	0.0007	0.0037
32	0.0044	0.0007	0.0037
33	0.0044	0.0007	0.0037
34	0.0044	0.0007	0.0037
35	0.0044	0.0007	0.0037
36	0.0044	0.0007	0.0037
37	0.0045	0.0007	0.0037
38	0.0045	0.0007	0.0038

39	0.0045	0.0007	0.0038
40	0.0045	0.0007	0.0038
41	0.0045	0.0007	0.0038
42	0.0045	0.0007	0.0038
43	0.0046	0.0007	0.0038
44	0.0046	0.0007	0.0038
45	0.0046	0.0007	0.0039
46	0.0046	0.0007	0.0039
47	0.0047	0.0007	0.0039
48	0.0047	0.0008	0.0039
49	0.0047	0.0008	0.0039
50	0.0047	0.0008	0.0039
51	0.0047	0.0008	0.0040
52	0.0047	0.0008	0.0040
53	0.0048	0.0008	0.0040
54	0.0048	0.0008	0.0040
55	0.0048	0.0008	0.0040
56	0.0048	0.0008	0.0041
57	0.0049	0.0008	0.0041
58	0.0049	0.0008	0.0041
59	0.0049	0.0008	0.0041
60	0.0049	0.0008	0.0041
61	0.0050	0.0008	0.0042
62	0.0050	0.0008	0.0042
63	0.0050	0.0008	0.0042
64	0.0050	0.0008	0.0042
65	0.0051	0.0008	0.0042
66	0.0051	0.0008	0.0043
67	0.0051	0.0008	0.0043
68	0.0051	0.0008	0.0043
69	0.0052	0.0008	0.0043
70	0.0052	0.0008	0.0043
71	0.0052	0.0008	0.0044
72	0.0052	0.0008	0.0044
73	0.0053	0.0008	0.0044
74	0.0053	0.0009	0.0044
75	0.0053	0.0009	0.0045
76	0.0053	0.0009	0.0045
77	0.0054	0.0009	0.0045
78	0.0054	0.0009	0.0045
79	0.0054	0.0009	0.0046
80	0.0055	0.0009	0.0046
81	0.0055	0.0009	0.0046
82	0.0055	0.0009	0.0046
83	0.0056	0.0009	0.0047
84	0.0056	0.0009	0.0047
85	0.0056	0.0009	0.0047
86	0.0056	0.0009	0.0047
87	0.0057	0.0009	0.0048
88	0.0057	0.0009	0.0048
89	0.0058	0.0009	0.0048
90	0.0058	0.0009	0.0049
91	0.0058	0.0009	0.0049
92	0.0059	0.0009	0.0049
93	0.0059	0.0010	0.0050
94	0.0059	0.0010	0.0050
95	0.0060	0.0010	0.0050
96	0.0060	0.0010	0.0050
97	0.0061	0.0010	0.0051
98	0.0061	0.0010	0.0051
99	0.0061	0.0010	0.0051
100	0.0062	0.0010	0.0052
101	0.0062	0.0010	0.0052
102	0.0063	0.0010	0.0052
103	0.0063	0.0010	0.0053
104	0.0063	0.0010	0.0053
105	0.0064	0.0010	0.0054
106	0.0064	0.0010	0.0054
107	0.0065	0.0010	0.0054
108	0.0065	0.0011	0.0055
109	0.0066	0.0011	0.0055

110	0.0066	0.0011	0.0056
111	0.0067	0.0011	0.0056
112	0.0067	0.0011	0.0056
113	0.0068	0.0011	0.0057
114	0.0068	0.0011	0.0057
115	0.0069	0.0011	0.0058
116	0.0069	0.0011	0.0058
117	0.0070	0.0011	0.0059
118	0.0071	0.0011	0.0059
119	0.0071	0.0011	0.0060
120	0.0072	0.0012	0.0060
121	0.0073	0.0012	0.0061
122	0.0073	0.0012	0.0061
123	0.0074	0.0012	0.0062
124	0.0074	0.0012	0.0062
125	0.0075	0.0012	0.0063
126	0.0076	0.0012	0.0064
127	0.0077	0.0012	0.0064
128	0.0077	0.0012	0.0065
129	0.0078	0.0013	0.0066
130	0.0079	0.0013	0.0066
131	0.0080	0.0013	0.0067
132	0.0080	0.0013	0.0067
133	0.0081	0.0013	0.0068
134	0.0082	0.0013	0.0069
135	0.0083	0.0013	0.0070
136	0.0084	0.0014	0.0070
137	0.0085	0.0014	0.0071
138	0.0086	0.0014	0.0072
139	0.0087	0.0014	0.0073
140	0.0088	0.0014	0.0074
141	0.0089	0.0014	0.0075
142	0.0090	0.0014	0.0075
143	0.0091	0.0015	0.0077
144	0.0092	0.0015	0.0077
145	0.0118	0.0017	0.0101
146	0.0119	0.0017	0.0102
147	0.0120	0.0017	0.0104
148	0.0121	0.0017	0.0105
149	0.0123	0.0017	0.0107
150	0.0124	0.0017	0.0108
151	0.0126	0.0017	0.0110
152	0.0128	0.0017	0.0111
153	0.0130	0.0017	0.0113
154	0.0131	0.0017	0.0114
155	0.0133	0.0017	0.0117
156	0.0135	0.0017	0.0118
157	0.0137	0.0017	0.0121
158	0.0139	0.0017	0.0122
159	0.0142	0.0017	0.0125
160	0.0143	0.0017	0.0127
161	0.0146	0.0017	0.0130
162	0.0148	0.0017	0.0131
163	0.0152	0.0017	0.0135
164	0.0153	0.0017	0.0137
165	0.0157	0.0017	0.0141
166	0.0159	0.0017	0.0143
167	0.0164	0.0017	0.0147
168	0.0166	0.0017	0.0149
169	0.0173	0.0017	0.0156
170	0.0176	0.0017	0.0159
171	0.0181	0.0017	0.0165
172	0.0184	0.0017	0.0168
173	0.0191	0.0017	0.0174
174	0.0194	0.0017	0.0178
175	0.0202	0.0017	0.0185
176	0.0206	0.0017	0.0189
177	0.0215	0.0017	0.0198
178	0.0220	0.0017	0.0203
179	0.0231	0.0017	0.0215
180	0.0237	0.0017	0.0221

181	0.0251	0.0017	0.0235
182	0.0259	0.0017	0.0243
183	0.0278	0.0017	0.0261
184	0.0288	0.0017	0.0272
185	0.0269	0.0017	0.0252
186	0.0284	0.0017	0.0267
187	0.0322	0.0017	0.0305
188	0.0347	0.0017	0.0330
189	0.0472	0.0017	0.0455
190	0.0527	0.0017	0.0510
191	0.0727	0.0017	0.0711
192	0.0970	0.0017	0.0953
193	0.2600	0.0017	0.2583
194	0.0604	0.0017	0.0588
195	0.0378	0.0017	0.0361
196	0.0301	0.0017	0.0284
197	0.0300	0.0017	0.0284
198	0.0268	0.0017	0.0251
199	0.0244	0.0017	0.0227
200	0.0225	0.0017	0.0209
201	0.0210	0.0017	0.0194
202	0.0198	0.0017	0.0181
203	0.0187	0.0017	0.0171
204	0.0178	0.0017	0.0162
205	0.0168	0.0017	0.0152
206	0.0162	0.0017	0.0145
207	0.0155	0.0017	0.0139
208	0.0150	0.0017	0.0133
209	0.0145	0.0017	0.0128
210	0.0140	0.0017	0.0124
211	0.0136	0.0017	0.0119
212	0.0132	0.0017	0.0116
213	0.0129	0.0017	0.0112
214	0.0125	0.0017	0.0109
215	0.0122	0.0017	0.0106
216	0.0119	0.0017	0.0103
217	0.0093	0.0015	0.0078
218	0.0091	0.0015	0.0076
219	0.0088	0.0014	0.0074
220	0.0086	0.0014	0.0073
221	0.0084	0.0014	0.0071
222	0.0083	0.0013	0.0069
223	0.0081	0.0013	0.0068
224	0.0079	0.0013	0.0067
225	0.0078	0.0013	0.0065
226	0.0076	0.0012	0.0064
227	0.0075	0.0012	0.0063
228	0.0073	0.0012	0.0062
229	0.0072	0.0012	0.0061
230	0.0071	0.0011	0.0060
231	0.0070	0.0011	0.0059
232	0.0069	0.0011	0.0058
233	0.0068	0.0011	0.0057
234	0.0067	0.0011	0.0056
235	0.0066	0.0011	0.0055
236	0.0065	0.0010	0.0054
237	0.0064	0.0010	0.0053
238	0.0063	0.0010	0.0053
239	0.0062	0.0010	0.0052
240	0.0061	0.0010	0.0051
241	0.0060	0.0010	0.0051
242	0.0060	0.0010	0.0050
243	0.0059	0.0009	0.0049
244	0.0058	0.0009	0.0049
245	0.0057	0.0009	0.0048
246	0.0057	0.0009	0.0048
247	0.0056	0.0009	0.0047
248	0.0055	0.0009	0.0046
249	0.0055	0.0009	0.0046
250	0.0054	0.0009	0.0045
251	0.0054	0.0009	0.0045

```
      252              0.0053          0.0009              0.0044
      253              0.0052          0.0008              0.0044
      254              0.0052          0.0008              0.0044
      255              0.0051          0.0008              0.0043
      256              0.0051          0.0008              0.0043
      257              0.0050          0.0008              0.0042
      258              0.0050          0.0008              0.0042
      259              0.0049          0.0008              0.0041
      260              0.0049          0.0008              0.0041
      261              0.0048          0.0008              0.0041
      262              0.0048          0.0008              0.0040
      263              0.0048          0.0008              0.0040
      264              0.0047          0.0008              0.0040
      265              0.0047          0.0008              0.0039
      266              0.0046          0.0007              0.0039
      267              0.0046          0.0007              0.0039
      268              0.0046          0.0007              0.0038
      269              0.0045          0.0007              0.0038
      270              0.0045          0.0007              0.0038
      271              0.0044          0.0007              0.0037
      272              0.0044          0.0007              0.0037
      273              0.0044          0.0007              0.0037
      274              0.0043          0.0007              0.0036
      275              0.0043          0.0007              0.0036
      276              0.0043          0.0007              0.0036
      277              0.0042          0.0007              0.0036
      278              0.0042          0.0007              0.0035
      279              0.0042          0.0007              0.0035
      280              0.0042          0.0007              0.0035
      281              0.0041          0.0007              0.0035
      282              0.0041          0.0007              0.0034
      283              0.0041          0.0007              0.0034
      284              0.0040          0.0007              0.0034
      285              0.0040          0.0006              0.0034
      286              0.0040          0.0006              0.0033
      287              0.0040          0.0006              0.0033
      288              0.0039          0.0006              0.0033
      ------------------------------------------------------------------------
      ------------------------------------------------------------------------
      Total soil rain loss =      0.32(In)
      Total effective rainfall =      2.71(In)
      Peak flow rate in flood hydrograph =      3.60(CFS)
      ------------------------------------------------------------------------
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                        24 - H O U R    S T O R M
                   R u n o f f      H y d r o g r a p h
      ------------------------------------------------------------------------
                Hydrograph in   5   Minute intervals ((CFS))

      ------------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0        2.5       5.0       7.5      10.0
------------------------------------------------------------------------
  0+ 5       0.0001      0.01  Q         |         |         |         |
  0+10       0.0004      0.05  Q         |         |         |         |
  0+15       0.0009      0.06  Q         |         |         |         |
  0+20       0.0013      0.07  Q         |         |         |         |
  0+25       0.0018      0.07  Q         |         |         |         |
  0+30       0.0022      0.07  Q         |         |         |         |
  0+35       0.0027      0.07  Q         |         |         |         |
  0+40       0.0032      0.07  Q         |         |         |         |
  0+45       0.0036      0.07  Q         |         |         |         |
  0+50       0.0041      0.07  Q         |         |         |         |
  0+55       0.0046      0.07  Q         |         |         |         |
  1+ 0       0.0051      0.07  Q         |         |         |         |
  1+ 5       0.0055      0.07  Q         |         |         |         |
  1+10       0.0060      0.07  Q         |         |         |         |
  1+15       0.0065      0.07  Q         |         |         |         |
  1+20       0.0070      0.07  Q         |         |         |         |
  1+25       0.0075      0.07  Q         |         |         |         |
  1+30       0.0079      0.07  Q         |         |         |         |
  1+35       0.0084      0.07  Q         |         |         |         |
```

1+40	0.0089	0.07	Q	|	|	|	|
1+45	0.0094	0.07	Q	|	|	|	|
1+50	0.0099	0.07	QV	|	|	|	|
1+55	0.0104	0.07	QV	|	|	|	|
2+ 0	0.0109	0.07	QV	|	|	|	|
2+ 5	0.0114	0.07	QV	|	|	|	|
2+10	0.0119	0.07	QV	|	|	|	|
2+15	0.0124	0.07	QV	|	|	|	|
2+20	0.0129	0.07	QV	|	|	|	|
2+25	0.0134	0.07	QV	|	|	|	|
2+30	0.0139	0.07	QV	|	|	|	|
2+35	0.0144	0.07	QV	|	|	|	|
2+40	0.0149	0.07	QV	|	|	|	|
2+45	0.0154	0.07	QV	|	|	|	|
2+50	0.0160	0.07	QV	|	|	|	|
2+55	0.0165	0.08	QV	|	|	|	|
3+ 0	0.0170	0.08	QV	|	|	|	|
3+ 5	0.0175	0.08	QV	|	|	|	|
3+10	0.0180	0.08	QV	|	|	|	|
3+15	0.0186	0.08	QV	|	|	|	|
3+20	0.0191	0.08	Q V	|	|	|	|
3+25	0.0196	0.08	Q V	|	|	|	|
3+30	0.0201	0.08	Q V	|	|	|	|
3+35	0.0207	0.08	Q V	|	|	|	|
3+40	0.0212	0.08	Q V	|	|	|	|
3+45	0.0218	0.08	Q V	|	|	|	|
3+50	0.0223	0.08	Q V	|	|	|	|
3+55	0.0228	0.08	Q V	|	|	|	|
4+ 0	0.0234	0.08	Q V	|	|	|	|
4+ 5	0.0239	0.08	Q V	|	|	|	|
4+10	0.0245	0.08	Q V	|	|	|	|
4+15	0.0250	0.08	Q V	|	|	|	|
4+20	0.0256	0.08	Q V	|	|	|	|
4+25	0.0261	0.08	Q V	|	|	|	|
4+30	0.0267	0.08	Q V	|	|	|	|
4+35	0.0273	0.08	Q V	|	|	|	|
4+40	0.0278	0.08	Q V	|	|	|	|
4+45	0.0284	0.08	Q V	|	|	|	|
4+50	0.0290	0.08	Q V	|	|	|	|
4+55	0.0295	0.08	Q V	|	|	|	|
5+ 0	0.0301	0.08	Q V	|	|	|	|
5+ 5	0.0307	0.08	Q V	|	|	|	|
5+10	0.0313	0.08	Q V	|	|	|	|
5+15	0.0319	0.08	Q V	|	|	|	|
5+20	0.0324	0.09	Q V	|	|	|	|
5+25	0.0330	0.09	Q V	|	|	|	|
5+30	0.0336	0.09	Q V	|	|	|	|
5+35	0.0342	0.09	Q V	|	|	|	|
5+40	0.0348	0.09	Q V	|	|	|	|
5+45	0.0354	0.09	Q V	|	|	|	|
5+50	0.0360	0.09	Q V	|	|	|	|
5+55	0.0366	0.09	Q V	|	|	|	|
6+ 0	0.0372	0.09	Q V	|	|	|	|
6+ 5	0.0379	0.09	Q V	|	|	|	|
6+10	0.0385	0.09	Q V	|	|	|	|
6+15	0.0391	0.09	Q V	|	|	|	|
6+20	0.0397	0.09	Q V	|	|	|	|
6+25	0.0403	0.09	Q V	|	|	|	|
6+30	0.0410	0.09	Q V	|	|	|	|
6+35	0.0416	0.09	Q V	|	|	|	|
6+40	0.0422	0.09	Q V	|	|	|	|
6+45	0.0429	0.09	Q V	|	|	|	|
6+50	0.0435	0.09	Q V	|	|	|	|
6+55	0.0442	0.09	Q V	|	|	|	|
7+ 0	0.0448	0.09	Q V	|	|	|	|
7+ 5	0.0455	0.10	Q V	|	|	|	|
7+10	0.0461	0.10	Q V	|	|	|	|
7+15	0.0468	0.10	Q V	|	|	|	|
7+20	0.0475	0.10	Q V	|	|	|	|
7+25	0.0481	0.10	Q V	|	|	|	|
7+30	0.0488	0.10	Q V	|	|	|	|

```
 7+35      0.0495      0.10  Q    V    |         |         |         |
 7+40      0.0502      0.10  Q    V    |         |         |         |
 7+45      0.0509      0.10  Q    V    |         |         |         |
 7+50      0.0516      0.10  Q    V    |         |         |         |
 7+55      0.0523      0.10  Q    V    |         |         |         |
 8+ 0      0.0530      0.10  Q    V    |         |         |         |
 8+ 5      0.0537      0.10  Q    V    |         |         |         |
 8+10      0.0544      0.10  Q    V    |         |         |         |
 8+15      0.0551      0.10  Q    V    |         |         |         |
 8+20      0.0558      0.10  Q    V    |         |         |         |
 8+25      0.0565      0.11  Q    V    |         |         |         |
 8+30      0.0573      0.11  Q     V   |         |         |         |
 8+35      0.0580      0.11  Q     V   |         |         |         |
 8+40      0.0587      0.11  Q     V   |         |         |         |
 8+45      0.0595      0.11  Q     V   |         |         |         |
 8+50      0.0602      0.11  Q     V   |         |         |         |
 8+55      0.0610      0.11  Q     V   |         |         |         |
 9+ 0      0.0617      0.11  Q     V   |         |         |         |
 9+ 5      0.0625      0.11  Q     V   |         |         |         |
 9+10      0.0633      0.11  Q     V   |         |         |         |
 9+15      0.0641      0.11  Q     V   |         |         |         |
 9+20      0.0648      0.11  Q     V   |         |         |         |
 9+25      0.0656      0.11  Q     V   |         |         |         |
 9+30      0.0664      0.12  Q     V   |         |         |         |
 9+35      0.0672      0.12  Q      V  |         |         |         |
 9+40      0.0680      0.12  Q      V  |         |         |         |
 9+45      0.0688      0.12  Q      V  |         |         |         |
 9+50      0.0697      0.12  Q      V  |         |         |         |
 9+55      0.0705      0.12  Q      V  |         |         |         |
10+ 0      0.0713      0.12  Q      V  |         |         |         |
10+ 5      0.0722      0.12  Q      V  |         |         |         |
10+10      0.0730      0.12  Q      V  |         |         |         |
10+15      0.0739      0.12  Q      V  |         |         |         |
10+20      0.0747      0.13  Q      V  |         |         |         |
10+25      0.0756      0.13  Q      V  |         |         |         |
10+30      0.0765      0.13  Q       V |         |         |         |
10+35      0.0774      0.13  Q       V |         |         |         |
10+40      0.0783      0.13  Q       V |         |         |         |
10+45      0.0792      0.13  Q       V |         |         |         |
10+50      0.0801      0.13  Q       V |         |         |         |
10+55      0.0810      0.13  Q       V |         |         |         |
11+ 0      0.0820      0.14  Q       V |         |         |         |
11+ 5      0.0829      0.14  Q       V |         |         |         |
11+10      0.0839      0.14  Q       V |         |         |         |
11+15      0.0848      0.14  Q       V |         |         |         |
11+20      0.0858      0.14  Q        V|         |         |         |
11+25      0.0868      0.14  Q        V|         |         |         |
11+30      0.0878      0.14  Q        V|         |         |         |
11+35      0.0888      0.15  Q        V|         |         |         |
11+40      0.0898      0.15  Q        V|         |         |         |
11+45      0.0908      0.15  Q        V|         |         |         |
11+50      0.0919      0.15  Q        V|         |         |         |
11+55      0.0929      0.15  Q        V|         |         |         |
12+ 0      0.0940      0.16  Q        V|         |         |         |
12+ 5      0.0952      0.17  Q         V         |         |         |
12+10      0.0965      0.19  Q         V         |         |         |
12+15      0.0979      0.20  Q         V         |         |         |
12+20      0.0993      0.21  Q         V         |         |         |
12+25      0.1008      0.21  Q         V         |         |         |
12+30      0.1023      0.22  Q         V         |         |         |
12+35      0.1038      0.22  Q         V         |         |         |
12+40      0.1053      0.22  Q          |V        |         |         |
12+45      0.1069      0.23  Q          |V        |         |         |
12+50      0.1084      0.23  Q          |V        |         |         |
12+55      0.1100      0.23  Q          |V        |         |         |
13+ 0      0.1117      0.24  Q          |V        |         |         |
13+ 5      0.1133      0.24  Q          |V        |         |         |
13+10      0.1150      0.24  Q          | V       |         |         |
13+15      0.1167      0.25  Q          | V       |         |         |
13+20      0.1185      0.25  |Q         | V       |         |         |
13+25      0.1202      0.26  |Q         | V       |         |         |
```

```
13+30       0.1220      0.26  |Q        | V       |         |         |
13+35       0.1239      0.27  |Q        |  V      |         |         |
13+40       0.1257      0.27  |Q        |  V      |         |         |
13+45       0.1277      0.28  |Q        |  V      |         |         |
13+50       0.1296      0.28  |Q        |  V      |         |         |
13+55       0.1316      0.29  |Q        |  V      |         |         |
14+ 0       0.1337      0.30  |Q        |   V     |         |         |
14+ 5       0.1358      0.30  |Q        |   V     |         |         |
14+10       0.1379      0.31  |Q        |   V     |         |         |
14+15       0.1401      0.32  |Q        |   V     |         |         |
14+20       0.1424      0.33  |Q        |    V    |         |         |
14+25       0.1448      0.34  |Q        |    V    |         |         |
14+30       0.1472      0.35  |Q        |    V    |         |         |
14+35       0.1497      0.36  |Q        |    V    |         |         |
14+40       0.1523      0.37  |Q        |     V   |         |         |
14+45       0.1549      0.38  |Q        |     V   |         |         |
14+50       0.1577      0.40  |Q        |     V   |         |         |
14+55       0.1605      0.41  |Q        |     V   |         |         |
15+ 0       0.1635      0.43  |Q        |      V  |         |         |
15+ 5       0.1666      0.45  |Q        |      V  |         |         |
15+10       0.1698      0.47  |Q        |      V  |         |         |
15+15       0.1732      0.49  |Q        |       V |         |         |
15+20       0.1768      0.52  | Q       |       V |         |         |
15+25       0.1805      0.54  | Q       |        V|         |         |
15+30       0.1841      0.52  | Q       |        V|         |         |
15+35       0.1879      0.55  | Q       |        V|         |         |
15+40       0.1921      0.61  | Q       |         V         |         |
15+45       0.1970      0.70  | Q       |         V         |         |
15+50       0.2030      0.88  |  Q      |         |V        |         |
15+55       0.2104      1.07  |   Q     |         | V       |         |
16+ 0       0.2202      1.43  |    Q    |         |  V      |         |
16+ 5       0.2369      2.43  |       Q |         |   V     |         |
16+10       0.2617      3.60  |         |   Q     |      V  |         |
16+15       0.2741      1.80  |      Q  |         |       V |         |
16+20       0.2814      1.06  |   Q     |         |        V|         |
16+25       0.2863      0.72  | Q       |         |         V         |
16+30       0.2906      0.62  | Q       |         |         V         |
16+35       0.2943      0.53  | Q       |         |         |V        |
16+40       0.2975      0.47  |Q        |         |         |V        |
16+45       0.3005      0.43  |Q        |         |         |V        |
16+50       0.3033      0.40  |Q        |         |         |V        |
16+55       0.3059      0.37  |Q        |         |         | V       |
17+ 0       0.3083      0.35  |Q        |         |         | V       |
17+ 5       0.3106      0.33  |Q        |         |         | V       |
17+10       0.3127      0.31  |Q        |         |         | V       |
17+15       0.3148      0.30  |Q        |         |         |  V      |
17+20       0.3167      0.28  |Q        |         |         |  V      |
17+25       0.3186      0.27  |Q        |         |         |  V      |
17+30       0.3204      0.26  |Q        |         |         |  V      |
17+35       0.3221      0.25  |Q        |         |         |  V      |
17+40       0.3238      0.24  Q         |         |         |   V     |
17+45       0.3255      0.24  Q         |         |         |   V     |
17+50       0.3270      0.23  Q         |         |         |   V     |
17+55       0.3286      0.22  Q         |         |         |   V     |
18+ 0       0.3300      0.22  Q         |         |         |   V     |
18+ 5       0.3314      0.20  Q         |         |         |   V     |
18+10       0.3326      0.17  Q         |         |         |    V    |
18+15       0.3337      0.16  Q         |         |         |    V    |
18+20       0.3348      0.15  Q         |         |         |    V    |
18+25       0.3358      0.15  Q         |         |         |    V    |
18+30       0.3368      0.14  Q         |         |         |    V    |
18+35       0.3377      0.14  Q         |         |         |    V    |
18+40       0.3387      0.14  Q         |         |         |    V    |
18+45       0.3396      0.14  Q         |         |         |    V    |
18+50       0.3406      0.13  Q         |         |         |    V    |
18+55       0.3414      0.13  Q         |         |         |    V    |
19+ 0       0.3423      0.13  Q         |         |         |     V   |
19+ 5       0.3432      0.13  Q         |         |         |     V   |
19+10       0.3440      0.12  Q         |         |         |     V   |
19+15       0.3449      0.12  Q         |         |         |     V   |
19+20       0.3457      0.12  Q         |         |         |     V   |
```

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  19+25       0.3465      0.12  Q          |          |          |     V    |
  19+30       0.3473      0.12  Q          |          |          |     V    |
  19+35       0.3481      0.11  Q          |          |          |     V    |
  19+40       0.3489      0.11  Q          |          |          |     V    |
  19+45       0.3496      0.11  Q          |          |          |     V    |
  19+50       0.3504      0.11  Q          |          |          |     V    |
  19+55       0.3511      0.11  Q          |          |          |     V    |
  20+ 0       0.3518      0.11  Q          |          |          |      V   |
  20+ 5       0.3526      0.10  Q          |          |          |      V   |
  20+10       0.3533      0.10  Q          |          |          |      V   |
  20+15       0.3540      0.10  Q          |          |          |      V   |
  20+20       0.3547      0.10  Q          |          |          |      V   |
  20+25       0.3553      0.10  Q          |          |          |      V   |
  20+30       0.3560      0.10  Q          |          |          |      V   |
  20+35       0.3567      0.10  Q          |          |          |      V   |
  20+40       0.3573      0.10  Q          |          |          |      V   |
  20+45       0.3580      0.09  Q          |          |          |      V   |
  20+50       0.3586      0.09  Q          |          |          |      V   |
  20+55       0.3593      0.09  Q          |          |          |      V   |
  21+ 0       0.3599      0.09  Q          |          |          |      V   |
  21+ 5       0.3605      0.09  Q          |          |          |      V   |
  21+10       0.3611      0.09  Q          |          |          |       V  |
  21+15       0.3618      0.09  Q          |          |          |       V  |
  21+20       0.3624      0.09  Q          |          |          |       V  |
  21+25       0.3630      0.09  Q          |          |          |       V  |
  21+30       0.3636      0.09  Q          |          |          |       V  |
  21+35       0.3641      0.09  Q          |          |          |       V  |
  21+40       0.3647      0.08  Q          |          |          |       V  |
  21+45       0.3653      0.08  Q          |          |          |       V  |
  21+50       0.3659      0.08  Q          |          |          |       V  |
  21+55       0.3664      0.08  Q          |          |          |       V  |
  22+ 0       0.3670      0.08  Q          |          |          |       V  |
  22+ 5       0.3675      0.08  Q          |          |          |       V  |
  22+10       0.3681      0.08  Q          |          |          |       V  |
  22+15       0.3686      0.08  Q          |          |          |       V  |
  22+20       0.3692      0.08  Q          |          |          |       V  |
  22+25       0.3697      0.08  Q          |          |          |       V  |
  22+30       0.3702      0.08  Q          |          |          |        V|
  22+35       0.3708      0.08  Q          |          |          |        V|
  22+40       0.3713      0.08  Q          |          |          |        V|
  22+45       0.3718      0.08  Q          |          |          |        V|
  22+50       0.3723      0.07  Q          |          |          |        V|
  22+55       0.3728      0.07  Q          |          |          |        V|
  23+ 0       0.3734      0.07  Q          |          |          |        V|
  23+ 5       0.3739      0.07  Q          |          |          |        V|
  23+10       0.3744      0.07  Q          |          |          |        V|
  23+15       0.3748      0.07  Q          |          |          |        V|
  23+20       0.3753      0.07  Q          |          |          |        V|
  23+25       0.3758      0.07  Q          |          |          |        V|
  23+30       0.3763      0.07  Q          |          |          |        V|
  23+35       0.3768      0.07  Q          |          |          |        V|
  23+40       0.3773      0.07  Q          |          |          |        V|
  23+45       0.3777      0.07  Q          |          |          |        V|
  23+50       0.3782      0.07  Q          |          |          |        V|
  23+55       0.3787      0.07  Q          |          |          |        V|
  24+ 0       0.3792      0.07  Q          |          |          |        V|
  24+ 5       0.3795      0.05  Q          |          |          |        V|
  24+10       0.3796      0.02  Q          |          |          |        V|
  24+15       0.3797      0.01  Q          |          |          |        V|
  24+20       0.3797      0.00  Q          |          |          |        V|
  24+25       0.3797      0.00  Q          |          |          |        V|
  24+30       0.3797      0.00  Q          |          |          |         V
-------------------------------------------------------------------------
```

- 25 Year 3 Hour Pre-Development Unit Hydrograph – Area 'F'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/13/16   File Name exf02503.out


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------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
WESTRIDGE HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'F' - 25 YEAR 3 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 25

       Antecedent Moisture Condition = 2

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 74.4       1.7          1.00     D     0.200     0.100    0.020

Area-averaged adjusted loss rate Fm (In/Hr) =  0.020

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC2)          Yield Fr
     0.17   0.100         74.4      74.4       3.44     0.444
     1.51   0.900         98.0      98.0       0.20     0.947

Area-averaged catchment yield fraction, Y =  0.897
Area-averaged low loss fraction, Yb =  0.103
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.091 (hours)
Watershed area =       1.68(Ac.)
Catchment Lag time =   0.073 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 114.8475
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.020(In/Hr)
Average low loss rate fraction (Yb) = 0.103 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.400(In)
Computed peak 30-minute rainfall =  0.870(In)
Specified peak 1-hour rainfall =  1.150(In)
Computed peak 3-hour rainfall =  1.940(In)
Specified peak 6-hour rainfall =  2.710(In)
Specified peak 24-hour rainfall =  4.490(In)


Rainfall depth area reduction factors:
Using a total area of       1.68(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000     Adjusted rainfall =  0.400(In)
```

30-minute factor = 1.000 Adjusted rainfall = 0.870(In)
1-hour factor = 1.000 Adjusted rainfall = 1.150(In)
3-hour factor = 1.000 Adjusted rainfall = 1.940(In)
6-hour factor = 1.000 Adjusted rainfall = 2.710(In)
24-hour factor = 1.000 Adjusted rainfall = 4.490(In)

U n i t H y d r o g r a p h

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
(K = 20.32 (CFS))		
1	19.656	3.994
2	75.825	11.412
3	92.019	3.290
4	97.659	1.146
5	99.077	0.288
6	99.802	0.147
7	100.000	0.040

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.4000	0.4000
2	0.5402	0.1403
3	0.6441	0.1039
4	0.7297	0.0856
5	0.8038	0.0741
6	0.8699	0.0661
7	0.9256	0.0557
8	0.9767	0.0511
9	1.0242	0.0474
10	1.0685	0.0444
11	1.1103	0.0418
12	1.1499	0.0396
13	1.1946	0.0447
14	1.2375	0.0429
15	1.2788	0.0413
16	1.3187	0.0399
17	1.3573	0.0386
18	1.3947	0.0374
19	1.4311	0.0364
20	1.4665	0.0354
21	1.5009	0.0345
22	1.5345	0.0336
23	1.5674	0.0328
24	1.5994	0.0321
25	1.6308	0.0314
26	1.6616	0.0307
27	1.6917	0.0301
28	1.7212	0.0295
29	1.7502	0.0290
30	1.7787	0.0285
31	1.8067	0.0280
32	1.8342	0.0275
33	1.8613	0.0271
34	1.8879	0.0266
35	1.9141	0.0262
36	1.9400	0.0258

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0258	0.0017	0.0242
2	0.0262	0.0017	0.0246
3	0.0271	0.0017	0.0254
4	0.0275	0.0017	0.0258
5	0.0285	0.0017	0.0268
6	0.0290	0.0017	0.0273

7	0.0301	0.0017	0.0285
8	0.0307	0.0017	0.0291
9	0.0321	0.0017	0.0304
10	0.0328	0.0017	0.0312
11	0.0345	0.0017	0.0328
12	0.0354	0.0017	0.0337
13	0.0374	0.0017	0.0358
14	0.0386	0.0017	0.0369
15	0.0413	0.0017	0.0397
16	0.0429	0.0017	0.0412
17	0.0396	0.0017	0.0379
18	0.0418	0.0017	0.0401
19	0.0474	0.0017	0.0458
20	0.0511	0.0017	0.0494
21	0.0661	0.0017	0.0645
22	0.0741	0.0017	0.0725
23	0.1039	0.0017	0.1022
24	0.1403	0.0017	0.1386
25	0.4000	0.0017	0.3983
26	0.0856	0.0017	0.0839
27	0.0557	0.0017	0.0540
28	0.0444	0.0017	0.0427
29	0.0447	0.0017	0.0430
30	0.0399	0.0017	0.0382
31	0.0364	0.0017	0.0347
32	0.0336	0.0017	0.0319
33	0.0314	0.0017	0.0297
34	0.0295	0.0017	0.0279
35	0.0280	0.0017	0.0263
36	0.0266	0.0017	0.0250

Total soil rain loss = 0.06(In)
Total effective rainfall = 1.88(In)
Peak flow rate in flood hydrograph = 5.49(CFS)

++

3 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0007	0.10	Q				
0+10	0.0032	0.37	VQ				
0+15	0.0064	0.46	VQ				
0+20	0.0099	0.50	VQ				
0+25	0.0135	0.52	Q				
0+30	0.0172	0.54	Q				
0+35	0.0210	0.56	QV				
0+40	0.0250	0.57	QV				
0+45	0.0290	0.59	Q V				
0+50	0.0332	0.61	Q V				
0+55	0.0376	0.63	Q V				
1+ 0	0.0421	0.66	Q V				
1+ 5	0.0469	0.69	Q V				
1+10	0.0518	0.72	Q V				
1+15	0.0570	0.75	Q V				
1+20	0.0625	0.80	Q V				
1+25	0.0681	0.81	Q V				
1+30	0.0735	0.79	Q V				
1+35	0.0792	0.83	Q V				
1+40	0.0855	0.91	Q V				
1+45	0.0927	1.04	Q V				
1+50	0.1013	1.26	Q V				
1+55	0.1118	1.52	Q V				
2+ 0	0.1260	2.05	Q V				
2+ 5	0.1509	3.62	Q V				
2+10	0.1887	5.49	Q V				

```
    2+15       0.2072      2.69  |          Q          |          |V         |
    2+20       0.2181      1.58  |      Q    |         |          |  V       |
    2+25       0.2254      1.07  |    Q      |         |          |   V      |
    2+30       0.2319      0.93  |  Q        |         |          |    V     |
    2+35       0.2374      0.81  |  Q        |         |          |     V    |
    2+40       0.2424      0.72  | Q         |         |          |     V    |
    2+45       0.2470      0.66  | Q         |         |          |      V   |
    2+50       0.2512      0.61  | Q         |         |          |       V  |
    2+55       0.2552      0.57  | Q         |         |          |       V  |
    3+ 0       0.2589      0.54  | Q         |         |          |        V|
    3+ 5       0.2618      0.42  |Q          |         |          |        V|
    3+10       0.2627      0.13  Q           |         |          |        V|
    3+15       0.2629      0.04  Q           |         |          |        V|
    3+20       0.2630      0.01  Q           |         |          |        V|
    3+25       0.2631      0.00  Q           |         |          |        V|
    3+30       0.2631      0.00  Q           |         |          |         V
-------------------------------------------------------------------------
```

- 25 Year 6 Hour Pre-Development Unit Hydrograph – Area 'F'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/13/16   File Name exf02506.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

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WESTRIDGE HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'F' - 25 YEAR 6 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 25

       Antecedent Moisture Condition = 2

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 74.4       1.7          1.00     D     0.200     0.100    0.020

Area-averaged adjusted loss rate Fm (In/Hr) =  0.020

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC2)           Yield Fr
     0.17   0.100         74.4      74.4       3.44     0.444
     1.51   0.900         98.0      98.0       0.20     0.947

Area-averaged catchment yield fraction, Y =  0.897
Area-averaged low loss fraction, Yb =  0.103
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.091 (hours)
Watershed area =       1.68(Ac.)
Catchment Lag time =   0.073 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 114.8475
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.020(In/Hr)
Average low loss rate fraction (Yb) = 0.103 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.400(In)
Computed peak 30-minute rainfall =  0.870(In)
Specified peak 1-hour rainfall =  1.150(In)
Computed peak 3-hour rainfall =  1.940(In)
Specified peak 6-hour rainfall =  2.710(In)
Specified peak 24-hour rainfall =  4.490(In)


Rainfall depth area reduction factors:
Using a total area of       1.68(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000     Adjusted rainfall =  0.400(In)
```

```
30-minute factor = 1.000    Adjusted rainfall =  0.870(In)
1-hour factor = 1.000       Adjusted rainfall =  1.150(In)
3-hour factor = 1.000       Adjusted rainfall =  1.940(In)
6-hour factor = 1.000       Adjusted rainfall =  2.710(In)
24-hour factor = 1.000 Adjusted rainfall =  4.490(In)
------------------------------------------------------------------------

                      U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
------------------------------------------------------------------------
               (K =        20.32 (CFS))

  1               19.656                   3.994
  2               75.825                  11.412
  3               92.019                   3.290
  4               97.659                   1.146
  5               99.077                   0.288
  6               99.802                   0.147
  7              100.000                   0.040
------------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.4000               0.4000
  2              0.5402               0.1403
  3              0.6441               0.1039
  4              0.7297               0.0856
  5              0.8038               0.0741
  6              0.8699               0.0661
  7              0.9256               0.0557
  8              0.9767               0.0511
  9              1.0242               0.0474
 10              1.0685               0.0444
 11              1.1103               0.0418
 12              1.1499               0.0396
 13              1.1946               0.0447
 14              1.2375               0.0429
 15              1.2788               0.0413
 16              1.3187               0.0399
 17              1.3573               0.0386
 18              1.3947               0.0374
 19              1.4311               0.0364
 20              1.4665               0.0354
 21              1.5009               0.0345
 22              1.5345               0.0336
 23              1.5674               0.0328
 24              1.5994               0.0321
 25              1.6308               0.0314
 26              1.6616               0.0307
 27              1.6917               0.0301
 28              1.7212               0.0295
 29              1.7502               0.0290
 30              1.7787               0.0285
 31              1.8067               0.0280
 32              1.8342               0.0275
 33              1.8613               0.0271
 34              1.8879               0.0266
 35              1.9141               0.0262
 36              1.9400               0.0258
 37              1.9658               0.0258
 38              1.9912               0.0254
 39              2.0163               0.0251
 40              2.0411               0.0248
 41              2.0655               0.0245
 42              2.0897               0.0241
 43              2.1135               0.0238
 44              2.1371               0.0236
 45              2.1604               0.0233
 46              2.1834               0.0230
 47              2.2062               0.0228
```

48	2.2287	0.0225
49	2.2510	0.0223
50	2.2730	0.0220
51	2.2948	0.0218
52	2.3164	0.0216
53	2.3378	0.0214
54	2.3589	0.0212
55	2.3799	0.0210
56	2.4007	0.0208
57	2.4213	0.0206
58	2.4416	0.0204
59	2.4619	0.0202
60	2.4819	0.0200
61	2.5018	0.0199
62	2.5214	0.0197
63	2.5410	0.0195
64	2.5603	0.0194
65	2.5796	0.0192
66	2.5986	0.0191
67	2.6175	0.0189
68	2.6363	0.0188
69	2.6549	0.0186
70	2.6734	0.0185
71	2.6918	0.0184
72	2.7100	0.0182

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0182	0.0017	0.0166
2	0.0184	0.0017	0.0167
3	0.0186	0.0017	0.0170
4	0.0188	0.0017	0.0171
5	0.0191	0.0017	0.0174
6	0.0192	0.0017	0.0175
7	0.0195	0.0017	0.0179
8	0.0197	0.0017	0.0180
9	0.0200	0.0017	0.0184
10	0.0202	0.0017	0.0185
11	0.0206	0.0017	0.0189
12	0.0208	0.0017	0.0191
13	0.0212	0.0017	0.0195
14	0.0214	0.0017	0.0197
15	0.0218	0.0017	0.0201
16	0.0220	0.0017	0.0204
17	0.0225	0.0017	0.0208
18	0.0228	0.0017	0.0211
19	0.0233	0.0017	0.0216
20	0.0236	0.0017	0.0219
21	0.0241	0.0017	0.0225
22	0.0245	0.0017	0.0228
23	0.0251	0.0017	0.0234
24	0.0254	0.0017	0.0238
25	0.0258	0.0017	0.0242
26	0.0262	0.0017	0.0246
27	0.0271	0.0017	0.0254
28	0.0275	0.0017	0.0258
29	0.0285	0.0017	0.0268
30	0.0290	0.0017	0.0273
31	0.0301	0.0017	0.0285
32	0.0307	0.0017	0.0291
33	0.0321	0.0017	0.0304
34	0.0328	0.0017	0.0312
35	0.0345	0.0017	0.0328
36	0.0354	0.0017	0.0337
37	0.0374	0.0017	0.0358
38	0.0386	0.0017	0.0369
39	0.0413	0.0017	0.0397
40	0.0429	0.0017	0.0412
41	0.0396	0.0017	0.0379

```
       42              0.0418          0.0017              0.0401
       43              0.0474          0.0017              0.0458
       44              0.0511          0.0017              0.0494
       45              0.0661          0.0017              0.0645
       46              0.0741          0.0017              0.0725
       47              0.1039          0.0017              0.1022
       48              0.1403          0.0017              0.1386
       49              0.4000          0.0017              0.3983
       50              0.0856          0.0017              0.0839
       51              0.0557          0.0017              0.0540
       52              0.0444          0.0017              0.0427
       53              0.0447          0.0017              0.0430
       54              0.0399          0.0017              0.0382
       55              0.0364          0.0017              0.0347
       56              0.0336          0.0017              0.0319
       57              0.0314          0.0017              0.0297
       58              0.0295          0.0017              0.0279
       59              0.0280          0.0017              0.0263
       60              0.0266          0.0017              0.0250
       61              0.0258          0.0017              0.0241
       62              0.0248          0.0017              0.0231
       63              0.0238          0.0017              0.0222
       64              0.0230          0.0017              0.0214
       65              0.0223          0.0017              0.0206
       66              0.0216          0.0017              0.0199
       67              0.0210          0.0017              0.0193
       68              0.0204          0.0017              0.0187
       69              0.0199          0.0017              0.0182
       70              0.0194          0.0017              0.0177
       71              0.0189          0.0017              0.0172
       72              0.0185          0.0017              0.0168
      ------------------------------------------------------------------
      ------------------------------------------------------------------
      Total soil rain loss =      0.12(In)
      Total effective rainfall =      2.59(In)
      Peak flow rate in flood hydrograph =      5.49(CFS)
      ------------------------------------------------------------------
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                        6 - H O U R    S T O R M
                   R u n o f f      H y d r o g r a p h
      ------------------------------------------------------------------
                Hydrograph in   5   Minute intervals ((CFS))

      ------------------------------------------------------------------
 Time(h+m) Volume Ac.Ft   Q(CFS)  0        2.5       5.0       7.5      10.0
 ------------------------------------------------------------------------
   0+ 5       0.0005      0.07  Q         |         |         |         |
   0+10       0.0022      0.26  VQ        |         |         |         |
   0+15       0.0044      0.31  VQ        |         |         |         |
   0+20       0.0067      0.34  VQ        |         |         |         |
   0+25       0.0091      0.34  VQ        |         |         |         |
   0+30       0.0115      0.35  |Q        |         |         |         |
   0+35       0.0139      0.36  |Q        |         |         |         |
   0+40       0.0164      0.36  |Q        |         |         |         |
   0+45       0.0189      0.37  |QV       |         |         |         |
   0+50       0.0215      0.37  |QV       |         |         |         |
   0+55       0.0241      0.38  |QV       |         |         |         |
   1+ 0       0.0267      0.38  |QV       |         |         |         |
   1+ 5       0.0294      0.39  |Q V      |         |         |         |
   1+10       0.0321      0.39  |Q V      |         |         |         |
   1+15       0.0349      0.40  |Q V      |         |         |         |
   1+20       0.0377      0.41  |Q  V     |         |         |         |
   1+25       0.0405      0.41  |Q  V     |         |         |         |
   1+30       0.0434      0.42  |Q  V     |         |         |         |
   1+35       0.0464      0.43  |Q   V    |         |         |         |
   1+40       0.0494      0.44  |Q   V    |         |         |         |
   1+45       0.0525      0.44  |Q   V    |         |         |         |
   1+50       0.0556      0.45  |Q    V   |         |         |         |
   1+55       0.0588      0.46  |Q    V   |         |         |         |
   2+ 0       0.0620      0.47  |Q    V   |         |         |         |
   2+ 5       0.0654      0.48  |Q     V  |         |         |         |
```

```
   2+10       0.0687      0.49  |Q     V  |          |          |          |
   2+15       0.0722      0.50  |Q     V  |          |          |          |
   2+20       0.0757      0.51  | Q     V |          |          |          |
   2+25       0.0793      0.53  | Q     V |          |          |          |
   2+30       0.0830      0.54  | Q      V|          |          |          |
   2+35       0.0869      0.56  | Q      V|          |          |          |
   2+40       0.0908      0.57  | Q       V          |          |          |
   2+45       0.0949      0.59  | Q       V          |          |          |
   2+50       0.0991      0.61  | Q       V          |          |          |
   2+55       0.1035      0.63  | Q       |V         |          |          |
   3+ 0       0.1080      0.66  | Q       |V         |          |          |
   3+ 5       0.1127      0.69  | Q       | V        |          |          |
   3+10       0.1177      0.72  | Q       | V        |          |          |
   3+15       0.1229      0.75  |  Q      |  V       |          |          |
   3+20       0.1283      0.80  |  Q      |   V      |          |          |
   3+25       0.1339      0.81  |  Q      |   V      |          |          |
   3+30       0.1394      0.79  |  Q      |    V     |          |          |
   3+35       0.1451      0.83  |  Q      |     V    |          |          |
   3+40       0.1514      0.91  |  Q      |     V    |          |          |
   3+45       0.1585      1.04  |   Q     |      V   |          |          |
   3+50       0.1672      1.26  |    Q    |       V  |          |          |
   3+55       0.1777      1.52  |     Q   |        V |          |          |
   4+ 0       0.1919      2.05  |       Q |          |V         |          |
   4+ 5       0.2168      3.62  |         |   Q      |  V       |          |
   4+10       0.2546      5.49  |         |          |Q      V  |          |
   4+15       0.2731      2.69  |         Q          |         V          |
   4+20       0.2839      1.58  |     Q   |          |          |V         |
   4+25       0.2913      1.07  |   Q     |          |          | V        |
   4+30       0.2977      0.93  |  Q      |          |          | V        |
   4+35       0.3033      0.81  |  Q      |          |          |  V       |
   4+40       0.3083      0.72  | Q       |          |          |   V      |
   4+45       0.3128      0.66  | Q       |          |          |   V      |
   4+50       0.3171      0.61  | Q       |          |          |   V      |
   4+55       0.3210      0.57  | Q       |          |          |    V     |
   5+ 0       0.3248      0.54  | Q       |          |          |    V     |
   5+ 5       0.3283      0.51  | Q       |          |          |     V    |
   5+10       0.3317      0.49  |Q        |          |          |     V    |
   5+15       0.3350      0.47  |Q        |          |          |     V    |
   5+20       0.3381      0.45  |Q        |          |          |      V   |
   5+25       0.3411      0.44  |Q        |          |          |      V   |
   5+30       0.3440      0.42  |Q        |          |          |      V   |
   5+35       0.3468      0.41  |Q        |          |          |       V  |
   5+40       0.3495      0.39  |Q        |          |          |       V  |
   5+45       0.3522      0.38  |Q        |          |          |       V  |
   5+50       0.3547      0.37  |Q        |          |          |        V|
   5+55       0.3572      0.36  |Q        |          |          |        V|
   6+ 0       0.3596      0.35  |Q        |          |          |        V|
   6+ 5       0.3616      0.28  |Q        |          |          |        V|
   6+10       0.3621      0.08  Q         |          |          |        V|
   6+15       0.3623      0.03  Q         |          |          |        V|
   6+20       0.3624      0.01  Q         |          |          |        V|
   6+25       0.3624      0.00  Q         |          |          |        V|
   6+30       0.3624      0.00  Q         |          |          |        V|
-------------------------------------------------------------------------
```

- 25 Year 12 Hour Pre-Development Unit Hydrograph – Area 'F'

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       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/13/16   File Name exf02512.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

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WESTRIDGE HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'F' - 25 YEAR 12 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 25

       Antecedent Moisture Condition = 2

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 74.4       1.7          1.00     D     0.200     0.100    0.020

Area-averaged adjusted loss rate Fm (In/Hr) =  0.020

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC2)          Yield Fr
     0.17   0.100         74.4      74.4       3.44     0.444
     1.51   0.900         98.0      98.0       0.20     0.947

Area-averaged catchment yield fraction, Y =  0.897
Area-averaged low loss fraction, Yb =  0.103
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.091 (hours)
Watershed area =       1.68(Ac.)
Catchment Lag time =   0.073 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 114.8475
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.020(In/Hr)
Average low loss rate fraction (Yb) = 0.103 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.400(In)
Computed peak 30-minute rainfall =  0.870(In)
Specified peak 1-hour rainfall =  1.150(In)
Computed peak 3-hour rainfall =  1.940(In)
Specified peak 6-hour rainfall =  2.710(In)
Specified peak 24-hour rainfall =  4.490(In)


Rainfall depth area reduction factors:
Using a total area of       1.68(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000     Adjusted rainfall =  0.400(In)
```

```
30-minute factor = 1.000    Adjusted rainfall =  0.870(In)
1-hour factor = 1.000       Adjusted rainfall =  1.150(In)
3-hour factor = 1.000       Adjusted rainfall =  1.940(In)
6-hour factor = 1.000       Adjusted rainfall =  2.710(In)
24-hour factor = 1.000 Adjusted rainfall =  4.490(In)
------------------------------------------------------------------------

                      U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
------------------------------------------------------------------------
               (K =        20.32 (CFS))

  1               19.656                   3.994
  2               75.825                  11.412
  3               92.019                   3.290
  4               97.659                   1.146
  5               99.077                   0.288
  6               99.802                   0.147
  7              100.000                   0.040
------------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.4000               0.4000
  2              0.5402               0.1403
  3              0.6441               0.1039
  4              0.7297               0.0856
  5              0.8038               0.0741
  6              0.8699               0.0661
  7              0.9256               0.0557
  8              0.9767               0.0511
  9              1.0242               0.0474
 10              1.0685               0.0444
 11              1.1103               0.0418
 12              1.1499               0.0396
 13              1.1946               0.0447
 14              1.2375               0.0429
 15              1.2788               0.0413
 16              1.3187               0.0399
 17              1.3573               0.0386
 18              1.3947               0.0374
 19              1.4311               0.0364
 20              1.4665               0.0354
 21              1.5009               0.0345
 22              1.5345               0.0336
 23              1.5674               0.0328
 24              1.5994               0.0321
 25              1.6308               0.0314
 26              1.6616               0.0307
 27              1.6917               0.0301
 28              1.7212               0.0295
 29              1.7502               0.0290
 30              1.7787               0.0285
 31              1.8067               0.0280
 32              1.8342               0.0275
 33              1.8613               0.0271
 34              1.8879               0.0266
 35              1.9141               0.0262
 36              1.9400               0.0258
 37              1.9658               0.0258
 38              1.9912               0.0254
 39              2.0163               0.0251
 40              2.0411               0.0248
 41              2.0655               0.0245
 42              2.0897               0.0241
 43              2.1135               0.0238
 44              2.1371               0.0236
 45              2.1604               0.0233
 46              2.1834               0.0230
 47              2.2062               0.0228
```

48	2.2287	0.0225
49	2.2510	0.0223
50	2.2730	0.0220
51	2.2948	0.0218
52	2.3164	0.0216
53	2.3378	0.0214
54	2.3589	0.0212
55	2.3799	0.0210
56	2.4007	0.0208
57	2.4213	0.0206
58	2.4416	0.0204
59	2.4619	0.0202
60	2.4819	0.0200
61	2.5018	0.0199
62	2.5214	0.0197
63	2.5410	0.0195
64	2.5603	0.0194
65	2.5796	0.0192
66	2.5986	0.0191
67	2.6175	0.0189
68	2.6363	0.0188
69	2.6549	0.0186
70	2.6734	0.0185
71	2.6918	0.0184
72	2.7100	0.0182
73	2.7236	0.0136
74	2.7372	0.0135
75	2.7506	0.0134
76	2.7639	0.0133
77	2.7771	0.0132
78	2.7902	0.0131
79	2.8031	0.0130
80	2.8160	0.0129
81	2.8288	0.0128
82	2.8414	0.0127
83	2.8540	0.0126
84	2.8665	0.0125
85	2.8789	0.0124
86	2.8912	0.0123
87	2.9034	0.0122
88	2.9155	0.0121
89	2.9275	0.0120
90	2.9394	0.0119
91	2.9513	0.0119
92	2.9631	0.0118
93	2.9747	0.0117
94	2.9864	0.0116
95	2.9979	0.0115
96	3.0093	0.0115
97	3.0207	0.0114
98	3.0320	0.0113
99	3.0433	0.0112
100	3.0544	0.0112
101	3.0655	0.0111
102	3.0765	0.0110
103	3.0875	0.0110
104	3.0984	0.0109
105	3.1092	0.0108
106	3.1199	0.0108
107	3.1306	0.0107
108	3.1412	0.0106
109	3.1518	0.0106
110	3.1623	0.0105
111	3.1727	0.0104
112	3.1831	0.0104
113	3.1935	0.0103
114	3.2037	0.0103
115	3.2139	0.0102
116	3.2241	0.0102
117	3.2342	0.0101
118	3.2442	0.0100

119	3.2542	0.0100
120	3.2641	0.0099
121	3.2740	0.0099
122	3.2838	0.0098
123	3.2936	0.0098
124	3.3033	0.0097
125	3.3130	0.0097
126	3.3227	0.0096
127	3.3322	0.0096
128	3.3418	0.0095
129	3.3512	0.0095
130	3.3607	0.0094
131	3.3701	0.0094
132	3.3794	0.0093
133	3.3887	0.0093
134	3.3980	0.0093
135	3.4072	0.0092
136	3.4164	0.0092
137	3.4255	0.0091
138	3.4346	0.0091
139	3.4436	0.0090
140	3.4526	0.0090
141	3.4616	0.0090
142	3.4705	0.0089
143	3.4794	0.0089
144	3.4882	0.0088

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0088	0.0009	0.0079
2	0.0089	0.0009	0.0080
3	0.0090	0.0009	0.0080
4	0.0090	0.0009	0.0081
5	0.0091	0.0009	0.0082
6	0.0091	0.0009	0.0082
7	0.0092	0.0009	0.0083
8	0.0093	0.0010	0.0083
9	0.0093	0.0010	0.0084
10	0.0094	0.0010	0.0084
11	0.0095	0.0010	0.0085
12	0.0095	0.0010	0.0086
13	0.0096	0.0010	0.0086
14	0.0097	0.0010	0.0087
15	0.0098	0.0010	0.0088
16	0.0098	0.0010	0.0088
17	0.0099	0.0010	0.0089
18	0.0100	0.0010	0.0090
19	0.0101	0.0010	0.0091
20	0.0102	0.0010	0.0091
21	0.0103	0.0011	0.0092
22	0.0103	0.0011	0.0093
23	0.0104	0.0011	0.0094
24	0.0105	0.0011	0.0094
25	0.0106	0.0011	0.0095
26	0.0107	0.0011	0.0096
27	0.0108	0.0011	0.0097
28	0.0109	0.0011	0.0098
29	0.0110	0.0011	0.0099
30	0.0111	0.0011	0.0099
31	0.0112	0.0012	0.0101
32	0.0113	0.0012	0.0101
33	0.0115	0.0012	0.0103
34	0.0115	0.0012	0.0103
35	0.0117	0.0012	0.0105
36	0.0118	0.0012	0.0106
37	0.0119	0.0012	0.0107
38	0.0120	0.0012	0.0108
39	0.0122	0.0013	0.0109
40	0.0123	0.0013	0.0110

41	0.0125	0.0013	0.0112
42	0.0126	0.0013	0.0113
43	0.0128	0.0013	0.0115
44	0.0129	0.0013	0.0115
45	0.0131	0.0013	0.0117
46	0.0132	0.0014	0.0118
47	0.0134	0.0014	0.0120
48	0.0135	0.0014	0.0121
49	0.0182	0.0017	0.0166
50	0.0184	0.0017	0.0167
51	0.0186	0.0017	0.0170
52	0.0188	0.0017	0.0171
53	0.0191	0.0017	0.0174
54	0.0192	0.0017	0.0175
55	0.0195	0.0017	0.0179
56	0.0197	0.0017	0.0180
57	0.0200	0.0017	0.0184
58	0.0202	0.0017	0.0185
59	0.0206	0.0017	0.0189
60	0.0208	0.0017	0.0191
61	0.0212	0.0017	0.0195
62	0.0214	0.0017	0.0197
63	0.0218	0.0017	0.0201
64	0.0220	0.0017	0.0204
65	0.0225	0.0017	0.0208
66	0.0228	0.0017	0.0211
67	0.0233	0.0017	0.0216
68	0.0236	0.0017	0.0219
69	0.0241	0.0017	0.0225
70	0.0245	0.0017	0.0228
71	0.0251	0.0017	0.0234
72	0.0254	0.0017	0.0238
73	0.0258	0.0017	0.0242
74	0.0262	0.0017	0.0246
75	0.0271	0.0017	0.0254
76	0.0275	0.0017	0.0258
77	0.0285	0.0017	0.0268
78	0.0290	0.0017	0.0273
79	0.0301	0.0017	0.0285
80	0.0307	0.0017	0.0291
81	0.0321	0.0017	0.0304
82	0.0328	0.0017	0.0312
83	0.0345	0.0017	0.0328
84	0.0354	0.0017	0.0337
85	0.0374	0.0017	0.0358
86	0.0386	0.0017	0.0369
87	0.0413	0.0017	0.0397
88	0.0429	0.0017	0.0412
89	0.0396	0.0017	0.0379
90	0.0418	0.0017	0.0401
91	0.0474	0.0017	0.0458
92	0.0511	0.0017	0.0494
93	0.0661	0.0017	0.0645
94	0.0741	0.0017	0.0725
95	0.1039	0.0017	0.1022
96	0.1403	0.0017	0.1386
97	0.4000	0.0017	0.3983
98	0.0856	0.0017	0.0839
99	0.0557	0.0017	0.0540
100	0.0444	0.0017	0.0427
101	0.0447	0.0017	0.0430
102	0.0399	0.0017	0.0382
103	0.0364	0.0017	0.0347
104	0.0336	0.0017	0.0319
105	0.0314	0.0017	0.0297
106	0.0295	0.0017	0.0279
107	0.0280	0.0017	0.0263
108	0.0266	0.0017	0.0250
109	0.0258	0.0017	0.0241
110	0.0248	0.0017	0.0231
111	0.0238	0.0017	0.0222

112	0.0230	0.0017	0.0214
113	0.0223	0.0017	0.0206
114	0.0216	0.0017	0.0199
115	0.0210	0.0017	0.0193
116	0.0204	0.0017	0.0187
117	0.0199	0.0017	0.0182
118	0.0194	0.0017	0.0177
119	0.0189	0.0017	0.0172
120	0.0185	0.0017	0.0168
121	0.0136	0.0014	0.0122
122	0.0133	0.0014	0.0119
123	0.0130	0.0013	0.0116
124	0.0127	0.0013	0.0114
125	0.0124	0.0013	0.0111
126	0.0121	0.0012	0.0109
127	0.0119	0.0012	0.0106
128	0.0116	0.0012	0.0104
129	0.0114	0.0012	0.0102
130	0.0112	0.0011	0.0100
131	0.0110	0.0011	0.0098
132	0.0108	0.0011	0.0096
133	0.0106	0.0011	0.0095
134	0.0104	0.0011	0.0093
135	0.0102	0.0010	0.0092
136	0.0100	0.0010	0.0090
137	0.0099	0.0010	0.0089
138	0.0097	0.0010	0.0087
139	0.0096	0.0010	0.0086
140	0.0094	0.0010	0.0085
141	0.0093	0.0010	0.0083
142	0.0092	0.0009	0.0082
143	0.0090	0.0009	0.0081
144	0.0089	0.0009	0.0080

Total soil rain loss = 0.20(In)
Total effective rainfall = 3.29(In)
Peak flow rate in flood hydrograph = 5.49(CFS)

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12 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0002	0.03	Q				
0+10	0.0011	0.12	Q				
0+15	0.0021	0.15	Q				
0+20	0.0032	0.16	Q				
0+25	0.0043	0.16	Q				
0+30	0.0054	0.16	Q				
0+35	0.0066	0.17	Q				
0+40	0.0077	0.17	Q				
0+45	0.0089	0.17	Q				
0+50	0.0101	0.17	Q				
0+55	0.0113	0.17	Q				
1+ 0	0.0124	0.17	QV				
1+ 5	0.0136	0.17	QV				
1+10	0.0148	0.18	QV				
1+15	0.0161	0.18	QV				
1+20	0.0173	0.18	QV				
1+25	0.0185	0.18	QV				
1+30	0.0198	0.18	QV				
1+35	0.0210	0.18	QV				
1+40	0.0223	0.18	QV				
1+45	0.0236	0.18	Q V				
1+50	0.0248	0.19	Q V				
1+55	0.0261	0.19	Q V				

```
2+ 0       0.0274      0.19  Q V       |         |         |         |
2+ 5       0.0288      0.19  Q V       |         |         |         |
2+10       0.0301      0.19  Q V       |         |         |         |
2+15       0.0314      0.19  Q V       |         |         |         |
2+20       0.0328      0.20  Q V       |         |         |         |
2+25       0.0342      0.20  Q V       |         |         |         |
2+30       0.0355      0.20  Q  V      |         |         |         |
2+35       0.0369      0.20  Q  V      |         |         |         |
2+40       0.0383      0.20  Q  V      |         |         |         |
2+45       0.0397      0.21  Q  V      |         |         |         |
2+50       0.0412      0.21  Q  V      |         |         |         |
2+55       0.0426      0.21  Q  V      |         |         |         |
3+ 0       0.0441      0.21  Q  V      |         |         |         |
3+ 5       0.0456      0.21  Q  V      |         |         |         |
3+10       0.0471      0.22  Q   V     |         |         |         |
3+15       0.0486      0.22  Q   V     |         |         |         |
3+20       0.0501      0.22  Q   V     |         |         |         |
3+25       0.0516      0.22  Q   V     |         |         |         |
3+30       0.0532      0.23  Q   V     |         |         |         |
3+35       0.0548      0.23  Q   V     |         |         |         |
3+40       0.0564      0.23  Q   V     |         |         |         |
3+45       0.0580      0.23  Q    V    |         |         |         |
3+50       0.0596      0.24  Q    V    |         |         |         |
3+55       0.0613      0.24  Q    V    |         |         |         |
4+ 0       0.0630      0.24  Q    V    |         |         |         |
4+ 5       0.0648      0.26  |Q   V    |         |         |         |
4+10       0.0669      0.31  |Q   V    |         |         |         |
4+15       0.0692      0.33  |Q    V   |         |         |         |
4+20       0.0716      0.34  |Q    V   |         |         |         |
4+25       0.0740      0.35  |Q    V   |         |         |         |
4+30       0.0764      0.35  |Q    V   |         |         |         |
4+35       0.0789      0.36  |Q    V   |         |         |         |
4+40       0.0813      0.36  |Q     V  |         |         |         |
4+45       0.0839      0.37  |Q     V  |         |         |         |
4+50       0.0864      0.37  |Q     V  |         |         |         |
4+55       0.0890      0.38  |Q     V  |         |         |         |
5+ 0       0.0917      0.38  |Q     V  |         |         |         |
5+ 5       0.0943      0.39  |Q      V |         |         |         |
5+10       0.0970      0.39  |Q      V |         |         |         |
5+15       0.0998      0.40  |Q      V |         |         |         |
5+20       0.1026      0.41  |Q      V |         |         |         |
5+25       0.1055      0.41  |Q       V|         |         |         |
5+30       0.1084      0.42  |Q       V|         |         |         |
5+35       0.1113      0.43  |Q       V|         |         |         |
5+40       0.1143      0.44  |Q       V|         |         |         |
5+45       0.1174      0.44  |Q        V         |         |         |
5+50       0.1205      0.45  |Q        V         |         |         |
5+55       0.1237      0.46  |Q        V         |         |         |
6+ 0       0.1270      0.47  |Q        |V        |         |         |
6+ 5       0.1303      0.48  |Q        |V        |         |         |
6+10       0.1337      0.49  |Q        |V        |         |         |
6+15       0.1371      0.50  |Q        |V        |         |         |
6+20       0.1406      0.51  | Q       | V       |         |         |
6+25       0.1442      0.53  | Q       | V       |         |         |
6+30       0.1480      0.54  | Q       | V       |         |         |
6+35       0.1518      0.56  | Q       |  V      |         |         |
6+40       0.1557      0.57  | Q       |  V      |         |         |
6+45       0.1598      0.59  | Q       |  V      |         |         |
6+50       0.1640      0.61  | Q       |   V     |         |         |
6+55       0.1684      0.63  | Q       |   V     |         |         |
7+ 0       0.1729      0.66  | Q       |    V    |         |         |
7+ 5       0.1777      0.69  | Q       |    V    |         |         |
7+10       0.1826      0.72  | Q       |    V    |         |         |
7+15       0.1878      0.75  |  Q      |     V   |         |         |
7+20       0.1933      0.80  |  Q      |     V   |         |         |
7+25       0.1989      0.81  |  Q      |      V  |         |         |
7+30       0.2043      0.79  |  Q      |      V  |         |         |
7+35       0.2100      0.83  |  Q      |       V |         |         |
7+40       0.2163      0.91  |  Q      |       V |         |         |
7+45       0.2235      1.04  |   Q     |        V|         |         |
7+50       0.2321      1.26  |    Q    |         V         |         |
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   7+55       0.2426      1.52  |     Q   |          |V        |          |
   8+ 0       0.2568      2.05  |       Q |          | V       |          |
   8+ 5       0.2817      3.62  |         |   Q      |   V     |          |
   8+10       0.3195      5.49  |         |          |Q     V  |          |
   8+15       0.3380      2.69  |         Q          |        V|          |
   8+20       0.3488      1.58  |     Q   |          |         V          |
   8+25       0.3562      1.07  |   Q     |          |         V          |
   8+30       0.3627      0.93  |  Q      |          |         |V         |
   8+35       0.3682      0.81  |  Q      |          |         | V        |
   8+40       0.3732      0.72  | Q       |          |         | V        |
   8+45       0.3778      0.66  | Q       |          |         | V        |
   8+50       0.3820      0.61  | Q       |          |         |  V       |
   8+55       0.3860      0.57  | Q       |          |         |  V       |
   9+ 0       0.3897      0.54  | Q       |          |         |  V       |
   9+ 5       0.3932      0.51  | Q       |          |         |   V      |
   9+10       0.3966      0.49  |Q        |          |         |   V      |
   9+15       0.3999      0.47  |Q        |          |         |   V      |
   9+20       0.4030      0.45  |Q        |          |         |    V     |
   9+25       0.4060      0.44  |Q        |          |         |    V     |
   9+30       0.4089      0.42  |Q        |          |         |    V     |
   9+35       0.4117      0.41  |Q        |          |         |    V     |
   9+40       0.4145      0.39  |Q        |          |         |     V    |
   9+45       0.4171      0.38  |Q        |          |         |     V    |
   9+50       0.4197      0.37  |Q        |          |         |     V    |
   9+55       0.4222      0.36  |Q        |          |         |     V    |
  10+ 0       0.4246      0.35  |Q        |          |         |     V    |
  10+ 5       0.4268      0.33  |Q        |          |         |      V   |
  10+10       0.4287      0.27  |Q        |          |         |      V   |
  10+15       0.4304      0.25  |Q        |          |         |      V   |
  10+20       0.4321      0.24  Q         |          |         |      V   |
  10+25       0.4337      0.23  Q         |          |         |      V   |
  10+30       0.4352      0.23  Q         |          |         |      V   |
  10+35       0.4368      0.22  Q         |          |         |      V   |
  10+40       0.4383      0.22  Q         |          |         |       V  |
  10+45       0.4397      0.21  Q         |          |         |       V  |
  10+50       0.4412      0.21  Q         |          |         |       V  |
  10+55       0.4426      0.20  Q         |          |         |       V  |
  11+ 0       0.4439      0.20  Q         |          |         |       V  |
  11+ 5       0.4453      0.20  Q         |          |         |       V  |
  11+10       0.4466      0.19  Q         |          |         |       V  |
  11+15       0.4479      0.19  Q         |          |         |       V  |
  11+20       0.4492      0.19  Q         |          |         |        V|
  11+25       0.4505      0.18  Q         |          |         |        V|
  11+30       0.4517      0.18  Q         |          |         |        V|
  11+35       0.4529      0.18  Q         |          |         |        V|
  11+40       0.4542      0.18  Q         |          |         |        V|
  11+45       0.4553      0.17  Q         |          |         |        V|
  11+50       0.4565      0.17  Q         |          |         |        V|
  11+55       0.4577      0.17  Q         |          |         |        V|
  12+ 0       0.4588      0.17  Q         |          |         |        V|
  12+ 5       0.4597      0.13  Q         |          |         |        V|
  12+10       0.4600      0.04  Q         |          |         |        V|
  12+15       0.4601      0.01  Q         |          |         |        V|
  12+20       0.4601      0.00  Q         |          |         |        V|
  12+25       0.4601      0.00  Q         |          |         |        V|
  12+30       0.4601      0.00  Q         |          |         |         V
-------------------------------------------------------------------------
```

- 25 Year 24 Hour Pre-Development Unit Hydrograph – Area 'F'

```
        U n i t   H y d r o g r a p h   A n a l y s i s

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        Study date  10/13/16   File Name exf02524.out


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
WESTRIDGE HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'F' - 25 YEAR 24 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

        Storm Event Year = 25

        Antecedent Moisture Condition = 2

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 74.4       1.7          1.00     D     0.200     0.100    0.020

Area-averaged adjusted loss rate Fm (In/Hr) =  0.020

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC2)           Yield Fr
     0.17   0.100         74.4      74.4       3.44     0.444
     1.51   0.900         98.0      98.0       0.20     0.947

Area-averaged catchment yield fraction, Y =  0.897
Area-averaged low loss fraction, Yb =  0.103
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.091 (hours)
Watershed area =       1.68(Ac.)
Catchment Lag time =   0.073 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 114.8475
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.020(In/Hr)
Average low loss rate fraction (Yb) = 0.103 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.400(In)
Computed peak 30-minute rainfall =  0.870(In)
Specified peak 1-hour rainfall =  1.150(In)
Computed peak 3-hour rainfall =  1.940(In)
Specified peak 6-hour rainfall =  2.710(In)
Specified peak 24-hour rainfall =  4.490(In)


Rainfall depth area reduction factors:
Using a total area of       1.68(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000     Adjusted rainfall =  0.400(In)
```

```
30-minute factor = 1.000    Adjusted rainfall =  0.870(In)
1-hour factor = 1.000       Adjusted rainfall =  1.150(In)
3-hour factor = 1.000       Adjusted rainfall =  1.940(In)
6-hour factor = 1.000       Adjusted rainfall =  2.710(In)
24-hour factor = 1.000 Adjusted rainfall =  4.490(In)
------------------------------------------------------------------------

                      U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
------------------------------------------------------------------------
               (K =        20.32 (CFS))

  1               19.656                   3.994
  2               75.825                  11.412
  3               92.019                   3.290
  4               97.659                   1.146
  5               99.077                   0.288
  6               99.802                   0.147
  7              100.000                   0.040
------------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.4000               0.4000
  2              0.5402               0.1403
  3              0.6441               0.1039
  4              0.7297               0.0856
  5              0.8038               0.0741
  6              0.8699               0.0661
  7              0.9256               0.0557
  8              0.9767               0.0511
  9              1.0242               0.0474
 10              1.0685               0.0444
 11              1.1103               0.0418
 12              1.1499               0.0396
 13              1.1946               0.0447
 14              1.2375               0.0429
 15              1.2788               0.0413
 16              1.3187               0.0399
 17              1.3573               0.0386
 18              1.3947               0.0374
 19              1.4311               0.0364
 20              1.4665               0.0354
 21              1.5009               0.0345
 22              1.5345               0.0336
 23              1.5674               0.0328
 24              1.5994               0.0321
 25              1.6308               0.0314
 26              1.6616               0.0307
 27              1.6917               0.0301
 28              1.7212               0.0295
 29              1.7502               0.0290
 30              1.7787               0.0285
 31              1.8067               0.0280
 32              1.8342               0.0275
 33              1.8613               0.0271
 34              1.8879               0.0266
 35              1.9141               0.0262
 36              1.9400               0.0258
 37              1.9658               0.0258
 38              1.9912               0.0254
 39              2.0163               0.0251
 40              2.0411               0.0248
 41              2.0655               0.0245
 42              2.0897               0.0241
 43              2.1135               0.0238
 44              2.1371               0.0236
 45              2.1604               0.0233
 46              2.1834               0.0230
 47              2.2062               0.0228
```

48	2.2287	0.0225
49	2.2510	0.0223
50	2.2730	0.0220
51	2.2948	0.0218
52	2.3164	0.0216
53	2.3378	0.0214
54	2.3589	0.0212
55	2.3799	0.0210
56	2.4007	0.0208
57	2.4213	0.0206
58	2.4416	0.0204
59	2.4619	0.0202
60	2.4819	0.0200
61	2.5018	0.0199
62	2.5214	0.0197
63	2.5410	0.0195
64	2.5603	0.0194
65	2.5796	0.0192
66	2.5986	0.0191
67	2.6175	0.0189
68	2.6363	0.0188
69	2.6549	0.0186
70	2.6734	0.0185
71	2.6918	0.0184
72	2.7100	0.0182
73	2.7236	0.0136
74	2.7372	0.0135
75	2.7506	0.0134
76	2.7639	0.0133
77	2.7771	0.0132
78	2.7902	0.0131
79	2.8031	0.0130
80	2.8160	0.0129
81	2.8288	0.0128
82	2.8414	0.0127
83	2.8540	0.0126
84	2.8665	0.0125
85	2.8789	0.0124
86	2.8912	0.0123
87	2.9034	0.0122
88	2.9155	0.0121
89	2.9275	0.0120
90	2.9394	0.0119
91	2.9513	0.0119
92	2.9631	0.0118
93	2.9747	0.0117
94	2.9864	0.0116
95	2.9979	0.0115
96	3.0093	0.0115
97	3.0207	0.0114
98	3.0320	0.0113
99	3.0433	0.0112
100	3.0544	0.0112
101	3.0655	0.0111
102	3.0765	0.0110
103	3.0875	0.0110
104	3.0984	0.0109
105	3.1092	0.0108
106	3.1199	0.0108
107	3.1306	0.0107
108	3.1412	0.0106
109	3.1518	0.0106
110	3.1623	0.0105
111	3.1727	0.0104
112	3.1831	0.0104
113	3.1935	0.0103
114	3.2037	0.0103
115	3.2139	0.0102
116	3.2241	0.0102
117	3.2342	0.0101
118	3.2442	0.0100

119	3.2542	0.0100
120	3.2641	0.0099
121	3.2740	0.0099
122	3.2838	0.0098
123	3.2936	0.0098
124	3.3033	0.0097
125	3.3130	0.0097
126	3.3227	0.0096
127	3.3322	0.0096
128	3.3418	0.0095
129	3.3512	0.0095
130	3.3607	0.0094
131	3.3701	0.0094
132	3.3794	0.0093
133	3.3887	0.0093
134	3.3980	0.0093
135	3.4072	0.0092
136	3.4164	0.0092
137	3.4255	0.0091
138	3.4346	0.0091
139	3.4436	0.0090
140	3.4526	0.0090
141	3.4616	0.0090
142	3.4705	0.0089
143	3.4794	0.0089
144	3.4882	0.0088
145	3.4970	0.0088
146	3.5058	0.0088
147	3.5145	0.0087
148	3.5232	0.0087
149	3.5319	0.0087
150	3.5405	0.0086
151	3.5491	0.0086
152	3.5576	0.0085
153	3.5661	0.0085
154	3.5746	0.0085
155	3.5830	0.0084
156	3.5914	0.0084
157	3.5998	0.0084
158	3.6081	0.0083
159	3.6164	0.0083
160	3.6247	0.0083
161	3.6329	0.0082
162	3.6411	0.0082
163	3.6493	0.0082
164	3.6574	0.0081
165	3.6655	0.0081
166	3.6736	0.0081
167	3.6817	0.0080
168	3.6897	0.0080
169	3.6977	0.0080
170	3.7056	0.0080
171	3.7135	0.0079
172	3.7214	0.0079
173	3.7293	0.0079
174	3.7371	0.0078
175	3.7450	0.0078
176	3.7527	0.0078
177	3.7605	0.0078
178	3.7682	0.0077
179	3.7759	0.0077
180	3.7836	0.0077
181	3.7912	0.0076
182	3.7988	0.0076
183	3.8064	0.0076
184	3.8140	0.0076
185	3.8215	0.0075
186	3.8290	0.0075
187	3.8365	0.0075
188	3.8440	0.0075
189	3.8514	0.0074

190	3.8588	0.0074
191	3.8662	0.0074
192	3.8736	0.0074
193	3.8809	0.0073
194	3.8882	0.0073
195	3.8955	0.0073
196	3.9028	0.0073
197	3.9100	0.0072
198	3.9172	0.0072
199	3.9244	0.0072
200	3.9316	0.0072
201	3.9387	0.0071
202	3.9459	0.0071
203	3.9530	0.0071
204	3.9600	0.0071
205	3.9671	0.0071
206	3.9741	0.0070
207	3.9812	0.0070
208	3.9881	0.0070
209	3.9951	0.0070
210	4.0021	0.0070
211	4.0090	0.0069
212	4.0159	0.0069
213	4.0228	0.0069
214	4.0297	0.0069
215	4.0365	0.0068
216	4.0433	0.0068
217	4.0502	0.0068
218	4.0569	0.0068
219	4.0637	0.0068
220	4.0705	0.0067
221	4.0772	0.0067
222	4.0839	0.0067
223	4.0906	0.0067
224	4.0973	0.0067
225	4.1039	0.0067
226	4.1105	0.0066
227	4.1172	0.0066
228	4.1238	0.0066
229	4.1303	0.0066
230	4.1369	0.0066
231	4.1434	0.0065
232	4.1500	0.0065
233	4.1565	0.0065
234	4.1630	0.0065
235	4.1694	0.0065
236	4.1759	0.0065
237	4.1823	0.0064
238	4.1887	0.0064
239	4.1951	0.0064
240	4.2015	0.0064
241	4.2079	0.0064
242	4.2142	0.0064
243	4.2206	0.0063
244	4.2269	0.0063
245	4.2332	0.0063
246	4.2395	0.0063
247	4.2457	0.0063
248	4.2520	0.0063
249	4.2582	0.0062
250	4.2645	0.0062
251	4.2707	0.0062
252	4.2768	0.0062
253	4.2830	0.0062
254	4.2892	0.0062
255	4.2953	0.0061
256	4.3015	0.0061
257	4.3076	0.0061
258	4.3137	0.0061
259	4.3197	0.0061
260	4.3258	0.0061

261	4.3319	0.0061
262	4.3379	0.0060
263	4.3439	0.0060
264	4.3499	0.0060
265	4.3559	0.0060
266	4.3619	0.0060
267	4.3679	0.0060
268	4.3738	0.0060
269	4.3798	0.0059
270	4.3857	0.0059
271	4.3916	0.0059
272	4.3975	0.0059
273	4.4034	0.0059
274	4.4092	0.0059
275	4.4151	0.0059
276	4.4209	0.0058
277	4.4268	0.0058
278	4.4326	0.0058
279	4.4384	0.0058
280	4.4442	0.0058
281	4.4499	0.0058
282	4.4557	0.0058
283	4.4614	0.0057
284	4.4672	0.0057
285	4.4729	0.0057
286	4.4786	0.0057
287	4.4843	0.0057
288	4.4900	0.0057

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0057	0.0006	0.0051
2	0.0057	0.0006	0.0051
3	0.0057	0.0006	0.0051
4	0.0057	0.0006	0.0051
5	0.0058	0.0006	0.0052
6	0.0058	0.0006	0.0052
7	0.0058	0.0006	0.0052
8	0.0058	0.0006	0.0052
9	0.0058	0.0006	0.0052
10	0.0059	0.0006	0.0053
11	0.0059	0.0006	0.0053
12	0.0059	0.0006	0.0053
13	0.0059	0.0006	0.0053
14	0.0059	0.0006	0.0053
15	0.0060	0.0006	0.0054
16	0.0060	0.0006	0.0054
17	0.0060	0.0006	0.0054
18	0.0060	0.0006	0.0054
19	0.0061	0.0006	0.0054
20	0.0061	0.0006	0.0054
21	0.0061	0.0006	0.0055
22	0.0061	0.0006	0.0055
23	0.0061	0.0006	0.0055
24	0.0062	0.0006	0.0055
25	0.0062	0.0006	0.0056
26	0.0062	0.0006	0.0056
27	0.0062	0.0006	0.0056
28	0.0063	0.0006	0.0056
29	0.0063	0.0006	0.0056
30	0.0063	0.0006	0.0057
31	0.0063	0.0007	0.0057
32	0.0064	0.0007	0.0057
33	0.0064	0.0007	0.0057
34	0.0064	0.0007	0.0057
35	0.0064	0.0007	0.0058
36	0.0065	0.0007	0.0058
37	0.0065	0.0007	0.0058
38	0.0065	0.0007	0.0058

39	0.0065	0.0007	0.0059
40	0.0066	0.0007	0.0059
41	0.0066	0.0007	0.0059
42	0.0066	0.0007	0.0059
43	0.0067	0.0007	0.0060
44	0.0067	0.0007	0.0060
45	0.0067	0.0007	0.0060
46	0.0067	0.0007	0.0060
47	0.0068	0.0007	0.0061
48	0.0068	0.0007	0.0061
49	0.0068	0.0007	0.0061
50	0.0068	0.0007	0.0061
51	0.0069	0.0007	0.0062
52	0.0069	0.0007	0.0062
53	0.0070	0.0007	0.0062
54	0.0070	0.0007	0.0063
55	0.0070	0.0007	0.0063
56	0.0070	0.0007	0.0063
57	0.0071	0.0007	0.0064
58	0.0071	0.0007	0.0064
59	0.0071	0.0007	0.0064
60	0.0072	0.0007	0.0064
61	0.0072	0.0007	0.0065
62	0.0072	0.0007	0.0065
63	0.0073	0.0007	0.0065
64	0.0073	0.0008	0.0066
65	0.0074	0.0008	0.0066
66	0.0074	0.0008	0.0066
67	0.0074	0.0008	0.0067
68	0.0075	0.0008	0.0067
69	0.0075	0.0008	0.0067
70	0.0075	0.0008	0.0068
71	0.0076	0.0008	0.0068
72	0.0076	0.0008	0.0068
73	0.0077	0.0008	0.0069
74	0.0077	0.0008	0.0069
75	0.0078	0.0008	0.0070
76	0.0078	0.0008	0.0070
77	0.0078	0.0008	0.0070
78	0.0079	0.0008	0.0071
79	0.0079	0.0008	0.0071
80	0.0080	0.0008	0.0071
81	0.0080	0.0008	0.0072
82	0.0080	0.0008	0.0072
83	0.0081	0.0008	0.0073
84	0.0081	0.0008	0.0073
85	0.0082	0.0008	0.0074
86	0.0082	0.0008	0.0074
87	0.0083	0.0009	0.0074
88	0.0083	0.0009	0.0075
89	0.0084	0.0009	0.0075
90	0.0084	0.0009	0.0076
91	0.0085	0.0009	0.0076
92	0.0085	0.0009	0.0077
93	0.0086	0.0009	0.0077
94	0.0087	0.0009	0.0078
95	0.0087	0.0009	0.0078
96	0.0088	0.0009	0.0079
97	0.0088	0.0009	0.0079
98	0.0089	0.0009	0.0080
99	0.0090	0.0009	0.0080
100	0.0090	0.0009	0.0081
101	0.0091	0.0009	0.0082
102	0.0091	0.0009	0.0082
103	0.0092	0.0009	0.0083
104	0.0093	0.0010	0.0083
105	0.0093	0.0010	0.0084
106	0.0094	0.0010	0.0084
107	0.0095	0.0010	0.0085
108	0.0095	0.0010	0.0086
109	0.0096	0.0010	0.0086

110	0.0097	0.0010	0.0087
111	0.0098	0.0010	0.0088
112	0.0098	0.0010	0.0088
113	0.0099	0.0010	0.0089
114	0.0100	0.0010	0.0090
115	0.0101	0.0010	0.0091
116	0.0102	0.0010	0.0091
117	0.0103	0.0011	0.0092
118	0.0103	0.0011	0.0093
119	0.0104	0.0011	0.0094
120	0.0105	0.0011	0.0094
121	0.0106	0.0011	0.0095
122	0.0107	0.0011	0.0096
123	0.0108	0.0011	0.0097
124	0.0109	0.0011	0.0098
125	0.0110	0.0011	0.0099
126	0.0111	0.0011	0.0099
127	0.0112	0.0012	0.0101
128	0.0113	0.0012	0.0101
129	0.0115	0.0012	0.0103
130	0.0115	0.0012	0.0103
131	0.0117	0.0012	0.0105
132	0.0118	0.0012	0.0106
133	0.0119	0.0012	0.0107
134	0.0120	0.0012	0.0108
135	0.0122	0.0013	0.0109
136	0.0123	0.0013	0.0110
137	0.0125	0.0013	0.0112
138	0.0126	0.0013	0.0113
139	0.0128	0.0013	0.0115
140	0.0129	0.0013	0.0115
141	0.0131	0.0013	0.0117
142	0.0132	0.0014	0.0118
143	0.0134	0.0014	0.0120
144	0.0135	0.0014	0.0121
145	0.0182	0.0017	0.0166
146	0.0184	0.0017	0.0167
147	0.0186	0.0017	0.0170
148	0.0188	0.0017	0.0171
149	0.0191	0.0017	0.0174
150	0.0192	0.0017	0.0175
151	0.0195	0.0017	0.0179
152	0.0197	0.0017	0.0180
153	0.0200	0.0017	0.0184
154	0.0202	0.0017	0.0185
155	0.0206	0.0017	0.0189
156	0.0208	0.0017	0.0191
157	0.0212	0.0017	0.0195
158	0.0214	0.0017	0.0197
159	0.0218	0.0017	0.0201
160	0.0220	0.0017	0.0204
161	0.0225	0.0017	0.0208
162	0.0228	0.0017	0.0211
163	0.0233	0.0017	0.0216
164	0.0236	0.0017	0.0219
165	0.0241	0.0017	0.0225
166	0.0245	0.0017	0.0228
167	0.0251	0.0017	0.0234
168	0.0254	0.0017	0.0238
169	0.0258	0.0017	0.0242
170	0.0262	0.0017	0.0246
171	0.0271	0.0017	0.0254
172	0.0275	0.0017	0.0258
173	0.0285	0.0017	0.0268
174	0.0290	0.0017	0.0273
175	0.0301	0.0017	0.0285
176	0.0307	0.0017	0.0291
177	0.0321	0.0017	0.0304
178	0.0328	0.0017	0.0312
179	0.0345	0.0017	0.0328
180	0.0354	0.0017	0.0337

181	0.0374	0.0017	0.0358
182	0.0386	0.0017	0.0369
183	0.0413	0.0017	0.0397
184	0.0429	0.0017	0.0412
185	0.0396	0.0017	0.0379
186	0.0418	0.0017	0.0401
187	0.0474	0.0017	0.0458
188	0.0511	0.0017	0.0494
189	0.0661	0.0017	0.0645
190	0.0741	0.0017	0.0725
191	0.1039	0.0017	0.1022
192	0.1403	0.0017	0.1386
193	0.4000	0.0017	0.3983
194	0.0856	0.0017	0.0839
195	0.0557	0.0017	0.0540
196	0.0444	0.0017	0.0427
197	0.0447	0.0017	0.0430
198	0.0399	0.0017	0.0382
199	0.0364	0.0017	0.0347
200	0.0336	0.0017	0.0319
201	0.0314	0.0017	0.0297
202	0.0295	0.0017	0.0279
203	0.0280	0.0017	0.0263
204	0.0266	0.0017	0.0250
205	0.0258	0.0017	0.0241
206	0.0248	0.0017	0.0231
207	0.0238	0.0017	0.0222
208	0.0230	0.0017	0.0214
209	0.0223	0.0017	0.0206
210	0.0216	0.0017	0.0199
211	0.0210	0.0017	0.0193
212	0.0204	0.0017	0.0187
213	0.0199	0.0017	0.0182
214	0.0194	0.0017	0.0177
215	0.0189	0.0017	0.0172
216	0.0185	0.0017	0.0168
217	0.0136	0.0014	0.0122
218	0.0133	0.0014	0.0119
219	0.0130	0.0013	0.0116
220	0.0127	0.0013	0.0114
221	0.0124	0.0013	0.0111
222	0.0121	0.0012	0.0109
223	0.0119	0.0012	0.0106
224	0.0116	0.0012	0.0104
225	0.0114	0.0012	0.0102
226	0.0112	0.0011	0.0100
227	0.0110	0.0011	0.0098
228	0.0108	0.0011	0.0096
229	0.0106	0.0011	0.0095
230	0.0104	0.0011	0.0093
231	0.0102	0.0010	0.0092
232	0.0100	0.0010	0.0090
233	0.0099	0.0010	0.0089
234	0.0097	0.0010	0.0087
235	0.0096	0.0010	0.0086
236	0.0094	0.0010	0.0085
237	0.0093	0.0010	0.0083
238	0.0092	0.0009	0.0082
239	0.0090	0.0009	0.0081
240	0.0089	0.0009	0.0080
241	0.0088	0.0009	0.0079
242	0.0087	0.0009	0.0078
243	0.0086	0.0009	0.0077
244	0.0085	0.0009	0.0076
245	0.0084	0.0009	0.0075
246	0.0083	0.0009	0.0074
247	0.0082	0.0008	0.0073
248	0.0081	0.0008	0.0072
249	0.0080	0.0008	0.0072
250	0.0079	0.0008	0.0071
251	0.0078	0.0008	0.0070

252	0.0077	0.0008	0.0069
253	0.0076	0.0008	0.0069
254	0.0076	0.0008	0.0068
255	0.0075	0.0008	0.0067
256	0.0074	0.0008	0.0066
257	0.0073	0.0008	0.0066
258	0.0073	0.0007	0.0065
259	0.0072	0.0007	0.0065
260	0.0071	0.0007	0.0064
261	0.0071	0.0007	0.0063
262	0.0070	0.0007	0.0063
263	0.0069	0.0007	0.0062
264	0.0069	0.0007	0.0062
265	0.0068	0.0007	0.0061
266	0.0067	0.0007	0.0061
267	0.0067	0.0007	0.0060
268	0.0066	0.0007	0.0060
269	0.0066	0.0007	0.0059
270	0.0065	0.0007	0.0059
271	0.0065	0.0007	0.0058
272	0.0064	0.0007	0.0058
273	0.0064	0.0007	0.0057
274	0.0063	0.0006	0.0057
275	0.0063	0.0006	0.0056
276	0.0062	0.0006	0.0056
277	0.0062	0.0006	0.0055
278	0.0061	0.0006	0.0055
279	0.0061	0.0006	0.0055
280	0.0060	0.0006	0.0054
281	0.0060	0.0006	0.0054
282	0.0060	0.0006	0.0053
283	0.0059	0.0006	0.0053
284	0.0059	0.0006	0.0053
285	0.0058	0.0006	0.0052
286	0.0058	0.0006	0.0052
287	0.0057	0.0006	0.0052
288	0.0057	0.0006	0.0051

Total soil rain loss = 0.30(In)
Total effective rainfall = 4.19(In)
Peak flow rate in flood hydrograph = 5.49(CFS)

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24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0001	0.02	Q	|	|	|	|
0+10	0.0007	0.08	Q	|	|	|	|
0+15	0.0013	0.10	Q	|	|	|	|
0+20	0.0020	0.10	Q	|	|	|	|
0+25	0.0028	0.10	Q	|	|	|	|
0+30	0.0035	0.10	Q	|	|	|	|
0+35	0.0042	0.11	Q	|	|	|	|
0+40	0.0049	0.11	Q	|	|	|	|
0+45	0.0057	0.11	Q	|	|	|	|
0+50	0.0064	0.11	Q	|	|	|	|
0+55	0.0071	0.11	Q	|	|	|	|
1+ 0	0.0079	0.11	Q	|	|	|	|
1+ 5	0.0086	0.11	Q	|	|	|	|
1+10	0.0093	0.11	Q	|	|	|	|
1+15	0.0101	0.11	Q	|	|	|	|
1+20	0.0108	0.11	Q	|	|	|	|
1+25	0.0116	0.11	Q	|	|	|	|
1+30	0.0123	0.11	Q	|	|	|	|
1+35	0.0131	0.11	Q	|	|	|	|

1+40	0.0139	0.11	Q	|	|	|	|
1+45	0.0146	0.11	Q	|	|	|	|
1+50	0.0154	0.11	QV	|	|	|	|
1+55	0.0162	0.11	QV	|	|	|	|
2+ 0	0.0169	0.11	QV	|	|	|	|
2+ 5	0.0177	0.11	QV	|	|	|	|
2+10	0.0185	0.11	QV	|	|	|	|
2+15	0.0192	0.11	QV	|	|	|	|
2+20	0.0200	0.11	QV	|	|	|	|
2+25	0.0208	0.11	QV	|	|	|	|
2+30	0.0216	0.11	QV	|	|	|	|
2+35	0.0224	0.11	QV	|	|	|	|
2+40	0.0232	0.12	QV	|	|	|	|
2+45	0.0240	0.12	QV	|	|	|	|
2+50	0.0248	0.12	QV	|	|	|	|
2+55	0.0256	0.12	QV	|	|	|	|
3+ 0	0.0264	0.12	QV	|	|	|	|
3+ 5	0.0272	0.12	QV	|	|	|	|
3+10	0.0280	0.12	QV	|	|	|	|
3+15	0.0288	0.12	QV	|	|	|	|
3+20	0.0297	0.12	Q V	|	|	|	|
3+25	0.0305	0.12	Q V	|	|	|	|
3+30	0.0313	0.12	Q V	|	|	|	|
3+35	0.0321	0.12	Q V	|	|	|	|
3+40	0.0330	0.12	Q V	|	|	|	|
3+45	0.0338	0.12	Q V	|	|	|	|
3+50	0.0347	0.12	Q V	|	|	|	|
3+55	0.0355	0.12	Q V	|	|	|	|
4+ 0	0.0363	0.12	Q V	|	|	|	|
4+ 5	0.0372	0.12	Q V	|	|	|	|
4+10	0.0381	0.12	Q V	|	|	|	|
4+15	0.0389	0.12	Q V	|	|	|	|
4+20	0.0398	0.13	Q V	|	|	|	|
4+25	0.0406	0.13	Q V	|	|	|	|
4+30	0.0415	0.13	Q V	|	|	|	|
4+35	0.0424	0.13	Q V	|	|	|	|
4+40	0.0433	0.13	Q V	|	|	|	|
4+45	0.0442	0.13	Q V	|	|	|	|
4+50	0.0450	0.13	Q V	|	|	|	|
4+55	0.0459	0.13	Q V	|	|	|	|
5+ 0	0.0468	0.13	Q V	|	|	|	|
5+ 5	0.0477	0.13	Q V	|	|	|	|
5+10	0.0486	0.13	Q V	|	|	|	|
5+15	0.0495	0.13	Q V	|	|	|	|
5+20	0.0505	0.13	Q V	|	|	|	|
5+25	0.0514	0.13	Q V	|	|	|	|
5+30	0.0523	0.13	Q V	|	|	|	|
5+35	0.0532	0.13	Q V	|	|	|	|
5+40	0.0542	0.14	Q V	|	|	|	|
5+45	0.0551	0.14	Q V	|	|	|	|
5+50	0.0560	0.14	Q V	|	|	|	|
5+55	0.0570	0.14	Q V	|	|	|	|
6+ 0	0.0579	0.14	Q V	|	|	|	|
6+ 5	0.0589	0.14	Q V	|	|	|	|
6+10	0.0598	0.14	Q V	|	|	|	|
6+15	0.0608	0.14	Q V	|	|	|	|
6+20	0.0618	0.14	Q V	|	|	|	|
6+25	0.0628	0.14	Q V	|	|	|	|
6+30	0.0637	0.14	Q V	|	|	|	|
6+35	0.0647	0.14	Q V	|	|	|	|
6+40	0.0657	0.14	Q V	|	|	|	|
6+45	0.0667	0.14	Q V	|	|	|	|
6+50	0.0677	0.15	Q V	|	|	|	|
6+55	0.0687	0.15	Q V	|	|	|	|
7+ 0	0.0698	0.15	Q V	|	|	|	|
7+ 5	0.0708	0.15	Q V	|	|	|	|
7+10	0.0718	0.15	Q V	|	|	|	|
7+15	0.0728	0.15	Q V	|	|	|	|
7+20	0.0739	0.15	Q V	|	|	|	|
7+25	0.0749	0.15	Q V	|	|	|	|
7+30	0.0760	0.15	Q V	|	|	|	|

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 7+35      0.0770      0.15  Q    V    |         |         |         |
 7+40      0.0781      0.15  Q    V    |         |         |         |
 7+45      0.0792      0.16  Q    V    |         |         |         |
 7+50      0.0803      0.16  Q    V    |         |         |         |
 7+55      0.0813      0.16  Q    V    |         |         |         |
 8+ 0      0.0824      0.16  Q    V    |         |         |         |
 8+ 5      0.0835      0.16  Q    V    |         |         |         |
 8+10      0.0846      0.16  Q    V    |         |         |         |
 8+15      0.0858      0.16  Q    V    |         |         |         |
 8+20      0.0869      0.16  Q    V    |         |         |         |
 8+25      0.0880      0.16  Q     V   |         |         |         |
 8+30      0.0891      0.17  Q     V   |         |         |         |
 8+35      0.0903      0.17  Q     V   |         |         |         |
 8+40      0.0914      0.17  Q     V   |         |         |         |
 8+45      0.0926      0.17  Q     V   |         |         |         |
 8+50      0.0938      0.17  Q     V   |         |         |         |
 8+55      0.0950      0.17  Q     V   |         |         |         |
 9+ 0      0.0961      0.17  Q     V   |         |         |         |
 9+ 5      0.0973      0.17  Q     V   |         |         |         |
 9+10      0.0985      0.18  Q     V   |         |         |         |
 9+15      0.0998      0.18  Q     V   |         |         |         |
 9+20      0.1010      0.18  Q     V   |         |         |         |
 9+25      0.1022      0.18  Q     V   |         |         |         |
 9+30      0.1035      0.18  Q      V  |         |         |         |
 9+35      0.1047      0.18  Q      V  |         |         |         |
 9+40      0.1060      0.18  Q      V  |         |         |         |
 9+45      0.1073      0.18  Q      V  |         |         |         |
 9+50      0.1085      0.19  Q      V  |         |         |         |
 9+55      0.1098      0.19  Q      V  |         |         |         |
10+ 0      0.1111      0.19  Q      V  |         |         |         |
10+ 5      0.1125      0.19  Q      V  |         |         |         |
10+10      0.1138      0.19  Q      V  |         |         |         |
10+15      0.1151      0.19  Q      V  |         |         |         |
10+20      0.1165      0.20  Q      V  |         |         |         |
10+25      0.1179      0.20  Q       V |         |         |         |
10+30      0.1192      0.20  Q       V |         |         |         |
10+35      0.1206      0.20  Q       V |         |         |         |
10+40      0.1220      0.20  Q       V |         |         |         |
10+45      0.1235      0.21  Q       V |         |         |         |
10+50      0.1249      0.21  Q       V |         |         |         |
10+55      0.1263      0.21  Q       V |         |         |         |
11+ 0      0.1278      0.21  Q       V |         |         |         |
11+ 5      0.1293      0.21  Q       V |         |         |         |
11+10      0.1308      0.22  Q       V |         |         |         |
11+15      0.1323      0.22  Q        V|         |         |         |
11+20      0.1338      0.22  Q        V|         |         |         |
11+25      0.1354      0.22  Q        V|         |         |         |
11+30      0.1369      0.23  Q        V|         |         |         |
11+35      0.1385      0.23  Q        V|         |         |         |
11+40      0.1401      0.23  Q        V|         |         |         |
11+45      0.1417      0.23  Q        V|         |         |         |
11+50      0.1433      0.24  Q        V|         |         |         |
11+55      0.1450      0.24  Q        V|         |         |         |
12+ 0      0.1467      0.24  Q         V         |         |         |
12+ 5      0.1485      0.26  |Q        V         |         |         |
12+10      0.1507      0.31  |Q        V         |         |         |
12+15      0.1529      0.33  |Q        V         |         |         |
12+20      0.1553      0.34  |Q        V         |         |         |
12+25      0.1577      0.35  |Q        V         |         |         |
12+30      0.1601      0.35  |Q        V         |         |         |
12+35      0.1626      0.36  |Q         |V        |         |         |
12+40      0.1651      0.36  |Q         |V        |         |         |
12+45      0.1676      0.37  |Q         |V        |         |         |
12+50      0.1701      0.37  |Q         |V        |         |         |
12+55      0.1727      0.38  |Q         |V        |         |         |
13+ 0      0.1754      0.38  |Q         |V        |         |         |
13+ 5      0.1780      0.39  |Q         | V       |         |         |
13+10      0.1808      0.39  |Q         | V       |         |         |
13+15      0.1835      0.40  |Q         | V       |         |         |
13+20      0.1863      0.41  |Q         | V       |         |         |
13+25      0.1892      0.41  |Q         | V       |         |         |
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13+30       0.1921      0.42  |Q        |  V      |         |         |
13+35       0.1950      0.43  |Q        |  V      |         |         |
13+40       0.1980      0.44  |Q        |  V      |         |         |
13+45       0.2011      0.44  |Q        |  V      |         |         |
13+50       0.2042      0.45  |Q        |  V      |         |         |
13+55       0.2074      0.46  |Q        |   V     |         |         |
14+ 0       0.2107      0.47  |Q        |   V     |         |         |
14+ 5       0.2140      0.48  |Q        |   V     |         |         |
14+10       0.2174      0.49  |Q        |   V     |         |         |
14+15       0.2208      0.50  |Q        |    V    |         |         |
14+20       0.2243      0.51  | Q       |    V    |         |         |
14+25       0.2280      0.53  | Q       |    V    |         |         |
14+30       0.2317      0.54  | Q       |    V    |         |         |
14+35       0.2355      0.56  | Q       |     V   |         |         |
14+40       0.2395      0.57  | Q       |     V   |         |         |
14+45       0.2435      0.59  | Q       |     V   |         |         |
14+50       0.2477      0.61  | Q       |     V   |         |         |
14+55       0.2521      0.63  | Q       |      V  |         |         |
15+ 0       0.2566      0.66  | Q       |      V  |         |         |
15+ 5       0.2614      0.69  | Q       |      V  |         |         |
15+10       0.2663      0.72  | Q       |       V |         |         |
15+15       0.2715      0.75  |  Q      |       V |         |         |
15+20       0.2770      0.80  |  Q      |       V |         |         |
15+25       0.2826      0.81  |  Q      |        V|         |         |
15+30       0.2880      0.79  |  Q      |        V|         |         |
15+35       0.2937      0.83  |  Q      |         V         |         |
15+40       0.3000      0.91  |  Q      |         V         |         |
15+45       0.3072      1.04  |   Q     |         V         |         |
15+50       0.3158      1.26  |    Q    |         |V        |         |
15+55       0.3263      1.52  |     Q   |         | V       |         |
16+ 0       0.3405      2.05  |       Q |         |  V      |         |
16+ 5       0.3654      3.62  |         |   Q     |   V     |         |
16+10       0.4032      5.49  |         |        |Q     V  |         |
16+15       0.4217      2.69  |        Q|        |      V |         |
16+20       0.4326      1.58  |     Q   |        |       V|         |
16+25       0.4399      1.07  |   Q     |        |        V         |
16+30       0.4464      0.93  |  Q      |        |        V         |
16+35       0.4519      0.81  |  Q      |        |        V         |
16+40       0.4569      0.72  | Q       |        |        |V        |
16+45       0.4615      0.66  | Q       |        |        |V        |
16+50       0.4657      0.61  | Q       |        |        |V        |
16+55       0.4697      0.57  | Q       |        |        | V       |
17+ 0       0.4734      0.54  | Q       |        |        | V       |
17+ 5       0.4769      0.51  | Q       |        |        | V       |
17+10       0.4803      0.49  |Q        |        |        | V       |
17+15       0.4836      0.47  |Q        |        |        |  V      |
17+20       0.4867      0.45  |Q        |        |        |  V      |
17+25       0.4897      0.44  |Q        |        |        |  V      |
17+30       0.4926      0.42  |Q        |        |        |  V      |
17+35       0.4955      0.41  |Q        |        |        |  V      |
17+40       0.4982      0.39  |Q        |        |        |   V     |
17+45       0.5008      0.38  |Q        |        |        |   V     |
17+50       0.5034      0.37  |Q        |        |        |   V     |
17+55       0.5059      0.36  |Q        |        |        |   V     |
18+ 0       0.5083      0.35  |Q        |        |        |   V     |
18+ 5       0.5105      0.33  |Q        |        |        |   V     |
18+10       0.5124      0.27  |Q        |        |        |   V     |
18+15       0.5141      0.25  |Q        |        |        |    V    |
18+20       0.5158      0.24  Q         |        |        |    V    |
18+25       0.5174      0.23  Q         |        |        |    V    |
18+30       0.5189      0.23  Q         |        |        |    V    |
18+35       0.5205      0.22  Q         |        |        |    V    |
18+40       0.5220      0.22  Q         |        |        |    V    |
18+45       0.5234      0.21  Q         |        |        |    V    |
18+50       0.5249      0.21  Q         |        |        |    V    |
18+55       0.5263      0.20  Q         |        |        |    V    |
19+ 0       0.5276      0.20  Q         |        |        |     V   |
19+ 5       0.5290      0.20  Q         |        |        |     V   |
19+10       0.5303      0.19  Q         |        |        |     V   |
19+15       0.5316      0.19  Q         |        |        |     V   |
19+20       0.5329      0.19  Q         |        |        |     V   |
```

```
  19+25       0.5342      0.18  Q          |          |          |     V    |
  19+30       0.5354      0.18  Q          |          |          |     V    |
  19+35       0.5367      0.18  Q          |          |          |     V    |
  19+40       0.5379      0.18  Q          |          |          |     V    |
  19+45       0.5390      0.17  Q          |          |          |     V    |
  19+50       0.5402      0.17  Q          |          |          |     V    |
  19+55       0.5414      0.17  Q          |          |          |     V    |
  20+ 0       0.5425      0.17  Q          |          |          |      V   |
  20+ 5       0.5436      0.16  Q          |          |          |      V   |
  20+10       0.5447      0.16  Q          |          |          |      V   |
  20+15       0.5458      0.16  Q          |          |          |      V   |
  20+20       0.5469      0.16  Q          |          |          |      V   |
  20+25       0.5480      0.15  Q          |          |          |      V   |
  20+30       0.5490      0.15  Q          |          |          |      V   |
  20+35       0.5501      0.15  Q          |          |          |      V   |
  20+40       0.5511      0.15  Q          |          |          |      V   |
  20+45       0.5521      0.15  Q          |          |          |      V   |
  20+50       0.5531      0.15  Q          |          |          |      V   |
  20+55       0.5541      0.14  Q          |          |          |      V   |
  21+ 0       0.5551      0.14  Q          |          |          |      V   |
  21+ 5       0.5561      0.14  Q          |          |          |      V   |
  21+10       0.5570      0.14  Q          |          |          |       V  |
  21+15       0.5580      0.14  Q          |          |          |       V  |
  21+20       0.5589      0.14  Q          |          |          |       V  |
  21+25       0.5598      0.14  Q          |          |          |       V  |
  21+30       0.5608      0.13  Q          |          |          |       V  |
  21+35       0.5617      0.13  Q          |          |          |       V  |
  21+40       0.5626      0.13  Q          |          |          |       V  |
  21+45       0.5635      0.13  Q          |          |          |       V  |
  21+50       0.5644      0.13  Q          |          |          |       V  |
  21+55       0.5653      0.13  Q          |          |          |       V  |
  22+ 0       0.5661      0.13  Q          |          |          |       V  |
  22+ 5       0.5670      0.13  Q          |          |          |       V  |
  22+10       0.5678      0.12  Q          |          |          |       V  |
  22+15       0.5687      0.12  Q          |          |          |       V  |
  22+20       0.5695      0.12  Q          |          |          |       V  |
  22+25       0.5704      0.12  Q          |          |          |       V  |
  22+30       0.5712      0.12  Q          |          |          |       V  |
  22+35       0.5720      0.12  Q          |          |          |        V|
  22+40       0.5728      0.12  Q          |          |          |        V|
  22+45       0.5736      0.12  Q          |          |          |        V|
  22+50       0.5744      0.12  Q          |          |          |        V|
  22+55       0.5752      0.12  Q          |          |          |        V|
  23+ 0       0.5760      0.11  Q          |          |          |        V|
  23+ 5       0.5768      0.11  Q          |          |          |        V|
  23+10       0.5776      0.11  Q          |          |          |        V|
  23+15       0.5783      0.11  Q          |          |          |        V|
  23+20       0.5791      0.11  Q          |          |          |        V|
  23+25       0.5799      0.11  Q          |          |          |        V|
  23+30       0.5806      0.11  Q          |          |          |        V|
  23+35       0.5814      0.11  Q          |          |          |        V|
  23+40       0.5821      0.11  Q          |          |          |        V|
  23+45       0.5829      0.11  Q          |          |          |        V|
  23+50       0.5836      0.11  Q          |          |          |        V|
  23+55       0.5843      0.11  Q          |          |          |        V|
  24+ 0       0.5850      0.10  Q          |          |          |        V|
  24+ 5       0.5856      0.08  Q          |          |          |        V|
  24+10       0.5858      0.03  Q          |          |          |        V|
  24+15       0.5858      0.01  Q          |          |          |        V|
  24+20       0.5859      0.00  Q          |          |          |        V|
  24+25       0.5859      0.00  Q          |          |          |        V|
  24+30       0.5859      0.00  Q          |          |          |        V|
-------------------------------------------------------------------------
```

- 100 Year 3 Hour Pre-Development Unit Hydrograph – Area 'F'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/13/16   File Name exf10003.out


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------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
WESTRIDGE HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'F' - 100 YEAR 3 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 100

       Antecedent Moisture Condition = 3

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 74.4       1.7          1.00     D     0.200     0.100    0.020

Area-averaged adjusted loss rate Fm (In/Hr) =  0.020

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC3)          Yield Fr
     0.17   0.100         74.4      90.5       1.05     0.807
     1.51   0.900         98.0      98.0       0.20     0.958

Area-averaged catchment yield fraction, Y =  0.943
Area-averaged low loss fraction, Yb =  0.057
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.091 (hours)
Watershed area =       1.68(Ac.)
Catchment Lag time =   0.073 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 114.8475
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.020(In/Hr)
Average low loss rate fraction (Yb) = 0.057 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.520(In)
Computed peak 30-minute rainfall =  1.090(In)
Specified peak 1-hour rainfall =  1.450(In)
Computed peak 3-hour rainfall =  2.430(In)
Specified peak 6-hour rainfall =  3.360(In)
Specified peak 24-hour rainfall =  5.630(In)


Rainfall depth area reduction factors:
Using a total area of       1.68(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000     Adjusted rainfall =  0.520(In)
```

```
30-minute factor = 1.000    Adjusted rainfall =  1.090(In)
1-hour factor = 1.000       Adjusted rainfall =  1.450(In)
3-hour factor = 1.000       Adjusted rainfall =  2.430(In)
6-hour factor = 1.000       Adjusted rainfall =  3.360(In)
24-hour factor = 1.000 Adjusted rainfall =  5.630(In)
--------------------------------------------------------------------

                     U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------
               (K =        20.32 (CFS))

  1               19.656                   3.994
  2               75.825                  11.412
  3               92.019                   3.290
  4               97.659                   1.146
  5               99.077                   0.288
  6               99.802                   0.147
  7              100.000                   0.040
--------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.5200               0.5200
  2              0.6923               0.1724
  3              0.8186               0.1262
  4              0.9218               0.1033
  5              1.0108               0.0890
  6              1.0899               0.0791
  7              1.1613               0.0714
  8              1.2270               0.0656
  9              1.2879               0.0610
 10              1.3450               0.0571
 11              1.3989               0.0538
 12              1.4499               0.0510
 13              1.5055               0.0556
 14              1.5588               0.0534
 15              1.6102               0.0514
 16              1.6598               0.0496
 17              1.7078               0.0480
 18              1.7543               0.0465
 19              1.7995               0.0452
 20              1.8434               0.0439
 21              1.8861               0.0428
 22              1.9278               0.0417
 23              1.9685               0.0407
 24              2.0083               0.0398
 25              2.0472               0.0389
 26              2.0853               0.0381
 27              2.1226               0.0373
 28              2.1592               0.0366
 29              2.1951               0.0359
 30              2.2304               0.0353
 31              2.2650               0.0346
 32              2.2991               0.0341
 33              2.3326               0.0335
 34              2.3656               0.0330
 35              2.3980               0.0325
 36              2.4300               0.0320
--------------------------------------------------------------------
Unit              Unit             Unit             Effective
Period            Rainfall         Soil-Loss        Rainfall
(number)            (In)           (In)               (In)
--------------------------------------------------------------------
  1              0.0320           0.0017             0.0303
  2              0.0325           0.0017             0.0308
  3              0.0335           0.0017             0.0318
  4              0.0341           0.0017             0.0324
  5              0.0353           0.0017             0.0336
  6              0.0359           0.0017             0.0342
```

7	0.0373	0.0017	0.0357
8	0.0381	0.0017	0.0364
9	0.0398	0.0017	0.0381
10	0.0407	0.0017	0.0390
11	0.0428	0.0017	0.0411
12	0.0439	0.0017	0.0422
13	0.0465	0.0017	0.0448
14	0.0480	0.0017	0.0463
15	0.0514	0.0017	0.0497
16	0.0534	0.0017	0.0517
17	0.0510	0.0017	0.0494
18	0.0538	0.0017	0.0522
19	0.0610	0.0017	0.0593
20	0.0656	0.0017	0.0640
21	0.0791	0.0017	0.0774
22	0.0890	0.0017	0.0873
23	0.1262	0.0017	0.1246
24	0.1724	0.0017	0.1707
25	0.5200	0.0017	0.5183
26	0.1033	0.0017	0.1016
27	0.0714	0.0017	0.0697
28	0.0571	0.0017	0.0554
29	0.0556	0.0017	0.0539
30	0.0496	0.0017	0.0479
31	0.0452	0.0017	0.0435
32	0.0417	0.0017	0.0400
33	0.0389	0.0017	0.0372
34	0.0366	0.0017	0.0349
35	0.0346	0.0017	0.0330
36	0.0330	0.0017	0.0313

Total soil rain loss = 0.06(In)
Total effective rainfall = 2.37(In)
Peak flow rate in flood hydrograph = 7.06(CFS)

++

3 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0008	0.12	Q				
0+10	0.0041	0.47	VQ				
0+15	0.0080	0.58	V Q				
0+20	0.0124	0.63	|VQ				
0+25	0.0169	0.65	| Q				
0+30	0.0215	0.68	| Q				
0+35	0.0263	0.70	| QV				
0+40	0.0313	0.72	| QV				
0+45	0.0364	0.74	| Q V				
0+50	0.0417	0.77	| Q V				
0+55	0.0471	0.79	| Q V				
1+ 0	0.0528	0.83	| Q V				
1+ 5	0.0587	0.86	| Q V				
1+10	0.0649	0.90	| Q V				
1+15	0.0714	0.94	| Q V				
1+20	0.0783	1.00	| Q V				
1+25	0.0853	1.02	| Q V				
1+30	0.0924	1.02	| Q |V				
1+35	0.0998	1.08	| Q | V				
1+40	0.1079	1.18	| Q | V				
1+45	0.1170	1.32	| Q | V				
1+50	0.1276	1.53	| Q | V				
1+55	0.1403	1.85	| Q | V				
2+ 0	0.1576	2.51	| Q V				
2+ 5	0.1890	4.56	| | Q | V			
2+10	0.2377	7.06	| | | Q |			

```
    2+15       0.2610      3.39  |          |  Q       |          |V         |
    2+20       0.2749      2.02  |          Q |          |          |  V       |
    2+25       0.2844      1.37  |     Q    |          |          |   V      |
    2+30       0.2925      1.18  |   Q      |          |          |    V     |
    2+35       0.2995      1.02  |   Q      |          |          |     V    |
    2+40       0.3058      0.91  |  Q       |          |          |     V    |
    2+45       0.3115      0.83  |  Q       |          |          |      V   |
    2+50       0.3168      0.77  |  Q       |          |          |       V  |
    2+55       0.3217      0.72  | Q        |          |          |       V  |
    3+ 0       0.3264      0.68  | Q        |          |          |        V |
    3+ 5       0.3300      0.52  | Q        |          |          |        V |
    3+10       0.3311      0.16  Q          |          |          |        V |
    3+15       0.3315      0.05  Q          |          |          |        V |
    3+20       0.3316      0.02  Q          |          |          |        V |
    3+25       0.3316      0.01  Q          |          |          |        V |
    3+30       0.3316      0.00  Q          |          |          |         V
-------------------------------------------------------------------------------
```

- 100 Year 6 Hour Pre-Development Unit Hydrograph – Area 'F'

```
        U n i t   H y d r o g r a p h   A n a l y s i s

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        Study date  10/13/16   File Name exf10006.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

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WESTRIDGE HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'F' - 100 YEAR 6 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

        Storm Event Year = 100

        Antecedent Moisture Condition = 3

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 74.4       1.7          1.00     D     0.200     0.100    0.020

Area-averaged adjusted loss rate Fm (In/Hr) =  0.020

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC3)          Yield Fr
     0.17   0.100         74.4      90.5       1.05     0.807
     1.51   0.900         98.0      98.0       0.20     0.958

Area-averaged catchment yield fraction, Y =  0.943
Area-averaged low loss fraction, Yb =  0.057
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.091 (hours)
Watershed area =       1.68(Ac.)
Catchment Lag time =   0.073 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 114.8475
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.020(In/Hr)
Average low loss rate fraction (Yb) = 0.057 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.520(In)
Computed peak 30-minute rainfall =  1.090(In)
Specified peak 1-hour rainfall =  1.450(In)
Computed peak 3-hour rainfall =  2.430(In)
Specified peak 6-hour rainfall =  3.360(In)
Specified peak 24-hour rainfall =  5.630(In)


Rainfall depth area reduction factors:
Using a total area of       1.68(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000     Adjusted rainfall =  0.520(In)
```

```
30-minute factor = 1.000    Adjusted rainfall =  1.090(In)
1-hour factor = 1.000       Adjusted rainfall =  1.450(In)
3-hour factor = 1.000       Adjusted rainfall =  2.430(In)
6-hour factor = 1.000       Adjusted rainfall =  3.360(In)
24-hour factor = 1.000 Adjusted rainfall =  5.630(In)
--------------------------------------------------------------------

                      U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------
               (K =        20.32 (CFS))

  1               19.656                   3.994
  2               75.825                  11.412
  3               92.019                   3.290
  4               97.659                   1.146
  5               99.077                   0.288
  6               99.802                   0.147
  7              100.000                   0.040
--------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.5200               0.5200
  2              0.6923               0.1724
  3              0.8186               0.1262
  4              0.9218               0.1033
  5              1.0108               0.0890
  6              1.0899               0.0791
  7              1.1613               0.0714
  8              1.2270               0.0656
  9              1.2879               0.0610
 10              1.3450               0.0571
 11              1.3989               0.0538
 12              1.4499               0.0510
 13              1.5055               0.0556
 14              1.5588               0.0534
 15              1.6102               0.0514
 16              1.6598               0.0496
 17              1.7078               0.0480
 18              1.7543               0.0465
 19              1.7995               0.0452
 20              1.8434               0.0439
 21              1.8861               0.0428
 22              1.9278               0.0417
 23              1.9685               0.0407
 24              2.0083               0.0398
 25              2.0472               0.0389
 26              2.0853               0.0381
 27              2.1226               0.0373
 28              2.1592               0.0366
 29              2.1951               0.0359
 30              2.2304               0.0353
 31              2.2650               0.0346
 32              2.2991               0.0341
 33              2.3326               0.0335
 34              2.3656               0.0330
 35              2.3980               0.0325
 36              2.4300               0.0320
 37              2.4613               0.0313
 38              2.4922               0.0309
 39              2.5226               0.0304
 40              2.5527               0.0300
 41              2.5823               0.0296
 42              2.6116               0.0293
 43              2.6404               0.0289
 44              2.6690               0.0285
 45              2.6972               0.0282
 46              2.7250               0.0279
 47              2.7526               0.0275
```

48	2.7798	0.0272
49	2.8067	0.0269
50	2.8334	0.0266
51	2.8597	0.0264
52	2.8858	0.0261
53	2.9116	0.0258
54	2.9372	0.0256
55	2.9625	0.0253
56	2.9875	0.0251
57	3.0123	0.0248
58	3.0369	0.0246
59	3.0613	0.0244
60	3.0855	0.0241
61	3.1094	0.0239
62	3.1331	0.0237
63	3.1566	0.0235
64	3.1800	0.0233
65	3.2031	0.0231
66	3.2260	0.0229
67	3.2488	0.0228
68	3.2714	0.0226
69	3.2938	0.0224
70	3.3160	0.0222
71	3.3381	0.0221
72	3.3600	0.0219

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0219	0.0013	0.0206
2	0.0221	0.0013	0.0208
3	0.0224	0.0013	0.0211
4	0.0226	0.0013	0.0213
5	0.0229	0.0013	0.0216
6	0.0231	0.0013	0.0218
7	0.0235	0.0013	0.0222
8	0.0237	0.0014	0.0224
9	0.0241	0.0014	0.0228
10	0.0244	0.0014	0.0230
11	0.0248	0.0014	0.0234
12	0.0251	0.0014	0.0236
13	0.0256	0.0015	0.0241
14	0.0258	0.0015	0.0243
15	0.0264	0.0015	0.0248
16	0.0266	0.0015	0.0251
17	0.0272	0.0016	0.0257
18	0.0275	0.0016	0.0260
19	0.0282	0.0016	0.0266
20	0.0285	0.0016	0.0269
21	0.0293	0.0017	0.0276
22	0.0296	0.0017	0.0280
23	0.0304	0.0017	0.0288
24	0.0309	0.0017	0.0292
25	0.0320	0.0017	0.0303
26	0.0325	0.0017	0.0308
27	0.0335	0.0017	0.0318
28	0.0341	0.0017	0.0324
29	0.0353	0.0017	0.0336
30	0.0359	0.0017	0.0342
31	0.0373	0.0017	0.0357
32	0.0381	0.0017	0.0364
33	0.0398	0.0017	0.0381
34	0.0407	0.0017	0.0390
35	0.0428	0.0017	0.0411
36	0.0439	0.0017	0.0422
37	0.0465	0.0017	0.0448
38	0.0480	0.0017	0.0463
39	0.0514	0.0017	0.0497
40	0.0534	0.0017	0.0517
41	0.0510	0.0017	0.0494

42	0.0538	0.0017	0.0522
43	0.0610	0.0017	0.0593
44	0.0656	0.0017	0.0640
45	0.0791	0.0017	0.0774
46	0.0890	0.0017	0.0873
47	0.1262	0.0017	0.1246
48	0.1724	0.0017	0.1707
49	0.5200	0.0017	0.5183
50	0.1033	0.0017	0.1016
51	0.0714	0.0017	0.0697
52	0.0571	0.0017	0.0554
53	0.0556	0.0017	0.0539
54	0.0496	0.0017	0.0479
55	0.0452	0.0017	0.0435
56	0.0417	0.0017	0.0400
57	0.0389	0.0017	0.0372
58	0.0366	0.0017	0.0349
59	0.0346	0.0017	0.0330
60	0.0330	0.0017	0.0313
61	0.0313	0.0017	0.0297
62	0.0300	0.0017	0.0284
63	0.0289	0.0017	0.0272
64	0.0279	0.0016	0.0263
65	0.0269	0.0015	0.0254
66	0.0261	0.0015	0.0246
67	0.0253	0.0015	0.0239
68	0.0246	0.0014	0.0232
69	0.0239	0.0014	0.0226
70	0.0233	0.0013	0.0220
71	0.0228	0.0013	0.0215
72	0.0222	0.0013	0.0210

Total soil rain loss = 0.11(In)
Total effective rainfall = 3.25(In)
Peak flow rate in flood hydrograph = 7.06(CFS)

++

6 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0006	0.08	Q				
0+10	0.0028	0.32	VQ				
0+15	0.0054	0.39	VQ				
0+20	0.0083	0.42	VQ				
0+25	0.0113	0.43	VQ				
0+30	0.0143	0.44	|Q				
0+35	0.0173	0.44	|Q				
0+40	0.0204	0.45	|Q				
0+45	0.0236	0.45	|QV				
0+50	0.0267	0.46	|QV				
0+55	0.0299	0.47	|QV				
1+ 0	0.0332	0.47	|QV				
1+ 5	0.0365	0.48	|Q V				
1+10	0.0399	0.49	|Q V				
1+15	0.0433	0.49	|Q V				
1+20	0.0467	0.50	| Q V				
1+25	0.0503	0.51	| Q V				
1+30	0.0538	0.52	| Q V				
1+35	0.0575	0.53	| Q V				
1+40	0.0612	0.54	| Q V				
1+45	0.0649	0.55	| Q V				
1+50	0.0688	0.56	| Q V				
1+55	0.0727	0.57	| Q V				
2+ 0	0.0767	0.58	| Q V				
2+ 5	0.0808	0.59	| Q V				

```
   2+10       0.0850      0.61  | Q    V  |          |          |          |
   2+15       0.0893      0.63  | Q    V  |          |          |          |
   2+20       0.0937      0.64  | Q     V |          |          |          |
   2+25       0.0982      0.66  | Q     V |          |          |          |
   2+30       0.1029      0.68  | Q      V|          |          |          |
   2+35       0.1077      0.70  | Q      V|          |          |          |
   2+40       0.1127      0.72  | Q      V|          |          |          |
   2+45       0.1177      0.74  | Q       V          |          |          |
   2+50       0.1230      0.77  |  Q      V          |          |          |
   2+55       0.1285      0.79  |  Q      |V         |          |          |
   3+ 0       0.1342      0.83  |  Q      |V         |          |          |
   3+ 5       0.1401      0.86  |  Q      | V        |          |          |
   3+10       0.1463      0.90  |  Q      | V        |          |          |
   3+15       0.1528      0.94  |  Q      |  V       |          |          |
   3+20       0.1597      1.00  |  Q      |   V      |          |          |
   3+25       0.1667      1.02  |   Q     |   V      |          |          |
   3+30       0.1738      1.02  |   Q     |    V     |          |          |
   3+35       0.1812      1.08  |   Q     |    V     |          |          |
   3+40       0.1893      1.18  |   Q     |     V    |          |          |
   3+45       0.1984      1.32  |    Q    |      V   |          |          |
   3+50       0.2090      1.53  |     Q   |       V  |          |          |
   3+55       0.2217      1.85  |      Q  |        V |          |          |
   4+ 0       0.2390      2.51  |         Q          |V         |          |
   4+ 5       0.2704      4.56  |         |       Q  |  V       |          |
   4+10       0.3191      7.06  |         |          |       Q  |          |
   4+15       0.3424      3.39  |         |  Q       |         V|          |
   4+20       0.3563      2.02  |       Q |          |          |V         |
   4+25       0.3658      1.37  |    Q    |          |          | V        |
   4+30       0.3739      1.18  |   Q     |          |          | V        |
   4+35       0.3809      1.02  |   Q     |          |          |  V       |
   4+40       0.3871      0.91  |  Q      |          |          |   V      |
   4+45       0.3929      0.83  |  Q      |          |          |   V      |
   4+50       0.3982      0.77  |  Q      |          |          |    V     |
   4+55       0.4031      0.72  | Q       |          |          |    V     |
   5+ 0       0.4078      0.68  | Q       |          |          |    V     |
   5+ 5       0.4122      0.64  | Q       |          |          |     V    |
   5+10       0.4164      0.61  | Q       |          |          |     V    |
   5+15       0.4204      0.58  | Q       |          |          |      V   |
   5+20       0.4243      0.56  | Q       |          |          |      V   |
   5+25       0.4280      0.54  | Q       |          |          |      V   |
   5+30       0.4316      0.52  | Q       |          |          |      V   |
   5+35       0.4350      0.50  | Q       |          |          |       V  |
   5+40       0.4384      0.49  |Q        |          |          |       V  |
   5+45       0.4416      0.47  |Q        |          |          |       V  |
   5+50       0.4448      0.46  |Q        |          |          |        V |
   5+55       0.4479      0.45  |Q        |          |          |        V |
   6+ 0       0.4509      0.44  |Q        |          |          |        V |
   6+ 5       0.4533      0.35  |Q        |          |          |        V |
   6+10       0.4540      0.10  Q         |          |          |        V |
   6+15       0.4543      0.03  Q         |          |          |        V |
   6+20       0.4543      0.01  Q         |          |          |        V |
   6+25       0.4544      0.00  Q         |          |          |        V |
   6+30       0.4544      0.00  Q         |          |          |         V
------------------------------------------------------------------------
```

- 100 Year 12 Hour Pre-Development Unit Hydrograph – Area 'F'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989-2012, Version 7.2

       Study date  10/13/16   File Name exf10012.out


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
WESTRIDGE HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'F' - 100 YEAR 12 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 100

       Antecedent Moisture Condition = 3

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 74.4       1.7          1.00     D     0.200     0.100    0.020

Area-averaged adjusted loss rate Fm (In/Hr) =  0.020

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC3)          Yield Fr
     0.17   0.100         74.4      90.5       1.05     0.807
     1.51   0.900         98.0      98.0       0.20     0.958

Area-averaged catchment yield fraction, Y =  0.943
Area-averaged low loss fraction, Yb =  0.057
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.091 (hours)
Watershed area =       1.68(Ac.)
Catchment Lag time =   0.073 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 114.8475
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.020(In/Hr)
Average low loss rate fraction (Yb) = 0.057 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.520(In)
Computed peak 30-minute rainfall =  1.090(In)
Specified peak 1-hour rainfall =  1.450(In)
Computed peak 3-hour rainfall =  2.430(In)
Specified peak 6-hour rainfall =  3.360(In)
Specified peak 24-hour rainfall =  5.630(In)


Rainfall depth area reduction factors:
Using a total area of       1.68(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000     Adjusted rainfall =  0.520(In)
```

```
30-minute factor = 1.000    Adjusted rainfall =  1.090(In)
1-hour factor = 1.000       Adjusted rainfall =  1.450(In)
3-hour factor = 1.000       Adjusted rainfall =  2.430(In)
6-hour factor = 1.000       Adjusted rainfall =  3.360(In)
24-hour factor = 1.000 Adjusted rainfall =  5.630(In)
--------------------------------------------------------------------

                     U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------
               (K =        20.32 (CFS))

  1               19.656                   3.994
  2               75.825                  11.412
  3               92.019                   3.290
  4               97.659                   1.146
  5               99.077                   0.288
  6               99.802                   0.147
  7              100.000                   0.040
--------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.5200               0.5200
  2              0.6923               0.1724
  3              0.8186               0.1262
  4              0.9218               0.1033
  5              1.0108               0.0890
  6              1.0899               0.0791
  7              1.1613               0.0714
  8              1.2270               0.0656
  9              1.2879               0.0610
 10              1.3450               0.0571
 11              1.3989               0.0538
 12              1.4499               0.0510
 13              1.5055               0.0556
 14              1.5588               0.0534
 15              1.6102               0.0514
 16              1.6598               0.0496
 17              1.7078               0.0480
 18              1.7543               0.0465
 19              1.7995               0.0452
 20              1.8434               0.0439
 21              1.8861               0.0428
 22              1.9278               0.0417
 23              1.9685               0.0407
 24              2.0083               0.0398
 25              2.0472               0.0389
 26              2.0853               0.0381
 27              2.1226               0.0373
 28              2.1592               0.0366
 29              2.1951               0.0359
 30              2.2304               0.0353
 31              2.2650               0.0346
 32              2.2991               0.0341
 33              2.3326               0.0335
 34              2.3656               0.0330
 35              2.3980               0.0325
 36              2.4300               0.0320
 37              2.4613               0.0313
 38              2.4922               0.0309
 39              2.5226               0.0304
 40              2.5527               0.0300
 41              2.5823               0.0296
 42              2.6116               0.0293
 43              2.6404               0.0289
 44              2.6690               0.0285
 45              2.6972               0.0282
 46              2.7250               0.0279
 47              2.7526               0.0275
```

48	2.7798	0.0272
49	2.8067	0.0269
50	2.8334	0.0266
51	2.8597	0.0264
52	2.8858	0.0261
53	2.9116	0.0258
54	2.9372	0.0256
55	2.9625	0.0253
56	2.9875	0.0251
57	3.0123	0.0248
58	3.0369	0.0246
59	3.0613	0.0244
60	3.0855	0.0241
61	3.1094	0.0239
62	3.1331	0.0237
63	3.1566	0.0235
64	3.1800	0.0233
65	3.2031	0.0231
66	3.2260	0.0229
67	3.2488	0.0228
68	3.2714	0.0226
69	3.2938	0.0224
70	3.3160	0.0222
71	3.3381	0.0221
72	3.3600	0.0219
73	3.3773	0.0173
74	3.3944	0.0172
75	3.4114	0.0170
76	3.4283	0.0169
77	3.4450	0.0167
78	3.4616	0.0166
79	3.4781	0.0165
80	3.4944	0.0163
81	3.5106	0.0162
82	3.5267	0.0161
83	3.5426	0.0160
84	3.5585	0.0158
85	3.5742	0.0157
86	3.5898	0.0156
87	3.6053	0.0155
88	3.6206	0.0154
89	3.6359	0.0153
90	3.6511	0.0152
91	3.6661	0.0151
92	3.6811	0.0149
93	3.6959	0.0148
94	3.7107	0.0147
95	3.7253	0.0146
96	3.7399	0.0146
97	3.7543	0.0145
98	3.7687	0.0144
99	3.7830	0.0143
100	3.7971	0.0142
101	3.8112	0.0141
102	3.8253	0.0140
103	3.8392	0.0139
104	3.8530	0.0138
105	3.8668	0.0138
106	3.8804	0.0137
107	3.8940	0.0136
108	3.9075	0.0135
109	3.9210	0.0134
110	3.9343	0.0134
111	3.9476	0.0133
112	3.9608	0.0132
113	3.9739	0.0131
114	3.9870	0.0131
115	4.0000	0.0130
116	4.0129	0.0129
117	4.0257	0.0128
118	4.0385	0.0128

119	4.0512	0.0127
120	4.0639	0.0126
121	4.0764	0.0126
122	4.0890	0.0125
123	4.1014	0.0124
124	4.1138	0.0124
125	4.1261	0.0123
126	4.1384	0.0123
127	4.1506	0.0122
128	4.1627	0.0121
129	4.1748	0.0121
130	4.1868	0.0120
131	4.1988	0.0120
132	4.2107	0.0119
133	4.2225	0.0118
134	4.2343	0.0118
135	4.2461	0.0117
136	4.2577	0.0117
137	4.2694	0.0116
138	4.2809	0.0116
139	4.2925	0.0115
140	4.3039	0.0115
141	4.3154	0.0114
142	4.3267	0.0114
143	4.3381	0.0113
144	4.3493	0.0113

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0113	0.0006	0.0106
2	0.0113	0.0006	0.0107
3	0.0114	0.0007	0.0108
4	0.0115	0.0007	0.0108
5	0.0116	0.0007	0.0109
6	0.0116	0.0007	0.0110
7	0.0117	0.0007	0.0111
8	0.0118	0.0007	0.0111
9	0.0119	0.0007	0.0112
10	0.0120	0.0007	0.0113
11	0.0121	0.0007	0.0114
12	0.0121	0.0007	0.0114
13	0.0123	0.0007	0.0116
14	0.0123	0.0007	0.0116
15	0.0124	0.0007	0.0117
16	0.0125	0.0007	0.0118
17	0.0126	0.0007	0.0119
18	0.0127	0.0007	0.0120
19	0.0128	0.0007	0.0121
20	0.0129	0.0007	0.0122
21	0.0131	0.0007	0.0123
22	0.0131	0.0008	0.0124
23	0.0133	0.0008	0.0125
24	0.0134	0.0008	0.0126
25	0.0135	0.0008	0.0127
26	0.0136	0.0008	0.0128
27	0.0138	0.0008	0.0130
28	0.0138	0.0008	0.0130
29	0.0140	0.0008	0.0132
30	0.0141	0.0008	0.0133
31	0.0143	0.0008	0.0135
32	0.0144	0.0008	0.0135
33	0.0146	0.0008	0.0137
34	0.0146	0.0008	0.0138
35	0.0148	0.0009	0.0140
36	0.0149	0.0009	0.0141
37	0.0152	0.0009	0.0143
38	0.0153	0.0009	0.0144
39	0.0155	0.0009	0.0146
40	0.0156	0.0009	0.0147

41	0.0158	0.0009	0.0149
42	0.0160	0.0009	0.0150
43	0.0162	0.0009	0.0153
44	0.0163	0.0009	0.0154
45	0.0166	0.0010	0.0156
46	0.0167	0.0010	0.0158
47	0.0170	0.0010	0.0160
48	0.0172	0.0010	0.0162
49	0.0219	0.0013	0.0206
50	0.0221	0.0013	0.0208
51	0.0224	0.0013	0.0211
52	0.0226	0.0013	0.0213
53	0.0229	0.0013	0.0216
54	0.0231	0.0013	0.0218
55	0.0235	0.0013	0.0222
56	0.0237	0.0014	0.0224
57	0.0241	0.0014	0.0228
58	0.0244	0.0014	0.0230
59	0.0248	0.0014	0.0234
60	0.0251	0.0014	0.0236
61	0.0256	0.0015	0.0241
62	0.0258	0.0015	0.0243
63	0.0264	0.0015	0.0248
64	0.0266	0.0015	0.0251
65	0.0272	0.0016	0.0257
66	0.0275	0.0016	0.0260
67	0.0282	0.0016	0.0266
68	0.0285	0.0016	0.0269
69	0.0293	0.0017	0.0276
70	0.0296	0.0017	0.0280
71	0.0304	0.0017	0.0288
72	0.0309	0.0017	0.0292
73	0.0320	0.0017	0.0303
74	0.0325	0.0017	0.0308
75	0.0335	0.0017	0.0318
76	0.0341	0.0017	0.0324
77	0.0353	0.0017	0.0336
78	0.0359	0.0017	0.0342
79	0.0373	0.0017	0.0357
80	0.0381	0.0017	0.0364
81	0.0398	0.0017	0.0381
82	0.0407	0.0017	0.0390
83	0.0428	0.0017	0.0411
84	0.0439	0.0017	0.0422
85	0.0465	0.0017	0.0448
86	0.0480	0.0017	0.0463
87	0.0514	0.0017	0.0497
88	0.0534	0.0017	0.0517
89	0.0510	0.0017	0.0494
90	0.0538	0.0017	0.0522
91	0.0610	0.0017	0.0593
92	0.0656	0.0017	0.0640
93	0.0791	0.0017	0.0774
94	0.0890	0.0017	0.0873
95	0.1262	0.0017	0.1246
96	0.1724	0.0017	0.1707
97	0.5200	0.0017	0.5183
98	0.1033	0.0017	0.1016
99	0.0714	0.0017	0.0697
100	0.0571	0.0017	0.0554
101	0.0556	0.0017	0.0539
102	0.0496	0.0017	0.0479
103	0.0452	0.0017	0.0435
104	0.0417	0.0017	0.0400
105	0.0389	0.0017	0.0372
106	0.0366	0.0017	0.0349
107	0.0346	0.0017	0.0330
108	0.0330	0.0017	0.0313
109	0.0313	0.0017	0.0297
110	0.0300	0.0017	0.0284
111	0.0289	0.0017	0.0272

```
      112              0.0279           0.0016             0.0263
      113              0.0269           0.0015             0.0254
      114              0.0261           0.0015             0.0246
      115              0.0253           0.0015             0.0239
      116              0.0246           0.0014             0.0232
      117              0.0239           0.0014             0.0226
      118              0.0233           0.0013             0.0220
      119              0.0228           0.0013             0.0215
      120              0.0222           0.0013             0.0210
      121              0.0173           0.0010             0.0163
      122              0.0169           0.0010             0.0159
      123              0.0165           0.0009             0.0155
      124              0.0161           0.0009             0.0152
      125              0.0157           0.0009             0.0148
      126              0.0154           0.0009             0.0145
      127              0.0151           0.0009             0.0142
      128              0.0147           0.0008             0.0139
      129              0.0145           0.0008             0.0136
      130              0.0142           0.0008             0.0134
      131              0.0139           0.0008             0.0131
      132              0.0137           0.0008             0.0129
      133              0.0134           0.0008             0.0127
      134              0.0132           0.0008             0.0124
      135              0.0130           0.0007             0.0122
      136              0.0128           0.0007             0.0120
      137              0.0126           0.0007             0.0119
      138              0.0124           0.0007             0.0117
      139              0.0122           0.0007             0.0115
      140              0.0120           0.0007             0.0113
      141              0.0118           0.0007             0.0112
      142              0.0117           0.0007             0.0110
      143              0.0115           0.0007             0.0109
      144              0.0114           0.0007             0.0107
      ------------------------------------------------------------------------
      ------------------------------------------------------------------------
      Total soil rain loss =      0.17(In)
      Total effective rainfall =      4.18(In)
      Peak flow rate in flood hydrograph =      7.06(CFS)
      ------------------------------------------------------------------------
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          12 - H O U R    S T O R M
                     R u n o f f      H y d r o g r a p h
      ------------------------------------------------------------------
                  Hydrograph in   5   Minute intervals ((CFS))

      ------------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0        2.5       5.0       7.5      10.0
----------------------------------------------------------------------------
  0+ 5       0.0003      0.04  Q         |         |         |         |
  0+10       0.0014      0.16  Q         |         |         |         |
  0+15       0.0028      0.20  Q         |         |         |         |
  0+20       0.0043      0.21  Q         |         |         |         |
  0+25       0.0058      0.22  Q         |         |         |         |
  0+30       0.0073      0.22  Q         |         |         |         |
  0+35       0.0088      0.22  Q         |         |         |         |
  0+40       0.0104      0.22  Q         |         |         |         |
  0+45       0.0119      0.23  Q         |         |         |         |
  0+50       0.0135      0.23  Q         |         |         |         |
  0+55       0.0151      0.23  QV        |         |         |         |
  1+ 0       0.0167      0.23  QV        |         |         |         |
  1+ 5       0.0183      0.23  QV        |         |         |         |
  1+10       0.0199      0.23  QV        |         |         |         |
  1+15       0.0215      0.24  QV        |         |         |         |
  1+20       0.0231      0.24  QV        |         |         |         |
  1+25       0.0248      0.24  QV        |         |         |         |
  1+30       0.0264      0.24  QV        |         |         |         |
  1+35       0.0281      0.24  QV        |         |         |         |
  1+40       0.0298      0.25  Q V       |         |         |         |
  1+45       0.0315      0.25  Q V       |         |         |         |
  1+50       0.0332      0.25  Q V       |         |         |         |
  1+55       0.0350      0.25  |QV       |         |         |         |
```

```
2+ 0       0.0367      0.25  |QV       |         |         |         |
2+ 5       0.0385      0.26  |QV       |         |         |         |
2+10       0.0403      0.26  |QV       |         |         |         |
2+15       0.0420      0.26  |QV       |         |         |         |
2+20       0.0439      0.26  |QV       |         |         |         |
2+25       0.0457      0.26  |Q V      |         |         |         |
2+30       0.0475      0.27  |Q V      |         |         |         |
2+35       0.0494      0.27  |Q V      |         |         |         |
2+40       0.0513      0.27  |Q V      |         |         |         |
2+45       0.0532      0.28  |Q V      |         |         |         |
2+50       0.0551      0.28  |Q V      |         |         |         |
2+55       0.0570      0.28  |Q V      |         |         |         |
3+ 0       0.0590      0.28  |Q  V     |         |         |         |
3+ 5       0.0609      0.29  |Q  V     |         |         |         |
3+10       0.0629      0.29  |Q  V     |         |         |         |
3+15       0.0649      0.29  |Q  V     |         |         |         |
3+20       0.0670      0.30  |Q  V     |         |         |         |
3+25       0.0690      0.30  |Q  V     |         |         |         |
3+30       0.0711      0.30  |Q  V     |         |         |         |
3+35       0.0732      0.31  |Q   V    |         |         |         |
3+40       0.0753      0.31  |Q   V    |         |         |         |
3+45       0.0775      0.31  |Q   V    |         |         |         |
3+50       0.0797      0.32  |Q   V    |         |         |         |
3+55       0.0819      0.32  |Q   V    |         |         |         |
4+ 0       0.0841      0.32  |Q   V    |         |         |         |
4+ 5       0.0865      0.35  |Q   V    |         |         |         |
4+10       0.0892      0.40  |Q    V   |         |         |         |
4+15       0.0921      0.42  |Q    V   |         |         |         |
4+20       0.0950      0.43  |Q    V   |         |         |         |
4+25       0.0980      0.43  |Q    V   |         |         |         |
4+30       0.1010      0.44  |Q    V   |         |         |         |
4+35       0.1041      0.44  |Q     V  |         |         |         |
4+40       0.1072      0.45  |Q     V  |         |         |         |
4+45       0.1103      0.45  |Q     V  |         |         |         |
4+50       0.1135      0.46  |Q     V  |         |         |         |
4+55       0.1167      0.47  |Q     V  |         |         |         |
5+ 0       0.1199      0.47  |Q      V |         |         |         |
5+ 5       0.1232      0.48  |Q      V |         |         |         |
5+10       0.1266      0.49  |Q      V |         |         |         |
5+15       0.1300      0.49  |Q      V |         |         |         |
5+20       0.1335      0.50  | Q      V|         |         |         |
5+25       0.1370      0.51  | Q      V|         |         |         |
5+30       0.1406      0.52  | Q      V|         |         |         |
5+35       0.1442      0.53  | Q      V|         |         |         |
5+40       0.1479      0.54  | Q       V         |         |         |
5+45       0.1517      0.55  | Q       V         |         |         |
5+50       0.1555      0.56  | Q       V         |         |         |
5+55       0.1594      0.57  | Q       V         |         |         |
6+ 0       0.1634      0.58  | Q       |V        |         |         |
6+ 5       0.1675      0.59  | Q       |V        |         |         |
6+10       0.1717      0.61  | Q       |V        |         |         |
6+15       0.1760      0.63  | Q       | V       |         |         |
6+20       0.1804      0.64  | Q       | V       |         |         |
6+25       0.1850      0.66  | Q       | V       |         |         |
6+30       0.1896      0.68  | Q       | V       |         |         |
6+35       0.1944      0.70  | Q       |  V      |         |         |
6+40       0.1994      0.72  | Q       |  V      |         |         |
6+45       0.2045      0.74  | Q       |  V      |         |         |
6+50       0.2098      0.77  |  Q      |   V     |         |         |
6+55       0.2152      0.79  |  Q      |   V     |         |         |
7+ 0       0.2209      0.83  |  Q      |    V    |         |         |
7+ 5       0.2268      0.86  |  Q      |    V    |         |         |
7+10       0.2330      0.90  |  Q      |    V    |         |         |
7+15       0.2395      0.94  |  Q      |     V   |         |         |
7+20       0.2464      1.00  |  Q      |     V   |         |         |
7+25       0.2535      1.02  |   Q     |      V  |         |         |
7+30       0.2605      1.02  |   Q     |      V  |         |         |
7+35       0.2679      1.08  |   Q     |       V |         |         |
7+40       0.2761      1.18  |   Q     |       V |         |         |
7+45       0.2851      1.32  |    Q    |        V|         |         |
7+50       0.2957      1.53  |     Q   |         V         |         |
```

```
   7+55       0.3084      1.85  |      Q  |          |V         |          |
   8+ 0       0.3257      2.51  |         Q          | V        |          |
   8+ 5       0.3571      4.56  |          |       Q |   V      |          |
   8+10       0.4058      7.06  |          |         |      VQ  |          |
   8+15       0.4291      3.39  |          |  Q      |        V |          |
   8+20       0.4430      2.02  |        Q |         |          V          |
   8+25       0.4525      1.37  |    Q     |         |          V          |
   8+30       0.4606      1.18  |   Q      |         |          |V         |
   8+35       0.4676      1.02  |   Q      |         |          |V         |
   8+40       0.4739      0.91  |  Q       |         |          | V        |
   8+45       0.4796      0.83  |  Q       |         |          | V        |
   8+50       0.4849      0.77  |  Q       |         |          |  V       |
   8+55       0.4899      0.72  | Q        |         |          |  V       |
   9+ 0       0.4945      0.68  | Q        |         |          |  V       |
   9+ 5       0.4990      0.64  | Q        |         |          |   V      |
   9+10       0.5032      0.61  | Q        |         |          |   V      |
   9+15       0.5072      0.58  | Q        |         |          |   V      |
   9+20       0.5110      0.56  | Q        |         |          |   V      |
   9+25       0.5147      0.54  | Q        |         |          |    V     |
   9+30       0.5183      0.52  | Q        |         |          |    V     |
   9+35       0.5218      0.50  | Q        |         |          |    V     |
   9+40       0.5251      0.49  |Q         |         |          |    V     |
   9+45       0.5284      0.47  |Q         |         |          |     V    |
   9+50       0.5315      0.46  |Q         |         |          |     V    |
   9+55       0.5346      0.45  |Q         |         |          |     V    |
  10+ 0       0.5377      0.44  |Q         |         |          |     V    |
  10+ 5       0.5405      0.41  |Q         |         |          |     V    |
  10+10       0.5429      0.35  |Q         |         |          |      V   |
  10+15       0.5452      0.33  |Q         |         |          |      V   |
  10+20       0.5474      0.32  |Q         |         |          |      V   |
  10+25       0.5495      0.31  |Q         |         |          |      V   |
  10+30       0.5516      0.30  |Q         |         |          |      V   |
  10+35       0.5536      0.30  |Q         |         |          |      V   |
  10+40       0.5556      0.29  |Q         |         |          |       V  |
  10+45       0.5576      0.28  |Q         |         |          |       V  |
  10+50       0.5595      0.28  |Q         |         |          |       V  |
  10+55       0.5614      0.27  |Q         |         |          |       V  |
  11+ 0       0.5632      0.27  |Q         |         |          |       V  |
  11+ 5       0.5650      0.26  |Q         |         |          |       V  |
  11+10       0.5668      0.26  |Q         |         |          |       V  |
  11+15       0.5686      0.25  |Q         |         |          |       V  |
  11+20       0.5703      0.25  Q          |         |          |        V |
  11+25       0.5720      0.25  Q          |         |          |        V |
  11+30       0.5736      0.24  Q          |         |          |        V |
  11+35       0.5753      0.24  Q          |         |          |        V |
  11+40       0.5769      0.23  Q          |         |          |        V |
  11+45       0.5785      0.23  Q          |         |          |        V |
  11+50       0.5800      0.23  Q          |         |          |        V |
  11+55       0.5816      0.22  Q          |         |          |        V |
  12+ 0       0.5831      0.22  Q          |         |          |        V |
  12+ 5       0.5843      0.18  Q          |         |          |        V |
  12+10       0.5847      0.05  Q          |         |          |        V |
  12+15       0.5848      0.02  Q          |         |          |        V |
  12+20       0.5848      0.01  Q          |         |          |        V |
  12+25       0.5849      0.00  Q          |         |          |        V |
  12+30       0.5849      0.00  Q          |         |          |         V
--------------------------------------------------------------------------
```

- 100 Year 24 Hour Pre-Development Unit Hydrograph – Area 'F'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989-2012, Version 7.2

       Study date  10/13/16   File Name exf10024.out


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
WESTRIDGE HYDROLOGY STUDY
EXISTING CONDITION UNIT HYDROGRAPH - AREA 'F' - 100 YEAR 24 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 100

       Antecedent Moisture Condition = 3

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 74.4       1.7          1.00     D     0.200     0.100    0.020

Area-averaged adjusted loss rate Fm (In/Hr) =  0.020

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC3)          Yield Fr
     0.17   0.100         74.4      90.5       1.05     0.807
     1.51   0.900         98.0      98.0       0.20     0.958

Area-averaged catchment yield fraction, Y =  0.943
Area-averaged low loss fraction, Yb =  0.057
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.091 (hours)
Watershed area =       1.68(Ac.)
Catchment Lag time =   0.073 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 114.8475
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.020(In/Hr)
Average low loss rate fraction (Yb) = 0.057 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.520(In)
Computed peak 30-minute rainfall =  1.090(In)
Specified peak 1-hour rainfall =  1.450(In)
Computed peak 3-hour rainfall =  2.430(In)
Specified peak 6-hour rainfall =  3.360(In)
Specified peak 24-hour rainfall =  5.630(In)


Rainfall depth area reduction factors:
Using a total area of       1.68(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000     Adjusted rainfall =  0.520(In)
```

```
30-minute factor = 1.000    Adjusted rainfall =  1.090(In)
1-hour factor = 1.000       Adjusted rainfall =  1.450(In)
3-hour factor = 1.000       Adjusted rainfall =  2.430(In)
6-hour factor = 1.000       Adjusted rainfall =  3.360(In)
24-hour factor = 1.000 Adjusted rainfall =  5.630(In)
--------------------------------------------------------------------

                     U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------
               (K =        20.32 (CFS))

  1               19.656                   3.994
  2               75.825                  11.412
  3               92.019                   3.290
  4               97.659                   1.146
  5               99.077                   0.288
  6               99.802                   0.147
  7              100.000                   0.040
--------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.5200               0.5200
  2              0.6923               0.1724
  3              0.8186               0.1262
  4              0.9218               0.1033
  5              1.0108               0.0890
  6              1.0899               0.0791
  7              1.1613               0.0714
  8              1.2270               0.0656
  9              1.2879               0.0610
 10              1.3450               0.0571
 11              1.3989               0.0538
 12              1.4499               0.0510
 13              1.5055               0.0556
 14              1.5588               0.0534
 15              1.6102               0.0514
 16              1.6598               0.0496
 17              1.7078               0.0480
 18              1.7543               0.0465
 19              1.7995               0.0452
 20              1.8434               0.0439
 21              1.8861               0.0428
 22              1.9278               0.0417
 23              1.9685               0.0407
 24              2.0083               0.0398
 25              2.0472               0.0389
 26              2.0853               0.0381
 27              2.1226               0.0373
 28              2.1592               0.0366
 29              2.1951               0.0359
 30              2.2304               0.0353
 31              2.2650               0.0346
 32              2.2991               0.0341
 33              2.3326               0.0335
 34              2.3656               0.0330
 35              2.3980               0.0325
 36              2.4300               0.0320
 37              2.4613               0.0313
 38              2.4922               0.0309
 39              2.5226               0.0304
 40              2.5527               0.0300
 41              2.5823               0.0296
 42              2.6116               0.0293
 43              2.6404               0.0289
 44              2.6690               0.0285
 45              2.6972               0.0282
 46              2.7250               0.0279
 47              2.7526               0.0275
```

48	2.7798	0.0272
49	2.8067	0.0269
50	2.8334	0.0266
51	2.8597	0.0264
52	2.8858	0.0261
53	2.9116	0.0258
54	2.9372	0.0256
55	2.9625	0.0253
56	2.9875	0.0251
57	3.0123	0.0248
58	3.0369	0.0246
59	3.0613	0.0244
60	3.0855	0.0241
61	3.1094	0.0239
62	3.1331	0.0237
63	3.1566	0.0235
64	3.1800	0.0233
65	3.2031	0.0231
66	3.2260	0.0229
67	3.2488	0.0228
68	3.2714	0.0226
69	3.2938	0.0224
70	3.3160	0.0222
71	3.3381	0.0221
72	3.3600	0.0219
73	3.3773	0.0173
74	3.3944	0.0172
75	3.4114	0.0170
76	3.4283	0.0169
77	3.4450	0.0167
78	3.4616	0.0166
79	3.4781	0.0165
80	3.4944	0.0163
81	3.5106	0.0162
82	3.5267	0.0161
83	3.5426	0.0160
84	3.5585	0.0158
85	3.5742	0.0157
86	3.5898	0.0156
87	3.6053	0.0155
88	3.6206	0.0154
89	3.6359	0.0153
90	3.6511	0.0152
91	3.6661	0.0151
92	3.6811	0.0149
93	3.6959	0.0148
94	3.7107	0.0147
95	3.7253	0.0146
96	3.7399	0.0146
97	3.7543	0.0145
98	3.7687	0.0144
99	3.7830	0.0143
100	3.7971	0.0142
101	3.8112	0.0141
102	3.8253	0.0140
103	3.8392	0.0139
104	3.8530	0.0138
105	3.8668	0.0138
106	3.8804	0.0137
107	3.8940	0.0136
108	3.9075	0.0135
109	3.9210	0.0134
110	3.9343	0.0134
111	3.9476	0.0133
112	3.9608	0.0132
113	3.9739	0.0131
114	3.9870	0.0131
115	4.0000	0.0130
116	4.0129	0.0129
117	4.0257	0.0128
118	4.0385	0.0128

119	4.0512	0.0127
120	4.0639	0.0126
121	4.0764	0.0126
122	4.0890	0.0125
123	4.1014	0.0124
124	4.1138	0.0124
125	4.1261	0.0123
126	4.1384	0.0123
127	4.1506	0.0122
128	4.1627	0.0121
129	4.1748	0.0121
130	4.1868	0.0120
131	4.1988	0.0120
132	4.2107	0.0119
133	4.2225	0.0118
134	4.2343	0.0118
135	4.2461	0.0117
136	4.2577	0.0117
137	4.2694	0.0116
138	4.2809	0.0116
139	4.2925	0.0115
140	4.3039	0.0115
141	4.3154	0.0114
142	4.3267	0.0114
143	4.3381	0.0113
144	4.3493	0.0113
145	4.3606	0.0112
146	4.3717	0.0112
147	4.3828	0.0111
148	4.3939	0.0111
149	4.4050	0.0110
150	4.4159	0.0110
151	4.4269	0.0109
152	4.4378	0.0109
153	4.4486	0.0108
154	4.4594	0.0108
155	4.4702	0.0108
156	4.4809	0.0107
157	4.4916	0.0107
158	4.5022	0.0106
159	4.5128	0.0106
160	4.5233	0.0105
161	4.5338	0.0105
162	4.5443	0.0105
163	4.5547	0.0104
164	4.5651	0.0104
165	4.5755	0.0103
166	4.5858	0.0103
167	4.5960	0.0103
168	4.6063	0.0102
169	4.6165	0.0102
170	4.6266	0.0102
171	4.6367	0.0101
172	4.6468	0.0101
173	4.6568	0.0100
174	4.6668	0.0100
175	4.6768	0.0100
176	4.6867	0.0099
177	4.6966	0.0099
178	4.7065	0.0099
179	4.7163	0.0098
180	4.7261	0.0098
181	4.7359	0.0098
182	4.7456	0.0097
183	4.7553	0.0097
184	4.7650	0.0097
185	4.7746	0.0096
186	4.7842	0.0096
187	4.7937	0.0096
188	4.8033	0.0095
189	4.8128	0.0095

190	4.8222	0.0095
191	4.8317	0.0094
192	4.8411	0.0094
193	4.8504	0.0094
194	4.8598	0.0093
195	4.8691	0.0093
196	4.8784	0.0093
197	4.8876	0.0093
198	4.8969	0.0092
199	4.9061	0.0092
200	4.9152	0.0092
201	4.9244	0.0091
202	4.9335	0.0091
203	4.9425	0.0091
204	4.9516	0.0091
205	4.9606	0.0090
206	4.9696	0.0090
207	4.9786	0.0090
208	4.9875	0.0089
209	4.9964	0.0089
210	5.0053	0.0089
211	5.0142	0.0089
212	5.0230	0.0088
213	5.0318	0.0088
214	5.0406	0.0088
215	5.0494	0.0088
216	5.0581	0.0087
217	5.0668	0.0087
218	5.0755	0.0087
219	5.0841	0.0087
220	5.0928	0.0086
221	5.1014	0.0086
222	5.1100	0.0086
223	5.1185	0.0086
224	5.1271	0.0085
225	5.1356	0.0085
226	5.1441	0.0085
227	5.1525	0.0085
228	5.1610	0.0084
229	5.1694	0.0084
230	5.1778	0.0084
231	5.1861	0.0084
232	5.1945	0.0083
233	5.2028	0.0083
234	5.2111	0.0083
235	5.2194	0.0083
236	5.2277	0.0083
237	5.2359	0.0082
238	5.2441	0.0082
239	5.2523	0.0082
240	5.2605	0.0082
241	5.2686	0.0082
242	5.2768	0.0081
243	5.2849	0.0081
244	5.2930	0.0081
245	5.3010	0.0081
246	5.3091	0.0080
247	5.3171	0.0080
248	5.3251	0.0080
249	5.3331	0.0080
250	5.3410	0.0080
251	5.3490	0.0079
252	5.3569	0.0079
253	5.3648	0.0079
254	5.3727	0.0079
255	5.3806	0.0079
256	5.3884	0.0078
257	5.3962	0.0078
258	5.4041	0.0078
259	5.4118	0.0078
260	5.4196	0.0078

261	5.4274	0.0078
262	5.4351	0.0077
263	5.4428	0.0077
264	5.4505	0.0077
265	5.4582	0.0077
266	5.4659	0.0077
267	5.4735	0.0076
268	5.4811	0.0076
269	5.4887	0.0076
270	5.4963	0.0076
271	5.5039	0.0076
272	5.5114	0.0076
273	5.5190	0.0075
274	5.5265	0.0075
275	5.5340	0.0075
276	5.5415	0.0075
277	5.5489	0.0075
278	5.5564	0.0075
279	5.5638	0.0074
280	5.5712	0.0074
281	5.5786	0.0074
282	5.5860	0.0074
283	5.5934	0.0074
284	5.6007	0.0074
285	5.6081	0.0073
286	5.6154	0.0073
287	5.6227	0.0073
288	5.6300	0.0073

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0073	0.0004	0.0069
2	0.0073	0.0004	0.0069
3	0.0073	0.0004	0.0069
4	0.0074	0.0004	0.0069
5	0.0074	0.0004	0.0070
6	0.0074	0.0004	0.0070
7	0.0074	0.0004	0.0070
8	0.0075	0.0004	0.0070
9	0.0075	0.0004	0.0071
10	0.0075	0.0004	0.0071
11	0.0075	0.0004	0.0071
12	0.0076	0.0004	0.0071
13	0.0076	0.0004	0.0072
14	0.0076	0.0004	0.0072
15	0.0076	0.0004	0.0072
16	0.0077	0.0004	0.0072
17	0.0077	0.0004	0.0073
18	0.0077	0.0004	0.0073
19	0.0078	0.0004	0.0073
20	0.0078	0.0004	0.0073
21	0.0078	0.0004	0.0074
22	0.0078	0.0004	0.0074
23	0.0079	0.0005	0.0074
24	0.0079	0.0005	0.0074
25	0.0079	0.0005	0.0075
26	0.0079	0.0005	0.0075
27	0.0080	0.0005	0.0075
28	0.0080	0.0005	0.0075
29	0.0080	0.0005	0.0076
30	0.0081	0.0005	0.0076
31	0.0081	0.0005	0.0076
32	0.0081	0.0005	0.0077
33	0.0082	0.0005	0.0077
34	0.0082	0.0005	0.0077
35	0.0082	0.0005	0.0078
36	0.0083	0.0005	0.0078
37	0.0083	0.0005	0.0078
38	0.0083	0.0005	0.0078

39	0.0084	0.0005	0.0079
40	0.0084	0.0005	0.0079
41	0.0084	0.0005	0.0080
42	0.0085	0.0005	0.0080
43	0.0085	0.0005	0.0080
44	0.0085	0.0005	0.0080
45	0.0086	0.0005	0.0081
46	0.0086	0.0005	0.0081
47	0.0087	0.0005	0.0082
48	0.0087	0.0005	0.0082
49	0.0087	0.0005	0.0082
50	0.0088	0.0005	0.0083
51	0.0088	0.0005	0.0083
52	0.0088	0.0005	0.0083
53	0.0089	0.0005	0.0084
54	0.0089	0.0005	0.0084
55	0.0090	0.0005	0.0085
56	0.0090	0.0005	0.0085
57	0.0091	0.0005	0.0085
58	0.0091	0.0005	0.0086
59	0.0091	0.0005	0.0086
60	0.0092	0.0005	0.0086
61	0.0092	0.0005	0.0087
62	0.0093	0.0005	0.0087
63	0.0093	0.0005	0.0088
64	0.0093	0.0005	0.0088
65	0.0094	0.0005	0.0089
66	0.0094	0.0005	0.0089
67	0.0095	0.0005	0.0090
68	0.0095	0.0005	0.0090
69	0.0096	0.0005	0.0090
70	0.0096	0.0006	0.0091
71	0.0097	0.0006	0.0091
72	0.0097	0.0006	0.0092
73	0.0098	0.0006	0.0092
74	0.0098	0.0006	0.0093
75	0.0099	0.0006	0.0093
76	0.0099	0.0006	0.0094
77	0.0100	0.0006	0.0094
78	0.0100	0.0006	0.0095
79	0.0101	0.0006	0.0095
80	0.0102	0.0006	0.0096
81	0.0102	0.0006	0.0096
82	0.0103	0.0006	0.0097
83	0.0103	0.0006	0.0098
84	0.0104	0.0006	0.0098
85	0.0105	0.0006	0.0099
86	0.0105	0.0006	0.0099
87	0.0106	0.0006	0.0100
88	0.0106	0.0006	0.0100
89	0.0107	0.0006	0.0101
90	0.0108	0.0006	0.0101
91	0.0108	0.0006	0.0102
92	0.0109	0.0006	0.0103
93	0.0110	0.0006	0.0104
94	0.0110	0.0006	0.0104
95	0.0111	0.0006	0.0105
96	0.0112	0.0006	0.0105
97	0.0113	0.0006	0.0106
98	0.0113	0.0006	0.0107
99	0.0114	0.0007	0.0108
100	0.0115	0.0007	0.0108
101	0.0116	0.0007	0.0109
102	0.0116	0.0007	0.0110
103	0.0117	0.0007	0.0111
104	0.0118	0.0007	0.0111
105	0.0119	0.0007	0.0112
106	0.0120	0.0007	0.0113
107	0.0121	0.0007	0.0114
108	0.0121	0.0007	0.0114
109	0.0123	0.0007	0.0116

110	0.0123	0.0007	0.0116
111	0.0124	0.0007	0.0117
112	0.0125	0.0007	0.0118
113	0.0126	0.0007	0.0119
114	0.0127	0.0007	0.0120
115	0.0128	0.0007	0.0121
116	0.0129	0.0007	0.0122
117	0.0131	0.0007	0.0123
118	0.0131	0.0008	0.0124
119	0.0133	0.0008	0.0125
120	0.0134	0.0008	0.0126
121	0.0135	0.0008	0.0127
122	0.0136	0.0008	0.0128
123	0.0138	0.0008	0.0130
124	0.0138	0.0008	0.0130
125	0.0140	0.0008	0.0132
126	0.0141	0.0008	0.0133
127	0.0143	0.0008	0.0135
128	0.0144	0.0008	0.0135
129	0.0146	0.0008	0.0137
130	0.0146	0.0008	0.0138
131	0.0148	0.0009	0.0140
132	0.0149	0.0009	0.0141
133	0.0152	0.0009	0.0143
134	0.0153	0.0009	0.0144
135	0.0155	0.0009	0.0146
136	0.0156	0.0009	0.0147
137	0.0158	0.0009	0.0149
138	0.0160	0.0009	0.0150
139	0.0162	0.0009	0.0153
140	0.0163	0.0009	0.0154
141	0.0166	0.0010	0.0156
142	0.0167	0.0010	0.0158
143	0.0170	0.0010	0.0160
144	0.0172	0.0010	0.0162
145	0.0219	0.0013	0.0206
146	0.0221	0.0013	0.0208
147	0.0224	0.0013	0.0211
148	0.0226	0.0013	0.0213
149	0.0229	0.0013	0.0216
150	0.0231	0.0013	0.0218
151	0.0235	0.0013	0.0222
152	0.0237	0.0014	0.0224
153	0.0241	0.0014	0.0228
154	0.0244	0.0014	0.0230
155	0.0248	0.0014	0.0234
156	0.0251	0.0014	0.0236
157	0.0256	0.0015	0.0241
158	0.0258	0.0015	0.0243
159	0.0264	0.0015	0.0248
160	0.0266	0.0015	0.0251
161	0.0272	0.0016	0.0257
162	0.0275	0.0016	0.0260
163	0.0282	0.0016	0.0266
164	0.0285	0.0016	0.0269
165	0.0293	0.0017	0.0276
166	0.0296	0.0017	0.0280
167	0.0304	0.0017	0.0288
168	0.0309	0.0017	0.0292
169	0.0320	0.0017	0.0303
170	0.0325	0.0017	0.0308
171	0.0335	0.0017	0.0318
172	0.0341	0.0017	0.0324
173	0.0353	0.0017	0.0336
174	0.0359	0.0017	0.0342
175	0.0373	0.0017	0.0357
176	0.0381	0.0017	0.0364
177	0.0398	0.0017	0.0381
178	0.0407	0.0017	0.0390
179	0.0428	0.0017	0.0411
180	0.0439	0.0017	0.0422

181	0.0465	0.0017	0.0448
182	0.0480	0.0017	0.0463
183	0.0514	0.0017	0.0497
184	0.0534	0.0017	0.0517
185	0.0510	0.0017	0.0494
186	0.0538	0.0017	0.0522
187	0.0610	0.0017	0.0593
188	0.0656	0.0017	0.0640
189	0.0791	0.0017	0.0774
190	0.0890	0.0017	0.0873
191	0.1262	0.0017	0.1246
192	0.1724	0.0017	0.1707
193	0.5200	0.0017	0.5183
194	0.1033	0.0017	0.1016
195	0.0714	0.0017	0.0697
196	0.0571	0.0017	0.0554
197	0.0556	0.0017	0.0539
198	0.0496	0.0017	0.0479
199	0.0452	0.0017	0.0435
200	0.0417	0.0017	0.0400
201	0.0389	0.0017	0.0372
202	0.0366	0.0017	0.0349
203	0.0346	0.0017	0.0330
204	0.0330	0.0017	0.0313
205	0.0313	0.0017	0.0297
206	0.0300	0.0017	0.0284
207	0.0289	0.0017	0.0272
208	0.0279	0.0016	0.0263
209	0.0269	0.0015	0.0254
210	0.0261	0.0015	0.0246
211	0.0253	0.0015	0.0239
212	0.0246	0.0014	0.0232
213	0.0239	0.0014	0.0226
214	0.0233	0.0013	0.0220
215	0.0228	0.0013	0.0215
216	0.0222	0.0013	0.0210
217	0.0173	0.0010	0.0163
218	0.0169	0.0010	0.0159
219	0.0165	0.0009	0.0155
220	0.0161	0.0009	0.0152
221	0.0157	0.0009	0.0148
222	0.0154	0.0009	0.0145
223	0.0151	0.0009	0.0142
224	0.0147	0.0008	0.0139
225	0.0145	0.0008	0.0136
226	0.0142	0.0008	0.0134
227	0.0139	0.0008	0.0131
228	0.0137	0.0008	0.0129
229	0.0134	0.0008	0.0127
230	0.0132	0.0008	0.0124
231	0.0130	0.0007	0.0122
232	0.0128	0.0007	0.0120
233	0.0126	0.0007	0.0119
234	0.0124	0.0007	0.0117
235	0.0122	0.0007	0.0115
236	0.0120	0.0007	0.0113
237	0.0118	0.0007	0.0112
238	0.0117	0.0007	0.0110
239	0.0115	0.0007	0.0109
240	0.0114	0.0007	0.0107
241	0.0112	0.0006	0.0106
242	0.0111	0.0006	0.0104
243	0.0109	0.0006	0.0103
244	0.0108	0.0006	0.0102
245	0.0107	0.0006	0.0101
246	0.0105	0.0006	0.0099
247	0.0104	0.0006	0.0098
248	0.0103	0.0006	0.0097
249	0.0102	0.0006	0.0096
250	0.0101	0.0006	0.0095
251	0.0100	0.0006	0.0094

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      252              0.0099          0.0006              0.0093
      253              0.0098          0.0006              0.0092
      254              0.0097          0.0006              0.0091
      255              0.0096          0.0005              0.0090
      256              0.0095          0.0005              0.0089
      257              0.0094          0.0005              0.0088
      258              0.0093          0.0005              0.0088
      259              0.0092          0.0005              0.0087
      260              0.0091          0.0005              0.0086
      261              0.0090          0.0005              0.0085
      262              0.0089          0.0005              0.0084
      263              0.0089          0.0005              0.0084
      264              0.0088          0.0005              0.0083
      265              0.0087          0.0005              0.0082
      266              0.0086          0.0005              0.0081
      267              0.0086          0.0005              0.0081
      268              0.0085          0.0005              0.0080
      269              0.0084          0.0005              0.0079
      270              0.0083          0.0005              0.0079
      271              0.0083          0.0005              0.0078
      272              0.0082          0.0005              0.0077
      273              0.0082          0.0005              0.0077
      274              0.0081          0.0005              0.0076
      275              0.0080          0.0005              0.0076
      276              0.0080          0.0005              0.0075
      277              0.0079          0.0005              0.0075
      278              0.0078          0.0004              0.0074
      279              0.0078          0.0004              0.0073
      280              0.0077          0.0004              0.0073
      281              0.0077          0.0004              0.0072
      282              0.0076          0.0004              0.0072
      283              0.0076          0.0004              0.0071
      284              0.0075          0.0004              0.0071
      285              0.0075          0.0004              0.0070
      286              0.0074          0.0004              0.0070
      287              0.0074          0.0004              0.0069
      288              0.0073          0.0004              0.0069
      ------------------------------------------------------------------------
      ------------------------------------------------------------------------
      Total soil rain loss =      0.24(In)
      Total effective rainfall =      5.39(In)
      Peak flow rate in flood hydrograph =      7.06(CFS)
      ------------------------------------------------------------------------
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                        24 - H O U R    S T O R M
                   R u n o f f      H y d r o g r a p h
      ------------------------------------------------------------------------
                Hydrograph in   5   Minute intervals ((CFS))

      ------------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0        2.5       5.0       7.5      10.0
------------------------------------------------------------------------
  0+ 5       0.0002      0.03  Q         |         |         |         |
  0+10       0.0009      0.11  Q         |         |         |         |
  0+15       0.0018      0.13  Q         |         |         |         |
  0+20       0.0027      0.14  Q         |         |         |         |
  0+25       0.0037      0.14  Q         |         |         |         |
  0+30       0.0047      0.14  Q         |         |         |         |
  0+35       0.0057      0.14  Q         |         |         |         |
  0+40       0.0066      0.14  Q         |         |         |         |
  0+45       0.0076      0.14  Q         |         |         |         |
  0+50       0.0086      0.14  Q         |         |         |         |
  0+55       0.0096      0.14  Q         |         |         |         |
  1+ 0       0.0106      0.14  Q         |         |         |         |
  1+ 5       0.0116      0.14  Q         |         |         |         |
  1+10       0.0126      0.15  Q         |         |         |         |
  1+15       0.0136      0.15  Q         |         |         |         |
  1+20       0.0146      0.15  Q         |         |         |         |
  1+25       0.0156      0.15  Q         |         |         |         |
  1+30       0.0166      0.15  Q         |         |         |         |
  1+35       0.0176      0.15  Q         |         |         |         |
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1+40	0.0187	0.15	Q	|	|	|	|
1+45	0.0197	0.15	QV	|	|	|	|
1+50	0.0207	0.15	QV	|	|	|	|
1+55	0.0217	0.15	QV	|	|	|	|
2+ 0	0.0228	0.15	QV	|	|	|	|
2+ 5	0.0238	0.15	QV	|	|	|	|
2+10	0.0249	0.15	QV	|	|	|	|
2+15	0.0259	0.15	QV	|	|	|	|
2+20	0.0270	0.15	QV	|	|	|	|
2+25	0.0280	0.15	QV	|	|	|	|
2+30	0.0291	0.15	QV	|	|	|	|
2+35	0.0301	0.15	QV	|	|	|	|
2+40	0.0312	0.16	QV	|	|	|	|
2+45	0.0323	0.16	QV	|	|	|	|
2+50	0.0334	0.16	QV	|	|	|	|
2+55	0.0344	0.16	QV	|	|	|	|
3+ 0	0.0355	0.16	QV	|	|	|	|
3+ 5	0.0366	0.16	QV	|	|	|	|
3+10	0.0377	0.16	Q V	|	|	|	|
3+15	0.0388	0.16	Q V	|	|	|	|
3+20	0.0399	0.16	Q V	|	|	|	|
3+25	0.0410	0.16	Q V	|	|	|	|
3+30	0.0421	0.16	Q V	|	|	|	|
3+35	0.0432	0.16	Q V	|	|	|	|
3+40	0.0444	0.16	Q V	|	|	|	|
3+45	0.0455	0.16	Q V	|	|	|	|
3+50	0.0466	0.16	Q V	|	|	|	|
3+55	0.0478	0.16	Q V	|	|	|	|
4+ 0	0.0489	0.17	Q V	|	|	|	|
4+ 5	0.0500	0.17	Q V	|	|	|	|
4+10	0.0512	0.17	Q V	|	|	|	|
4+15	0.0524	0.17	Q V	|	|	|	|
4+20	0.0535	0.17	Q V	|	|	|	|
4+25	0.0547	0.17	Q V	|	|	|	|
4+30	0.0558	0.17	Q V	|	|	|	|
4+35	0.0570	0.17	Q V	|	|	|	|
4+40	0.0582	0.17	Q V	|	|	|	|
4+45	0.0594	0.17	Q V	|	|	|	|
4+50	0.0606	0.17	Q V	|	|	|	|
4+55	0.0618	0.17	Q V	|	|	|	|
5+ 0	0.0630	0.17	Q V	|	|	|	|
5+ 5	0.0642	0.18	Q V	|	|	|	|
5+10	0.0654	0.18	Q V	|	|	|	|
5+15	0.0666	0.18	Q V	|	|	|	|
5+20	0.0679	0.18	Q V	|	|	|	|
5+25	0.0691	0.18	Q V	|	|	|	|
5+30	0.0703	0.18	Q V	|	|	|	|
5+35	0.0716	0.18	Q V	|	|	|	|
5+40	0.0728	0.18	Q V	|	|	|	|
5+45	0.0741	0.18	Q V	|	|	|	|
5+50	0.0753	0.18	Q V	|	|	|	|
5+55	0.0766	0.18	Q V	|	|	|	|
6+ 0	0.0779	0.19	Q V	|	|	|	|
6+ 5	0.0792	0.19	Q V	|	|	|	|
6+10	0.0805	0.19	Q V	|	|	|	|
6+15	0.0818	0.19	Q V	|	|	|	|
6+20	0.0831	0.19	Q V	|	|	|	|
6+25	0.0844	0.19	Q V	|	|	|	|
6+30	0.0857	0.19	Q V	|	|	|	|
6+35	0.0870	0.19	Q V	|	|	|	|
6+40	0.0883	0.19	Q V	|	|	|	|
6+45	0.0897	0.19	Q V	|	|	|	|
6+50	0.0910	0.20	Q V	|	|	|	|
6+55	0.0924	0.20	Q V	|	|	|	|
7+ 0	0.0937	0.20	Q V	|	|	|	|
7+ 5	0.0951	0.20	Q V	|	|	|	|
7+10	0.0965	0.20	Q V	|	|	|	|
7+15	0.0979	0.20	Q V	|	|	|	|
7+20	0.0993	0.20	Q V	|	|	|	|
7+25	0.1007	0.20	Q V	|	|	|	|
7+30	0.1021	0.20	Q V	|	|	|	|

```
 7+35      0.1035      0.21  Q    V    |         |         |         |
 7+40      0.1049      0.21  Q    V    |         |         |         |
 7+45      0.1064      0.21  Q    V    |         |         |         |
 7+50      0.1078      0.21  Q    V    |         |         |         |
 7+55      0.1093      0.21  Q    V    |         |         |         |
 8+ 0      0.1107      0.21  Q    V    |         |         |         |
 8+ 5      0.1122      0.21  Q    V    |         |         |         |
 8+10      0.1137      0.22  Q     V   |         |         |         |
 8+15      0.1152      0.22  Q     V   |         |         |         |
 8+20      0.1167      0.22  Q     V   |         |         |         |
 8+25      0.1182      0.22  Q     V   |         |         |         |
 8+30      0.1197      0.22  Q     V   |         |         |         |
 8+35      0.1213      0.22  Q     V   |         |         |         |
 8+40      0.1228      0.22  Q     V   |         |         |         |
 8+45      0.1244      0.23  Q     V   |         |         |         |
 8+50      0.1259      0.23  Q     V   |         |         |         |
 8+55      0.1275      0.23  Q     V   |         |         |         |
 9+ 0      0.1291      0.23  Q     V   |         |         |         |
 9+ 5      0.1307      0.23  Q     V   |         |         |         |
 9+10      0.1323      0.23  Q      V  |         |         |         |
 9+15      0.1339      0.24  Q      V  |         |         |         |
 9+20      0.1356      0.24  Q      V  |         |         |         |
 9+25      0.1372      0.24  Q      V  |         |         |         |
 9+30      0.1389      0.24  Q      V  |         |         |         |
 9+35      0.1406      0.24  Q      V  |         |         |         |
 9+40      0.1423      0.25  Q      V  |         |         |         |
 9+45      0.1440      0.25  Q      V  |         |         |         |
 9+50      0.1457      0.25  Q      V  |         |         |         |
 9+55      0.1474      0.25  |Q     V  |         |         |         |
10+ 0      0.1492      0.25  |Q     V  |         |         |         |
10+ 5      0.1509      0.26  |Q      V |         |         |         |
10+10      0.1527      0.26  |Q      V |         |         |         |
10+15      0.1545      0.26  |Q      V |         |         |         |
10+20      0.1563      0.26  |Q      V |         |         |         |
10+25      0.1581      0.26  |Q      V |         |         |         |
10+30      0.1600      0.27  |Q      V |         |         |         |
10+35      0.1618      0.27  |Q      V |         |         |         |
10+40      0.1637      0.27  |Q      V |         |         |         |
10+45      0.1656      0.28  |Q      V |         |         |         |
10+50      0.1675      0.28  |Q      V |         |         |         |
10+55      0.1694      0.28  |Q      V |         |         |         |
11+ 0      0.1714      0.28  |Q       V|         |         |         |
11+ 5      0.1734      0.29  |Q       V|         |         |         |
11+10      0.1754      0.29  |Q       V|         |         |         |
11+15      0.1774      0.29  |Q       V|         |         |         |
11+20      0.1794      0.30  |Q       V|         |         |         |
11+25      0.1815      0.30  |Q       V|         |         |         |
11+30      0.1836      0.30  |Q       V|         |         |         |
11+35      0.1857      0.31  |Q       V|         |         |         |
11+40      0.1878      0.31  |Q       V|         |         |         |
11+45      0.1899      0.31  |Q        V         |         |         |
11+50      0.1921      0.32  |Q        V         |         |         |
11+55      0.1943      0.32  |Q        V         |         |         |
12+ 0      0.1966      0.32  |Q        V         |         |         |
12+ 5      0.1989      0.35  |Q        V         |         |         |
12+10      0.2017      0.40  |Q        V         |         |         |
12+15      0.2045      0.42  |Q        V         |         |         |
12+20      0.2075      0.43  |Q         |V        |         |         |
12+25      0.2104      0.43  |Q         |V        |         |         |
12+30      0.2135      0.44  |Q         |V        |         |         |
12+35      0.2165      0.44  |Q         |V        |         |         |
12+40      0.2196      0.45  |Q         |V        |         |         |
12+45      0.2227      0.45  |Q         |V        |         |         |
12+50      0.2259      0.46  |Q         |V        |         |         |
12+55      0.2291      0.47  |Q         | V       |         |         |
13+ 0      0.2324      0.47  |Q         | V       |         |         |
13+ 5      0.2357      0.48  |Q         | V       |         |         |
13+10      0.2390      0.49  |Q         | V       |         |         |
13+15      0.2425      0.49  |Q         | V       |         |         |
13+20      0.2459      0.50  | Q        |  V      |         |         |
13+25      0.2494      0.51  | Q        |  V      |         |         |
```

```
13+30       0.2530      0.52  | Q       |  V      |         |         |
13+35       0.2566      0.53  | Q       |  V      |         |         |
13+40       0.2603      0.54  | Q       |  V      |         |         |
13+45       0.2641      0.55  | Q       |   V     |         |         |
13+50       0.2679      0.56  | Q       |   V     |         |         |
13+55       0.2719      0.57  | Q       |   V     |         |         |
14+ 0       0.2759      0.58  | Q       |   V     |         |         |
14+ 5       0.2800      0.59  | Q       |   V     |         |         |
14+10       0.2842      0.61  | Q       |    V    |         |         |
14+15       0.2885      0.63  | Q       |    V    |         |         |
14+20       0.2929      0.64  | Q       |    V    |         |         |
14+25       0.2974      0.66  | Q       |    V    |         |         |
14+30       0.3021      0.68  | Q       |     V   |         |         |
14+35       0.3069      0.70  | Q       |     V   |         |         |
14+40       0.3118      0.72  | Q       |     V   |         |         |
14+45       0.3169      0.74  | Q       |     V   |         |         |
14+50       0.3222      0.77  |  Q      |      V  |         |         |
14+55       0.3277      0.79  |  Q      |      V  |         |         |
15+ 0       0.3334      0.83  |  Q      |      V  |         |         |
15+ 5       0.3393      0.86  |  Q      |       V |         |         |
15+10       0.3455      0.90  |  Q      |       V |         |         |
15+15       0.3520      0.94  |  Q      |       V |         |         |
15+20       0.3589      1.00  |  Q      |        V|         |         |
15+25       0.3659      1.02  |   Q     |        V|         |         |
15+30       0.3729      1.02  |   Q     |        V|         |         |
15+35       0.3803      1.08  |   Q     |         V         |         |
15+40       0.3885      1.18  |   Q     |         V         |         |
15+45       0.3976      1.32  |    Q    |         |V        |         |
15+50       0.4082      1.53  |     Q   |         |V        |         |
15+55       0.4209      1.85  |      Q  |         | V       |         |
16+ 0       0.4382      2.51  |         Q       |  V      |         |
16+ 5       0.4696      4.56  |         |       Q |   V     |         |
16+10       0.5182      7.06  |         |         |     VQ  |         |
16+15       0.5416      3.39  |         |  Q      |      V  |         |
16+20       0.5555      2.02  |       Q |         |       V|         |
16+25       0.5649      1.37  |    Q    |         |       V|         |
16+30       0.5731      1.18  |   Q     |         |        V         |
16+35       0.5801      1.02  |   Q     |         |        V         |
16+40       0.5863      0.91  |  Q      |         |         |V       |
16+45       0.5920      0.83  |  Q      |         |         |V       |
16+50       0.5973      0.77  |  Q      |         |         |V       |
16+55       0.6023      0.72  | Q       |         |         |V       |
17+ 0       0.6070      0.68  | Q       |         |         | V      |
17+ 5       0.6114      0.64  | Q       |         |         | V      |
17+10       0.6156      0.61  | Q       |         |         | V      |
17+15       0.6196      0.58  | Q       |         |         | V      |
17+20       0.6235      0.56  | Q       |         |         |  V     |
17+25       0.6272      0.54  | Q       |         |         |  V     |
17+30       0.6307      0.52  | Q       |         |         |  V     |
17+35       0.6342      0.50  | Q       |         |         |  V     |
17+40       0.6376      0.49  |Q        |         |         |  V     |
17+45       0.6408      0.47  |Q        |         |         |   V    |
17+50       0.6440      0.46  |Q        |         |         |   V    |
17+55       0.6471      0.45  |Q        |         |         |   V    |
18+ 0       0.6501      0.44  |Q        |         |         |   V    |
18+ 5       0.6529      0.41  |Q        |         |         |   V    |
18+10       0.6554      0.35  |Q        |         |         |   V    |
18+15       0.6576      0.33  |Q        |         |         |   V    |
18+20       0.6598      0.32  |Q        |         |         |    V   |
18+25       0.6620      0.31  |Q        |         |         |    V   |
18+30       0.6641      0.30  |Q        |         |         |    V   |
18+35       0.6661      0.30  |Q        |         |         |    V   |
18+40       0.6681      0.29  |Q        |         |         |    V   |
18+45       0.6700      0.28  |Q        |         |         |    V   |
18+50       0.6720      0.28  |Q        |         |         |    V   |
18+55       0.6738      0.27  |Q        |         |         |    V   |
19+ 0       0.6757      0.27  |Q        |         |         |    V   |
19+ 5       0.6775      0.26  |Q        |         |         |    V   |
19+10       0.6793      0.26  |Q        |         |         |     V  |
19+15       0.6810      0.25  |Q        |         |         |     V  |
19+20       0.6827      0.25  Q         |         |         |     V  |
```

```
  19+25       0.6844      0.25  Q          |          |          |     V    |
  19+30       0.6861      0.24  Q          |          |          |     V    |
  19+35       0.6877      0.24  Q          |          |          |     V    |
  19+40       0.6893      0.23  Q          |          |          |     V    |
  19+45       0.6909      0.23  Q          |          |          |     V    |
  19+50       0.6925      0.23  Q          |          |          |     V    |
  19+55       0.6940      0.22  Q          |          |          |     V    |
  20+ 0       0.6956      0.22  Q          |          |          |     V    |
  20+ 5       0.6971      0.22  Q          |          |          |     V    |
  20+10       0.6985      0.22  Q          |          |          |      V   |
  20+15       0.7000      0.21  Q          |          |          |      V   |
  20+20       0.7015      0.21  Q          |          |          |      V   |
  20+25       0.7029      0.21  Q          |          |          |      V   |
  20+30       0.7043      0.20  Q          |          |          |      V   |
  20+35       0.7057      0.20  Q          |          |          |      V   |
  20+40       0.7071      0.20  Q          |          |          |      V   |
  20+45       0.7084      0.20  Q          |          |          |      V   |
  20+50       0.7098      0.20  Q          |          |          |      V   |
  20+55       0.7111      0.19  Q          |          |          |      V   |
  21+ 0       0.7124      0.19  Q          |          |          |      V   |
  21+ 5       0.7137      0.19  Q          |          |          |      V   |
  21+10       0.7150      0.19  Q          |          |          |      V   |
  21+15       0.7163      0.19  Q          |          |          |       V  |
  21+20       0.7176      0.18  Q          |          |          |       V  |
  21+25       0.7188      0.18  Q          |          |          |       V  |
  21+30       0.7200      0.18  Q          |          |          |       V  |
  21+35       0.7213      0.18  Q          |          |          |       V  |
  21+40       0.7225      0.18  Q          |          |          |       V  |
  21+45       0.7237      0.17  Q          |          |          |       V  |
  21+50       0.7249      0.17  Q          |          |          |       V  |
  21+55       0.7261      0.17  Q          |          |          |       V  |
  22+ 0       0.7272      0.17  Q          |          |          |       V  |
  22+ 5       0.7284      0.17  Q          |          |          |       V  |
  22+10       0.7295      0.17  Q          |          |          |       V  |
  22+15       0.7307      0.17  Q          |          |          |       V  |
  22+20       0.7318      0.16  Q          |          |          |       V  |
  22+25       0.7329      0.16  Q          |          |          |       V  |
  22+30       0.7340      0.16  Q          |          |          |       V  |
  22+35       0.7351      0.16  Q          |          |          |        V |
  22+40       0.7362      0.16  Q          |          |          |        V |
  22+45       0.7373      0.16  Q          |          |          |        V |
  22+50       0.7384      0.16  Q          |          |          |        V |
  22+55       0.7395      0.16  Q          |          |          |        V |
  23+ 0       0.7405      0.15  Q          |          |          |        V |
  23+ 5       0.7416      0.15  Q          |          |          |        V |
  23+10       0.7426      0.15  Q          |          |          |        V |
  23+15       0.7437      0.15  Q          |          |          |        V |
  23+20       0.7447      0.15  Q          |          |          |        V |
  23+25       0.7457      0.15  Q          |          |          |        V |
  23+30       0.7467      0.15  Q          |          |          |        V |
  23+35       0.7477      0.15  Q          |          |          |        V |
  23+40       0.7487      0.15  Q          |          |          |        V |
  23+45       0.7497      0.14  Q          |          |          |        V |
  23+50       0.7507      0.14  Q          |          |          |        V |
  23+55       0.7517      0.14  Q          |          |          |        V |
  24+ 0       0.7527      0.14  Q          |          |          |        V |
  24+ 5       0.7534      0.11  Q          |          |          |        V |
  24+10       0.7537      0.03  Q          |          |          |        V |
  24+15       0.7538      0.01  Q          |          |          |        V |
  24+20       0.7538      0.00  Q          |          |          |        V |
  24+25       0.7538      0.00  Q          |          |          |        V |
  24+30       0.7538      0.00  Q          |          |          |         V
-------------------------------------------------------------------------
```

- 2 Year 3 Hour Post-Development Unit Hydrograph – Area 'F'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/20/16   File Name prf00203.out


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------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'F' - 2 YEAR 3 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 2

       Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 74.4       1.7          1.00     D     0.200     0.100    0.020

Area-averaged adjusted loss rate Fm (In/Hr) =  0.020

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
     0.17   0.100         74.4      56.3       7.77     0.015
     1.51   0.900         98.0      98.0       0.20     0.890

Area-averaged catchment yield fraction, Y =  0.802
Area-averaged low loss fraction, Yb =  0.198
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.091 (hours)
Watershed area =       1.68(Ac.)
Catchment Lag time =   0.073 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 114.8095
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.020(In/Hr)
Average low loss rate fraction (Yb) = 0.198 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.190(In)
Computed peak 30-minute rainfall =  0.400(In)
Specified peak 1-hour rainfall =  0.530(In)
Computed peak 3-hour rainfall =  0.890(In)
Specified peak 6-hour rainfall =  1.220(In)
Specified peak 24-hour rainfall =  2.050(In)


Rainfall depth area reduction factors:
Using a total area of       1.68(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000     Adjusted rainfall =  0.190(In)
```

```
30-minute factor = 1.000    Adjusted rainfall =  0.400(In)
1-hour factor = 1.000       Adjusted rainfall =  0.530(In)
3-hour factor = 1.000       Adjusted rainfall =  0.890(In)
6-hour factor = 1.000       Adjusted rainfall =  1.220(In)
24-hour factor = 1.000 Adjusted rainfall =  2.050(In)
--------------------------------------------------------------------

                     U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------
               (K =        20.32 (CFS))

  1               19.643                   3.991
  2               75.813                  11.412
  3               92.011                   3.291
  4               97.656                   1.147
  5               99.076                   0.288
  6               99.801                   0.147
  7              100.000                   0.040
--------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.1900               0.1900
  2              0.2534               0.0634
  3              0.2999               0.0465
  4              0.3380               0.0381
  5              0.3708               0.0328
  6              0.4000               0.0292
  7              0.4258               0.0258
  8              0.4495               0.0237
  9              0.4715               0.0220
 10              0.4921               0.0206
 11              0.5116               0.0194
 12              0.5300               0.0184
 13              0.5504               0.0204
 14              0.5699               0.0196
 15              0.5888               0.0189
 16              0.6070               0.0182
 17              0.6246               0.0176
 18              0.6417               0.0171
 19              0.6583               0.0166
 20              0.6744               0.0161
 21              0.6901               0.0157
 22              0.7054               0.0153
 23              0.7204               0.0150
 24              0.7350               0.0146
 25              0.7493               0.0143
 26              0.7633               0.0140
 27              0.7770               0.0137
 28              0.7905               0.0134
 29              0.8037               0.0132
 30              0.8166               0.0130
 31              0.8294               0.0127
 32              0.8419               0.0125
 33              0.8542               0.0123
 34              0.8663               0.0121
 35              0.8782               0.0119
 36              0.8900               0.0118
--------------------------------------------------------------------
Unit              Unit             Unit             Effective
Period            Rainfall         Soil-Loss        Rainfall
(number)            (In)           (In)               (In)
--------------------------------------------------------------------
  1              0.0118           0.0017             0.0101
  2              0.0119           0.0017             0.0103
  3              0.0123           0.0017             0.0106
  4              0.0125           0.0017             0.0109
  5              0.0130           0.0017             0.0113
  6              0.0132           0.0017             0.0115
```

7	0.0137	0.0017	0.0120
8	0.0140	0.0017	0.0123
9	0.0146	0.0017	0.0129
10	0.0150	0.0017	0.0133
11	0.0157	0.0017	0.0140
12	0.0161	0.0017	0.0145
13	0.0171	0.0017	0.0154
14	0.0176	0.0017	0.0159
15	0.0189	0.0017	0.0172
16	0.0196	0.0017	0.0179
17	0.0184	0.0017	0.0167
18	0.0194	0.0017	0.0178
19	0.0220	0.0017	0.0204
20	0.0237	0.0017	0.0221
21	0.0292	0.0017	0.0275
22	0.0328	0.0017	0.0312
23	0.0465	0.0017	0.0448
24	0.0634	0.0017	0.0617
25	0.1900	0.0017	0.1883
26	0.0381	0.0017	0.0364
27	0.0258	0.0017	0.0242
28	0.0206	0.0017	0.0189
29	0.0204	0.0017	0.0187
30	0.0182	0.0017	0.0165
31	0.0166	0.0017	0.0149
32	0.0153	0.0017	0.0137
33	0.0143	0.0017	0.0126
34	0.0134	0.0017	0.0118
35	0.0127	0.0017	0.0111
36	0.0121	0.0017	0.0105

Total soil rain loss = 0.06(In)
Total effective rainfall = 0.83(In)
Peak flow rate in flood hydrograph = 2.56(CFS)

++

3 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0003	0.04	Q	|	|	|	|
0+10	0.0014	0.16	Q	|	|	|	|
0+15	0.0027	0.19	Q	|	|	|	|
0+20	0.0041	0.21	QV	|	|	|	|
0+25	0.0056	0.22	QV	|	|	|	|
0+30	0.0072	0.23	Q V	|	|	|	|
0+35	0.0088	0.23	Q V	|	|	|	|
0+40	0.0105	0.24	Q V	|	|	|	|
0+45	0.0122	0.25	|Q V	|	|	|	|
0+50	0.0140	0.26	|Q V	|	|	|	|
0+55	0.0159	0.27	|Q V	|	|	|	|
1+ 0	0.0178	0.28	|Q V	|	|	|	|
1+ 5	0.0198	0.29	|Q V	|	|	|	|
1+10	0.0220	0.31	|Q V	|	|	|	|
1+15	0.0242	0.32	|Q V	|	|	|	|
1+20	0.0266	0.34	|Q V|	|	|	|	|
1+25	0.0290	0.35	|Q V|	|	|	|	|
1+30	0.0314	0.35	|Q V	|	|	|	|
1+35	0.0339	0.37	|Q |V	|	|	|	|
1+40	0.0367	0.41	|Q | V	|	|	|	|
1+45	0.0399	0.46	|Q | V	|	|	|	|
1+50	0.0436	0.54	| Q | V	|	|	|	|
1+55	0.0482	0.66	| Q | V	|	|	|	|
2+ 0	0.0544	0.90	| Q | V	|	|	|	|
2+ 5	0.0657	1.65	| Q |	| V	|	|	|
2+10	0.0834	2.56	| Q |	| V	|	|	|

```
    2+15       0.0918      1.22  |   Q     |         |         |V        |
    2+20       0.0967      0.71  | Q       |         |         |  V      |
    2+25       0.1000      0.48  |Q        |         |         |   V     |
    2+30       0.1028      0.41  |Q        |         |         |    V    |
    2+35       0.1053      0.35  |Q        |         |         |     V   |
    2+40       0.1074      0.31  |Q        |         |         |     V   |
    2+45       0.1093      0.28  |Q        |         |         |      V  |
    2+50       0.1111      0.26  |Q        |         |         |       V |
    2+55       0.1128      0.24  Q         |         |         |       V |
    3+ 0       0.1144      0.23  Q         |         |         |        V|
    3+ 5       0.1156      0.18  Q         |         |         |        V|
    3+10       0.1160      0.05  Q         |         |         |        V|
    3+15       0.1161      0.02  Q         |         |         |        V|
    3+20       0.1161      0.01  Q         |         |         |        V|
    3+25       0.1161      0.00  Q         |         |         |        V|
    3+30       0.1161      0.00  Q         |         |         |         V
-------------------------------------------------------------------------
```

- 2 Year 6 Hour Post-Development Unit Hydrograph – Area 'F'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/20/16   File Name prf00206.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'F' - 2 YEAR 6 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 2

       Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 74.4       1.7          1.00     D     0.200     0.100    0.020

Area-averaged adjusted loss rate Fm (In/Hr) =  0.020

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
     0.17   0.100         74.4      56.3       7.77     0.015
     1.51   0.900         98.0      98.0       0.20     0.890

Area-averaged catchment yield fraction, Y =  0.802
Area-averaged low loss fraction, Yb =  0.198
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.091 (hours)
Watershed area =       1.68(Ac.)
Catchment Lag time =   0.073 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 114.8095
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.020(In/Hr)
Average low loss rate fraction (Yb) = 0.198 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.190(In)
Computed peak 30-minute rainfall =  0.400(In)
Specified peak 1-hour rainfall =  0.530(In)
Computed peak 3-hour rainfall =  0.890(In)
Specified peak 6-hour rainfall =  1.220(In)
Specified peak 24-hour rainfall =  2.050(In)


Rainfall depth area reduction factors:
Using a total area of       1.68(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000     Adjusted rainfall =  0.190(In)
```

```
30-minute factor = 1.000    Adjusted rainfall =  0.400(In)
1-hour factor = 1.000       Adjusted rainfall =  0.530(In)
3-hour factor = 1.000       Adjusted rainfall =  0.890(In)
6-hour factor = 1.000       Adjusted rainfall =  1.220(In)
24-hour factor = 1.000 Adjusted rainfall =  2.050(In)
------------------------------------------------------------------------

                      U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
------------------------------------------------------------------------
               (K =        20.32 (CFS))

  1               19.643                   3.991
  2               75.813                  11.412
  3               92.011                   3.291
  4               97.656                   1.147
  5               99.076                   0.288
  6               99.801                   0.147
  7              100.000                   0.040
------------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.1900               0.1900
  2              0.2534               0.0634
  3              0.2999               0.0465
  4              0.3380               0.0381
  5              0.3708               0.0328
  6              0.4000               0.0292
  7              0.4258               0.0258
  8              0.4495               0.0237
  9              0.4715               0.0220
 10              0.4921               0.0206
 11              0.5116               0.0194
 12              0.5300               0.0184
 13              0.5504               0.0204
 14              0.5699               0.0196
 15              0.5888               0.0189
 16              0.6070               0.0182
 17              0.6246               0.0176
 18              0.6417               0.0171
 19              0.6583               0.0166
 20              0.6744               0.0161
 21              0.6901               0.0157
 22              0.7054               0.0153
 23              0.7204               0.0150
 24              0.7350               0.0146
 25              0.7493               0.0143
 26              0.7633               0.0140
 27              0.7770               0.0137
 28              0.7905               0.0134
 29              0.8037               0.0132
 30              0.8166               0.0130
 31              0.8294               0.0127
 32              0.8419               0.0125
 33              0.8542               0.0123
 34              0.8663               0.0121
 35              0.8782               0.0119
 36              0.8900               0.0118
 37              0.9012               0.0112
 38              0.9122               0.0110
 39              0.9230               0.0108
 40              0.9337               0.0107
 41              0.9442               0.0105
 42              0.9547               0.0104
 43              0.9649               0.0103
 44              0.9751               0.0101
 45              0.9851               0.0100
 46              0.9950               0.0099
 47              1.0048               0.0098
```

48	1.0145	0.0097
49	1.0240	0.0096
50	1.0335	0.0095
51	1.0428	0.0094
52	1.0521	0.0093
53	1.0612	0.0092
54	1.0703	0.0091
55	1.0793	0.0090
56	1.0882	0.0089
57	1.0970	0.0088
58	1.1057	0.0087
59	1.1143	0.0086
60	1.1229	0.0086
61	1.1313	0.0085
62	1.1397	0.0084
63	1.1481	0.0083
64	1.1563	0.0083
65	1.1645	0.0082
66	1.1726	0.0081
67	1.1807	0.0081
68	1.1887	0.0080
69	1.1966	0.0079
70	1.2045	0.0079
71	1.2123	0.0078
72	1.2200	0.0077

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0077	0.0015	0.0062
2	0.0078	0.0015	0.0063
3	0.0079	0.0016	0.0064
4	0.0080	0.0016	0.0064
5	0.0081	0.0016	0.0065
6	0.0082	0.0016	0.0066
7	0.0083	0.0016	0.0067
8	0.0084	0.0017	0.0067
9	0.0086	0.0017	0.0069
10	0.0086	0.0017	0.0070
11	0.0088	0.0017	0.0071
12	0.0089	0.0017	0.0072
13	0.0091	0.0017	0.0074
14	0.0092	0.0017	0.0075
15	0.0094	0.0017	0.0077
16	0.0095	0.0017	0.0078
17	0.0097	0.0017	0.0080
18	0.0098	0.0017	0.0081
19	0.0100	0.0017	0.0084
20	0.0101	0.0017	0.0085
21	0.0104	0.0017	0.0087
22	0.0105	0.0017	0.0089
23	0.0108	0.0017	0.0092
24	0.0110	0.0017	0.0093
25	0.0118	0.0017	0.0101
26	0.0119	0.0017	0.0103
27	0.0123	0.0017	0.0106
28	0.0125	0.0017	0.0109
29	0.0130	0.0017	0.0113
30	0.0132	0.0017	0.0115
31	0.0137	0.0017	0.0120
32	0.0140	0.0017	0.0123
33	0.0146	0.0017	0.0129
34	0.0150	0.0017	0.0133
35	0.0157	0.0017	0.0140
36	0.0161	0.0017	0.0145
37	0.0171	0.0017	0.0154
38	0.0176	0.0017	0.0159
39	0.0189	0.0017	0.0172
40	0.0196	0.0017	0.0179
41	0.0184	0.0017	0.0167

```
       42              0.0194          0.0017              0.0178
       43              0.0220          0.0017              0.0204
       44              0.0237          0.0017              0.0221
       45              0.0292          0.0017              0.0275
       46              0.0328          0.0017              0.0312
       47              0.0465          0.0017              0.0448
       48              0.0634          0.0017              0.0617
       49              0.1900          0.0017              0.1883
       50              0.0381          0.0017              0.0364
       51              0.0258          0.0017              0.0242
       52              0.0206          0.0017              0.0189
       53              0.0204          0.0017              0.0187
       54              0.0182          0.0017              0.0165
       55              0.0166          0.0017              0.0149
       56              0.0153          0.0017              0.0137
       57              0.0143          0.0017              0.0126
       58              0.0134          0.0017              0.0118
       59              0.0127          0.0017              0.0111
       60              0.0121          0.0017              0.0105
       61              0.0112          0.0017              0.0095
       62              0.0107          0.0017              0.0090
       63              0.0103          0.0017              0.0086
       64              0.0099          0.0017              0.0082
       65              0.0096          0.0017              0.0079
       66              0.0093          0.0017              0.0076
       67              0.0090          0.0017              0.0073
       68              0.0087          0.0017              0.0070
       69              0.0085          0.0017              0.0068
       70              0.0083          0.0016              0.0066
       71              0.0081          0.0016              0.0065
       72              0.0079          0.0016              0.0063
      ------------------------------------------------------------------------
      ------------------------------------------------------------------------
      Total soil rain loss =      0.12(In)
      Total effective rainfall =      1.10(In)
      Peak flow rate in flood hydrograph =      2.56(CFS)
      ------------------------------------------------------------------------
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          6 - H O U R    S T O R M
                     R u n o f f      H y d r o g r a p h
      ------------------------------------------------------------------------
                 Hydrograph in   5   Minute intervals ((CFS))

      ------------------------------------------------------------------------
 Time(h+m) Volume Ac.Ft   Q(CFS)  0        2.5       5.0       7.5      10.0
 ------------------------------------------------------------------------
   0+ 5       0.0002      0.02  Q         |         |         |         |
   0+10       0.0008      0.10  Q         |         |         |         |
   0+15       0.0016      0.12  Q         |         |         |         |
   0+20       0.0025      0.13  Q         |         |         |         |
   0+25       0.0034      0.13  Q         |         |         |         |
   0+30       0.0043      0.13  QV        |         |         |         |
   0+35       0.0052      0.13  QV        |         |         |         |
   0+40       0.0061      0.14  QV        |         |         |         |
   0+45       0.0071      0.14  QV        |         |         |         |
   0+50       0.0081      0.14  Q V       |         |         |         |
   0+55       0.0090      0.14  Q V       |         |         |         |
   1+ 0       0.0100      0.14  Q V       |         |         |         |
   1+ 5       0.0110      0.15  Q V       |         |         |         |
   1+10       0.0121      0.15  Q  V      |         |         |         |
   1+15       0.0131      0.15  Q  V      |         |         |         |
   1+20       0.0142      0.16  Q  V      |         |         |         |
   1+25       0.0153      0.16  Q  V      |         |         |         |
   1+30       0.0164      0.16  Q   V     |         |         |         |
   1+35       0.0175      0.16  Q   V     |         |         |         |
   1+40       0.0187      0.17  Q   V     |         |         |         |
   1+45       0.0199      0.17  Q    V    |         |         |         |
   1+50       0.0211      0.18  Q    V    |         |         |         |
   1+55       0.0223      0.18  Q    V    |         |         |         |
   2+ 0       0.0236      0.19  Q     V   |         |         |         |
   2+ 5       0.0249      0.19  Q     V   |         |         |         |
```

```
   2+10       0.0263      0.20  Q     V   |         |          |         |
   2+15       0.0277      0.21  Q      V  |         |          |         |
   2+20       0.0292      0.21  Q      V  |         |          |         |
   2+25       0.0307      0.22  Q      V  |         |          |         |
   2+30       0.0323      0.23  Q       V |         |          |         |
   2+35       0.0339      0.23  Q       V |         |          |         |
   2+40       0.0356      0.24  Q        V|         |          |         |
   2+45       0.0373      0.25  |Q       V|         |          |         |
   2+50       0.0391      0.26  |Q        V         |          |         |
   2+55       0.0410      0.27  |Q        V         |          |         |
   3+ 0       0.0429      0.28  |Q        |V        |          |         |
   3+ 5       0.0449      0.29  |Q        |V        |          |         |
   3+10       0.0471      0.31  |Q        | V       |          |         |
   3+15       0.0493      0.32  |Q        | V       |          |         |
   3+20       0.0517      0.34  |Q        |  V      |          |         |
   3+25       0.0541      0.35  |Q        |   V     |          |         |
   3+30       0.0565      0.35  |Q        |   V     |          |         |
   3+35       0.0590      0.37  |Q        |    V    |          |         |
   3+40       0.0618      0.41  |Q        |     V   |          |         |
   3+45       0.0650      0.46  |Q        |     V   |          |         |
   3+50       0.0687      0.54  | Q       |      V  |          |         |
   3+55       0.0733      0.66  | Q       |        V|          |         |
   4+ 0       0.0795      0.90  |  Q      |         V          |         |
   4+ 5       0.0908      1.65  |     Q   |          |  V      |         |
   4+10       0.1085      2.56  |         Q          |      V  |         |
   4+15       0.1169      1.22  |   Q     |          |        V|         |
   4+20       0.1218      0.71  | Q       |          |         |V        |
   4+25       0.1251      0.48  |Q        |          |         | V       |
   4+30       0.1279      0.41  |Q        |          |         |  V      |
   4+35       0.1304      0.35  |Q        |          |         |  V      |
   4+40       0.1325      0.31  |Q        |          |         |   V     |
   4+45       0.1344      0.28  |Q        |          |         |   V     |
   4+50       0.1362      0.26  |Q        |          |         |    V    |
   4+55       0.1379      0.24  Q         |          |         |    V    |
   5+ 0       0.1395      0.23  Q         |          |         |     V   |
   5+ 5       0.1410      0.21  Q         |          |         |     V   |
   5+10       0.1423      0.20  Q         |          |         |     V   |
   5+15       0.1436      0.19  Q         |          |         |      V  |
   5+20       0.1448      0.18  Q         |          |         |      V  |
   5+25       0.1460      0.17  Q         |          |         |      V  |
   5+30       0.1471      0.16  Q         |          |         |       V |
   5+35       0.1482      0.16  Q         |          |         |       V |
   5+40       0.1492      0.15  Q         |          |         |       V |
   5+45       0.1502      0.14  Q         |          |         |        V|
   5+50       0.1512      0.14  Q         |          |         |        V|
   5+55       0.1521      0.14  Q         |          |         |        V|
   6+ 0       0.1530      0.13  Q         |          |         |        V|
   6+ 5       0.1537      0.10  Q         |          |         |        V|
   6+10       0.1539      0.03  Q         |          |         |        V|
   6+15       0.1540      0.01  Q         |          |         |        V|
   6+20       0.1540      0.00  Q         |          |         |        V|
   6+25       0.1540      0.00  Q         |          |         |        V|
   6+30       0.1540      0.00  Q         |          |         |         V
------------------------------------------------------------------------
```

- 2 Year 12 Hour Post-Development Unit Hydrograph – Area 'F'

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       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/20/16   File Name prf00212.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

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RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'F' - 2 YEAR 12 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 2

       Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 74.4       1.7          1.00     D     0.200     0.100    0.020

Area-averaged adjusted loss rate Fm (In/Hr) =  0.020

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
     0.17   0.100         74.4      56.3       7.77     0.015
     1.51   0.900         98.0      98.0       0.20     0.890

Area-averaged catchment yield fraction, Y =  0.802
Area-averaged low loss fraction, Yb =  0.198
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.091 (hours)
Watershed area =       1.68(Ac.)
Catchment Lag time =   0.073 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 114.8095
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.020(In/Hr)
Average low loss rate fraction (Yb) = 0.198 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.190(In)
Computed peak 30-minute rainfall =  0.400(In)
Specified peak 1-hour rainfall =  0.530(In)
Computed peak 3-hour rainfall =  0.890(In)
Specified peak 6-hour rainfall =  1.220(In)
Specified peak 24-hour rainfall =  2.050(In)


Rainfall depth area reduction factors:
Using a total area of       1.68(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000     Adjusted rainfall =  0.190(In)
```

```
30-minute factor = 1.000    Adjusted rainfall =  0.400(In)
1-hour factor = 1.000       Adjusted rainfall =  0.530(In)
3-hour factor = 1.000       Adjusted rainfall =  0.890(In)
6-hour factor = 1.000       Adjusted rainfall =  1.220(In)
24-hour factor = 1.000 Adjusted rainfall =  2.050(In)
--------------------------------------------------------------------

                     U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------
               (K =        20.32 (CFS))

  1               19.643                   3.991
  2               75.813                  11.412
  3               92.011                   3.291
  4               97.656                   1.147
  5               99.076                   0.288
  6               99.801                   0.147
  7              100.000                   0.040
--------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.1900               0.1900
  2              0.2534               0.0634
  3              0.2999               0.0465
  4              0.3380               0.0381
  5              0.3708               0.0328
  6              0.4000               0.0292
  7              0.4258               0.0258
  8              0.4495               0.0237
  9              0.4715               0.0220
 10              0.4921               0.0206
 11              0.5116               0.0194
 12              0.5300               0.0184
 13              0.5504               0.0204
 14              0.5699               0.0196
 15              0.5888               0.0189
 16              0.6070               0.0182
 17              0.6246               0.0176
 18              0.6417               0.0171
 19              0.6583               0.0166
 20              0.6744               0.0161
 21              0.6901               0.0157
 22              0.7054               0.0153
 23              0.7204               0.0150
 24              0.7350               0.0146
 25              0.7493               0.0143
 26              0.7633               0.0140
 27              0.7770               0.0137
 28              0.7905               0.0134
 29              0.8037               0.0132
 30              0.8166               0.0130
 31              0.8294               0.0127
 32              0.8419               0.0125
 33              0.8542               0.0123
 34              0.8663               0.0121
 35              0.8782               0.0119
 36              0.8900               0.0118
 37              0.9012               0.0112
 38              0.9122               0.0110
 39              0.9230               0.0108
 40              0.9337               0.0107
 41              0.9442               0.0105
 42              0.9547               0.0104
 43              0.9649               0.0103
 44              0.9751               0.0101
 45              0.9851               0.0100
 46              0.9950               0.0099
 47              1.0048               0.0098
```

48	1.0145	0.0097
49	1.0240	0.0096
50	1.0335	0.0095
51	1.0428	0.0094
52	1.0521	0.0093
53	1.0612	0.0092
54	1.0703	0.0091
55	1.0793	0.0090
56	1.0882	0.0089
57	1.0970	0.0088
58	1.1057	0.0087
59	1.1143	0.0086
60	1.1229	0.0086
61	1.1313	0.0085
62	1.1397	0.0084
63	1.1481	0.0083
64	1.1563	0.0083
65	1.1645	0.0082
66	1.1726	0.0081
67	1.1807	0.0081
68	1.1887	0.0080
69	1.1966	0.0079
70	1.2045	0.0079
71	1.2123	0.0078
72	1.2200	0.0077
73	1.2263	0.0063
74	1.2326	0.0063
75	1.2388	0.0062
76	1.2449	0.0062
77	1.2510	0.0061
78	1.2571	0.0061
79	1.2631	0.0060
80	1.2691	0.0060
81	1.2750	0.0059
82	1.2809	0.0059
83	1.2867	0.0058
84	1.2925	0.0058
85	1.2982	0.0057
86	1.3039	0.0057
87	1.3096	0.0057
88	1.3152	0.0056
89	1.3208	0.0056
90	1.3263	0.0055
91	1.3318	0.0055
92	1.3372	0.0055
93	1.3427	0.0054
94	1.3481	0.0054
95	1.3534	0.0054
96	1.3587	0.0053
97	1.3640	0.0053
98	1.3693	0.0052
99	1.3745	0.0052
100	1.3796	0.0052
101	1.3848	0.0051
102	1.3899	0.0051
103	1.3950	0.0051
104	1.4001	0.0051
105	1.4051	0.0050
106	1.4101	0.0050
107	1.4150	0.0050
108	1.4200	0.0049
109	1.4249	0.0049
110	1.4298	0.0049
111	1.4346	0.0049
112	1.4394	0.0048
113	1.4442	0.0048
114	1.4490	0.0048
115	1.4538	0.0047
116	1.4585	0.0047
117	1.4632	0.0047
118	1.4678	0.0047

119	1.4725	0.0046
120	1.4771	0.0046
121	1.4817	0.0046
122	1.4863	0.0046
123	1.4908	0.0045
124	1.4954	0.0045
125	1.4999	0.0045
126	1.5043	0.0045
127	1.5088	0.0045
128	1.5132	0.0044
129	1.5176	0.0044
130	1.5220	0.0044
131	1.5264	0.0044
132	1.5308	0.0044
133	1.5351	0.0043
134	1.5394	0.0043
135	1.5437	0.0043
136	1.5480	0.0043
137	1.5522	0.0043
138	1.5565	0.0042
139	1.5607	0.0042
140	1.5649	0.0042
141	1.5690	0.0042
142	1.5732	0.0042
143	1.5773	0.0041
144	1.5814	0.0041

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0041	0.0008	0.0033
2	0.0041	0.0008	0.0033
3	0.0042	0.0008	0.0033
4	0.0042	0.0008	0.0034
5	0.0042	0.0008	0.0034
6	0.0043	0.0008	0.0034
7	0.0043	0.0008	0.0034
8	0.0043	0.0009	0.0035
9	0.0044	0.0009	0.0035
10	0.0044	0.0009	0.0035
11	0.0044	0.0009	0.0035
12	0.0044	0.0009	0.0036
13	0.0045	0.0009	0.0036
14	0.0045	0.0009	0.0036
15	0.0045	0.0009	0.0036
16	0.0046	0.0009	0.0037
17	0.0046	0.0009	0.0037
18	0.0046	0.0009	0.0037
19	0.0047	0.0009	0.0038
20	0.0047	0.0009	0.0038
21	0.0048	0.0009	0.0038
22	0.0048	0.0009	0.0038
23	0.0049	0.0010	0.0039
24	0.0049	0.0010	0.0039
25	0.0049	0.0010	0.0040
26	0.0050	0.0010	0.0040
27	0.0050	0.0010	0.0040
28	0.0051	0.0010	0.0041
29	0.0051	0.0010	0.0041
30	0.0051	0.0010	0.0041
31	0.0052	0.0010	0.0042
32	0.0052	0.0010	0.0042
33	0.0053	0.0011	0.0043
34	0.0054	0.0011	0.0043
35	0.0054	0.0011	0.0044
36	0.0055	0.0011	0.0044
37	0.0055	0.0011	0.0044
38	0.0056	0.0011	0.0045
39	0.0057	0.0011	0.0045
40	0.0057	0.0011	0.0046

41	0.0058	0.0011	0.0046
42	0.0058	0.0012	0.0047
43	0.0059	0.0012	0.0047
44	0.0060	0.0012	0.0048
45	0.0061	0.0012	0.0049
46	0.0061	0.0012	0.0049
47	0.0062	0.0012	0.0050
48	0.0063	0.0012	0.0050
49	0.0077	0.0015	0.0062
50	0.0078	0.0015	0.0063
51	0.0079	0.0016	0.0064
52	0.0080	0.0016	0.0064
53	0.0081	0.0016	0.0065
54	0.0082	0.0016	0.0066
55	0.0083	0.0016	0.0067
56	0.0084	0.0017	0.0067
57	0.0086	0.0017	0.0069
58	0.0086	0.0017	0.0070
59	0.0088	0.0017	0.0071
60	0.0089	0.0017	0.0072
61	0.0091	0.0017	0.0074
62	0.0092	0.0017	0.0075
63	0.0094	0.0017	0.0077
64	0.0095	0.0017	0.0078
65	0.0097	0.0017	0.0080
66	0.0098	0.0017	0.0081
67	0.0100	0.0017	0.0084
68	0.0101	0.0017	0.0085
69	0.0104	0.0017	0.0087
70	0.0105	0.0017	0.0089
71	0.0108	0.0017	0.0092
72	0.0110	0.0017	0.0093
73	0.0118	0.0017	0.0101
74	0.0119	0.0017	0.0103
75	0.0123	0.0017	0.0106
76	0.0125	0.0017	0.0109
77	0.0130	0.0017	0.0113
78	0.0132	0.0017	0.0115
79	0.0137	0.0017	0.0120
80	0.0140	0.0017	0.0123
81	0.0146	0.0017	0.0129
82	0.0150	0.0017	0.0133
83	0.0157	0.0017	0.0140
84	0.0161	0.0017	0.0145
85	0.0171	0.0017	0.0154
86	0.0176	0.0017	0.0159
87	0.0189	0.0017	0.0172
88	0.0196	0.0017	0.0179
89	0.0184	0.0017	0.0167
90	0.0194	0.0017	0.0178
91	0.0220	0.0017	0.0204
92	0.0237	0.0017	0.0221
93	0.0292	0.0017	0.0275
94	0.0328	0.0017	0.0312
95	0.0465	0.0017	0.0448
96	0.0634	0.0017	0.0617
97	0.1900	0.0017	0.1883
98	0.0381	0.0017	0.0364
99	0.0258	0.0017	0.0242
100	0.0206	0.0017	0.0189
101	0.0204	0.0017	0.0187
102	0.0182	0.0017	0.0165
103	0.0166	0.0017	0.0149
104	0.0153	0.0017	0.0137
105	0.0143	0.0017	0.0126
106	0.0134	0.0017	0.0118
107	0.0127	0.0017	0.0111
108	0.0121	0.0017	0.0105
109	0.0112	0.0017	0.0095
110	0.0107	0.0017	0.0090
111	0.0103	0.0017	0.0086

112	0.0099	0.0017	0.0082
113	0.0096	0.0017	0.0079
114	0.0093	0.0017	0.0076
115	0.0090	0.0017	0.0073
116	0.0087	0.0017	0.0070
117	0.0085	0.0017	0.0068
118	0.0083	0.0016	0.0066
119	0.0081	0.0016	0.0065
120	0.0079	0.0016	0.0063
121	0.0063	0.0012	0.0051
122	0.0062	0.0012	0.0049
123	0.0060	0.0012	0.0048
124	0.0059	0.0012	0.0047
125	0.0057	0.0011	0.0046
126	0.0056	0.0011	0.0045
127	0.0055	0.0011	0.0044
128	0.0054	0.0011	0.0043
129	0.0053	0.0010	0.0042
130	0.0052	0.0010	0.0042
131	0.0051	0.0010	0.0041
132	0.0050	0.0010	0.0040
133	0.0049	0.0010	0.0039
134	0.0048	0.0010	0.0039
135	0.0047	0.0009	0.0038
136	0.0047	0.0009	0.0037
137	0.0046	0.0009	0.0037
138	0.0045	0.0009	0.0036
139	0.0045	0.0009	0.0036
140	0.0044	0.0009	0.0035
141	0.0043	0.0009	0.0035
142	0.0043	0.0008	0.0034
143	0.0042	0.0008	0.0034
144	0.0042	0.0008	0.0033

Total soil rain loss = 0.19(In)
Total effective rainfall = 1.39(In)
Peak flow rate in flood hydrograph = 2.56(CFS)

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12 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0001	0.01	Q				
0+10	0.0004	0.05	Q				
0+15	0.0009	0.06	Q				
0+20	0.0013	0.07	Q				
0+25	0.0018	0.07	Q				
0+30	0.0023	0.07	Q				
0+35	0.0027	0.07	Q				
0+40	0.0032	0.07	Q				
0+45	0.0037	0.07	Q				
0+50	0.0042	0.07	Q				
0+55	0.0047	0.07	Q				
1+ 0	0.0052	0.07	QV				
1+ 5	0.0057	0.07	QV				
1+10	0.0062	0.07	QV				
1+15	0.0067	0.07	QV				
1+20	0.0072	0.07	QV				
1+25	0.0077	0.07	QV				
1+30	0.0082	0.08	QV				
1+35	0.0087	0.08	QV				
1+40	0.0093	0.08	QV				
1+45	0.0098	0.08	Q V				
1+50	0.0103	0.08	Q V				
1+55	0.0109	0.08	Q V				

```
2+ 0       0.0114      0.08  Q V       |         |         |         |
2+ 5       0.0120      0.08  Q V       |         |         |         |
2+10       0.0125      0.08  Q V       |         |         |         |
2+15       0.0131      0.08  Q V       |         |         |         |
2+20       0.0136      0.08  Q V       |         |         |         |
2+25       0.0142      0.08  Q V       |         |         |         |
2+30       0.0148      0.08  Q  V      |         |         |         |
2+35       0.0154      0.08  Q  V      |         |         |         |
2+40       0.0159      0.08  Q  V      |         |         |         |
2+45       0.0165      0.09  Q  V      |         |         |         |
2+50       0.0171      0.09  Q  V      |         |         |         |
2+55       0.0177      0.09  Q  V      |         |         |         |
3+ 0       0.0183      0.09  Q  V      |         |         |         |
3+ 5       0.0189      0.09  Q  V      |         |         |         |
3+10       0.0196      0.09  Q   V     |         |         |         |
3+15       0.0202      0.09  Q   V     |         |         |         |
3+20       0.0208      0.09  Q   V     |         |         |         |
3+25       0.0215      0.09  Q   V     |         |         |         |
3+30       0.0221      0.09  Q   V     |         |         |         |
3+35       0.0228      0.09  Q   V     |         |         |         |
3+40       0.0234      0.10  Q   V     |         |         |         |
3+45       0.0241      0.10  Q   V     |         |         |         |
3+50       0.0248      0.10  Q    V    |         |         |         |
3+55       0.0255      0.10  Q    V    |         |         |         |
4+ 0       0.0262      0.10  Q    V    |         |         |         |
4+ 5       0.0269      0.11  Q    V    |         |         |         |
4+10       0.0277      0.12  Q    V    |         |         |         |
4+15       0.0286      0.13  Q    V    |         |         |         |
4+20       0.0295      0.13  Q     V   |         |         |         |
4+25       0.0304      0.13  Q     V   |         |         |         |
4+30       0.0313      0.13  Q     V   |         |         |         |
4+35       0.0322      0.13  Q     V   |         |         |         |
4+40       0.0331      0.14  Q     V   |         |         |         |
4+45       0.0341      0.14  Q      V  |         |         |         |
4+50       0.0350      0.14  Q      V  |         |         |         |
4+55       0.0360      0.14  Q      V  |         |         |         |
5+ 0       0.0370      0.14  Q      V  |         |         |         |
5+ 5       0.0380      0.15  Q      V  |         |         |         |
5+10       0.0390      0.15  Q       V |         |         |         |
5+15       0.0401      0.15  Q       V |         |         |         |
5+20       0.0411      0.16  Q       V |         |         |         |
5+25       0.0422      0.16  Q       V |         |         |         |
5+30       0.0433      0.16  Q       V |         |         |         |
5+35       0.0445      0.16  Q        V|         |         |         |
5+40       0.0456      0.17  Q        V|         |         |         |
5+45       0.0468      0.17  Q        V|         |         |         |
5+50       0.0480      0.18  Q        V|         |         |         |
5+55       0.0493      0.18  Q         V         |         |         |
6+ 0       0.0506      0.19  Q         V         |         |         |
6+ 5       0.0519      0.19  Q         V         |         |         |
6+10       0.0533      0.20  Q         V         |         |         |
6+15       0.0547      0.21  Q         |V        |         |         |
6+20       0.0562      0.21  Q         |V        |         |         |
6+25       0.0577      0.22  Q         |V        |         |         |
6+30       0.0593      0.23  Q         | V       |         |         |
6+35       0.0609      0.23  Q         | V       |         |         |
6+40       0.0626      0.24  Q         | V       |         |         |
6+45       0.0643      0.25  |Q        |  V       |         |         |
6+50       0.0661      0.26  |Q        |  V       |         |         |
6+55       0.0679      0.27  |Q        |  V       |         |         |
7+ 0       0.0699      0.28  |Q        |   V      |         |         |
7+ 5       0.0719      0.29  |Q        |   V      |         |         |
7+10       0.0740      0.31  |Q        |    V     |         |         |
7+15       0.0763      0.32  |Q        |    V     |         |         |
7+20       0.0786      0.34  |Q        |     V    |         |         |
7+25       0.0811      0.35  |Q        |     V    |         |         |
7+30       0.0835      0.35  |Q        |      V   |         |         |
7+35       0.0860      0.37  |Q        |      V   |         |         |
7+40       0.0888      0.41  |Q        |       V  |         |         |
7+45       0.0919      0.46  |Q        |       V  |         |         |
7+50       0.0957      0.54  | Q       |        V |         |         |
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   7+55       0.1002      0.66  | Q       |         V         |         |
   8+ 0       0.1064      0.90  |  Q      |         |V        |         |
   8+ 5       0.1178      1.65  |     Q   |         |   V     |         |
   8+10       0.1355      2.56  |         Q         |      V  |         |
   8+15       0.1439      1.22  |    Q    |         |         V|         |
   8+20       0.1488      0.71  | Q       |         |          V         |
   8+25       0.1521      0.48  |Q        |         |          |V        |
   8+30       0.1549      0.41  |Q        |         |          |V        |
   8+35       0.1573      0.35  |Q        |         |          | V       |
   8+40       0.1595      0.31  |Q        |         |          | V       |
   8+45       0.1614      0.28  |Q        |         |          |  V      |
   8+50       0.1632      0.26  |Q        |         |          |  V      |
   8+55       0.1649      0.24  Q         |         |          |  V      |
   9+ 0       0.1665      0.23  Q         |         |          |   V     |
   9+ 5       0.1679      0.21  Q         |         |          |   V     |
   9+10       0.1693      0.20  Q         |         |          |   V     |
   9+15       0.1706      0.19  Q         |         |          |    V    |
   9+20       0.1718      0.18  Q         |         |          |    V    |
   9+25       0.1730      0.17  Q         |         |          |    V    |
   9+30       0.1741      0.16  Q         |         |          |    V    |
   9+35       0.1751      0.16  Q         |         |          |    V    |
   9+40       0.1762      0.15  Q         |         |          |     V   |
   9+45       0.1772      0.14  Q         |         |          |     V   |
   9+50       0.1781      0.14  Q         |         |          |     V   |
   9+55       0.1791      0.14  Q         |         |          |     V   |
  10+ 0       0.1800      0.13  Q         |         |          |     V   |
  10+ 5       0.1808      0.12  Q         |         |          |      V  |
  10+10       0.1816      0.11  Q         |         |          |      V  |
  10+15       0.1823      0.10  Q         |         |          |      V  |
  10+20       0.1830      0.10  Q         |         |          |      V  |
  10+25       0.1836      0.10  Q         |         |          |      V  |
  10+30       0.1843      0.09  Q         |         |          |      V  |
  10+35       0.1849      0.09  Q         |         |          |       V |
  10+40       0.1855      0.09  Q         |         |          |       V |
  10+45       0.1861      0.09  Q         |         |          |       V |
  10+50       0.1867      0.09  Q         |         |          |       V |
  10+55       0.1873      0.08  Q         |         |          |       V |
  11+ 0       0.1879      0.08  Q         |         |          |       V |
  11+ 5       0.1884      0.08  Q         |         |          |       V |
  11+10       0.1890      0.08  Q         |         |          |       V |
  11+15       0.1895      0.08  Q         |         |          |       V |
  11+20       0.1901      0.08  Q         |         |          |        V|
  11+25       0.1906      0.08  Q         |         |          |        V|
  11+30       0.1911      0.08  Q         |         |          |        V|
  11+35       0.1916      0.07  Q         |         |          |        V|
  11+40       0.1921      0.07  Q         |         |          |        V|
  11+45       0.1926      0.07  Q         |         |          |        V|
  11+50       0.1931      0.07  Q         |         |          |        V|
  11+55       0.1936      0.07  Q         |         |          |        V|
  12+ 0       0.1941      0.07  Q         |         |          |        V|
  12+ 5       0.1944      0.05  Q         |         |          |        V|
  12+10       0.1946      0.02  Q         |         |          |        V|
  12+15       0.1946      0.01  Q         |         |          |        V|
  12+20       0.1946      0.00  Q         |         |          |        V|
  12+25       0.1946      0.00  Q         |         |          |        V|
  12+30       0.1946      0.00  Q         |         |          |         V
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- 2 Year 24 Hour Post-Development Unit Hydrograph – Area 'F'

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       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/20/16   File Name prf00224.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'F' - 2 YEAR 24 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 2

       Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 74.4       1.7          1.00     D     0.200     0.100    0.020

Area-averaged adjusted loss rate Fm (In/Hr) =  0.020

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
     0.17   0.100         74.4      56.3       7.77     0.015
     1.51   0.900         98.0      98.0       0.20     0.890

Area-averaged catchment yield fraction, Y =  0.802
Area-averaged low loss fraction, Yb =  0.198
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.091 (hours)
Watershed area =       1.68(Ac.)
Catchment Lag time =   0.073 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 114.8095
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.020(In/Hr)
Average low loss rate fraction (Yb) = 0.198 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.190(In)
Computed peak 30-minute rainfall =  0.400(In)
Specified peak 1-hour rainfall =  0.530(In)
Computed peak 3-hour rainfall =  0.890(In)
Specified peak 6-hour rainfall =  1.220(In)
Specified peak 24-hour rainfall =  2.050(In)


Rainfall depth area reduction factors:
Using a total area of       1.68(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000     Adjusted rainfall =  0.190(In)
```

```
30-minute factor = 1.000    Adjusted rainfall =  0.400(In)
1-hour factor = 1.000       Adjusted rainfall =  0.530(In)
3-hour factor = 1.000       Adjusted rainfall =  0.890(In)
6-hour factor = 1.000       Adjusted rainfall =  1.220(In)
24-hour factor = 1.000 Adjusted rainfall =  2.050(In)
------------------------------------------------------------------------

                      U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
------------------------------------------------------------------------
               (K =        20.32 (CFS))

  1               19.643                   3.991
  2               75.813                  11.412
  3               92.011                   3.291
  4               97.656                   1.147
  5               99.076                   0.288
  6               99.801                   0.147
  7              100.000                   0.040
------------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.1900               0.1900
  2              0.2534               0.0634
  3              0.2999               0.0465
  4              0.3380               0.0381
  5              0.3708               0.0328
  6              0.4000               0.0292
  7              0.4258               0.0258
  8              0.4495               0.0237
  9              0.4715               0.0220
 10              0.4921               0.0206
 11              0.5116               0.0194
 12              0.5300               0.0184
 13              0.5504               0.0204
 14              0.5699               0.0196
 15              0.5888               0.0189
 16              0.6070               0.0182
 17              0.6246               0.0176
 18              0.6417               0.0171
 19              0.6583               0.0166
 20              0.6744               0.0161
 21              0.6901               0.0157
 22              0.7054               0.0153
 23              0.7204               0.0150
 24              0.7350               0.0146
 25              0.7493               0.0143
 26              0.7633               0.0140
 27              0.7770               0.0137
 28              0.7905               0.0134
 29              0.8037               0.0132
 30              0.8166               0.0130
 31              0.8294               0.0127
 32              0.8419               0.0125
 33              0.8542               0.0123
 34              0.8663               0.0121
 35              0.8782               0.0119
 36              0.8900               0.0118
 37              0.9012               0.0112
 38              0.9122               0.0110
 39              0.9230               0.0108
 40              0.9337               0.0107
 41              0.9442               0.0105
 42              0.9547               0.0104
 43              0.9649               0.0103
 44              0.9751               0.0101
 45              0.9851               0.0100
 46              0.9950               0.0099
 47              1.0048               0.0098
```

48	1.0145	0.0097
49	1.0240	0.0096
50	1.0335	0.0095
51	1.0428	0.0094
52	1.0521	0.0093
53	1.0612	0.0092
54	1.0703	0.0091
55	1.0793	0.0090
56	1.0882	0.0089
57	1.0970	0.0088
58	1.1057	0.0087
59	1.1143	0.0086
60	1.1229	0.0086
61	1.1313	0.0085
62	1.1397	0.0084
63	1.1481	0.0083
64	1.1563	0.0083
65	1.1645	0.0082
66	1.1726	0.0081
67	1.1807	0.0081
68	1.1887	0.0080
69	1.1966	0.0079
70	1.2045	0.0079
71	1.2123	0.0078
72	1.2200	0.0077
73	1.2263	0.0063
74	1.2326	0.0063
75	1.2388	0.0062
76	1.2449	0.0062
77	1.2510	0.0061
78	1.2571	0.0061
79	1.2631	0.0060
80	1.2691	0.0060
81	1.2750	0.0059
82	1.2809	0.0059
83	1.2867	0.0058
84	1.2925	0.0058
85	1.2982	0.0057
86	1.3039	0.0057
87	1.3096	0.0057
88	1.3152	0.0056
89	1.3208	0.0056
90	1.3263	0.0055
91	1.3318	0.0055
92	1.3372	0.0055
93	1.3427	0.0054
94	1.3481	0.0054
95	1.3534	0.0054
96	1.3587	0.0053
97	1.3640	0.0053
98	1.3693	0.0052
99	1.3745	0.0052
100	1.3796	0.0052
101	1.3848	0.0051
102	1.3899	0.0051
103	1.3950	0.0051
104	1.4001	0.0051
105	1.4051	0.0050
106	1.4101	0.0050
107	1.4150	0.0050
108	1.4200	0.0049
109	1.4249	0.0049
110	1.4298	0.0049
111	1.4346	0.0049
112	1.4394	0.0048
113	1.4442	0.0048
114	1.4490	0.0048
115	1.4538	0.0047
116	1.4585	0.0047
117	1.4632	0.0047
118	1.4678	0.0047

119	1.4725	0.0046
120	1.4771	0.0046
121	1.4817	0.0046
122	1.4863	0.0046
123	1.4908	0.0045
124	1.4954	0.0045
125	1.4999	0.0045
126	1.5043	0.0045
127	1.5088	0.0045
128	1.5132	0.0044
129	1.5176	0.0044
130	1.5220	0.0044
131	1.5264	0.0044
132	1.5308	0.0044
133	1.5351	0.0043
134	1.5394	0.0043
135	1.5437	0.0043
136	1.5480	0.0043
137	1.5522	0.0043
138	1.5565	0.0042
139	1.5607	0.0042
140	1.5649	0.0042
141	1.5690	0.0042
142	1.5732	0.0042
143	1.5773	0.0041
144	1.5814	0.0041
145	1.5856	0.0041
146	1.5896	0.0041
147	1.5937	0.0041
148	1.5978	0.0041
149	1.6018	0.0040
150	1.6058	0.0040
151	1.6098	0.0040
152	1.6138	0.0040
153	1.6178	0.0040
154	1.6217	0.0040
155	1.6256	0.0039
156	1.6296	0.0039
157	1.6335	0.0039
158	1.6373	0.0039
159	1.6412	0.0039
160	1.6451	0.0039
161	1.6489	0.0038
162	1.6527	0.0038
163	1.6566	0.0038
164	1.6604	0.0038
165	1.6641	0.0038
166	1.6679	0.0038
167	1.6717	0.0038
168	1.6754	0.0037
169	1.6791	0.0037
170	1.6828	0.0037
171	1.6865	0.0037
172	1.6902	0.0037
173	1.6939	0.0037
174	1.6976	0.0037
175	1.7012	0.0036
176	1.7048	0.0036
177	1.7085	0.0036
178	1.7121	0.0036
179	1.7157	0.0036
180	1.7192	0.0036
181	1.7228	0.0036
182	1.7264	0.0036
183	1.7299	0.0035
184	1.7334	0.0035
185	1.7370	0.0035
186	1.7405	0.0035
187	1.7440	0.0035
188	1.7475	0.0035
189	1.7509	0.0035

190	1.7544	0.0035
191	1.7578	0.0035
192	1.7613	0.0034
193	1.7647	0.0034
194	1.7681	0.0034
195	1.7715	0.0034
196	1.7749	0.0034
197	1.7783	0.0034
198	1.7817	0.0034
199	1.7851	0.0034
200	1.7884	0.0034
201	1.7917	0.0033
202	1.7951	0.0033
203	1.7984	0.0033
204	1.8017	0.0033
205	1.8050	0.0033
206	1.8083	0.0033
207	1.8116	0.0033
208	1.8149	0.0033
209	1.8181	0.0033
210	1.8214	0.0033
211	1.8246	0.0032
212	1.8278	0.0032
213	1.8311	0.0032
214	1.8343	0.0032
215	1.8375	0.0032
216	1.8407	0.0032
217	1.8439	0.0032
218	1.8470	0.0032
219	1.8502	0.0032
220	1.8534	0.0032
221	1.8565	0.0031
222	1.8597	0.0031
223	1.8628	0.0031
224	1.8659	0.0031
225	1.8690	0.0031
226	1.8721	0.0031
227	1.8752	0.0031
228	1.8783	0.0031
229	1.8814	0.0031
230	1.8845	0.0031
231	1.8875	0.0031
232	1.8906	0.0031
233	1.8936	0.0030
234	1.8967	0.0030
235	1.8997	0.0030
236	1.9027	0.0030
237	1.9057	0.0030
238	1.9087	0.0030
239	1.9117	0.0030
240	1.9147	0.0030
241	1.9177	0.0030
242	1.9207	0.0030
243	1.9237	0.0030
244	1.9266	0.0030
245	1.9296	0.0030
246	1.9325	0.0029
247	1.9355	0.0029
248	1.9384	0.0029
249	1.9413	0.0029
250	1.9442	0.0029
251	1.9471	0.0029
252	1.9500	0.0029
253	1.9529	0.0029
254	1.9558	0.0029
255	1.9587	0.0029
256	1.9616	0.0029
257	1.9644	0.0029
258	1.9673	0.0029
259	1.9701	0.0029
260	1.9730	0.0028

261	1.9758	0.0028
262	1.9787	0.0028
263	1.9815	0.0028
264	1.9843	0.0028
265	1.9871	0.0028
266	1.9899	0.0028
267	1.9927	0.0028
268	1.9955	0.0028
269	1.9983	0.0028
270	2.0011	0.0028
271	2.0038	0.0028
272	2.0066	0.0028
273	2.0094	0.0028
274	2.0121	0.0028
275	2.0149	0.0027
276	2.0176	0.0027
277	2.0203	0.0027
278	2.0231	0.0027
279	2.0258	0.0027
280	2.0285	0.0027
281	2.0312	0.0027
282	2.0339	0.0027
283	2.0366	0.0027
284	2.0393	0.0027
285	2.0420	0.0027
286	2.0447	0.0027
287	2.0473	0.0027
288	2.0500	0.0027

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0027	0.0005	0.0021
2	0.0027	0.0005	0.0021
3	0.0027	0.0005	0.0022
4	0.0027	0.0005	0.0022
5	0.0027	0.0005	0.0022
6	0.0027	0.0005	0.0022
7	0.0027	0.0005	0.0022
8	0.0027	0.0005	0.0022
9	0.0027	0.0005	0.0022
10	0.0027	0.0005	0.0022
11	0.0028	0.0005	0.0022
12	0.0028	0.0005	0.0022
13	0.0028	0.0005	0.0022
14	0.0028	0.0006	0.0022
15	0.0028	0.0006	0.0022
16	0.0028	0.0006	0.0022
17	0.0028	0.0006	0.0023
18	0.0028	0.0006	0.0023
19	0.0028	0.0006	0.0023
20	0.0028	0.0006	0.0023
21	0.0029	0.0006	0.0023
22	0.0029	0.0006	0.0023
23	0.0029	0.0006	0.0023
24	0.0029	0.0006	0.0023
25	0.0029	0.0006	0.0023
26	0.0029	0.0006	0.0023
27	0.0029	0.0006	0.0023
28	0.0029	0.0006	0.0024
29	0.0029	0.0006	0.0024
30	0.0030	0.0006	0.0024
31	0.0030	0.0006	0.0024
32	0.0030	0.0006	0.0024
33	0.0030	0.0006	0.0024
34	0.0030	0.0006	0.0024
35	0.0030	0.0006	0.0024
36	0.0030	0.0006	0.0024
37	0.0030	0.0006	0.0024
38	0.0030	0.0006	0.0024

39	0.0031	0.0006	0.0025
40	0.0031	0.0006	0.0025
41	0.0031	0.0006	0.0025
42	0.0031	0.0006	0.0025
43	0.0031	0.0006	0.0025
44	0.0031	0.0006	0.0025
45	0.0031	0.0006	0.0025
46	0.0031	0.0006	0.0025
47	0.0032	0.0006	0.0025
48	0.0032	0.0006	0.0025
49	0.0032	0.0006	0.0026
50	0.0032	0.0006	0.0026
51	0.0032	0.0006	0.0026
52	0.0032	0.0006	0.0026
53	0.0033	0.0006	0.0026
54	0.0033	0.0006	0.0026
55	0.0033	0.0006	0.0026
56	0.0033	0.0007	0.0026
57	0.0033	0.0007	0.0027
58	0.0033	0.0007	0.0027
59	0.0033	0.0007	0.0027
60	0.0034	0.0007	0.0027
61	0.0034	0.0007	0.0027
62	0.0034	0.0007	0.0027
63	0.0034	0.0007	0.0027
64	0.0034	0.0007	0.0027
65	0.0034	0.0007	0.0028
66	0.0035	0.0007	0.0028
67	0.0035	0.0007	0.0028
68	0.0035	0.0007	0.0028
69	0.0035	0.0007	0.0028
70	0.0035	0.0007	0.0028
71	0.0035	0.0007	0.0028
72	0.0036	0.0007	0.0029
73	0.0036	0.0007	0.0029
74	0.0036	0.0007	0.0029
75	0.0036	0.0007	0.0029
76	0.0036	0.0007	0.0029
77	0.0037	0.0007	0.0029
78	0.0037	0.0007	0.0029
79	0.0037	0.0007	0.0030
80	0.0037	0.0007	0.0030
81	0.0037	0.0007	0.0030
82	0.0038	0.0007	0.0030
83	0.0038	0.0007	0.0030
84	0.0038	0.0008	0.0030
85	0.0038	0.0008	0.0031
86	0.0038	0.0008	0.0031
87	0.0039	0.0008	0.0031
88	0.0039	0.0008	0.0031
89	0.0039	0.0008	0.0031
90	0.0039	0.0008	0.0032
91	0.0040	0.0008	0.0032
92	0.0040	0.0008	0.0032
93	0.0040	0.0008	0.0032
94	0.0040	0.0008	0.0032
95	0.0041	0.0008	0.0033
96	0.0041	0.0008	0.0033
97	0.0041	0.0008	0.0033
98	0.0041	0.0008	0.0033
99	0.0042	0.0008	0.0033
100	0.0042	0.0008	0.0034
101	0.0042	0.0008	0.0034
102	0.0043	0.0008	0.0034
103	0.0043	0.0008	0.0034
104	0.0043	0.0009	0.0035
105	0.0044	0.0009	0.0035
106	0.0044	0.0009	0.0035
107	0.0044	0.0009	0.0035
108	0.0044	0.0009	0.0036
109	0.0045	0.0009	0.0036

110	0.0045	0.0009	0.0036
111	0.0045	0.0009	0.0036
112	0.0046	0.0009	0.0037
113	0.0046	0.0009	0.0037
114	0.0046	0.0009	0.0037
115	0.0047	0.0009	0.0038
116	0.0047	0.0009	0.0038
117	0.0048	0.0009	0.0038
118	0.0048	0.0009	0.0038
119	0.0049	0.0010	0.0039
120	0.0049	0.0010	0.0039
121	0.0049	0.0010	0.0040
122	0.0050	0.0010	0.0040
123	0.0050	0.0010	0.0040
124	0.0051	0.0010	0.0041
125	0.0051	0.0010	0.0041
126	0.0051	0.0010	0.0041
127	0.0052	0.0010	0.0042
128	0.0052	0.0010	0.0042
129	0.0053	0.0011	0.0043
130	0.0054	0.0011	0.0043
131	0.0054	0.0011	0.0044
132	0.0055	0.0011	0.0044
133	0.0055	0.0011	0.0044
134	0.0056	0.0011	0.0045
135	0.0057	0.0011	0.0045
136	0.0057	0.0011	0.0046
137	0.0058	0.0011	0.0046
138	0.0058	0.0012	0.0047
139	0.0059	0.0012	0.0047
140	0.0060	0.0012	0.0048
141	0.0061	0.0012	0.0049
142	0.0061	0.0012	0.0049
143	0.0062	0.0012	0.0050
144	0.0063	0.0012	0.0050
145	0.0077	0.0015	0.0062
146	0.0078	0.0015	0.0063
147	0.0079	0.0016	0.0064
148	0.0080	0.0016	0.0064
149	0.0081	0.0016	0.0065
150	0.0082	0.0016	0.0066
151	0.0083	0.0016	0.0067
152	0.0084	0.0017	0.0067
153	0.0086	0.0017	0.0069
154	0.0086	0.0017	0.0070
155	0.0088	0.0017	0.0071
156	0.0089	0.0017	0.0072
157	0.0091	0.0017	0.0074
158	0.0092	0.0017	0.0075
159	0.0094	0.0017	0.0077
160	0.0095	0.0017	0.0078
161	0.0097	0.0017	0.0080
162	0.0098	0.0017	0.0081
163	0.0100	0.0017	0.0084
164	0.0101	0.0017	0.0085
165	0.0104	0.0017	0.0087
166	0.0105	0.0017	0.0089
167	0.0108	0.0017	0.0092
168	0.0110	0.0017	0.0093
169	0.0118	0.0017	0.0101
170	0.0119	0.0017	0.0103
171	0.0123	0.0017	0.0106
172	0.0125	0.0017	0.0109
173	0.0130	0.0017	0.0113
174	0.0132	0.0017	0.0115
175	0.0137	0.0017	0.0120
176	0.0140	0.0017	0.0123
177	0.0146	0.0017	0.0129
178	0.0150	0.0017	0.0133
179	0.0157	0.0017	0.0140
180	0.0161	0.0017	0.0145

181	0.0171	0.0017	0.0154
182	0.0176	0.0017	0.0159
183	0.0189	0.0017	0.0172
184	0.0196	0.0017	0.0179
185	0.0184	0.0017	0.0167
186	0.0194	0.0017	0.0178
187	0.0220	0.0017	0.0204
188	0.0237	0.0017	0.0221
189	0.0292	0.0017	0.0275
190	0.0328	0.0017	0.0312
191	0.0465	0.0017	0.0448
192	0.0634	0.0017	0.0617
193	0.1900	0.0017	0.1883
194	0.0381	0.0017	0.0364
195	0.0258	0.0017	0.0242
196	0.0206	0.0017	0.0189
197	0.0204	0.0017	0.0187
198	0.0182	0.0017	0.0165
199	0.0166	0.0017	0.0149
200	0.0153	0.0017	0.0137
201	0.0143	0.0017	0.0126
202	0.0134	0.0017	0.0118
203	0.0127	0.0017	0.0111
204	0.0121	0.0017	0.0105
205	0.0112	0.0017	0.0095
206	0.0107	0.0017	0.0090
207	0.0103	0.0017	0.0086
208	0.0099	0.0017	0.0082
209	0.0096	0.0017	0.0079
210	0.0093	0.0017	0.0076
211	0.0090	0.0017	0.0073
212	0.0087	0.0017	0.0070
213	0.0085	0.0017	0.0068
214	0.0083	0.0016	0.0066
215	0.0081	0.0016	0.0065
216	0.0079	0.0016	0.0063
217	0.0063	0.0012	0.0051
218	0.0062	0.0012	0.0049
219	0.0060	0.0012	0.0048
220	0.0059	0.0012	0.0047
221	0.0057	0.0011	0.0046
222	0.0056	0.0011	0.0045
223	0.0055	0.0011	0.0044
224	0.0054	0.0011	0.0043
225	0.0053	0.0010	0.0042
226	0.0052	0.0010	0.0042
227	0.0051	0.0010	0.0041
228	0.0050	0.0010	0.0040
229	0.0049	0.0010	0.0039
230	0.0048	0.0010	0.0039
231	0.0047	0.0009	0.0038
232	0.0047	0.0009	0.0037
233	0.0046	0.0009	0.0037
234	0.0045	0.0009	0.0036
235	0.0045	0.0009	0.0036
236	0.0044	0.0009	0.0035
237	0.0043	0.0009	0.0035
238	0.0043	0.0008	0.0034
239	0.0042	0.0008	0.0034
240	0.0042	0.0008	0.0033
241	0.0041	0.0008	0.0033
242	0.0041	0.0008	0.0032
243	0.0040	0.0008	0.0032
244	0.0040	0.0008	0.0032
245	0.0039	0.0008	0.0031
246	0.0039	0.0008	0.0031
247	0.0038	0.0008	0.0031
248	0.0038	0.0007	0.0030
249	0.0037	0.0007	0.0030
250	0.0037	0.0007	0.0030
251	0.0036	0.0007	0.0029

```
      252              0.0036          0.0007              0.0029
      253              0.0036          0.0007              0.0029
      254              0.0035          0.0007              0.0028
      255              0.0035          0.0007              0.0028
      256              0.0035          0.0007              0.0028
      257              0.0034          0.0007              0.0028
      258              0.0034          0.0007              0.0027
      259              0.0034          0.0007              0.0027
      260              0.0033          0.0007              0.0027
      261              0.0033          0.0007              0.0026
      262              0.0033          0.0006              0.0026
      263              0.0032          0.0006              0.0026
      264              0.0032          0.0006              0.0026
      265              0.0032          0.0006              0.0026
      266              0.0032          0.0006              0.0025
      267              0.0031          0.0006              0.0025
      268              0.0031          0.0006              0.0025
      269              0.0031          0.0006              0.0025
      270              0.0031          0.0006              0.0025
      271              0.0030          0.0006              0.0024
      272              0.0030          0.0006              0.0024
      273              0.0030          0.0006              0.0024
      274              0.0030          0.0006              0.0024
      275              0.0029          0.0006              0.0024
      276              0.0029          0.0006              0.0023
      277              0.0029          0.0006              0.0023
      278              0.0029          0.0006              0.0023
      279              0.0029          0.0006              0.0023
      280              0.0028          0.0006              0.0023
      281              0.0028          0.0006              0.0023
      282              0.0028          0.0006              0.0022
      283              0.0028          0.0005              0.0022
      284              0.0028          0.0005              0.0022
      285              0.0027          0.0005              0.0022
      286              0.0027          0.0005              0.0022
      287              0.0027          0.0005              0.0022
      288              0.0027          0.0005              0.0021
      ---------------------------------------------------------------------
      ---------------------------------------------------------------------
      Total soil rain loss =      0.28(In)
      Total effective rainfall =      1.77(In)
      Peak flow rate in flood hydrograph =      2.56(CFS)
      ---------------------------------------------------------------------
      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                        24 - H O U R    S T O R M
                   R u n o f f      H y d r o g r a p h
      ---------------------------------------------------------------------
                Hydrograph in   5   Minute intervals ((CFS))

      ---------------------------------------------------------------------
 Time(h+m) Volume Ac.Ft   Q(CFS)  0        2.5       5.0       7.5      10.0
 ------------------------------------------------------------------------
   0+ 5       0.0001      0.01  Q         |         |         |         |
   0+10       0.0003      0.03  Q         |         |         |         |
   0+15       0.0006      0.04  Q         |         |         |         |
   0+20       0.0009      0.04  Q         |         |         |         |
   0+25       0.0012      0.04  Q         |         |         |         |
   0+30       0.0015      0.04  Q         |         |         |         |
   0+35       0.0018      0.04  Q         |         |         |         |
   0+40       0.0021      0.04  Q         |         |         |         |
   0+45       0.0024      0.04  Q         |         |         |         |
   0+50       0.0027      0.04  Q         |         |         |         |
   0+55       0.0030      0.04  Q         |         |         |         |
   1+ 0       0.0033      0.04  Q         |         |         |         |
   1+ 5       0.0036      0.05  Q         |         |         |         |
   1+10       0.0039      0.05  Q         |         |         |         |
   1+15       0.0042      0.05  Q         |         |         |         |
   1+20       0.0045      0.05  Q         |         |         |         |
   1+25       0.0049      0.05  Q         |         |         |         |
   1+30       0.0052      0.05  Q         |         |         |         |
   1+35       0.0055      0.05  Q         |         |         |         |
```

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1+40       0.0058      0.05  Q          |          |          |          |
1+45       0.0061      0.05  Q          |          |          |          |
1+50       0.0065      0.05  QV         |          |          |          |
1+55       0.0068      0.05  QV         |          |          |          |
2+ 0       0.0071      0.05  QV         |          |          |          |
2+ 5       0.0074      0.05  QV         |          |          |          |
2+10       0.0077      0.05  QV         |          |          |          |
2+15       0.0081      0.05  QV         |          |          |          |
2+20       0.0084      0.05  QV         |          |          |          |
2+25       0.0087      0.05  QV         |          |          |          |
2+30       0.0091      0.05  QV         |          |          |          |
2+35       0.0094      0.05  QV         |          |          |          |
2+40       0.0097      0.05  QV         |          |          |          |
2+45       0.0101      0.05  QV         |          |          |          |
2+50       0.0104      0.05  QV         |          |          |          |
2+55       0.0107      0.05  QV         |          |          |          |
3+ 0       0.0111      0.05  QV         |          |          |          |
3+ 5       0.0114      0.05  QV         |          |          |          |
3+10       0.0117      0.05  QV         |          |          |          |
3+15       0.0121      0.05  QV         |          |          |          |
3+20       0.0124      0.05  Q V        |          |          |          |
3+25       0.0128      0.05  Q V        |          |          |          |
3+30       0.0131      0.05  Q V        |          |          |          |
3+35       0.0135      0.05  Q V        |          |          |          |
3+40       0.0138      0.05  Q V        |          |          |          |
3+45       0.0142      0.05  Q V        |          |          |          |
3+50       0.0145      0.05  Q V        |          |          |          |
3+55       0.0149      0.05  Q V        |          |          |          |
4+ 0       0.0152      0.05  Q V        |          |          |          |
4+ 5       0.0156      0.05  Q V        |          |          |          |
4+10       0.0159      0.05  Q V        |          |          |          |
4+15       0.0163      0.05  Q V        |          |          |          |
4+20       0.0167      0.05  Q V        |          |          |          |
4+25       0.0170      0.05  Q V        |          |          |          |
4+30       0.0174      0.05  Q V        |          |          |          |
4+35       0.0178      0.05  Q V        |          |          |          |
4+40       0.0181      0.05  Q V        |          |          |          |
4+45       0.0185      0.05  Q V        |          |          |          |
4+50       0.0189      0.05  Q  V       |          |          |          |
4+55       0.0192      0.05  Q  V       |          |          |          |
5+ 0       0.0196      0.05  Q  V       |          |          |          |
5+ 5       0.0200      0.05  Q  V       |          |          |          |
5+10       0.0204      0.05  Q  V       |          |          |          |
5+15       0.0208      0.06  Q  V       |          |          |          |
5+20       0.0211      0.06  Q  V       |          |          |          |
5+25       0.0215      0.06  Q  V       |          |          |          |
5+30       0.0219      0.06  Q  V       |          |          |          |
5+35       0.0223      0.06  Q  V       |          |          |          |
5+40       0.0227      0.06  Q  V       |          |          |          |
5+45       0.0231      0.06  Q  V       |          |          |          |
5+50       0.0235      0.06  Q  V       |          |          |          |
5+55       0.0239      0.06  Q  V       |          |          |          |
6+ 0       0.0243      0.06  Q  V       |          |          |          |
6+ 5       0.0247      0.06  Q  V       |          |          |          |
6+10       0.0251      0.06  Q   V      |          |          |          |
6+15       0.0255      0.06  Q   V      |          |          |          |
6+20       0.0259      0.06  Q   V      |          |          |          |
6+25       0.0263      0.06  Q   V      |          |          |          |
6+30       0.0267      0.06  Q   V      |          |          |          |
6+35       0.0271      0.06  Q   V      |          |          |          |
6+40       0.0275      0.06  Q   V      |          |          |          |
6+45       0.0279      0.06  Q   V      |          |          |          |
6+50       0.0283      0.06  Q   V      |          |          |          |
6+55       0.0288      0.06  Q   V      |          |          |          |
7+ 0       0.0292      0.06  Q   V      |          |          |          |
7+ 5       0.0296      0.06  Q   V      |          |          |          |
7+10       0.0300      0.06  Q   V      |          |          |          |
7+15       0.0305      0.06  Q   V      |          |          |          |
7+20       0.0309      0.06  Q    V     |          |          |          |
7+25       0.0313      0.06  Q    V     |          |          |          |
7+30       0.0318      0.06  Q    V     |          |          |          |
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 7+35      0.0322      0.06  Q    V    |         |         |         |
 7+40      0.0327      0.06  Q    V    |         |         |         |
 7+45      0.0331      0.06  Q    V    |         |         |         |
 7+50      0.0336      0.07  Q    V    |         |         |         |
 7+55      0.0340      0.07  Q    V    |         |         |         |
 8+ 0      0.0345      0.07  Q    V    |         |         |         |
 8+ 5      0.0349      0.07  Q    V    |         |         |         |
 8+10      0.0354      0.07  Q    V    |         |         |         |
 8+15      0.0359      0.07  Q    V    |         |         |         |
 8+20      0.0363      0.07  Q    V    |         |         |         |
 8+25      0.0368      0.07  Q    V    |         |         |         |
 8+30      0.0373      0.07  Q     V   |         |         |         |
 8+35      0.0378      0.07  Q     V   |         |         |         |
 8+40      0.0382      0.07  Q     V   |         |         |         |
 8+45      0.0387      0.07  Q     V   |         |         |         |
 8+50      0.0392      0.07  Q     V   |         |         |         |
 8+55      0.0397      0.07  Q     V   |         |         |         |
 9+ 0      0.0402      0.07  Q     V   |         |         |         |
 9+ 5      0.0407      0.07  Q     V   |         |         |         |
 9+10      0.0412      0.07  Q     V   |         |         |         |
 9+15      0.0417      0.07  Q     V   |         |         |         |
 9+20      0.0422      0.07  Q     V   |         |         |         |
 9+25      0.0427      0.07  Q     V   |         |         |         |
 9+30      0.0432      0.08  Q     V   |         |         |         |
 9+35      0.0438      0.08  Q      V  |         |         |         |
 9+40      0.0443      0.08  Q      V  |         |         |         |
 9+45      0.0448      0.08  Q      V  |         |         |         |
 9+50      0.0453      0.08  Q      V  |         |         |         |
 9+55      0.0459      0.08  Q      V  |         |         |         |
10+ 0      0.0464      0.08  Q      V  |         |         |         |
10+ 5      0.0470      0.08  Q      V  |         |         |         |
10+10      0.0475      0.08  Q      V  |         |         |         |
10+15      0.0481      0.08  Q      V  |         |         |         |
10+20      0.0486      0.08  Q      V  |         |         |         |
10+25      0.0492      0.08  Q      V  |         |         |         |
10+30      0.0498      0.08  Q       V |         |         |         |
10+35      0.0504      0.08  Q       V |         |         |         |
10+40      0.0510      0.08  Q       V |         |         |         |
10+45      0.0515      0.09  Q       V |         |         |         |
10+50      0.0521      0.09  Q       V |         |         |         |
10+55      0.0527      0.09  Q       V |         |         |         |
11+ 0      0.0533      0.09  Q       V |         |         |         |
11+ 5      0.0540      0.09  Q       V |         |         |         |
11+10      0.0546      0.09  Q       V |         |         |         |
11+15      0.0552      0.09  Q       V |         |         |         |
11+20      0.0558      0.09  Q        V|         |         |         |
11+25      0.0565      0.09  Q        V|         |         |         |
11+30      0.0571      0.09  Q        V|         |         |         |
11+35      0.0578      0.09  Q        V|         |         |         |
11+40      0.0584      0.10  Q        V|         |         |         |
11+45      0.0591      0.10  Q        V|         |         |         |
11+50      0.0598      0.10  Q        V|         |         |         |
11+55      0.0605      0.10  Q        V|         |         |         |
12+ 0      0.0612      0.10  Q        V|         |         |         |
12+ 5      0.0619      0.11  Q         V         |         |         |
12+10      0.0627      0.12  Q         V         |         |         |
12+15      0.0636      0.13  Q         V         |         |         |
12+20      0.0645      0.13  Q         V         |         |         |
12+25      0.0654      0.13  Q         V         |         |         |
12+30      0.0663      0.13  Q         V         |         |         |
12+35      0.0672      0.13  Q         V         |         |         |
12+40      0.0681      0.14  Q          |V        |         |         |
12+45      0.0691      0.14  Q          |V        |         |         |
12+50      0.0700      0.14  Q          |V        |         |         |
12+55      0.0710      0.14  Q          |V        |         |         |
13+ 0      0.0720      0.14  Q          |V        |         |         |
13+ 5      0.0730      0.15  Q          |V        |         |         |
13+10      0.0740      0.15  Q          |V        |         |         |
13+15      0.0751      0.15  Q          | V       |         |         |
13+20      0.0762      0.16  Q          | V       |         |         |
13+25      0.0772      0.16  Q          | V       |         |         |
```

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13+30       0.0784      0.16  Q          | V        |          |          |
13+35       0.0795      0.16  Q          | V        |          |          |
13+40       0.0807      0.17  Q          |  V       |          |          |
13+45       0.0818      0.17  Q          |  V       |          |          |
13+50       0.0831      0.18  Q          |  V       |          |          |
13+55       0.0843      0.18  Q          |  V       |          |          |
14+ 0       0.0856      0.19  Q          |  V       |          |          |
14+ 5       0.0869      0.19  Q          |   V      |          |          |
14+10       0.0883      0.20  Q          |   V      |          |          |
14+15       0.0897      0.21  Q          |   V      |          |          |
14+20       0.0912      0.21  Q          |   V      |          |          |
14+25       0.0927      0.22  Q          |    V     |          |          |
14+30       0.0943      0.23  Q          |    V     |          |          |
14+35       0.0959      0.23  Q          |    V     |          |          |
14+40       0.0976      0.24  Q          |    V     |          |          |
14+45       0.0993      0.25  |Q         |     V    |          |          |
14+50       0.1011      0.26  |Q         |     V    |          |          |
14+55       0.1029      0.27  |Q         |     V    |          |          |
15+ 0       0.1049      0.28  |Q         |     V    |          |          |
15+ 5       0.1069      0.29  |Q         |      V   |          |          |
15+10       0.1090      0.31  |Q         |      V   |          |          |
15+15       0.1113      0.32  |Q         |       V  |          |          |
15+20       0.1136      0.34  |Q         |       V  |          |          |
15+25       0.1161      0.35  |Q         |       V  |          |          |
15+30       0.1185      0.35  |Q         |        V|          |          |
15+35       0.1210      0.37  |Q         |        V|          |          |
15+40       0.1238      0.41  |Q         |         V          |          |
15+45       0.1270      0.46  |Q         |         V          |          |
15+50       0.1307      0.54  | Q        |          V         |          |
15+55       0.1352      0.66  | Q        |          V         |          |
16+ 0       0.1414      0.90  |  Q       |           V        |          |
16+ 5       0.1528      1.65  |     Q    |            V       |          |
16+10       0.1705      2.56  |        Q |             V      |          |
16+15       0.1789      1.22  |   Q      |              V     |          |
16+20       0.1838      0.71  | Q        |               V|   |          |
16+25       0.1871      0.48  |Q         |                V   |          |
16+30       0.1899      0.41  |Q         |                V   |          |
16+35       0.1923      0.35  |Q         |                 V  |          |
16+40       0.1945      0.31  |Q         |                 V  |          |
16+45       0.1964      0.28  |Q         |                 V  |          |
16+50       0.1982      0.26  |Q         |                  V |          |
16+55       0.1999      0.24  Q          |                  V |          |
17+ 0       0.2015      0.23  Q          |                  V |          |
17+ 5       0.2029      0.21  Q          |                  V |          |
17+10       0.2043      0.20  Q          |                   V |         |
17+15       0.2056      0.19  Q          |                   V |         |
17+20       0.2068      0.18  Q          |                   V |         |
17+25       0.2080      0.17  Q          |                   V |         |
17+30       0.2091      0.16  Q          |                   V |         |
17+35       0.2101      0.16  Q          |                    V|         |
17+40       0.2112      0.15  Q          |                    V|         |
17+45       0.2122      0.14  Q          |                    V|         |
17+50       0.2131      0.14  Q          |                    V|         |
17+55       0.2141      0.14  Q          |                    V|         |
18+ 0       0.2150      0.13  Q          |                    V|         |
18+ 5       0.2158      0.12  Q          |                    V|         |
18+10       0.2166      0.11  Q          |                     V|        |
18+15       0.2173      0.10  Q          |                     V|        |
18+20       0.2180      0.10  Q          |                     V|        |
18+25       0.2186      0.10  Q          |                     V|        |
18+30       0.2193      0.09  Q          |                     V|        |
18+35       0.2199      0.09  Q          |                     V|        |
18+40       0.2205      0.09  Q          |                     V|        |
18+45       0.2211      0.09  Q          |                     V|        |
18+50       0.2217      0.09  Q          |                     V|        |
18+55       0.2223      0.08  Q          |                     V|        |
19+ 0       0.2229      0.08  Q          |                      V|       |
19+ 5       0.2234      0.08  Q          |                      V|       |
19+10       0.2240      0.08  Q          |                      V|       |
19+15       0.2245      0.08  Q          |                      V|       |
19+20       0.2251      0.08  Q          |                      V|       |
```

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  19+25       0.2256      0.08  Q          |          |          |     V    |
  19+30       0.2261      0.08  Q          |          |          |     V    |
  19+35       0.2266      0.07  Q          |          |          |     V    |
  19+40       0.2271      0.07  Q          |          |          |     V    |
  19+45       0.2276      0.07  Q          |          |          |     V    |
  19+50       0.2281      0.07  Q          |          |          |     V    |
  19+55       0.2286      0.07  Q          |          |          |     V    |
  20+ 0       0.2291      0.07  Q          |          |          |      V   |
  20+ 5       0.2295      0.07  Q          |          |          |      V   |
  20+10       0.2300      0.07  Q          |          |          |      V   |
  20+15       0.2305      0.07  Q          |          |          |      V   |
  20+20       0.2309      0.07  Q          |          |          |      V   |
  20+25       0.2313      0.06  Q          |          |          |      V   |
  20+30       0.2318      0.06  Q          |          |          |      V   |
  20+35       0.2322      0.06  Q          |          |          |      V   |
  20+40       0.2326      0.06  Q          |          |          |      V   |
  20+45       0.2331      0.06  Q          |          |          |      V   |
  20+50       0.2335      0.06  Q          |          |          |      V   |
  20+55       0.2339      0.06  Q          |          |          |      V   |
  21+ 0       0.2343      0.06  Q          |          |          |      V   |
  21+ 5       0.2347      0.06  Q          |          |          |      V   |
  21+10       0.2351      0.06  Q          |          |          |       V  |
  21+15       0.2355      0.06  Q          |          |          |       V  |
  21+20       0.2359      0.06  Q          |          |          |       V  |
  21+25       0.2363      0.06  Q          |          |          |       V  |
  21+30       0.2367      0.06  Q          |          |          |       V  |
  21+35       0.2371      0.06  Q          |          |          |       V  |
  21+40       0.2374      0.05  Q          |          |          |       V  |
  21+45       0.2378      0.05  Q          |          |          |       V  |
  21+50       0.2382      0.05  Q          |          |          |       V  |
  21+55       0.2386      0.05  Q          |          |          |       V  |
  22+ 0       0.2389      0.05  Q          |          |          |       V  |
  22+ 5       0.2393      0.05  Q          |          |          |       V  |
  22+10       0.2396      0.05  Q          |          |          |       V  |
  22+15       0.2400      0.05  Q          |          |          |       V  |
  22+20       0.2404      0.05  Q          |          |          |       V  |
  22+25       0.2407      0.05  Q          |          |          |       V  |
  22+30       0.2410      0.05  Q          |          |          |        V |
  22+35       0.2414      0.05  Q          |          |          |        V |
  22+40       0.2417      0.05  Q          |          |          |        V |
  22+45       0.2421      0.05  Q          |          |          |        V |
  22+50       0.2424      0.05  Q          |          |          |        V |
  22+55       0.2427      0.05  Q          |          |          |        V |
  23+ 0       0.2431      0.05  Q          |          |          |        V |
  23+ 5       0.2434      0.05  Q          |          |          |        V |
  23+10       0.2437      0.05  Q          |          |          |        V |
  23+15       0.2440      0.05  Q          |          |          |        V |
  23+20       0.2444      0.05  Q          |          |          |        V |
  23+25       0.2447      0.05  Q          |          |          |        V |
  23+30       0.2450      0.05  Q          |          |          |        V |
  23+35       0.2453      0.05  Q          |          |          |        V |
  23+40       0.2456      0.05  Q          |          |          |        V |
  23+45       0.2459      0.04  Q          |          |          |        V |
  23+50       0.2462      0.04  Q          |          |          |        V |
  23+55       0.2465      0.04  Q          |          |          |        V |
  24+ 0       0.2468      0.04  Q          |          |          |        V |
  24+ 5       0.2471      0.04  Q          |          |          |        V |
  24+10       0.2472      0.01  Q          |          |          |        V |
  24+15       0.2472      0.00  Q          |          |          |        V |
  24+20       0.2472      0.00  Q          |          |          |        V |
  24+25       0.2472      0.00  Q          |          |          |        V |
  24+30       0.2472      0.00  Q          |          |          |        V |
-------------------------------------------------------------------------
```

- 5 Year 3 Hour Post-Development Unit Hydrograph – Area 'F'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/20/16   File Name prf00503.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'F' - 5 YEAR 3 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 5

       Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 74.4       1.7          1.00     D     0.200     0.100    0.020

Area-averaged adjusted loss rate Fm (In/Hr) =  0.020

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
     0.17   0.100         74.4      56.3       7.77     0.078
     1.51   0.900         98.0      98.0       0.20     0.923

Area-averaged catchment yield fraction, Y =  0.839
Area-averaged low loss fraction, Yb =  0.161
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.091 (hours)
Watershed area =       1.68(Ac.)
Catchment Lag time =   0.073 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 114.8095
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.020(In/Hr)
Average low loss rate fraction (Yb) = 0.161 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.260(In)
Computed peak 30-minute rainfall =  0.590(In)
Specified peak 1-hour rainfall =  0.780(In)
Computed peak 3-hour rainfall =  1.310(In)
Specified peak 6-hour rainfall =  1.810(In)
Specified peak 24-hour rainfall =  3.030(In)


Rainfall depth area reduction factors:
Using a total area of       1.68(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000     Adjusted rainfall =  0.260(In)
```

30-minute factor = 1.000 Adjusted rainfall = 0.590(In)
1-hour factor = 1.000 Adjusted rainfall = 0.780(In)
3-hour factor = 1.000 Adjusted rainfall = 1.310(In)
6-hour factor = 1.000 Adjusted rainfall = 1.810(In)
24-hour factor = 1.000 Adjusted rainfall = 3.030(In)

U n i t H y d r o g r a p h

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 20.32 (CFS))	
1	19.643	3.991
2	75.813	11.412
3	92.011	3.291
4	97.656	1.147
5	99.076	0.288
6	99.801	0.147
7	100.000	0.040

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.2600	0.2600
2	0.3570	0.0970
3	0.4297	0.0727
4	0.4901	0.0604
5	0.5428	0.0527
6	0.5900	0.0472
7	0.6277	0.0378
8	0.6624	0.0347
9	0.6946	0.0322
10	0.7247	0.0301
11	0.7531	0.0284
12	0.7799	0.0269
13	0.8100	0.0300
14	0.8388	0.0288
15	0.8666	0.0278
16	0.8934	0.0268
17	0.9193	0.0259
18	0.9444	0.0251
19	0.9689	0.0244
20	0.9926	0.0237
21	1.0157	0.0231
22	1.0383	0.0225
23	1.0603	0.0220
24	1.0818	0.0215
25	1.1029	0.0210
26	1.1235	0.0206
27	1.1437	0.0202
28	1.1635	0.0198
29	1.1829	0.0194
30	1.2020	0.0191
31	1.2207	0.0187
32	1.2391	0.0184
33	1.2573	0.0181
34	1.2751	0.0178
35	1.2927	0.0176
36	1.3100	0.0173

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0173	0.0017	0.0156
2	0.0176	0.0017	0.0159
3	0.0181	0.0017	0.0165
4	0.0184	0.0017	0.0168
5	0.0191	0.0017	0.0174
6	0.0194	0.0017	0.0178

7	0.0202	0.0017	0.0185
8	0.0206	0.0017	0.0189
9	0.0215	0.0017	0.0198
10	0.0220	0.0017	0.0203
11	0.0231	0.0017	0.0215
12	0.0237	0.0017	0.0221
13	0.0251	0.0017	0.0235
14	0.0259	0.0017	0.0243
15	0.0278	0.0017	0.0261
16	0.0288	0.0017	0.0272
17	0.0269	0.0017	0.0252
18	0.0284	0.0017	0.0267
19	0.0322	0.0017	0.0305
20	0.0347	0.0017	0.0330
21	0.0472	0.0017	0.0455
22	0.0527	0.0017	0.0510
23	0.0727	0.0017	0.0711
24	0.0970	0.0017	0.0953
25	0.2600	0.0017	0.2583
26	0.0604	0.0017	0.0588
27	0.0378	0.0017	0.0361
28	0.0301	0.0017	0.0284
29	0.0300	0.0017	0.0284
30	0.0268	0.0017	0.0251
31	0.0244	0.0017	0.0227
32	0.0225	0.0017	0.0209
33	0.0210	0.0017	0.0194
34	0.0198	0.0017	0.0181
35	0.0187	0.0017	0.0171
36	0.0178	0.0017	0.0162

Total soil rain loss = 0.06(In)
Total effective rainfall = 1.25(In)
Peak flow rate in flood hydrograph = 3.60(CFS)

++

3 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0004	0.06	Q				
0+10	0.0021	0.24	Q				
0+15	0.0042	0.30	VQ				
0+20	0.0064	0.33	|Q				
0+25	0.0087	0.34	|Q				
0+30	0.0111	0.35	|QV				
0+35	0.0136	0.36	|Q V				
0+40	0.0162	0.37	|Q V				
0+45	0.0188	0.38	|Q V				
0+50	0.0216	0.40	|Q V				
0+55	0.0244	0.41	|Q V				
1+ 0	0.0274	0.43	|Q V				
1+ 5	0.0305	0.45	|Q V				
1+10	0.0338	0.47	|Q V				
1+15	0.0372	0.49	|Q V				
1+20	0.0408	0.52	| Q V				
1+25	0.0444	0.54	| Q V				
1+30	0.0481	0.52	| Q V				
1+35	0.0519	0.55	| Q V				
1+40	0.0561	0.61	| Q V				
1+45	0.0609	0.70	| Q V				
1+50	0.0669	0.88	| Q V				
1+55	0.0743	1.07	| Q V				
2+ 0	0.0841	1.43	| Q V				
2+ 5	0.1009	2.43	| Q V				
2+10	0.1257	3.60	| Q V				

```
    2+15       0.1381      1.80  |      Q  |         |         |V        |
    2+20       0.1453      1.06  |    Q    |         |         |  V      |
    2+25       0.1503      0.72  |  Q      |         |         |   V     |
    2+30       0.1545      0.62  |  Q      |         |         |    V    |
    2+35       0.1582      0.53  |  Q      |         |         |     V   |
    2+40       0.1615      0.47  |Q        |         |         |     V   |
    2+45       0.1644      0.43  |Q        |         |         |      V  |
    2+50       0.1672      0.40  |Q        |         |         |       V |
    2+55       0.1698      0.37  |Q        |         |         |       V |
    3+ 0       0.1722      0.35  |Q        |         |         |        V|
    3+ 5       0.1741      0.27  |Q        |         |         |        V|
    3+10       0.1746      0.08  Q         |         |         |        V|
    3+15       0.1748      0.03  Q         |         |         |        V|
    3+20       0.1749      0.01  Q         |         |         |        V|
    3+25       0.1749      0.00  Q         |         |         |        V|
    3+30       0.1749      0.00  Q         |         |         |        V|
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- 5 Year 6 Hour Post-Development Unit Hydrograph – Area 'F'

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       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/20/16   File Name prf00506.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

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RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'F' - 5 YEAR 6 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 5

       Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 74.4       1.7          1.00     D     0.200     0.100    0.020

Area-averaged adjusted loss rate Fm (In/Hr) =  0.020

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
     0.17   0.100         74.4      56.3       7.77     0.078
     1.51   0.900         98.0      98.0       0.20     0.923

Area-averaged catchment yield fraction, Y =  0.839
Area-averaged low loss fraction, Yb =  0.161
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.091 (hours)
Watershed area =       1.68(Ac.)
Catchment Lag time =   0.073 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 114.8095
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.020(In/Hr)
Average low loss rate fraction (Yb) = 0.161 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.260(In)
Computed peak 30-minute rainfall =  0.590(In)
Specified peak 1-hour rainfall =  0.780(In)
Computed peak 3-hour rainfall =  1.310(In)
Specified peak 6-hour rainfall =  1.810(In)
Specified peak 24-hour rainfall =  3.030(In)


Rainfall depth area reduction factors:
Using a total area of       1.68(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000     Adjusted rainfall =  0.260(In)
```

```
30-minute factor = 1.000    Adjusted rainfall =  0.590(In)
1-hour factor = 1.000       Adjusted rainfall =  0.780(In)
3-hour factor = 1.000       Adjusted rainfall =  1.310(In)
6-hour factor = 1.000       Adjusted rainfall =  1.810(In)
24-hour factor = 1.000 Adjusted rainfall =  3.030(In)
------------------------------------------------------------------------

                     U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
------------------------------------------------------------------------
               (K =        20.32 (CFS))

  1               19.643                   3.991
  2               75.813                  11.412
  3               92.011                   3.291
  4               97.656                   1.147
  5               99.076                   0.288
  6               99.801                   0.147
  7              100.000                   0.040
------------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.2600               0.2600
  2              0.3570               0.0970
  3              0.4297               0.0727
  4              0.4901               0.0604
  5              0.5428               0.0527
  6              0.5900               0.0472
  7              0.6277               0.0378
  8              0.6624               0.0347
  9              0.6946               0.0322
 10              0.7247               0.0301
 11              0.7531               0.0284
 12              0.7799               0.0269
 13              0.8100               0.0300
 14              0.8388               0.0288
 15              0.8666               0.0278
 16              0.8934               0.0268
 17              0.9193               0.0259
 18              0.9444               0.0251
 19              0.9689               0.0244
 20              0.9926               0.0237
 21              1.0157               0.0231
 22              1.0383               0.0225
 23              1.0603               0.0220
 24              1.0818               0.0215
 25              1.1029               0.0210
 26              1.1235               0.0206
 27              1.1437               0.0202
 28              1.1635               0.0198
 29              1.1829               0.0194
 30              1.2020               0.0191
 31              1.2207               0.0187
 32              1.2391               0.0184
 33              1.2573               0.0181
 34              1.2751               0.0178
 35              1.2927               0.0176
 36              1.3100               0.0173
 37              1.3268               0.0168
 38              1.3434               0.0166
 39              1.3598               0.0164
 40              1.3760               0.0162
 41              1.3919               0.0159
 42              1.4076               0.0157
 43              1.4232               0.0155
 44              1.4385               0.0153
 45              1.4537               0.0152
 46              1.4687               0.0150
 47              1.4835               0.0148
```

48	1.4981	0.0146
49	1.5126	0.0145
50	1.5269	0.0143
51	1.5411	0.0142
52	1.5551	0.0140
53	1.5690	0.0139
54	1.5827	0.0137
55	1.5963	0.0136
56	1.6098	0.0135
57	1.6231	0.0133
58	1.6364	0.0132
59	1.6495	0.0131
60	1.6624	0.0130
61	1.6753	0.0129
62	1.6881	0.0128
63	1.7007	0.0126
64	1.7132	0.0125
65	1.7257	0.0124
66	1.7380	0.0123
67	1.7502	0.0122
68	1.7624	0.0121
69	1.7744	0.0120
70	1.7864	0.0119
71	1.7982	0.0119
72	1.8100	0.0118

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0118	0.0017	0.0101
2	0.0119	0.0017	0.0102
3	0.0120	0.0017	0.0104
4	0.0121	0.0017	0.0105
5	0.0123	0.0017	0.0107
6	0.0124	0.0017	0.0108
7	0.0126	0.0017	0.0110
8	0.0128	0.0017	0.0111
9	0.0130	0.0017	0.0113
10	0.0131	0.0017	0.0114
11	0.0133	0.0017	0.0117
12	0.0135	0.0017	0.0118
13	0.0137	0.0017	0.0121
14	0.0139	0.0017	0.0122
15	0.0142	0.0017	0.0125
16	0.0143	0.0017	0.0127
17	0.0146	0.0017	0.0130
18	0.0148	0.0017	0.0131
19	0.0152	0.0017	0.0135
20	0.0153	0.0017	0.0137
21	0.0157	0.0017	0.0141
22	0.0159	0.0017	0.0143
23	0.0164	0.0017	0.0147
24	0.0166	0.0017	0.0149
25	0.0173	0.0017	0.0156
26	0.0176	0.0017	0.0159
27	0.0181	0.0017	0.0165
28	0.0184	0.0017	0.0168
29	0.0191	0.0017	0.0174
30	0.0194	0.0017	0.0178
31	0.0202	0.0017	0.0185
32	0.0206	0.0017	0.0189
33	0.0215	0.0017	0.0198
34	0.0220	0.0017	0.0203
35	0.0231	0.0017	0.0215
36	0.0237	0.0017	0.0221
37	0.0251	0.0017	0.0235
38	0.0259	0.0017	0.0243
39	0.0278	0.0017	0.0261
40	0.0288	0.0017	0.0272
41	0.0269	0.0017	0.0252

42	0.0284	0.0017	0.0267
43	0.0322	0.0017	0.0305
44	0.0347	0.0017	0.0330
45	0.0472	0.0017	0.0455
46	0.0527	0.0017	0.0510
47	0.0727	0.0017	0.0711
48	0.0970	0.0017	0.0953
49	0.2600	0.0017	0.2583
50	0.0604	0.0017	0.0588
51	0.0378	0.0017	0.0361
52	0.0301	0.0017	0.0284
53	0.0300	0.0017	0.0284
54	0.0268	0.0017	0.0251
55	0.0244	0.0017	0.0227
56	0.0225	0.0017	0.0209
57	0.0210	0.0017	0.0194
58	0.0198	0.0017	0.0181
59	0.0187	0.0017	0.0171
60	0.0178	0.0017	0.0162
61	0.0168	0.0017	0.0152
62	0.0162	0.0017	0.0145
63	0.0155	0.0017	0.0139
64	0.0150	0.0017	0.0133
65	0.0145	0.0017	0.0128
66	0.0140	0.0017	0.0124
67	0.0136	0.0017	0.0119
68	0.0132	0.0017	0.0116
69	0.0129	0.0017	0.0112
70	0.0125	0.0017	0.0109
71	0.0122	0.0017	0.0106
72	0.0119	0.0017	0.0103

Total soil rain loss = 0.12(In)
Total effective rainfall = 1.69(In)
Peak flow rate in flood hydrograph = 3.60(CFS)

++

6 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0003	0.04	Q	|	|	|	|
0+10	0.0014	0.16	Q	|	|	|	|
0+15	0.0027	0.19	Q	|	|	|	|
0+20	0.0041	0.21	Q	|	|	|	|
0+25	0.0055	0.21	Q	|	|	|	|
0+30	0.0070	0.22	QV	|	|	|	|
0+35	0.0085	0.22	QV	|	|	|	|
0+40	0.0101	0.22	QV	|	|	|	|
0+45	0.0116	0.23	QV	|	|	|	|
0+50	0.0132	0.23	Q V	|	|	|	|
0+55	0.0148	0.23	Q V	|	|	|	|
1+ 0	0.0164	0.24	Q V	|	|	|	|
1+ 5	0.0181	0.24	Q V	|	|	|	|
1+10	0.0197	0.24	Q V	|	|	|	|
1+15	0.0214	0.25	Q V	|	|	|	|
1+20	0.0232	0.25	|Q V	|	|	|	|
1+25	0.0250	0.26	|Q V	|	|	|	|
1+30	0.0268	0.26	|Q V	|	|	|	|
1+35	0.0286	0.27	|Q V	|	|	|	|
1+40	0.0305	0.27	|Q V	|	|	|	|
1+45	0.0324	0.28	|Q V	|	|	|	|
1+50	0.0344	0.28	|Q V	|	|	|	|
1+55	0.0363	0.29	|Q V	|	|	|	|
2+ 0	0.0384	0.30	|Q V	|	|	|	|
2+ 5	0.0405	0.30	|Q V	|	|	|	|

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   2+10       0.0427      0.31  |Q     V  |          |          |          |
   2+15       0.0449      0.32  |Q     V  |          |          |          |
   2+20       0.0472      0.33  |Q     V  |          |          |          |
   2+25       0.0495      0.34  |Q      V |          |          |          |
   2+30       0.0519      0.35  |Q      V |          |          |          |
   2+35       0.0544      0.36  |Q       V|          |          |          |
   2+40       0.0570      0.37  |Q       V|          |          |          |
   2+45       0.0596      0.38  |Q        V          |          |          |
   2+50       0.0624      0.40  |Q        V          |          |          |
   2+55       0.0652      0.41  |Q         |V         |          |          |
   3+ 0       0.0682      0.43  |Q         |V         |          |          |
   3+ 5       0.0713      0.45  |Q         | V        |          |          |
   3+10       0.0746      0.47  |Q         | V        |          |          |
   3+15       0.0780      0.49  |Q         |  V       |          |          |
   3+20       0.0816      0.52  | Q        |  V       |          |          |
   3+25       0.0852      0.54  | Q        |   V      |          |          |
   3+30       0.0889      0.52  | Q        |    V     |          |          |
   3+35       0.0927      0.55  | Q        |    V     |          |          |
   3+40       0.0969      0.61  | Q        |     V    |          |          |
   3+45       0.1017      0.70  | Q        |      V   |          |          |
   3+50       0.1077      0.88  |  Q       |       V  |          |          |
   3+55       0.1151      1.07  |   Q      |        V |          |          |
   4+ 0       0.1249      1.43  |    Q     |          |V         |          |
   4+ 5       0.1417      2.43  |         Q|          |  V       |          |
   4+10       0.1665      3.60  |          |   Q      |       V  |          |
   4+15       0.1789      1.80  |       Q  |          |         V|          |
   4+20       0.1861      1.06  |   Q      |          |          |V         |
   4+25       0.1911      0.72  | Q        |          |          | V        |
   4+30       0.1953      0.62  | Q        |          |          |  V       |
   4+35       0.1990      0.53  | Q        |          |          |  V       |
   4+40       0.2023      0.47  |Q         |          |          |   V      |
   4+45       0.2052      0.43  |Q         |          |          |   V      |
   4+50       0.2080      0.40  |Q         |          |          |    V     |
   4+55       0.2106      0.37  |Q         |          |          |    V     |
   5+ 0       0.2130      0.35  |Q         |          |          |     V    |
   5+ 5       0.2153      0.33  |Q         |          |          |     V    |
   5+10       0.2175      0.31  |Q         |          |          |     V    |
   5+15       0.2195      0.30  |Q         |          |          |      V   |
   5+20       0.2215      0.28  |Q         |          |          |      V   |
   5+25       0.2233      0.27  |Q         |          |          |      V   |
   5+30       0.2251      0.26  |Q         |          |          |       V  |
   5+35       0.2269      0.25  |Q         |          |          |       V  |
   5+40       0.2286      0.24  Q          |          |          |       V  |
   5+45       0.2302      0.24  Q          |          |          |       V  |
   5+50       0.2318      0.23  Q          |          |          |        V |
   5+55       0.2333      0.22  Q          |          |          |        V |
   6+ 0       0.2348      0.22  Q          |          |          |        V |
   6+ 5       0.2360      0.17  Q          |          |          |        V |
   6+10       0.2363      0.05  Q          |          |          |        V |
   6+15       0.2364      0.02  Q          |          |          |        V |
   6+20       0.2365      0.00  Q          |          |          |        V |
   6+25       0.2365      0.00  Q          |          |          |        V |
   6+30       0.2365      0.00  Q          |          |          |        V |
-------------------------------------------------------------------------
```

- 5 Year 12 Hour Post-Development Unit Hydrograph – Area 'F'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/20/16   File Name prf00512.out


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'F' - 5 YEAR 12 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 5

       Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 74.4       1.7          1.00     D     0.200     0.100    0.020

Area-averaged adjusted loss rate Fm (In/Hr) =  0.020

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
     0.17   0.100         74.4      56.3       7.77     0.078
     1.51   0.900         98.0      98.0       0.20     0.923

Area-averaged catchment yield fraction, Y =  0.839
Area-averaged low loss fraction, Yb =  0.161
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.091 (hours)
Watershed area =       1.68(Ac.)
Catchment Lag time =   0.073 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 114.8095
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.020(In/Hr)
Average low loss rate fraction (Yb) = 0.161 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.260(In)
Computed peak 30-minute rainfall =  0.590(In)
Specified peak 1-hour rainfall =  0.780(In)
Computed peak 3-hour rainfall =  1.310(In)
Specified peak 6-hour rainfall =  1.810(In)
Specified peak 24-hour rainfall =  3.030(In)


Rainfall depth area reduction factors:
Using a total area of       1.68(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000     Adjusted rainfall =  0.260(In)
```

```
30-minute factor = 1.000    Adjusted rainfall =  0.590(In)
1-hour factor = 1.000       Adjusted rainfall =  0.780(In)
3-hour factor = 1.000       Adjusted rainfall =  1.310(In)
6-hour factor = 1.000       Adjusted rainfall =  1.810(In)
24-hour factor = 1.000 Adjusted rainfall =  3.030(In)
--------------------------------------------------------------------

                     U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------
               (K =        20.32 (CFS))

  1               19.643                   3.991
  2               75.813                  11.412
  3               92.011                   3.291
  4               97.656                   1.147
  5               99.076                   0.288
  6               99.801                   0.147
  7              100.000                   0.040
--------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.2600               0.2600
  2              0.3570               0.0970
  3              0.4297               0.0727
  4              0.4901               0.0604
  5              0.5428               0.0527
  6              0.5900               0.0472
  7              0.6277               0.0378
  8              0.6624               0.0347
  9              0.6946               0.0322
 10              0.7247               0.0301
 11              0.7531               0.0284
 12              0.7799               0.0269
 13              0.8100               0.0300
 14              0.8388               0.0288
 15              0.8666               0.0278
 16              0.8934               0.0268
 17              0.9193               0.0259
 18              0.9444               0.0251
 19              0.9689               0.0244
 20              0.9926               0.0237
 21              1.0157               0.0231
 22              1.0383               0.0225
 23              1.0603               0.0220
 24              1.0818               0.0215
 25              1.1029               0.0210
 26              1.1235               0.0206
 27              1.1437               0.0202
 28              1.1635               0.0198
 29              1.1829               0.0194
 30              1.2020               0.0191
 31              1.2207               0.0187
 32              1.2391               0.0184
 33              1.2573               0.0181
 34              1.2751               0.0178
 35              1.2927               0.0176
 36              1.3100               0.0173
 37              1.3268               0.0168
 38              1.3434               0.0166
 39              1.3598               0.0164
 40              1.3760               0.0162
 41              1.3919               0.0159
 42              1.4076               0.0157
 43              1.4232               0.0155
 44              1.4385               0.0153
 45              1.4537               0.0152
 46              1.4687               0.0150
 47              1.4835               0.0148
```

48	1.4981	0.0146
49	1.5126	0.0145
50	1.5269	0.0143
51	1.5411	0.0142
52	1.5551	0.0140
53	1.5690	0.0139
54	1.5827	0.0137
55	1.5963	0.0136
56	1.6098	0.0135
57	1.6231	0.0133
58	1.6364	0.0132
59	1.6495	0.0131
60	1.6624	0.0130
61	1.6753	0.0129
62	1.6881	0.0128
63	1.7007	0.0126
64	1.7132	0.0125
65	1.7257	0.0124
66	1.7380	0.0123
67	1.7502	0.0122
68	1.7624	0.0121
69	1.7744	0.0120
70	1.7864	0.0119
71	1.7982	0.0119
72	1.8100	0.0118
73	1.8193	0.0093
74	1.8285	0.0092
75	1.8377	0.0091
76	1.8467	0.0091
77	1.8557	0.0090
78	1.8646	0.0089
79	1.8735	0.0088
80	1.8823	0.0088
81	1.8910	0.0087
82	1.8996	0.0086
83	1.9082	0.0086
84	1.9167	0.0085
85	1.9252	0.0084
86	1.9336	0.0084
87	1.9419	0.0083
88	1.9501	0.0083
89	1.9584	0.0082
90	1.9665	0.0081
91	1.9746	0.0081
92	1.9826	0.0080
93	1.9906	0.0080
94	1.9985	0.0079
95	2.0064	0.0079
96	2.0142	0.0078
97	2.0220	0.0078
98	2.0297	0.0077
99	2.0374	0.0077
100	2.0450	0.0076
101	2.0526	0.0076
102	2.0601	0.0075
103	2.0676	0.0075
104	2.0751	0.0074
105	2.0825	0.0074
106	2.0898	0.0073
107	2.0971	0.0073
108	2.1044	0.0073
109	2.1116	0.0072
110	2.1188	0.0072
111	2.1259	0.0071
112	2.1330	0.0071
113	2.1401	0.0071
114	2.1471	0.0070
115	2.1541	0.0070
116	2.1610	0.0069
117	2.1679	0.0069
118	2.1748	0.0069

119	2.1816	0.0068
120	2.1884	0.0068
121	2.1952	0.0068
122	2.2019	0.0067
123	2.2086	0.0067
124	2.2152	0.0067
125	2.2219	0.0066
126	2.2285	0.0066
127	2.2350	0.0066
128	2.2415	0.0065
129	2.2480	0.0065
130	2.2545	0.0065
131	2.2609	0.0064
132	2.2673	0.0064
133	2.2737	0.0064
134	2.2800	0.0063
135	2.2863	0.0063
136	2.2926	0.0063
137	2.2989	0.0063
138	2.3051	0.0062
139	2.3113	0.0062
140	2.3175	0.0062
141	2.3236	0.0061
142	2.3297	0.0061
143	2.3358	0.0061
144	2.3418	0.0061

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0061	0.0010	0.0051
2	0.0061	0.0010	0.0051
3	0.0061	0.0010	0.0051
4	0.0062	0.0010	0.0052
5	0.0062	0.0010	0.0052
6	0.0063	0.0010	0.0052
7	0.0063	0.0010	0.0053
8	0.0063	0.0010	0.0053
9	0.0064	0.0010	0.0054
10	0.0064	0.0010	0.0054
11	0.0065	0.0010	0.0054
12	0.0065	0.0011	0.0055
13	0.0066	0.0011	0.0055
14	0.0066	0.0011	0.0056
15	0.0067	0.0011	0.0056
16	0.0067	0.0011	0.0056
17	0.0068	0.0011	0.0057
18	0.0068	0.0011	0.0057
19	0.0069	0.0011	0.0058
20	0.0069	0.0011	0.0058
21	0.0070	0.0011	0.0059
22	0.0071	0.0011	0.0059
23	0.0071	0.0011	0.0060
24	0.0072	0.0012	0.0060
25	0.0073	0.0012	0.0061
26	0.0073	0.0012	0.0061
27	0.0074	0.0012	0.0062
28	0.0074	0.0012	0.0062
29	0.0075	0.0012	0.0063
30	0.0076	0.0012	0.0064
31	0.0077	0.0012	0.0064
32	0.0077	0.0012	0.0065
33	0.0078	0.0013	0.0066
34	0.0079	0.0013	0.0066
35	0.0080	0.0013	0.0067
36	0.0080	0.0013	0.0067
37	0.0081	0.0013	0.0068
38	0.0082	0.0013	0.0069
39	0.0083	0.0013	0.0070
40	0.0084	0.0014	0.0070

41	0.0085	0.0014	0.0071
42	0.0086	0.0014	0.0072
43	0.0087	0.0014	0.0073
44	0.0088	0.0014	0.0074
45	0.0089	0.0014	0.0075
46	0.0090	0.0014	0.0075
47	0.0091	0.0015	0.0077
48	0.0092	0.0015	0.0077
49	0.0118	0.0017	0.0101
50	0.0119	0.0017	0.0102
51	0.0120	0.0017	0.0104
52	0.0121	0.0017	0.0105
53	0.0123	0.0017	0.0107
54	0.0124	0.0017	0.0108
55	0.0126	0.0017	0.0110
56	0.0128	0.0017	0.0111
57	0.0130	0.0017	0.0113
58	0.0131	0.0017	0.0114
59	0.0133	0.0017	0.0117
60	0.0135	0.0017	0.0118
61	0.0137	0.0017	0.0121
62	0.0139	0.0017	0.0122
63	0.0142	0.0017	0.0125
64	0.0143	0.0017	0.0127
65	0.0146	0.0017	0.0130
66	0.0148	0.0017	0.0131
67	0.0152	0.0017	0.0135
68	0.0153	0.0017	0.0137
69	0.0157	0.0017	0.0141
70	0.0159	0.0017	0.0143
71	0.0164	0.0017	0.0147
72	0.0166	0.0017	0.0149
73	0.0173	0.0017	0.0156
74	0.0176	0.0017	0.0159
75	0.0181	0.0017	0.0165
76	0.0184	0.0017	0.0168
77	0.0191	0.0017	0.0174
78	0.0194	0.0017	0.0178
79	0.0202	0.0017	0.0185
80	0.0206	0.0017	0.0189
81	0.0215	0.0017	0.0198
82	0.0220	0.0017	0.0203
83	0.0231	0.0017	0.0215
84	0.0237	0.0017	0.0221
85	0.0251	0.0017	0.0235
86	0.0259	0.0017	0.0243
87	0.0278	0.0017	0.0261
88	0.0288	0.0017	0.0272
89	0.0269	0.0017	0.0252
90	0.0284	0.0017	0.0267
91	0.0322	0.0017	0.0305
92	0.0347	0.0017	0.0330
93	0.0472	0.0017	0.0455
94	0.0527	0.0017	0.0510
95	0.0727	0.0017	0.0711
96	0.0970	0.0017	0.0953
97	0.2600	0.0017	0.2583
98	0.0604	0.0017	0.0588
99	0.0378	0.0017	0.0361
100	0.0301	0.0017	0.0284
101	0.0300	0.0017	0.0284
102	0.0268	0.0017	0.0251
103	0.0244	0.0017	0.0227
104	0.0225	0.0017	0.0209
105	0.0210	0.0017	0.0194
106	0.0198	0.0017	0.0181
107	0.0187	0.0017	0.0171
108	0.0178	0.0017	0.0162
109	0.0168	0.0017	0.0152
110	0.0162	0.0017	0.0145
111	0.0155	0.0017	0.0139

```
      112              0.0150           0.0017              0.0133
      113              0.0145           0.0017              0.0128
      114              0.0140           0.0017              0.0124
      115              0.0136           0.0017              0.0119
      116              0.0132           0.0017              0.0116
      117              0.0129           0.0017              0.0112
      118              0.0125           0.0017              0.0109
      119              0.0122           0.0017              0.0106
      120              0.0119           0.0017              0.0103
      121              0.0093           0.0015              0.0078
      122              0.0091           0.0015              0.0076
      123              0.0088           0.0014              0.0074
      124              0.0086           0.0014              0.0073
      125              0.0084           0.0014              0.0071
      126              0.0083           0.0013              0.0069
      127              0.0081           0.0013              0.0068
      128              0.0079           0.0013              0.0067
      129              0.0078           0.0013              0.0065
      130              0.0076           0.0012              0.0064
      131              0.0075           0.0012              0.0063
      132              0.0073           0.0012              0.0062
      133              0.0072           0.0012              0.0061
      134              0.0071           0.0011              0.0060
      135              0.0070           0.0011              0.0059
      136              0.0069           0.0011              0.0058
      137              0.0068           0.0011              0.0057
      138              0.0067           0.0011              0.0056
      139              0.0066           0.0011              0.0055
      140              0.0065           0.0010              0.0054
      141              0.0064           0.0010              0.0053
      142              0.0063           0.0010              0.0053
      143              0.0062           0.0010              0.0052
      144              0.0061           0.0010              0.0051
      ------------------------------------------------------------------------
      ------------------------------------------------------------------------
      Total soil rain loss =      0.21(In)
      Total effective rainfall =      2.14(In)
      Peak flow rate in flood hydrograph =      3.60(CFS)
      ------------------------------------------------------------------------
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          12 - H O U R    S T O R M
                     R u n o f f      H y d r o g r a p h
      ------------------------------------------------------------------
                  Hydrograph in   5   Minute intervals ((CFS))

      ------------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0        2.5       5.0       7.5      10.0
----------------------------------------------------------------------------
  0+ 5       0.0001      0.02  Q         |         |         |         |
  0+10       0.0007      0.08  Q         |         |         |         |
  0+15       0.0013      0.10  Q         |         |         |         |
  0+20       0.0020      0.10  Q         |         |         |         |
  0+25       0.0028      0.10  Q         |         |         |         |
  0+30       0.0035      0.11  Q         |         |         |         |
  0+35       0.0042      0.11  Q         |         |         |         |
  0+40       0.0050      0.11  Q         |         |         |         |
  0+45       0.0057      0.11  Q         |         |         |         |
  0+50       0.0065      0.11  Q         |         |         |         |
  0+55       0.0072      0.11  Q         |         |         |         |
  1+ 0       0.0080      0.11  QV        |         |         |         |
  1+ 5       0.0087      0.11  QV        |         |         |         |
  1+10       0.0095      0.11  QV        |         |         |         |
  1+15       0.0103      0.11  QV        |         |         |         |
  1+20       0.0111      0.11  QV        |         |         |         |
  1+25       0.0119      0.11  QV        |         |         |         |
  1+30       0.0127      0.12  QV        |         |         |         |
  1+35       0.0135      0.12  QV        |         |         |         |
  1+40       0.0143      0.12  QV        |         |         |         |
  1+45       0.0151      0.12  Q V       |         |         |         |
  1+50       0.0159      0.12  Q V       |         |         |         |
  1+55       0.0167      0.12  Q V       |         |         |         |
```

```
2+ 0       0.0176      0.12  Q V       |         |         |         |
2+ 5       0.0184      0.12  Q V       |         |         |         |
2+10       0.0193      0.12  Q V       |         |         |         |
2+15       0.0201      0.12  Q V       |         |         |         |
2+20       0.0210      0.13  Q V       |         |         |         |
2+25       0.0219      0.13  Q V       |         |         |         |
2+30       0.0227      0.13  Q  V       |         |         |         |
2+35       0.0236      0.13  Q  V       |         |         |         |
2+40       0.0245      0.13  Q  V       |         |         |         |
2+45       0.0254      0.13  Q  V       |         |         |         |
2+50       0.0263      0.13  Q  V       |         |         |         |
2+55       0.0273      0.13  Q  V       |         |         |         |
3+ 0       0.0282      0.14  Q  V       |         |         |         |
3+ 5       0.0291      0.14  Q  V       |         |         |         |
3+10       0.0301      0.14  Q   V       |         |         |         |
3+15       0.0311      0.14  Q   V       |         |         |         |
3+20       0.0320      0.14  Q   V       |         |         |         |
3+25       0.0330      0.14  Q   V       |         |         |         |
3+30       0.0340      0.14  Q   V       |         |         |         |
3+35       0.0350      0.15  Q   V       |         |         |         |
3+40       0.0360      0.15  Q   V       |         |         |         |
3+45       0.0371      0.15  Q   V       |         |         |         |
3+50       0.0381      0.15  Q    V       |         |         |         |
3+55       0.0392      0.15  Q    V       |         |         |         |
4+ 0       0.0402      0.16  Q    V       |         |         |         |
4+ 5       0.0414      0.17  Q    V       |         |         |         |
4+10       0.0427      0.19  Q    V       |         |         |         |
4+15       0.0441      0.20  Q    V       |         |         |         |
4+20       0.0456      0.21  Q     V       |         |         |         |
4+25       0.0470      0.21  Q     V       |         |         |         |
4+30       0.0485      0.22  Q     V       |         |         |         |
4+35       0.0500      0.22  Q     V       |         |         |         |
4+40       0.0515      0.22  Q     V       |         |         |         |
4+45       0.0531      0.23  Q      V       |         |         |         |
4+50       0.0547      0.23  Q      V       |         |         |         |
4+55       0.0563      0.23  Q      V       |         |         |         |
5+ 0       0.0579      0.24  Q      V       |         |         |         |
5+ 5       0.0596      0.24  Q      V       |         |         |         |
5+10       0.0612      0.24  Q       V       |         |         |         |
5+15       0.0629      0.25  Q       V       |         |         |         |
5+20       0.0647      0.25  |Q      V       |         |         |         |
5+25       0.0665      0.26  |Q      V       |         |         |         |
5+30       0.0683      0.26  |Q       V|         |         |         |
5+35       0.0701      0.27  |Q       V|         |         |         |
5+40       0.0720      0.27  |Q       V|         |         |         |
5+45       0.0739      0.28  |Q       V|         |         |         |
5+50       0.0758      0.28  |Q        V         |         |         |
5+55       0.0778      0.29  |Q        V         |         |         |
6+ 0       0.0799      0.30  |Q        V         |         |         |
6+ 5       0.0820      0.30  |Q        V         |         |         |
6+10       0.0842      0.31  |Q        |V         |         |         |
6+15       0.0864      0.32  |Q        |V         |         |         |
6+20       0.0887      0.33  |Q        |V         |         |         |
6+25       0.0910      0.34  |Q        | V         |         |         |
6+30       0.0934      0.35  |Q        | V         |         |         |
6+35       0.0959      0.36  |Q        | V         |         |         |
6+40       0.0985      0.37  |Q        |  V         |         |         |
6+45       0.1011      0.38  |Q        |  V         |         |         |
6+50       0.1039      0.40  |Q        |  V         |         |         |
6+55       0.1067      0.41  |Q        |   V         |         |         |
7+ 0       0.1097      0.43  |Q        |   V         |         |         |
7+ 5       0.1128      0.45  |Q        |    V         |         |         |
7+10       0.1160      0.47  |Q        |    V         |         |         |
7+15       0.1194      0.49  |Q        |    V         |         |         |
7+20       0.1230      0.52  | Q       |     V         |         |         |
7+25       0.1267      0.54  | Q       |     V         |         |         |
7+30       0.1303      0.52  | Q       |      V         |         |         |
7+35       0.1342      0.55  | Q       |      V         |         |         |
7+40       0.1384      0.61  | Q       |       V         |         |         |
7+45       0.1432      0.70  | Q       |        V|         |         |
7+50       0.1492      0.88  |  Q      |        V|         |         |
```

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   7+55       0.1566      1.07  |   Q     |         V         |         |
   8+ 0       0.1664      1.43  |    Q    |         | V       |         |
   8+ 5       0.1832      2.43  |       Q |         |   V     |         |
   8+10       0.2079      3.60  |         |   Q     |      V  |         |
   8+15       0.2204      1.80  |      Q  |         |        V|         |
   8+20       0.2276      1.06  |   Q     |         |         V         |
   8+25       0.2326      0.72  | Q       |         |         |V        |
   8+30       0.2368      0.62  | Q       |         |         |V        |
   8+35       0.2405      0.53  | Q       |         |         | V       |
   8+40       0.2438      0.47  |Q        |         |         | V       |
   8+45       0.2467      0.43  |Q        |         |         |  V      |
   8+50       0.2495      0.40  |Q        |         |         |  V      |
   8+55       0.2521      0.37  |Q        |         |         |  V      |
   9+ 0       0.2545      0.35  |Q        |         |         |   V     |
   9+ 5       0.2568      0.33  |Q        |         |         |   V     |
   9+10       0.2589      0.31  |Q        |         |         |   V     |
   9+15       0.2610      0.30  |Q        |         |         |   V     |
   9+20       0.2630      0.28  |Q        |         |         |    V    |
   9+25       0.2648      0.27  |Q        |         |         |    V    |
   9+30       0.2666      0.26  |Q        |         |         |    V    |
   9+35       0.2684      0.25  |Q        |         |         |    V    |
   9+40       0.2701      0.24  Q         |         |         |     V   |
   9+45       0.2717      0.24  Q         |         |         |     V   |
   9+50       0.2733      0.23  Q         |         |         |     V   |
   9+55       0.2748      0.22  Q         |         |         |     V   |
  10+ 0       0.2763      0.22  Q         |         |         |     V   |
  10+ 5       0.2777      0.20  Q         |         |         |      V  |
  10+10       0.2788      0.17  Q         |         |         |      V  |
  10+15       0.2799      0.16  Q         |         |         |      V  |
  10+20       0.2810      0.15  Q         |         |         |      V  |
  10+25       0.2820      0.15  Q         |         |         |      V  |
  10+30       0.2830      0.14  Q         |         |         |      V  |
  10+35       0.2840      0.14  Q         |         |         |       V |
  10+40       0.2849      0.14  Q         |         |         |       V |
  10+45       0.2859      0.14  Q         |         |         |       V |
  10+50       0.2868      0.13  Q         |         |         |       V |
  10+55       0.2877      0.13  Q         |         |         |       V |
  11+ 0       0.2886      0.13  Q         |         |         |       V |
  11+ 5       0.2894      0.13  Q         |         |         |       V |
  11+10       0.2903      0.12  Q         |         |         |       V |
  11+15       0.2911      0.12  Q         |         |         |       V |
  11+20       0.2919      0.12  Q         |         |         |        V|
  11+25       0.2927      0.12  Q         |         |         |        V|
  11+30       0.2935      0.12  Q         |         |         |        V|
  11+35       0.2943      0.11  Q         |         |         |        V|
  11+40       0.2951      0.11  Q         |         |         |        V|
  11+45       0.2959      0.11  Q         |         |         |        V|
  11+50       0.2966      0.11  Q         |         |         |        V|
  11+55       0.2973      0.11  Q         |         |         |        V|
  12+ 0       0.2981      0.11  Q         |         |         |        V|
  12+ 5       0.2987      0.08  Q         |         |         |        V|
  12+10       0.2988      0.03  Q         |         |         |        V|
  12+15       0.2989      0.01  Q         |         |         |        V|
  12+20       0.2989      0.00  Q         |         |         |        V|
  12+25       0.2989      0.00  Q         |         |         |        V|
  12+30       0.2989      0.00  Q         |         |         |         V
-------------------------------------------------------------------------
```

- 5 Year 24 Hour Post-Development Unit Hydrograph – Area 'F'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989-2012, Version 7.2

       Study date  10/20/16   File Name prf00524.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'F' - 5 YEAR 24 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 5

       Antecedent Moisture Condition = 1

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 74.4       1.7          1.00     D     0.200     0.100    0.020

Area-averaged adjusted loss rate Fm (In/Hr) =  0.020

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC1)          Yield Fr
     0.17   0.100         74.4      56.3       7.77     0.078
     1.51   0.900         98.0      98.0       0.20     0.923

Area-averaged catchment yield fraction, Y =  0.839
Area-averaged low loss fraction, Yb =  0.161
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.091 (hours)
Watershed area =       1.68(Ac.)
Catchment Lag time =   0.073 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 114.8095
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.020(In/Hr)
Average low loss rate fraction (Yb) = 0.161 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.260(In)
Computed peak 30-minute rainfall =  0.590(In)
Specified peak 1-hour rainfall =  0.780(In)
Computed peak 3-hour rainfall =  1.310(In)
Specified peak 6-hour rainfall =  1.810(In)
Specified peak 24-hour rainfall =  3.030(In)


Rainfall depth area reduction factors:
Using a total area of       1.68(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000     Adjusted rainfall =  0.260(In)
```

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30-minute factor = 1.000    Adjusted rainfall =  0.590(In)
1-hour factor = 1.000       Adjusted rainfall =  0.780(In)
3-hour factor = 1.000       Adjusted rainfall =  1.310(In)
6-hour factor = 1.000       Adjusted rainfall =  1.810(In)
24-hour factor = 1.000 Adjusted rainfall =  3.030(In)
--------------------------------------------------------------------

                     U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------
               (K =        20.32 (CFS))

  1               19.643                   3.991
  2               75.813                  11.412
  3               92.011                   3.291
  4               97.656                   1.147
  5               99.076                   0.288
  6               99.801                   0.147
  7              100.000                   0.040
--------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.2600               0.2600
  2              0.3570               0.0970
  3              0.4297               0.0727
  4              0.4901               0.0604
  5              0.5428               0.0527
  6              0.5900               0.0472
  7              0.6277               0.0378
  8              0.6624               0.0347
  9              0.6946               0.0322
 10              0.7247               0.0301
 11              0.7531               0.0284
 12              0.7799               0.0269
 13              0.8100               0.0300
 14              0.8388               0.0288
 15              0.8666               0.0278
 16              0.8934               0.0268
 17              0.9193               0.0259
 18              0.9444               0.0251
 19              0.9689               0.0244
 20              0.9926               0.0237
 21              1.0157               0.0231
 22              1.0383               0.0225
 23              1.0603               0.0220
 24              1.0818               0.0215
 25              1.1029               0.0210
 26              1.1235               0.0206
 27              1.1437               0.0202
 28              1.1635               0.0198
 29              1.1829               0.0194
 30              1.2020               0.0191
 31              1.2207               0.0187
 32              1.2391               0.0184
 33              1.2573               0.0181
 34              1.2751               0.0178
 35              1.2927               0.0176
 36              1.3100               0.0173
 37              1.3268               0.0168
 38              1.3434               0.0166
 39              1.3598               0.0164
 40              1.3760               0.0162
 41              1.3919               0.0159
 42              1.4076               0.0157
 43              1.4232               0.0155
 44              1.4385               0.0153
 45              1.4537               0.0152
 46              1.4687               0.0150
 47              1.4835               0.0148
```

48	1.4981	0.0146
49	1.5126	0.0145
50	1.5269	0.0143
51	1.5411	0.0142
52	1.5551	0.0140
53	1.5690	0.0139
54	1.5827	0.0137
55	1.5963	0.0136
56	1.6098	0.0135
57	1.6231	0.0133
58	1.6364	0.0132
59	1.6495	0.0131
60	1.6624	0.0130
61	1.6753	0.0129
62	1.6881	0.0128
63	1.7007	0.0126
64	1.7132	0.0125
65	1.7257	0.0124
66	1.7380	0.0123
67	1.7502	0.0122
68	1.7624	0.0121
69	1.7744	0.0120
70	1.7864	0.0119
71	1.7982	0.0119
72	1.8100	0.0118
73	1.8193	0.0093
74	1.8285	0.0092
75	1.8377	0.0091
76	1.8467	0.0091
77	1.8557	0.0090
78	1.8646	0.0089
79	1.8735	0.0088
80	1.8823	0.0088
81	1.8910	0.0087
82	1.8996	0.0086
83	1.9082	0.0086
84	1.9167	0.0085
85	1.9252	0.0084
86	1.9336	0.0084
87	1.9419	0.0083
88	1.9501	0.0083
89	1.9584	0.0082
90	1.9665	0.0081
91	1.9746	0.0081
92	1.9826	0.0080
93	1.9906	0.0080
94	1.9985	0.0079
95	2.0064	0.0079
96	2.0142	0.0078
97	2.0220	0.0078
98	2.0297	0.0077
99	2.0374	0.0077
100	2.0450	0.0076
101	2.0526	0.0076
102	2.0601	0.0075
103	2.0676	0.0075
104	2.0751	0.0074
105	2.0825	0.0074
106	2.0898	0.0073
107	2.0971	0.0073
108	2.1044	0.0073
109	2.1116	0.0072
110	2.1188	0.0072
111	2.1259	0.0071
112	2.1330	0.0071
113	2.1401	0.0071
114	2.1471	0.0070
115	2.1541	0.0070
116	2.1610	0.0069
117	2.1679	0.0069
118	2.1748	0.0069

119	2.1816	0.0068
120	2.1884	0.0068
121	2.1952	0.0068
122	2.2019	0.0067
123	2.2086	0.0067
124	2.2152	0.0067
125	2.2219	0.0066
126	2.2285	0.0066
127	2.2350	0.0066
128	2.2415	0.0065
129	2.2480	0.0065
130	2.2545	0.0065
131	2.2609	0.0064
132	2.2673	0.0064
133	2.2737	0.0064
134	2.2800	0.0063
135	2.2863	0.0063
136	2.2926	0.0063
137	2.2989	0.0063
138	2.3051	0.0062
139	2.3113	0.0062
140	2.3175	0.0062
141	2.3236	0.0061
142	2.3297	0.0061
143	2.3358	0.0061
144	2.3418	0.0061
145	2.3479	0.0060
146	2.3539	0.0060
147	2.3599	0.0060
148	2.3658	0.0060
149	2.3717	0.0059
150	2.3777	0.0059
151	2.3835	0.0059
152	2.3894	0.0059
153	2.3952	0.0058
154	2.4010	0.0058
155	2.4068	0.0058
156	2.4126	0.0058
157	2.4183	0.0057
158	2.4240	0.0057
159	2.4297	0.0057
160	2.4354	0.0057
161	2.4410	0.0056
162	2.4466	0.0056
163	2.4522	0.0056
164	2.4578	0.0056
165	2.4634	0.0056
166	2.4689	0.0055
167	2.4744	0.0055
168	2.4799	0.0055
169	2.4854	0.0055
170	2.4909	0.0055
171	2.4963	0.0054
172	2.5017	0.0054
173	2.5071	0.0054
174	2.5125	0.0054
175	2.5179	0.0054
176	2.5232	0.0053
177	2.5285	0.0053
178	2.5338	0.0053
179	2.5391	0.0053
180	2.5444	0.0053
181	2.5496	0.0052
182	2.5548	0.0052
183	2.5600	0.0052
184	2.5652	0.0052
185	2.5704	0.0052
186	2.5755	0.0052
187	2.5807	0.0051
188	2.5858	0.0051
189	2.5909	0.0051

190	2.5960	0.0051
191	2.6011	0.0051
192	2.6061	0.0051
193	2.6112	0.0050
194	2.6162	0.0050
195	2.6212	0.0050
196	2.6262	0.0050
197	2.6311	0.0050
198	2.6361	0.0050
199	2.6410	0.0049
200	2.6460	0.0049
201	2.6509	0.0049
202	2.6558	0.0049
203	2.6606	0.0049
204	2.6655	0.0049
205	2.6704	0.0048
206	2.6752	0.0048
207	2.6800	0.0048
208	2.6848	0.0048
209	2.6896	0.0048
210	2.6944	0.0048
211	2.6991	0.0048
212	2.7039	0.0047
213	2.7086	0.0047
214	2.7133	0.0047
215	2.7180	0.0047
216	2.7227	0.0047
217	2.7274	0.0047
218	2.7321	0.0047
219	2.7367	0.0047
220	2.7414	0.0046
221	2.7460	0.0046
222	2.7506	0.0046
223	2.7552	0.0046
224	2.7598	0.0046
225	2.7644	0.0046
226	2.7689	0.0046
227	2.7735	0.0045
228	2.7780	0.0045
229	2.7825	0.0045
230	2.7870	0.0045
231	2.7915	0.0045
232	2.7960	0.0045
233	2.8005	0.0045
234	2.8050	0.0045
235	2.8094	0.0044
236	2.8138	0.0044
237	2.8183	0.0044
238	2.8227	0.0044
239	2.8271	0.0044
240	2.8315	0.0044
241	2.8359	0.0044
242	2.8402	0.0044
243	2.8446	0.0044
244	2.8489	0.0043
245	2.8533	0.0043
246	2.8576	0.0043
247	2.8619	0.0043
248	2.8662	0.0043
249	2.8705	0.0043
250	2.8748	0.0043
251	2.8790	0.0043
252	2.8833	0.0043
253	2.8875	0.0042
254	2.8918	0.0042
255	2.8960	0.0042
256	2.9002	0.0042
257	2.9044	0.0042
258	2.9086	0.0042
259	2.9128	0.0042
260	2.9170	0.0042

261	2.9211	0.0042
262	2.9253	0.0042
263	2.9294	0.0041
264	2.9336	0.0041
265	2.9377	0.0041
266	2.9418	0.0041
267	2.9459	0.0041
268	2.9500	0.0041
269	2.9541	0.0041
270	2.9582	0.0041
271	2.9622	0.0041
272	2.9663	0.0041
273	2.9704	0.0040
274	2.9744	0.0040
275	2.9784	0.0040
276	2.9824	0.0040
277	2.9865	0.0040
278	2.9905	0.0040
279	2.9945	0.0040
280	2.9984	0.0040
281	3.0024	0.0040
282	3.0064	0.0040
283	3.0103	0.0040
284	3.0143	0.0039
285	3.0182	0.0039
286	3.0222	0.0039
287	3.0261	0.0039
288	3.0300	0.0039

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0039	0.0006	0.0033
2	0.0039	0.0006	0.0033
3	0.0039	0.0006	0.0033
4	0.0039	0.0006	0.0033
5	0.0040	0.0006	0.0033
6	0.0040	0.0006	0.0033
7	0.0040	0.0006	0.0034
8	0.0040	0.0006	0.0034
9	0.0040	0.0006	0.0034
10	0.0040	0.0006	0.0034
11	0.0040	0.0007	0.0034
12	0.0041	0.0007	0.0034
13	0.0041	0.0007	0.0034
14	0.0041	0.0007	0.0034
15	0.0041	0.0007	0.0034
16	0.0041	0.0007	0.0035
17	0.0041	0.0007	0.0035
18	0.0041	0.0007	0.0035
19	0.0042	0.0007	0.0035
20	0.0042	0.0007	0.0035
21	0.0042	0.0007	0.0035
22	0.0042	0.0007	0.0035
23	0.0042	0.0007	0.0035
24	0.0042	0.0007	0.0036
25	0.0043	0.0007	0.0036
26	0.0043	0.0007	0.0036
27	0.0043	0.0007	0.0036
28	0.0043	0.0007	0.0036
29	0.0043	0.0007	0.0036
30	0.0043	0.0007	0.0036
31	0.0044	0.0007	0.0037
32	0.0044	0.0007	0.0037
33	0.0044	0.0007	0.0037
34	0.0044	0.0007	0.0037
35	0.0044	0.0007	0.0037
36	0.0044	0.0007	0.0037
37	0.0045	0.0007	0.0037
38	0.0045	0.0007	0.0038

39	0.0045	0.0007	0.0038
40	0.0045	0.0007	0.0038
41	0.0045	0.0007	0.0038
42	0.0045	0.0007	0.0038
43	0.0046	0.0007	0.0038
44	0.0046	0.0007	0.0038
45	0.0046	0.0007	0.0039
46	0.0046	0.0007	0.0039
47	0.0047	0.0007	0.0039
48	0.0047	0.0008	0.0039
49	0.0047	0.0008	0.0039
50	0.0047	0.0008	0.0039
51	0.0047	0.0008	0.0040
52	0.0047	0.0008	0.0040
53	0.0048	0.0008	0.0040
54	0.0048	0.0008	0.0040
55	0.0048	0.0008	0.0040
56	0.0048	0.0008	0.0041
57	0.0049	0.0008	0.0041
58	0.0049	0.0008	0.0041
59	0.0049	0.0008	0.0041
60	0.0049	0.0008	0.0041
61	0.0050	0.0008	0.0042
62	0.0050	0.0008	0.0042
63	0.0050	0.0008	0.0042
64	0.0050	0.0008	0.0042
65	0.0051	0.0008	0.0042
66	0.0051	0.0008	0.0043
67	0.0051	0.0008	0.0043
68	0.0051	0.0008	0.0043
69	0.0052	0.0008	0.0043
70	0.0052	0.0008	0.0043
71	0.0052	0.0008	0.0044
72	0.0052	0.0008	0.0044
73	0.0053	0.0008	0.0044
74	0.0053	0.0009	0.0044
75	0.0053	0.0009	0.0045
76	0.0053	0.0009	0.0045
77	0.0054	0.0009	0.0045
78	0.0054	0.0009	0.0045
79	0.0054	0.0009	0.0046
80	0.0055	0.0009	0.0046
81	0.0055	0.0009	0.0046
82	0.0055	0.0009	0.0046
83	0.0056	0.0009	0.0047
84	0.0056	0.0009	0.0047
85	0.0056	0.0009	0.0047
86	0.0056	0.0009	0.0047
87	0.0057	0.0009	0.0048
88	0.0057	0.0009	0.0048
89	0.0058	0.0009	0.0048
90	0.0058	0.0009	0.0049
91	0.0058	0.0009	0.0049
92	0.0059	0.0009	0.0049
93	0.0059	0.0010	0.0050
94	0.0059	0.0010	0.0050
95	0.0060	0.0010	0.0050
96	0.0060	0.0010	0.0050
97	0.0061	0.0010	0.0051
98	0.0061	0.0010	0.0051
99	0.0061	0.0010	0.0051
100	0.0062	0.0010	0.0052
101	0.0062	0.0010	0.0052
102	0.0063	0.0010	0.0052
103	0.0063	0.0010	0.0053
104	0.0063	0.0010	0.0053
105	0.0064	0.0010	0.0054
106	0.0064	0.0010	0.0054
107	0.0065	0.0010	0.0054
108	0.0065	0.0011	0.0055
109	0.0066	0.0011	0.0055

110	0.0066	0.0011	0.0056
111	0.0067	0.0011	0.0056
112	0.0067	0.0011	0.0056
113	0.0068	0.0011	0.0057
114	0.0068	0.0011	0.0057
115	0.0069	0.0011	0.0058
116	0.0069	0.0011	0.0058
117	0.0070	0.0011	0.0059
118	0.0071	0.0011	0.0059
119	0.0071	0.0011	0.0060
120	0.0072	0.0012	0.0060
121	0.0073	0.0012	0.0061
122	0.0073	0.0012	0.0061
123	0.0074	0.0012	0.0062
124	0.0074	0.0012	0.0062
125	0.0075	0.0012	0.0063
126	0.0076	0.0012	0.0064
127	0.0077	0.0012	0.0064
128	0.0077	0.0012	0.0065
129	0.0078	0.0013	0.0066
130	0.0079	0.0013	0.0066
131	0.0080	0.0013	0.0067
132	0.0080	0.0013	0.0067
133	0.0081	0.0013	0.0068
134	0.0082	0.0013	0.0069
135	0.0083	0.0013	0.0070
136	0.0084	0.0014	0.0070
137	0.0085	0.0014	0.0071
138	0.0086	0.0014	0.0072
139	0.0087	0.0014	0.0073
140	0.0088	0.0014	0.0074
141	0.0089	0.0014	0.0075
142	0.0090	0.0014	0.0075
143	0.0091	0.0015	0.0077
144	0.0092	0.0015	0.0077
145	0.0118	0.0017	0.0101
146	0.0119	0.0017	0.0102
147	0.0120	0.0017	0.0104
148	0.0121	0.0017	0.0105
149	0.0123	0.0017	0.0107
150	0.0124	0.0017	0.0108
151	0.0126	0.0017	0.0110
152	0.0128	0.0017	0.0111
153	0.0130	0.0017	0.0113
154	0.0131	0.0017	0.0114
155	0.0133	0.0017	0.0117
156	0.0135	0.0017	0.0118
157	0.0137	0.0017	0.0121
158	0.0139	0.0017	0.0122
159	0.0142	0.0017	0.0125
160	0.0143	0.0017	0.0127
161	0.0146	0.0017	0.0130
162	0.0148	0.0017	0.0131
163	0.0152	0.0017	0.0135
164	0.0153	0.0017	0.0137
165	0.0157	0.0017	0.0141
166	0.0159	0.0017	0.0143
167	0.0164	0.0017	0.0147
168	0.0166	0.0017	0.0149
169	0.0173	0.0017	0.0156
170	0.0176	0.0017	0.0159
171	0.0181	0.0017	0.0165
172	0.0184	0.0017	0.0168
173	0.0191	0.0017	0.0174
174	0.0194	0.0017	0.0178
175	0.0202	0.0017	0.0185
176	0.0206	0.0017	0.0189
177	0.0215	0.0017	0.0198
178	0.0220	0.0017	0.0203
179	0.0231	0.0017	0.0215
180	0.0237	0.0017	0.0221

181	0.0251	0.0017	0.0235
182	0.0259	0.0017	0.0243
183	0.0278	0.0017	0.0261
184	0.0288	0.0017	0.0272
185	0.0269	0.0017	0.0252
186	0.0284	0.0017	0.0267
187	0.0322	0.0017	0.0305
188	0.0347	0.0017	0.0330
189	0.0472	0.0017	0.0455
190	0.0527	0.0017	0.0510
191	0.0727	0.0017	0.0711
192	0.0970	0.0017	0.0953
193	0.2600	0.0017	0.2583
194	0.0604	0.0017	0.0588
195	0.0378	0.0017	0.0361
196	0.0301	0.0017	0.0284
197	0.0300	0.0017	0.0284
198	0.0268	0.0017	0.0251
199	0.0244	0.0017	0.0227
200	0.0225	0.0017	0.0209
201	0.0210	0.0017	0.0194
202	0.0198	0.0017	0.0181
203	0.0187	0.0017	0.0171
204	0.0178	0.0017	0.0162
205	0.0168	0.0017	0.0152
206	0.0162	0.0017	0.0145
207	0.0155	0.0017	0.0139
208	0.0150	0.0017	0.0133
209	0.0145	0.0017	0.0128
210	0.0140	0.0017	0.0124
211	0.0136	0.0017	0.0119
212	0.0132	0.0017	0.0116
213	0.0129	0.0017	0.0112
214	0.0125	0.0017	0.0109
215	0.0122	0.0017	0.0106
216	0.0119	0.0017	0.0103
217	0.0093	0.0015	0.0078
218	0.0091	0.0015	0.0076
219	0.0088	0.0014	0.0074
220	0.0086	0.0014	0.0073
221	0.0084	0.0014	0.0071
222	0.0083	0.0013	0.0069
223	0.0081	0.0013	0.0068
224	0.0079	0.0013	0.0067
225	0.0078	0.0013	0.0065
226	0.0076	0.0012	0.0064
227	0.0075	0.0012	0.0063
228	0.0073	0.0012	0.0062
229	0.0072	0.0012	0.0061
230	0.0071	0.0011	0.0060
231	0.0070	0.0011	0.0059
232	0.0069	0.0011	0.0058
233	0.0068	0.0011	0.0057
234	0.0067	0.0011	0.0056
235	0.0066	0.0011	0.0055
236	0.0065	0.0010	0.0054
237	0.0064	0.0010	0.0053
238	0.0063	0.0010	0.0053
239	0.0062	0.0010	0.0052
240	0.0061	0.0010	0.0051
241	0.0060	0.0010	0.0051
242	0.0060	0.0010	0.0050
243	0.0059	0.0009	0.0049
244	0.0058	0.0009	0.0049
245	0.0057	0.0009	0.0048
246	0.0057	0.0009	0.0048
247	0.0056	0.0009	0.0047
248	0.0055	0.0009	0.0046
249	0.0055	0.0009	0.0046
250	0.0054	0.0009	0.0045
251	0.0054	0.0009	0.0045

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      252              0.0053          0.0009              0.0044
      253              0.0052          0.0008              0.0044
      254              0.0052          0.0008              0.0044
      255              0.0051          0.0008              0.0043
      256              0.0051          0.0008              0.0043
      257              0.0050          0.0008              0.0042
      258              0.0050          0.0008              0.0042
      259              0.0049          0.0008              0.0041
      260              0.0049          0.0008              0.0041
      261              0.0048          0.0008              0.0041
      262              0.0048          0.0008              0.0040
      263              0.0048          0.0008              0.0040
      264              0.0047          0.0008              0.0040
      265              0.0047          0.0008              0.0039
      266              0.0046          0.0007              0.0039
      267              0.0046          0.0007              0.0039
      268              0.0046          0.0007              0.0038
      269              0.0045          0.0007              0.0038
      270              0.0045          0.0007              0.0038
      271              0.0044          0.0007              0.0037
      272              0.0044          0.0007              0.0037
      273              0.0044          0.0007              0.0037
      274              0.0043          0.0007              0.0036
      275              0.0043          0.0007              0.0036
      276              0.0043          0.0007              0.0036
      277              0.0042          0.0007              0.0036
      278              0.0042          0.0007              0.0035
      279              0.0042          0.0007              0.0035
      280              0.0042          0.0007              0.0035
      281              0.0041          0.0007              0.0035
      282              0.0041          0.0007              0.0034
      283              0.0041          0.0007              0.0034
      284              0.0040          0.0007              0.0034
      285              0.0040          0.0006              0.0034
      286              0.0040          0.0006              0.0033
      287              0.0040          0.0006              0.0033
      288              0.0039          0.0006              0.0033
      ---------------------------------------------------------------------
      ---------------------------------------------------------------------
      Total soil rain loss =      0.32(In)
      Total effective rainfall =      2.71(In)
      Peak flow rate in flood hydrograph =      3.60(CFS)
      ---------------------------------------------------------------------
      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                        24 - H O U R    S T O R M
                   R u n o f f      H y d r o g r a p h
      ---------------------------------------------------------------------
                Hydrograph in   5   Minute intervals ((CFS))

      ---------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0        2.5       5.0       7.5      10.0
---------------------------------------------------------------------------
  0+ 5       0.0001      0.01  Q         |         |         |         |
  0+10       0.0004      0.05  Q         |         |         |         |
  0+15       0.0009      0.06  Q         |         |         |         |
  0+20       0.0013      0.07  Q         |         |         |         |
  0+25       0.0018      0.07  Q         |         |         |         |
  0+30       0.0022      0.07  Q         |         |         |         |
  0+35       0.0027      0.07  Q         |         |         |         |
  0+40       0.0032      0.07  Q         |         |         |         |
  0+45       0.0036      0.07  Q         |         |         |         |
  0+50       0.0041      0.07  Q         |         |         |         |
  0+55       0.0046      0.07  Q         |         |         |         |
  1+ 0       0.0051      0.07  Q         |         |         |         |
  1+ 5       0.0055      0.07  Q         |         |         |         |
  1+10       0.0060      0.07  Q         |         |         |         |
  1+15       0.0065      0.07  Q         |         |         |         |
  1+20       0.0070      0.07  Q         |         |         |         |
  1+25       0.0075      0.07  Q         |         |         |         |
  1+30       0.0079      0.07  Q         |         |         |         |
  1+35       0.0084      0.07  Q         |         |         |         |
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1+40       0.0089      0.07  Q          |          |          |          |
1+45       0.0094      0.07  Q          |          |          |          |
1+50       0.0099      0.07  QV         |          |          |          |
1+55       0.0104      0.07  QV         |          |          |          |
2+ 0       0.0109      0.07  QV         |          |          |          |
2+ 5       0.0114      0.07  QV         |          |          |          |
2+10       0.0119      0.07  QV         |          |          |          |
2+15       0.0124      0.07  QV         |          |          |          |
2+20       0.0129      0.07  QV         |          |          |          |
2+25       0.0134      0.07  QV         |          |          |          |
2+30       0.0139      0.07  QV         |          |          |          |
2+35       0.0144      0.07  QV         |          |          |          |
2+40       0.0149      0.07  QV         |          |          |          |
2+45       0.0154      0.07  QV         |          |          |          |
2+50       0.0160      0.07  QV         |          |          |          |
2+55       0.0165      0.08  QV         |          |          |          |
3+ 0       0.0170      0.08  QV         |          |          |          |
3+ 5       0.0175      0.08  QV         |          |          |          |
3+10       0.0180      0.08  QV         |          |          |          |
3+15       0.0186      0.08  QV         |          |          |          |
3+20       0.0191      0.08  Q V        |          |          |          |
3+25       0.0196      0.08  Q V        |          |          |          |
3+30       0.0201      0.08  Q V        |          |          |          |
3+35       0.0207      0.08  Q V        |          |          |          |
3+40       0.0212      0.08  Q V        |          |          |          |
3+45       0.0218      0.08  Q V        |          |          |          |
3+50       0.0223      0.08  Q V        |          |          |          |
3+55       0.0228      0.08  Q V        |          |          |          |
4+ 0       0.0234      0.08  Q V        |          |          |          |
4+ 5       0.0239      0.08  Q V        |          |          |          |
4+10       0.0245      0.08  Q V        |          |          |          |
4+15       0.0250      0.08  Q V        |          |          |          |
4+20       0.0256      0.08  Q V        |          |          |          |
4+25       0.0261      0.08  Q V        |          |          |          |
4+30       0.0267      0.08  Q V        |          |          |          |
4+35       0.0273      0.08  Q V        |          |          |          |
4+40       0.0278      0.08  Q V        |          |          |          |
4+45       0.0284      0.08  Q V        |          |          |          |
4+50       0.0290      0.08  Q  V       |          |          |          |
4+55       0.0295      0.08  Q  V       |          |          |          |
5+ 0       0.0301      0.08  Q  V       |          |          |          |
5+ 5       0.0307      0.08  Q  V       |          |          |          |
5+10       0.0313      0.08  Q  V       |          |          |          |
5+15       0.0319      0.08  Q  V       |          |          |          |
5+20       0.0324      0.09  Q  V       |          |          |          |
5+25       0.0330      0.09  Q  V       |          |          |          |
5+30       0.0336      0.09  Q  V       |          |          |          |
5+35       0.0342      0.09  Q  V       |          |          |          |
5+40       0.0348      0.09  Q  V       |          |          |          |
5+45       0.0354      0.09  Q  V       |          |          |          |
5+50       0.0360      0.09  Q  V       |          |          |          |
5+55       0.0366      0.09  Q  V       |          |          |          |
6+ 0       0.0372      0.09  Q  V       |          |          |          |
6+ 5       0.0379      0.09  Q  V       |          |          |          |
6+10       0.0385      0.09  Q   V      |          |          |          |
6+15       0.0391      0.09  Q   V      |          |          |          |
6+20       0.0397      0.09  Q   V      |          |          |          |
6+25       0.0403      0.09  Q   V      |          |          |          |
6+30       0.0410      0.09  Q   V      |          |          |          |
6+35       0.0416      0.09  Q   V      |          |          |          |
6+40       0.0422      0.09  Q   V      |          |          |          |
6+45       0.0429      0.09  Q   V      |          |          |          |
6+50       0.0435      0.09  Q   V      |          |          |          |
6+55       0.0442      0.09  Q   V      |          |          |          |
7+ 0       0.0448      0.09  Q   V      |          |          |          |
7+ 5       0.0455      0.10  Q   V      |          |          |          |
7+10       0.0461      0.10  Q   V      |          |          |          |
7+15       0.0468      0.10  Q   V      |          |          |          |
7+20       0.0475      0.10  Q    V     |          |          |          |
7+25       0.0481      0.10  Q    V     |          |          |          |
7+30       0.0488      0.10  Q    V     |          |          |          |
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 7+35      0.0495      0.10  Q    V    |         |         |         |
 7+40      0.0502      0.10  Q    V    |         |         |         |
 7+45      0.0509      0.10  Q    V    |         |         |         |
 7+50      0.0516      0.10  Q    V    |         |         |         |
 7+55      0.0523      0.10  Q    V    |         |         |         |
 8+ 0      0.0530      0.10  Q    V    |         |         |         |
 8+ 5      0.0537      0.10  Q    V    |         |         |         |
 8+10      0.0544      0.10  Q    V    |         |         |         |
 8+15      0.0551      0.10  Q    V    |         |         |         |
 8+20      0.0558      0.10  Q    V    |         |         |         |
 8+25      0.0565      0.11  Q    V    |         |         |         |
 8+30      0.0573      0.11  Q     V   |         |         |         |
 8+35      0.0580      0.11  Q     V   |         |         |         |
 8+40      0.0587      0.11  Q     V   |         |         |         |
 8+45      0.0595      0.11  Q     V   |         |         |         |
 8+50      0.0602      0.11  Q     V   |         |         |         |
 8+55      0.0610      0.11  Q     V   |         |         |         |
 9+ 0      0.0617      0.11  Q     V   |         |         |         |
 9+ 5      0.0625      0.11  Q     V   |         |         |         |
 9+10      0.0633      0.11  Q     V   |         |         |         |
 9+15      0.0641      0.11  Q     V   |         |         |         |
 9+20      0.0648      0.11  Q     V   |         |         |         |
 9+25      0.0656      0.11  Q     V   |         |         |         |
 9+30      0.0664      0.12  Q     V   |         |         |         |
 9+35      0.0672      0.12  Q      V  |         |         |         |
 9+40      0.0680      0.12  Q      V  |         |         |         |
 9+45      0.0688      0.12  Q      V  |         |         |         |
 9+50      0.0697      0.12  Q      V  |         |         |         |
 9+55      0.0705      0.12  Q      V  |         |         |         |
10+ 0      0.0713      0.12  Q      V  |         |         |         |
10+ 5      0.0722      0.12  Q      V  |         |         |         |
10+10      0.0730      0.12  Q      V  |         |         |         |
10+15      0.0739      0.12  Q      V  |         |         |         |
10+20      0.0747      0.13  Q      V  |         |         |         |
10+25      0.0756      0.13  Q      V  |         |         |         |
10+30      0.0765      0.13  Q       V |         |         |         |
10+35      0.0774      0.13  Q       V |         |         |         |
10+40      0.0783      0.13  Q       V |         |         |         |
10+45      0.0792      0.13  Q       V |         |         |         |
10+50      0.0801      0.13  Q       V |         |         |         |
10+55      0.0810      0.13  Q       V |         |         |         |
11+ 0      0.0820      0.14  Q       V |         |         |         |
11+ 5      0.0829      0.14  Q       V |         |         |         |
11+10      0.0839      0.14  Q       V |         |         |         |
11+15      0.0848      0.14  Q       V |         |         |         |
11+20      0.0858      0.14  Q        V|         |         |         |
11+25      0.0868      0.14  Q        V|         |         |         |
11+30      0.0878      0.14  Q        V|         |         |         |
11+35      0.0888      0.15  Q        V|         |         |         |
11+40      0.0898      0.15  Q        V|         |         |         |
11+45      0.0908      0.15  Q        V|         |         |         |
11+50      0.0919      0.15  Q        V|         |         |         |
11+55      0.0929      0.15  Q        V|         |         |         |
12+ 0      0.0940      0.16  Q        V|         |         |         |
12+ 5      0.0952      0.17  Q         V         |         |         |
12+10      0.0965      0.19  Q         V         |         |         |
12+15      0.0979      0.20  Q         V         |         |         |
12+20      0.0993      0.21  Q         V         |         |         |
12+25      0.1008      0.21  Q         V         |         |         |
12+30      0.1023      0.22  Q         V         |         |         |
12+35      0.1038      0.22  Q         V         |         |         |
12+40      0.1053      0.22  Q          |V        |         |         |
12+45      0.1069      0.23  Q          |V        |         |         |
12+50      0.1084      0.23  Q          |V        |         |         |
12+55      0.1100      0.23  Q          |V        |         |         |
13+ 0      0.1117      0.24  Q          |V        |         |         |
13+ 5      0.1133      0.24  Q          |V        |         |         |
13+10      0.1150      0.24  Q          | V       |         |         |
13+15      0.1167      0.25  Q          | V       |         |         |
13+20      0.1185      0.25  |Q         | V       |         |         |
13+25      0.1202      0.26  |Q         | V       |         |         |
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```
13+30       0.1220      0.26  |Q        | V       |         |         |
13+35       0.1239      0.27  |Q        |  V      |         |         |
13+40       0.1257      0.27  |Q        |  V      |         |         |
13+45       0.1277      0.28  |Q        |  V      |         |         |
13+50       0.1296      0.28  |Q        |  V      |         |         |
13+55       0.1316      0.29  |Q        |  V      |         |         |
14+ 0       0.1337      0.30  |Q        |   V     |         |         |
14+ 5       0.1358      0.30  |Q        |   V     |         |         |
14+10       0.1379      0.31  |Q        |   V     |         |         |
14+15       0.1401      0.32  |Q        |   V     |         |         |
14+20       0.1424      0.33  |Q        |    V    |         |         |
14+25       0.1448      0.34  |Q        |    V    |         |         |
14+30       0.1472      0.35  |Q        |    V    |         |         |
14+35       0.1497      0.36  |Q        |    V    |         |         |
14+40       0.1523      0.37  |Q        |     V   |         |         |
14+45       0.1549      0.38  |Q        |     V   |         |         |
14+50       0.1577      0.40  |Q        |     V   |         |         |
14+55       0.1605      0.41  |Q        |     V   |         |         |
15+ 0       0.1635      0.43  |Q        |      V  |         |         |
15+ 5       0.1666      0.45  |Q        |      V  |         |         |
15+10       0.1698      0.47  |Q        |      V  |         |         |
15+15       0.1732      0.49  |Q        |       V |         |         |
15+20       0.1768      0.52  | Q       |       V |         |         |
15+25       0.1805      0.54  | Q       |        V|         |         |
15+30       0.1841      0.52  | Q       |        V|         |         |
15+35       0.1879      0.55  | Q       |        V|         |         |
15+40       0.1921      0.61  | Q       |         V         |         |
15+45       0.1970      0.70  | Q       |         V         |         |
15+50       0.2030      0.88  |  Q      |         |V        |         |
15+55       0.2104      1.07  |   Q     |         | V       |         |
16+ 0       0.2202      1.43  |    Q    |         |  V      |         |
16+ 5       0.2369      2.43  |       Q |         |   V     |         |
16+10       0.2617      3.60  |         |   Q     |      V  |         |
16+15       0.2741      1.80  |      Q  |         |       V |         |
16+20       0.2814      1.06  |   Q     |         |        V|         |
16+25       0.2863      0.72  | Q       |         |         V         |
16+30       0.2906      0.62  | Q       |         |         V         |
16+35       0.2943      0.53  | Q       |         |         |V        |
16+40       0.2975      0.47  |Q        |         |         |V        |
16+45       0.3005      0.43  |Q        |         |         |V        |
16+50       0.3033      0.40  |Q        |         |         |V        |
16+55       0.3059      0.37  |Q        |         |         | V       |
17+ 0       0.3083      0.35  |Q        |         |         | V       |
17+ 5       0.3106      0.33  |Q        |         |         | V       |
17+10       0.3127      0.31  |Q        |         |         | V       |
17+15       0.3148      0.30  |Q        |         |         |  V      |
17+20       0.3167      0.28  |Q        |         |         |  V      |
17+25       0.3186      0.27  |Q        |         |         |  V      |
17+30       0.3204      0.26  |Q        |         |         |  V      |
17+35       0.3221      0.25  |Q        |         |         |  V      |
17+40       0.3238      0.24  Q         |         |         |   V     |
17+45       0.3255      0.24  Q         |         |         |   V     |
17+50       0.3270      0.23  Q         |         |         |   V     |
17+55       0.3286      0.22  Q         |         |         |   V     |
18+ 0       0.3300      0.22  Q         |         |         |   V     |
18+ 5       0.3314      0.20  Q         |         |         |   V     |
18+10       0.3326      0.17  Q         |         |         |    V    |
18+15       0.3337      0.16  Q         |         |         |    V    |
18+20       0.3348      0.15  Q         |         |         |    V    |
18+25       0.3358      0.15  Q         |         |         |    V    |
18+30       0.3368      0.14  Q         |         |         |    V    |
18+35       0.3377      0.14  Q         |         |         |    V    |
18+40       0.3387      0.14  Q         |         |         |    V    |
18+45       0.3396      0.14  Q         |         |         |    V    |
18+50       0.3406      0.13  Q         |         |         |    V    |
18+55       0.3414      0.13  Q         |         |         |    V    |
19+ 0       0.3423      0.13  Q         |         |         |     V   |
19+ 5       0.3432      0.13  Q         |         |         |     V   |
19+10       0.3440      0.12  Q         |         |         |     V   |
19+15       0.3449      0.12  Q         |         |         |     V   |
19+20       0.3457      0.12  Q         |         |         |     V   |
```

```
  19+25       0.3465      0.12  Q          |          |          |     V    |
  19+30       0.3473      0.12  Q          |          |          |     V    |
  19+35       0.3481      0.11  Q          |          |          |     V    |
  19+40       0.3489      0.11  Q          |          |          |     V    |
  19+45       0.3496      0.11  Q          |          |          |     V    |
  19+50       0.3504      0.11  Q          |          |          |     V    |
  19+55       0.3511      0.11  Q          |          |          |     V    |
  20+ 0       0.3518      0.11  Q          |          |          |      V   |
  20+ 5       0.3526      0.10  Q          |          |          |      V   |
  20+10       0.3533      0.10  Q          |          |          |      V   |
  20+15       0.3540      0.10  Q          |          |          |      V   |
  20+20       0.3547      0.10  Q          |          |          |      V   |
  20+25       0.3553      0.10  Q          |          |          |      V   |
  20+30       0.3560      0.10  Q          |          |          |      V   |
  20+35       0.3567      0.10  Q          |          |          |      V   |
  20+40       0.3573      0.10  Q          |          |          |      V   |
  20+45       0.3580      0.09  Q          |          |          |      V   |
  20+50       0.3586      0.09  Q          |          |          |      V   |
  20+55       0.3593      0.09  Q          |          |          |      V   |
  21+ 0       0.3599      0.09  Q          |          |          |      V   |
  21+ 5       0.3605      0.09  Q          |          |          |      V   |
  21+10       0.3611      0.09  Q          |          |          |       V  |
  21+15       0.3618      0.09  Q          |          |          |       V  |
  21+20       0.3624      0.09  Q          |          |          |       V  |
  21+25       0.3630      0.09  Q          |          |          |       V  |
  21+30       0.3636      0.09  Q          |          |          |       V  |
  21+35       0.3641      0.09  Q          |          |          |       V  |
  21+40       0.3647      0.08  Q          |          |          |       V  |
  21+45       0.3653      0.08  Q          |          |          |       V  |
  21+50       0.3659      0.08  Q          |          |          |       V  |
  21+55       0.3664      0.08  Q          |          |          |       V  |
  22+ 0       0.3670      0.08  Q          |          |          |       V  |
  22+ 5       0.3675      0.08  Q          |          |          |       V  |
  22+10       0.3681      0.08  Q          |          |          |       V  |
  22+15       0.3686      0.08  Q          |          |          |       V  |
  22+20       0.3692      0.08  Q          |          |          |       V  |
  22+25       0.3697      0.08  Q          |          |          |       V  |
  22+30       0.3702      0.08  Q          |          |          |        V |
  22+35       0.3708      0.08  Q          |          |          |        V |
  22+40       0.3713      0.08  Q          |          |          |        V |
  22+45       0.3718      0.08  Q          |          |          |        V |
  22+50       0.3723      0.07  Q          |          |          |        V |
  22+55       0.3728      0.07  Q          |          |          |        V |
  23+ 0       0.3734      0.07  Q          |          |          |        V |
  23+ 5       0.3739      0.07  Q          |          |          |        V |
  23+10       0.3744      0.07  Q          |          |          |        V |
  23+15       0.3748      0.07  Q          |          |          |        V |
  23+20       0.3753      0.07  Q          |          |          |        V |
  23+25       0.3758      0.07  Q          |          |          |        V |
  23+30       0.3763      0.07  Q          |          |          |        V |
  23+35       0.3768      0.07  Q          |          |          |        V |
  23+40       0.3773      0.07  Q          |          |          |        V |
  23+45       0.3777      0.07  Q          |          |          |        V |
  23+50       0.3782      0.07  Q          |          |          |        V |
  23+55       0.3787      0.07  Q          |          |          |        V |
  24+ 0       0.3792      0.07  Q          |          |          |        V |
  24+ 5       0.3795      0.05  Q          |          |          |        V |
  24+10       0.3796      0.02  Q          |          |          |        V |
  24+15       0.3797      0.01  Q          |          |          |        V |
  24+20       0.3797      0.00  Q          |          |          |        V |
  24+25       0.3797      0.00  Q          |          |          |        V |
  24+30       0.3797      0.00  Q          |          |          |         V
-------------------------------------------------------------------------
```

- 25 Year 3 Hour Post-Development Unit Hydrograph – Area 'F'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/20/16   File Name prf02503.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'F' - 25 YEAR 3 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 25

       Antecedent Moisture Condition = 2

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 74.4       1.7          1.00     D     0.200     0.100    0.020

Area-averaged adjusted loss rate Fm (In/Hr) =  0.020

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC2)          Yield Fr
     0.17   0.100         74.4      74.4       3.44     0.444
     1.51   0.900         98.0      98.0       0.20     0.947

Area-averaged catchment yield fraction, Y =  0.897
Area-averaged low loss fraction, Yb =  0.103
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.091 (hours)
Watershed area =       1.68(Ac.)
Catchment Lag time =   0.073 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 114.8095
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.020(In/Hr)
Average low loss rate fraction (Yb) = 0.103 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.400(In)
Computed peak 30-minute rainfall =  0.870(In)
Specified peak 1-hour rainfall =  1.150(In)
Computed peak 3-hour rainfall =  1.940(In)
Specified peak 6-hour rainfall =  2.710(In)
Specified peak 24-hour rainfall =  4.490(In)


Rainfall depth area reduction factors:
Using a total area of       1.68(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000     Adjusted rainfall =  0.400(In)
```

```
30-minute factor = 1.000    Adjusted rainfall =  0.870(In)
1-hour factor = 1.000       Adjusted rainfall =  1.150(In)
3-hour factor = 1.000       Adjusted rainfall =  1.940(In)
6-hour factor = 1.000       Adjusted rainfall =  2.710(In)
24-hour factor = 1.000 Adjusted rainfall =  4.490(In)
--------------------------------------------------------------------

                     U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------
               (K =        20.32 (CFS))

  1               19.643                   3.991
  2               75.813                  11.412
  3               92.011                   3.291
  4               97.656                   1.147
  5               99.076                   0.288
  6               99.801                   0.147
  7              100.000                   0.040
--------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.4000               0.4000
  2              0.5402               0.1403
  3              0.6441               0.1039
  4              0.7297               0.0856
  5              0.8038               0.0741
  6              0.8699               0.0661
  7              0.9256               0.0557
  8              0.9767               0.0511
  9              1.0242               0.0474
 10              1.0685               0.0444
 11              1.1103               0.0418
 12              1.1499               0.0396
 13              1.1946               0.0447
 14              1.2375               0.0429
 15              1.2788               0.0413
 16              1.3187               0.0399
 17              1.3573               0.0386
 18              1.3947               0.0374
 19              1.4311               0.0364
 20              1.4665               0.0354
 21              1.5009               0.0345
 22              1.5345               0.0336
 23              1.5674               0.0328
 24              1.5994               0.0321
 25              1.6308               0.0314
 26              1.6616               0.0307
 27              1.6917               0.0301
 28              1.7212               0.0295
 29              1.7502               0.0290
 30              1.7787               0.0285
 31              1.8067               0.0280
 32              1.8342               0.0275
 33              1.8613               0.0271
 34              1.8879               0.0266
 35              1.9141               0.0262
 36              1.9400               0.0258
--------------------------------------------------------------------
Unit              Unit            Unit             Effective
Period            Rainfall        Soil-Loss        Rainfall
(number)            (In)          (In)               (In)
--------------------------------------------------------------------
  1              0.0258          0.0017             0.0242
  2              0.0262          0.0017             0.0246
  3              0.0271          0.0017             0.0254
  4              0.0275          0.0017             0.0258
  5              0.0285          0.0017             0.0268
  6              0.0290          0.0017             0.0273
```

7	0.0301	0.0017	0.0285
8	0.0307	0.0017	0.0291
9	0.0321	0.0017	0.0304
10	0.0328	0.0017	0.0312
11	0.0345	0.0017	0.0328
12	0.0354	0.0017	0.0337
13	0.0374	0.0017	0.0358
14	0.0386	0.0017	0.0369
15	0.0413	0.0017	0.0397
16	0.0429	0.0017	0.0412
17	0.0396	0.0017	0.0379
18	0.0418	0.0017	0.0401
19	0.0474	0.0017	0.0458
20	0.0511	0.0017	0.0494
21	0.0661	0.0017	0.0645
22	0.0741	0.0017	0.0725
23	0.1039	0.0017	0.1022
24	0.1403	0.0017	0.1386
25	0.4000	0.0017	0.3983
26	0.0856	0.0017	0.0839
27	0.0557	0.0017	0.0540
28	0.0444	0.0017	0.0427
29	0.0447	0.0017	0.0430
30	0.0399	0.0017	0.0382
31	0.0364	0.0017	0.0347
32	0.0336	0.0017	0.0319
33	0.0314	0.0017	0.0297
34	0.0295	0.0017	0.0279
35	0.0280	0.0017	0.0263
36	0.0266	0.0017	0.0250

Total soil rain loss = 0.06(In)
Total effective rainfall = 1.88(In)
Peak flow rate in flood hydrograph = 5.49(CFS)

++

3 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0 2.5 5.0 7.5 10.0
0+ 5	0.0007	0.10	Q | | | |
0+10	0.0032	0.37	VQ | | | |
0+15	0.0064	0.46	VQ | | | |
0+20	0.0099	0.50	|VQ | | | |
0+25	0.0135	0.52	| Q | | | |
0+30	0.0172	0.54	| Q | | | |
0+35	0.0210	0.56	| QV | | | |
0+40	0.0250	0.57	| QV | | | |
0+45	0.0290	0.59	| Q V | | | |
0+50	0.0332	0.61	| Q V | | | |
0+55	0.0376	0.63	| Q V | | | |
1+ 0	0.0421	0.66	| Q V | | | |
1+ 5	0.0469	0.69	| Q V | | | |
1+10	0.0518	0.72	| Q V | | | |
1+15	0.0570	0.75	| Q V | | | |
1+20	0.0625	0.80	| Q V| | | |
1+25	0.0681	0.81	| Q V | | |
1+30	0.0735	0.79	| Q |V | | |
1+35	0.0792	0.83	| Q | V | | |
1+40	0.0855	0.91	| Q | V | | |
1+45	0.0927	1.04	| Q | V | | |
1+50	0.1013	1.26	| Q | V | | |
1+55	0.1118	1.52	| Q | V | | |
2+ 0	0.1260	2.05	| Q | V| | |
2+ 5	0.1509	3.62	| | Q | V | |
2+10	0.1887	5.49	| | |Q V | |

```
    2+15       0.2072      2.69  |          Q         |          |V         |
    2+20       0.2181      1.58  |      Q     |       |          |  V       |
    2+25       0.2254      1.07  |    Q       |       |          |   V      |
    2+30       0.2319      0.93  |  Q         |       |          |    V     |
    2+35       0.2374      0.81  |  Q         |       |          |     V    |
    2+40       0.2424      0.72  | Q          |       |          |     V    |
    2+45       0.2470      0.66  | Q          |       |          |      V   |
    2+50       0.2512      0.61  | Q          |       |          |       V  |
    2+55       0.2552      0.57  | Q          |       |          |       V  |
    3+ 0       0.2589      0.54  | Q          |       |          |        V |
    3+ 5       0.2618      0.42  |Q           |       |          |        V |
    3+10       0.2627      0.13  Q            |       |          |        V |
    3+15       0.2629      0.04  Q            |       |          |        V |
    3+20       0.2630      0.01  Q            |       |          |        V |
    3+25       0.2631      0.00  Q            |       |          |        V |
    3+30       0.2631      0.00  Q            |       |          |         V
-------------------------------------------------------------------------
```

- 25 Year 6 Hour Post-Development Unit Hydrograph – Area 'F'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/20/16   File Name prf02506.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

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RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'F' - 25 YEAR 6 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 25

       Antecedent Moisture Condition = 2

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 74.4       1.7          1.00     D     0.200     0.100    0.020

Area-averaged adjusted loss rate Fm (In/Hr) =  0.020

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC2)          Yield Fr
     0.17   0.100         74.4      74.4       3.44     0.444
     1.51   0.900         98.0      98.0       0.20     0.947

Area-averaged catchment yield fraction, Y =  0.897
Area-averaged low loss fraction, Yb =  0.103
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.091 (hours)
Watershed area =       1.68(Ac.)
Catchment Lag time =   0.073 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 114.8095
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.020(In/Hr)
Average low loss rate fraction (Yb) = 0.103 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.400(In)
Computed peak 30-minute rainfall =  0.870(In)
Specified peak 1-hour rainfall =  1.150(In)
Computed peak 3-hour rainfall =  1.940(In)
Specified peak 6-hour rainfall =  2.710(In)
Specified peak 24-hour rainfall =  4.490(In)


Rainfall depth area reduction factors:
Using a total area of       1.68(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000     Adjusted rainfall =  0.400(In)
```

```
30-minute factor = 1.000    Adjusted rainfall =  0.870(In)
1-hour factor = 1.000       Adjusted rainfall =  1.150(In)
3-hour factor = 1.000       Adjusted rainfall =  1.940(In)
6-hour factor = 1.000       Adjusted rainfall =  2.710(In)
24-hour factor = 1.000 Adjusted rainfall =  4.490(In)
------------------------------------------------------------------------

                      U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
------------------------------------------------------------------------
               (K =        20.32 (CFS))

  1               19.643                   3.991
  2               75.813                  11.412
  3               92.011                   3.291
  4               97.656                   1.147
  5               99.076                   0.288
  6               99.801                   0.147
  7              100.000                   0.040
------------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.4000               0.4000
  2              0.5402               0.1403
  3              0.6441               0.1039
  4              0.7297               0.0856
  5              0.8038               0.0741
  6              0.8699               0.0661
  7              0.9256               0.0557
  8              0.9767               0.0511
  9              1.0242               0.0474
 10              1.0685               0.0444
 11              1.1103               0.0418
 12              1.1499               0.0396
 13              1.1946               0.0447
 14              1.2375               0.0429
 15              1.2788               0.0413
 16              1.3187               0.0399
 17              1.3573               0.0386
 18              1.3947               0.0374
 19              1.4311               0.0364
 20              1.4665               0.0354
 21              1.5009               0.0345
 22              1.5345               0.0336
 23              1.5674               0.0328
 24              1.5994               0.0321
 25              1.6308               0.0314
 26              1.6616               0.0307
 27              1.6917               0.0301
 28              1.7212               0.0295
 29              1.7502               0.0290
 30              1.7787               0.0285
 31              1.8067               0.0280
 32              1.8342               0.0275
 33              1.8613               0.0271
 34              1.8879               0.0266
 35              1.9141               0.0262
 36              1.9400               0.0258
 37              1.9658               0.0258
 38              1.9912               0.0254
 39              2.0163               0.0251
 40              2.0411               0.0248
 41              2.0655               0.0245
 42              2.0897               0.0241
 43              2.1135               0.0238
 44              2.1371               0.0236
 45              2.1604               0.0233
 46              2.1834               0.0230
 47              2.2062               0.0228
```

48	2.2287	0.0225
49	2.2510	0.0223
50	2.2730	0.0220
51	2.2948	0.0218
52	2.3164	0.0216
53	2.3378	0.0214
54	2.3589	0.0212
55	2.3799	0.0210
56	2.4007	0.0208
57	2.4213	0.0206
58	2.4416	0.0204
59	2.4619	0.0202
60	2.4819	0.0200
61	2.5018	0.0199
62	2.5214	0.0197
63	2.5410	0.0195
64	2.5603	0.0194
65	2.5796	0.0192
66	2.5986	0.0191
67	2.6175	0.0189
68	2.6363	0.0188
69	2.6549	0.0186
70	2.6734	0.0185
71	2.6918	0.0184
72	2.7100	0.0182

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0182	0.0017	0.0166
2	0.0184	0.0017	0.0167
3	0.0186	0.0017	0.0170
4	0.0188	0.0017	0.0171
5	0.0191	0.0017	0.0174
6	0.0192	0.0017	0.0175
7	0.0195	0.0017	0.0179
8	0.0197	0.0017	0.0180
9	0.0200	0.0017	0.0184
10	0.0202	0.0017	0.0185
11	0.0206	0.0017	0.0189
12	0.0208	0.0017	0.0191
13	0.0212	0.0017	0.0195
14	0.0214	0.0017	0.0197
15	0.0218	0.0017	0.0201
16	0.0220	0.0017	0.0204
17	0.0225	0.0017	0.0208
18	0.0228	0.0017	0.0211
19	0.0233	0.0017	0.0216
20	0.0236	0.0017	0.0219
21	0.0241	0.0017	0.0225
22	0.0245	0.0017	0.0228
23	0.0251	0.0017	0.0234
24	0.0254	0.0017	0.0238
25	0.0258	0.0017	0.0242
26	0.0262	0.0017	0.0246
27	0.0271	0.0017	0.0254
28	0.0275	0.0017	0.0258
29	0.0285	0.0017	0.0268
30	0.0290	0.0017	0.0273
31	0.0301	0.0017	0.0285
32	0.0307	0.0017	0.0291
33	0.0321	0.0017	0.0304
34	0.0328	0.0017	0.0312
35	0.0345	0.0017	0.0328
36	0.0354	0.0017	0.0337
37	0.0374	0.0017	0.0358
38	0.0386	0.0017	0.0369
39	0.0413	0.0017	0.0397
40	0.0429	0.0017	0.0412
41	0.0396	0.0017	0.0379

```
       42              0.0418          0.0017              0.0401
       43              0.0474          0.0017              0.0458
       44              0.0511          0.0017              0.0494
       45              0.0661          0.0017              0.0645
       46              0.0741          0.0017              0.0725
       47              0.1039          0.0017              0.1022
       48              0.1403          0.0017              0.1386
       49              0.4000          0.0017              0.3983
       50              0.0856          0.0017              0.0839
       51              0.0557          0.0017              0.0540
       52              0.0444          0.0017              0.0427
       53              0.0447          0.0017              0.0430
       54              0.0399          0.0017              0.0382
       55              0.0364          0.0017              0.0347
       56              0.0336          0.0017              0.0319
       57              0.0314          0.0017              0.0297
       58              0.0295          0.0017              0.0279
       59              0.0280          0.0017              0.0263
       60              0.0266          0.0017              0.0250
       61              0.0258          0.0017              0.0241
       62              0.0248          0.0017              0.0231
       63              0.0238          0.0017              0.0222
       64              0.0230          0.0017              0.0214
       65              0.0223          0.0017              0.0206
       66              0.0216          0.0017              0.0199
       67              0.0210          0.0017              0.0193
       68              0.0204          0.0017              0.0187
       69              0.0199          0.0017              0.0182
       70              0.0194          0.0017              0.0177
       71              0.0189          0.0017              0.0172
       72              0.0185          0.0017              0.0168
      ------------------------------------------------------------------
      ------------------------------------------------------------------
      Total soil rain loss =      0.12(In)
      Total effective rainfall =      2.59(In)
      Peak flow rate in flood hydrograph =      5.49(CFS)
      ------------------------------------------------------------------
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                        6 - H O U R    S T O R M
                   R u n o f f      H y d r o g r a p h
      ------------------------------------------------------------------
                Hydrograph in   5   Minute intervals ((CFS))

      ------------------------------------------------------------------
 Time(h+m) Volume Ac.Ft   Q(CFS)  0        2.5       5.0       7.5      10.0
 ------------------------------------------------------------------------
   0+ 5       0.0005      0.07  Q         |         |         |         |
   0+10       0.0022      0.26  VQ        |         |         |         |
   0+15       0.0044      0.31  VQ        |         |         |         |
   0+20       0.0067      0.34  VQ        |         |         |         |
   0+25       0.0090      0.34  VQ        |         |         |         |
   0+30       0.0115      0.35  |Q        |         |         |         |
   0+35       0.0139      0.36  |Q        |         |         |         |
   0+40       0.0164      0.36  |Q        |         |         |         |
   0+45       0.0189      0.37  |QV       |         |         |         |
   0+50       0.0215      0.37  |QV       |         |         |         |
   0+55       0.0241      0.38  |QV       |         |         |         |
   1+ 0       0.0267      0.38  |QV       |         |         |         |
   1+ 5       0.0294      0.39  |Q V      |         |         |         |
   1+10       0.0321      0.39  |Q V      |         |         |         |
   1+15       0.0349      0.40  |Q V      |         |         |         |
   1+20       0.0377      0.41  |Q  V     |         |         |         |
   1+25       0.0405      0.41  |Q  V     |         |         |         |
   1+30       0.0434      0.42  |Q  V     |         |         |         |
   1+35       0.0464      0.43  |Q   V    |         |         |         |
   1+40       0.0494      0.44  |Q   V    |         |         |         |
   1+45       0.0525      0.44  |Q   V    |         |         |         |
   1+50       0.0556      0.45  |Q    V   |         |         |         |
   1+55       0.0588      0.46  |Q    V   |         |         |         |
   2+ 0       0.0620      0.47  |Q    V   |         |         |         |
   2+ 5       0.0654      0.48  |Q     V  |         |         |         |
```

```
   2+10       0.0687      0.49  |Q     V  |          |          |          |
   2+15       0.0722      0.50  |Q     V  |          |          |          |
   2+20       0.0757      0.51  | Q     V |          |          |          |
   2+25       0.0793      0.53  | Q     V |          |          |          |
   2+30       0.0830      0.54  | Q      V|          |          |          |
   2+35       0.0869      0.56  | Q      V|          |          |          |
   2+40       0.0908      0.57  | Q       V          |          |          |
   2+45       0.0949      0.59  | Q       V          |          |          |
   2+50       0.0991      0.61  | Q       V          |          |          |
   2+55       0.1035      0.63  | Q       |V         |          |          |
   3+ 0       0.1080      0.66  | Q       |V         |          |          |
   3+ 5       0.1127      0.69  | Q       | V        |          |          |
   3+10       0.1177      0.72  | Q       | V        |          |          |
   3+15       0.1229      0.75  |  Q      |  V       |          |          |
   3+20       0.1283      0.80  |  Q      |   V      |          |          |
   3+25       0.1339      0.81  |  Q      |   V      |          |          |
   3+30       0.1394      0.79  |  Q      |    V     |          |          |
   3+35       0.1451      0.83  |  Q      |     V    |          |          |
   3+40       0.1514      0.91  |  Q      |     V    |          |          |
   3+45       0.1585      1.04  |   Q     |      V   |          |          |
   3+50       0.1672      1.26  |    Q    |       V  |          |          |
   3+55       0.1777      1.52  |     Q   |        V |          |          |
   4+ 0       0.1918      2.05  |       Q |          |V         |          |
   4+ 5       0.2168      3.62  |         |   Q      |  V       |          |
   4+10       0.2546      5.49  |         |          |Q      V  |          |
   4+15       0.2731      2.69  |         Q          |         V          |
   4+20       0.2839      1.58  |     Q   |          |          |V         |
   4+25       0.2913      1.07  |   Q     |          |          | V        |
   4+30       0.2977      0.93  |  Q      |          |          | V        |
   4+35       0.3033      0.81  |  Q      |          |          |  V       |
   4+40       0.3083      0.72  | Q       |          |          |   V      |
   4+45       0.3128      0.66  | Q       |          |          |   V      |
   4+50       0.3171      0.61  | Q       |          |          |   V      |
   4+55       0.3210      0.57  | Q       |          |          |    V     |
   5+ 0       0.3248      0.54  | Q       |          |          |    V     |
   5+ 5       0.3283      0.51  | Q       |          |          |     V    |
   5+10       0.3317      0.49  |Q        |          |          |     V    |
   5+15       0.3350      0.47  |Q        |          |          |     V    |
   5+20       0.3381      0.45  |Q        |          |          |      V   |
   5+25       0.3411      0.44  |Q        |          |          |      V   |
   5+30       0.3440      0.42  |Q        |          |          |      V   |
   5+35       0.3468      0.41  |Q        |          |          |       V  |
   5+40       0.3495      0.39  |Q        |          |          |       V  |
   5+45       0.3522      0.38  |Q        |          |          |       V  |
   5+50       0.3547      0.37  |Q        |          |          |        V|
   5+55       0.3572      0.36  |Q        |          |          |        V|
   6+ 0       0.3596      0.35  |Q        |          |          |        V|
   6+ 5       0.3616      0.28  |Q        |          |          |        V|
   6+10       0.3621      0.08  Q         |          |          |        V|
   6+15       0.3623      0.03  Q         |          |          |        V|
   6+20       0.3624      0.01  Q         |          |          |        V|
   6+25       0.3624      0.00  Q         |          |          |        V|
   6+30       0.3624      0.00  Q         |          |          |        V|
-------------------------------------------------------------------------
```

- 25 Year 12 Hour Post-Development Unit Hydrograph – Area 'F'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989-2012, Version 7.2

       Study date  10/20/16   File Name prf02512.out


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'F' - 25 YEAR 12 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 25

       Antecedent Moisture Condition = 2

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 74.4       1.7          1.00     D     0.200     0.100    0.020

Area-averaged adjusted loss rate Fm (In/Hr) =  0.020

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC2)          Yield Fr
     0.17   0.100         74.4      74.4       3.44     0.444
     1.51   0.900         98.0      98.0       0.20     0.947

Area-averaged catchment yield fraction, Y =  0.897
Area-averaged low loss fraction, Yb =  0.103
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.091 (hours)
Watershed area =       1.68(Ac.)
Catchment Lag time =   0.073 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 114.8095
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.020(In/Hr)
Average low loss rate fraction (Yb) = 0.103 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.400(In)
Computed peak 30-minute rainfall =  0.870(In)
Specified peak 1-hour rainfall =  1.150(In)
Computed peak 3-hour rainfall =  1.940(In)
Specified peak 6-hour rainfall =  2.710(In)
Specified peak 24-hour rainfall =  4.490(In)


Rainfall depth area reduction factors:
Using a total area of       1.68(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000     Adjusted rainfall =  0.400(In)
```

```
30-minute factor = 1.000    Adjusted rainfall =  0.870(In)
1-hour factor = 1.000       Adjusted rainfall =  1.150(In)
3-hour factor = 1.000       Adjusted rainfall =  1.940(In)
6-hour factor = 1.000       Adjusted rainfall =  2.710(In)
24-hour factor = 1.000 Adjusted rainfall =  4.490(In)
------------------------------------------------------------------------

                     U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
------------------------------------------------------------------------
               (K =        20.32 (CFS))

  1               19.643                   3.991
  2               75.813                  11.412
  3               92.011                   3.291
  4               97.656                   1.147
  5               99.076                   0.288
  6               99.801                   0.147
  7              100.000                   0.040
------------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.4000               0.4000
  2              0.5402               0.1403
  3              0.6441               0.1039
  4              0.7297               0.0856
  5              0.8038               0.0741
  6              0.8699               0.0661
  7              0.9256               0.0557
  8              0.9767               0.0511
  9              1.0242               0.0474
 10              1.0685               0.0444
 11              1.1103               0.0418
 12              1.1499               0.0396
 13              1.1946               0.0447
 14              1.2375               0.0429
 15              1.2788               0.0413
 16              1.3187               0.0399
 17              1.3573               0.0386
 18              1.3947               0.0374
 19              1.4311               0.0364
 20              1.4665               0.0354
 21              1.5009               0.0345
 22              1.5345               0.0336
 23              1.5674               0.0328
 24              1.5994               0.0321
 25              1.6308               0.0314
 26              1.6616               0.0307
 27              1.6917               0.0301
 28              1.7212               0.0295
 29              1.7502               0.0290
 30              1.7787               0.0285
 31              1.8067               0.0280
 32              1.8342               0.0275
 33              1.8613               0.0271
 34              1.8879               0.0266
 35              1.9141               0.0262
 36              1.9400               0.0258
 37              1.9658               0.0258
 38              1.9912               0.0254
 39              2.0163               0.0251
 40              2.0411               0.0248
 41              2.0655               0.0245
 42              2.0897               0.0241
 43              2.1135               0.0238
 44              2.1371               0.0236
 45              2.1604               0.0233
 46              2.1834               0.0230
 47              2.2062               0.0228
```

48	2.2287	0.0225
49	2.2510	0.0223
50	2.2730	0.0220
51	2.2948	0.0218
52	2.3164	0.0216
53	2.3378	0.0214
54	2.3589	0.0212
55	2.3799	0.0210
56	2.4007	0.0208
57	2.4213	0.0206
58	2.4416	0.0204
59	2.4619	0.0202
60	2.4819	0.0200
61	2.5018	0.0199
62	2.5214	0.0197
63	2.5410	0.0195
64	2.5603	0.0194
65	2.5796	0.0192
66	2.5986	0.0191
67	2.6175	0.0189
68	2.6363	0.0188
69	2.6549	0.0186
70	2.6734	0.0185
71	2.6918	0.0184
72	2.7100	0.0182
73	2.7236	0.0136
74	2.7372	0.0135
75	2.7506	0.0134
76	2.7639	0.0133
77	2.7771	0.0132
78	2.7902	0.0131
79	2.8031	0.0130
80	2.8160	0.0129
81	2.8288	0.0128
82	2.8414	0.0127
83	2.8540	0.0126
84	2.8665	0.0125
85	2.8789	0.0124
86	2.8912	0.0123
87	2.9034	0.0122
88	2.9155	0.0121
89	2.9275	0.0120
90	2.9394	0.0119
91	2.9513	0.0119
92	2.9631	0.0118
93	2.9747	0.0117
94	2.9864	0.0116
95	2.9979	0.0115
96	3.0093	0.0115
97	3.0207	0.0114
98	3.0320	0.0113
99	3.0433	0.0112
100	3.0544	0.0112
101	3.0655	0.0111
102	3.0765	0.0110
103	3.0875	0.0110
104	3.0984	0.0109
105	3.1092	0.0108
106	3.1199	0.0108
107	3.1306	0.0107
108	3.1412	0.0106
109	3.1518	0.0106
110	3.1623	0.0105
111	3.1727	0.0104
112	3.1831	0.0104
113	3.1935	0.0103
114	3.2037	0.0103
115	3.2139	0.0102
116	3.2241	0.0102
117	3.2342	0.0101
118	3.2442	0.0100

119	3.2542	0.0100
120	3.2641	0.0099
121	3.2740	0.0099
122	3.2838	0.0098
123	3.2936	0.0098
124	3.3033	0.0097
125	3.3130	0.0097
126	3.3227	0.0096
127	3.3322	0.0096
128	3.3418	0.0095
129	3.3512	0.0095
130	3.3607	0.0094
131	3.3701	0.0094
132	3.3794	0.0093
133	3.3887	0.0093
134	3.3980	0.0093
135	3.4072	0.0092
136	3.4164	0.0092
137	3.4255	0.0091
138	3.4346	0.0091
139	3.4436	0.0090
140	3.4526	0.0090
141	3.4616	0.0090
142	3.4705	0.0089
143	3.4794	0.0089
144	3.4882	0.0088

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0088	0.0009	0.0079
2	0.0089	0.0009	0.0080
3	0.0090	0.0009	0.0080
4	0.0090	0.0009	0.0081
5	0.0091	0.0009	0.0082
6	0.0091	0.0009	0.0082
7	0.0092	0.0009	0.0083
8	0.0093	0.0010	0.0083
9	0.0093	0.0010	0.0084
10	0.0094	0.0010	0.0084
11	0.0095	0.0010	0.0085
12	0.0095	0.0010	0.0086
13	0.0096	0.0010	0.0086
14	0.0097	0.0010	0.0087
15	0.0098	0.0010	0.0088
16	0.0098	0.0010	0.0088
17	0.0099	0.0010	0.0089
18	0.0100	0.0010	0.0090
19	0.0101	0.0010	0.0091
20	0.0102	0.0010	0.0091
21	0.0103	0.0011	0.0092
22	0.0103	0.0011	0.0093
23	0.0104	0.0011	0.0094
24	0.0105	0.0011	0.0094
25	0.0106	0.0011	0.0095
26	0.0107	0.0011	0.0096
27	0.0108	0.0011	0.0097
28	0.0109	0.0011	0.0098
29	0.0110	0.0011	0.0099
30	0.0111	0.0011	0.0099
31	0.0112	0.0012	0.0101
32	0.0113	0.0012	0.0101
33	0.0115	0.0012	0.0103
34	0.0115	0.0012	0.0103
35	0.0117	0.0012	0.0105
36	0.0118	0.0012	0.0106
37	0.0119	0.0012	0.0107
38	0.0120	0.0012	0.0108
39	0.0122	0.0013	0.0109
40	0.0123	0.0013	0.0110

41	0.0125	0.0013	0.0112
42	0.0126	0.0013	0.0113
43	0.0128	0.0013	0.0115
44	0.0129	0.0013	0.0115
45	0.0131	0.0013	0.0117
46	0.0132	0.0014	0.0118
47	0.0134	0.0014	0.0120
48	0.0135	0.0014	0.0121
49	0.0182	0.0017	0.0166
50	0.0184	0.0017	0.0167
51	0.0186	0.0017	0.0170
52	0.0188	0.0017	0.0171
53	0.0191	0.0017	0.0174
54	0.0192	0.0017	0.0175
55	0.0195	0.0017	0.0179
56	0.0197	0.0017	0.0180
57	0.0200	0.0017	0.0184
58	0.0202	0.0017	0.0185
59	0.0206	0.0017	0.0189
60	0.0208	0.0017	0.0191
61	0.0212	0.0017	0.0195
62	0.0214	0.0017	0.0197
63	0.0218	0.0017	0.0201
64	0.0220	0.0017	0.0204
65	0.0225	0.0017	0.0208
66	0.0228	0.0017	0.0211
67	0.0233	0.0017	0.0216
68	0.0236	0.0017	0.0219
69	0.0241	0.0017	0.0225
70	0.0245	0.0017	0.0228
71	0.0251	0.0017	0.0234
72	0.0254	0.0017	0.0238
73	0.0258	0.0017	0.0242
74	0.0262	0.0017	0.0246
75	0.0271	0.0017	0.0254
76	0.0275	0.0017	0.0258
77	0.0285	0.0017	0.0268
78	0.0290	0.0017	0.0273
79	0.0301	0.0017	0.0285
80	0.0307	0.0017	0.0291
81	0.0321	0.0017	0.0304
82	0.0328	0.0017	0.0312
83	0.0345	0.0017	0.0328
84	0.0354	0.0017	0.0337
85	0.0374	0.0017	0.0358
86	0.0386	0.0017	0.0369
87	0.0413	0.0017	0.0397
88	0.0429	0.0017	0.0412
89	0.0396	0.0017	0.0379
90	0.0418	0.0017	0.0401
91	0.0474	0.0017	0.0458
92	0.0511	0.0017	0.0494
93	0.0661	0.0017	0.0645
94	0.0741	0.0017	0.0725
95	0.1039	0.0017	0.1022
96	0.1403	0.0017	0.1386
97	0.4000	0.0017	0.3983
98	0.0856	0.0017	0.0839
99	0.0557	0.0017	0.0540
100	0.0444	0.0017	0.0427
101	0.0447	0.0017	0.0430
102	0.0399	0.0017	0.0382
103	0.0364	0.0017	0.0347
104	0.0336	0.0017	0.0319
105	0.0314	0.0017	0.0297
106	0.0295	0.0017	0.0279
107	0.0280	0.0017	0.0263
108	0.0266	0.0017	0.0250
109	0.0258	0.0017	0.0241
110	0.0248	0.0017	0.0231
111	0.0238	0.0017	0.0222

112	0.0230	0.0017	0.0214
113	0.0223	0.0017	0.0206
114	0.0216	0.0017	0.0199
115	0.0210	0.0017	0.0193
116	0.0204	0.0017	0.0187
117	0.0199	0.0017	0.0182
118	0.0194	0.0017	0.0177
119	0.0189	0.0017	0.0172
120	0.0185	0.0017	0.0168
121	0.0136	0.0014	0.0122
122	0.0133	0.0014	0.0119
123	0.0130	0.0013	0.0116
124	0.0127	0.0013	0.0114
125	0.0124	0.0013	0.0111
126	0.0121	0.0012	0.0109
127	0.0119	0.0012	0.0106
128	0.0116	0.0012	0.0104
129	0.0114	0.0012	0.0102
130	0.0112	0.0011	0.0100
131	0.0110	0.0011	0.0098
132	0.0108	0.0011	0.0096
133	0.0106	0.0011	0.0095
134	0.0104	0.0011	0.0093
135	0.0102	0.0010	0.0092
136	0.0100	0.0010	0.0090
137	0.0099	0.0010	0.0089
138	0.0097	0.0010	0.0087
139	0.0096	0.0010	0.0086
140	0.0094	0.0010	0.0085
141	0.0093	0.0010	0.0083
142	0.0092	0.0009	0.0082
143	0.0090	0.0009	0.0081
144	0.0089	0.0009	0.0080

Total soil rain loss = 0.20(In)
Total effective rainfall = 3.29(In)
Peak flow rate in flood hydrograph = 5.49(CFS)

++

12 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0002	0.03	Q				
0+10	0.0011	0.12	Q				
0+15	0.0021	0.15	Q				
0+20	0.0032	0.16	Q				
0+25	0.0043	0.16	Q				
0+30	0.0054	0.16	Q				
0+35	0.0066	0.17	Q				
0+40	0.0077	0.17	Q				
0+45	0.0089	0.17	Q				
0+50	0.0101	0.17	Q				
0+55	0.0113	0.17	Q				
1+ 0	0.0124	0.17	QV				
1+ 5	0.0136	0.17	QV				
1+10	0.0148	0.18	QV				
1+15	0.0161	0.18	QV				
1+20	0.0173	0.18	QV				
1+25	0.0185	0.18	QV				
1+30	0.0198	0.18	QV				
1+35	0.0210	0.18	QV				
1+40	0.0223	0.18	QV				
1+45	0.0236	0.18	Q V				
1+50	0.0248	0.19	Q V				
1+55	0.0261	0.19	Q V				

```
2+ 0       0.0274      0.19  Q V       |         |         |         |
2+ 5       0.0288      0.19  Q V       |         |         |         |
2+10       0.0301      0.19  Q V       |         |         |         |
2+15       0.0314      0.19  Q V       |         |         |         |
2+20       0.0328      0.20  Q V       |         |         |         |
2+25       0.0342      0.20  Q V       |         |         |         |
2+30       0.0355      0.20  Q  V      |         |         |         |
2+35       0.0369      0.20  Q  V      |         |         |         |
2+40       0.0383      0.20  Q  V      |         |         |         |
2+45       0.0397      0.21  Q  V      |         |         |         |
2+50       0.0412      0.21  Q  V      |         |         |         |
2+55       0.0426      0.21  Q  V      |         |         |         |
3+ 0       0.0441      0.21  Q  V      |         |         |         |
3+ 5       0.0456      0.21  Q  V      |         |         |         |
3+10       0.0471      0.22  Q   V     |         |         |         |
3+15       0.0486      0.22  Q   V     |         |         |         |
3+20       0.0501      0.22  Q   V     |         |         |         |
3+25       0.0516      0.22  Q   V     |         |         |         |
3+30       0.0532      0.23  Q   V     |         |         |         |
3+35       0.0548      0.23  Q   V     |         |         |         |
3+40       0.0564      0.23  Q   V     |         |         |         |
3+45       0.0580      0.23  Q    V    |         |         |         |
3+50       0.0596      0.24  Q    V    |         |         |         |
3+55       0.0613      0.24  Q    V    |         |         |         |
4+ 0       0.0630      0.24  Q    V    |         |         |         |
4+ 5       0.0648      0.26  |Q   V    |         |         |         |
4+10       0.0669      0.31  |Q   V    |         |         |         |
4+15       0.0692      0.33  |Q    V   |         |         |         |
4+20       0.0716      0.34  |Q    V   |         |         |         |
4+25       0.0740      0.35  |Q    V   |         |         |         |
4+30       0.0764      0.35  |Q    V   |         |         |         |
4+35       0.0789      0.36  |Q    V   |         |         |         |
4+40       0.0813      0.36  |Q     V  |         |         |         |
4+45       0.0839      0.37  |Q     V  |         |         |         |
4+50       0.0864      0.37  |Q     V  |         |         |         |
4+55       0.0890      0.38  |Q     V  |         |         |         |
5+ 0       0.0917      0.38  |Q     V  |         |         |         |
5+ 5       0.0943      0.39  |Q      V |         |         |         |
5+10       0.0970      0.39  |Q      V |         |         |         |
5+15       0.0998      0.40  |Q      V |         |         |         |
5+20       0.1026      0.41  |Q      V |         |         |         |
5+25       0.1055      0.41  |Q       V|         |         |         |
5+30       0.1084      0.42  |Q       V|         |         |         |
5+35       0.1113      0.43  |Q       V|         |         |         |
5+40       0.1143      0.44  |Q       V|         |         |         |
5+45       0.1174      0.44  |Q        V         |         |         |
5+50       0.1205      0.45  |Q        V         |         |         |
5+55       0.1237      0.46  |Q        V         |         |         |
6+ 0       0.1270      0.47  |Q        |V        |         |         |
6+ 5       0.1303      0.48  |Q        |V        |         |         |
6+10       0.1337      0.49  |Q        |V        |         |         |
6+15       0.1371      0.50  |Q        |V        |         |         |
6+20       0.1406      0.51  | Q       | V       |         |         |
6+25       0.1442      0.53  | Q       | V       |         |         |
6+30       0.1480      0.54  | Q       | V       |         |         |
6+35       0.1518      0.56  | Q       |  V      |         |         |
6+40       0.1557      0.57  | Q       |  V      |         |         |
6+45       0.1598      0.59  | Q       |  V      |         |         |
6+50       0.1640      0.61  | Q       |   V     |         |         |
6+55       0.1684      0.63  | Q       |   V     |         |         |
7+ 0       0.1729      0.66  | Q       |    V    |         |         |
7+ 5       0.1777      0.69  | Q       |    V    |         |         |
7+10       0.1826      0.72  | Q       |    V    |         |         |
7+15       0.1878      0.75  |  Q      |     V   |         |         |
7+20       0.1933      0.80  |  Q      |     V   |         |         |
7+25       0.1988      0.81  |  Q      |      V  |         |         |
7+30       0.2043      0.79  |  Q      |      V  |         |         |
7+35       0.2100      0.83  |  Q      |       V |         |         |
7+40       0.2163      0.91  |  Q      |       V |         |         |
7+45       0.2235      1.04  |   Q     |        V|         |         |
7+50       0.2321      1.26  |    Q    |         V         |         |
```

```
   7+55       0.2426      1.52  |     Q   |          |V        |          |
   8+ 0       0.2568      2.05  |       Q |          | V       |          |
   8+ 5       0.2817      3.62  |         |   Q      |   V     |          |
   8+10       0.3195      5.49  |         |          |Q     V  |          |
   8+15       0.3380      2.69  |         Q          |        V|          |
   8+20       0.3488      1.58  |     Q   |          |         V          |
   8+25       0.3562      1.07  |   Q     |          |         V          |
   8+30       0.3627      0.93  |  Q      |          |         |V         |
   8+35       0.3682      0.81  |  Q      |          |         | V        |
   8+40       0.3732      0.72  | Q       |          |         | V        |
   8+45       0.3778      0.66  | Q       |          |         | V        |
   8+50       0.3820      0.61  | Q       |          |         |  V       |
   8+55       0.3860      0.57  | Q       |          |         |  V       |
   9+ 0       0.3897      0.54  | Q       |          |         |  V       |
   9+ 5       0.3932      0.51  | Q       |          |         |   V      |
   9+10       0.3966      0.49  |Q        |          |         |   V      |
   9+15       0.3999      0.47  |Q        |          |         |   V      |
   9+20       0.4030      0.45  |Q        |          |         |    V     |
   9+25       0.4060      0.44  |Q        |          |         |    V     |
   9+30       0.4089      0.42  |Q        |          |         |    V     |
   9+35       0.4117      0.41  |Q        |          |         |    V     |
   9+40       0.4145      0.39  |Q        |          |         |     V    |
   9+45       0.4171      0.38  |Q        |          |         |     V    |
   9+50       0.4197      0.37  |Q        |          |         |     V    |
   9+55       0.4222      0.36  |Q        |          |         |     V    |
  10+ 0       0.4246      0.35  |Q        |          |         |     V    |
  10+ 5       0.4268      0.33  |Q        |          |         |      V   |
  10+10       0.4287      0.27  |Q        |          |         |      V   |
  10+15       0.4304      0.25  |Q        |          |         |      V   |
  10+20       0.4321      0.24  Q         |          |         |      V   |
  10+25       0.4337      0.23  Q         |          |         |      V   |
  10+30       0.4352      0.23  Q         |          |         |      V   |
  10+35       0.4368      0.22  Q         |          |         |      V   |
  10+40       0.4383      0.22  Q         |          |         |       V  |
  10+45       0.4397      0.21  Q         |          |         |       V  |
  10+50       0.4412      0.21  Q         |          |         |       V  |
  10+55       0.4426      0.20  Q         |          |         |       V  |
  11+ 0       0.4439      0.20  Q         |          |         |       V  |
  11+ 5       0.4453      0.20  Q         |          |         |       V  |
  11+10       0.4466      0.19  Q         |          |         |       V  |
  11+15       0.4479      0.19  Q         |          |         |       V  |
  11+20       0.4492      0.19  Q         |          |         |        V|
  11+25       0.4505      0.18  Q         |          |         |        V|
  11+30       0.4517      0.18  Q         |          |         |        V|
  11+35       0.4529      0.18  Q         |          |         |        V|
  11+40       0.4542      0.18  Q         |          |         |        V|
  11+45       0.4553      0.17  Q         |          |         |        V|
  11+50       0.4565      0.17  Q         |          |         |        V|
  11+55       0.4577      0.17  Q         |          |         |        V|
  12+ 0       0.4588      0.17  Q         |          |         |        V|
  12+ 5       0.4597      0.13  Q         |          |         |        V|
  12+10       0.4600      0.04  Q         |          |         |        V|
  12+15       0.4601      0.01  Q         |          |         |        V|
  12+20       0.4601      0.00  Q         |          |         |        V|
  12+25       0.4601      0.00  Q         |          |         |        V|
  12+30       0.4601      0.00  Q         |          |         |        V|
-------------------------------------------------------------------------
```

- 25 Year 24 Hour Post-Development Unit Hydrograph – Area 'F'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/20/16   File Name prf02524.out


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'F' - 25 YEAR 24 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 25

       Antecedent Moisture Condition = 2

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 74.4       1.7          1.00     D     0.200     0.100    0.020

Area-averaged adjusted loss rate Fm (In/Hr) =  0.020

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC2)          Yield Fr
     0.17   0.100         74.4      74.4       3.44     0.444
     1.51   0.900         98.0      98.0       0.20     0.947

Area-averaged catchment yield fraction, Y =  0.897
Area-averaged low loss fraction, Yb =  0.103
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.091 (hours)
Watershed area =       1.68(Ac.)
Catchment Lag time =   0.073 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 114.8095
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.020(In/Hr)
Average low loss rate fraction (Yb) = 0.103 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.400(In)
Computed peak 30-minute rainfall =  0.870(In)
Specified peak 1-hour rainfall =  1.150(In)
Computed peak 3-hour rainfall =  1.940(In)
Specified peak 6-hour rainfall =  2.710(In)
Specified peak 24-hour rainfall =  4.490(In)


Rainfall depth area reduction factors:
Using a total area of       1.68(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000     Adjusted rainfall =  0.400(In)
```

```
30-minute factor = 1.000    Adjusted rainfall =  0.870(In)
1-hour factor = 1.000       Adjusted rainfall =  1.150(In)
3-hour factor = 1.000       Adjusted rainfall =  1.940(In)
6-hour factor = 1.000       Adjusted rainfall =  2.710(In)
24-hour factor = 1.000 Adjusted rainfall =  4.490(In)
------------------------------------------------------------------------

                      U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
------------------------------------------------------------------------
               (K =        20.32 (CFS))

  1               19.643                   3.991
  2               75.813                  11.412
  3               92.011                   3.291
  4               97.656                   1.147
  5               99.076                   0.288
  6               99.801                   0.147
  7              100.000                   0.040
------------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.4000               0.4000
  2              0.5402               0.1403
  3              0.6441               0.1039
  4              0.7297               0.0856
  5              0.8038               0.0741
  6              0.8699               0.0661
  7              0.9256               0.0557
  8              0.9767               0.0511
  9              1.0242               0.0474
 10              1.0685               0.0444
 11              1.1103               0.0418
 12              1.1499               0.0396
 13              1.1946               0.0447
 14              1.2375               0.0429
 15              1.2788               0.0413
 16              1.3187               0.0399
 17              1.3573               0.0386
 18              1.3947               0.0374
 19              1.4311               0.0364
 20              1.4665               0.0354
 21              1.5009               0.0345
 22              1.5345               0.0336
 23              1.5674               0.0328
 24              1.5994               0.0321
 25              1.6308               0.0314
 26              1.6616               0.0307
 27              1.6917               0.0301
 28              1.7212               0.0295
 29              1.7502               0.0290
 30              1.7787               0.0285
 31              1.8067               0.0280
 32              1.8342               0.0275
 33              1.8613               0.0271
 34              1.8879               0.0266
 35              1.9141               0.0262
 36              1.9400               0.0258
 37              1.9658               0.0258
 38              1.9912               0.0254
 39              2.0163               0.0251
 40              2.0411               0.0248
 41              2.0655               0.0245
 42              2.0897               0.0241
 43              2.1135               0.0238
 44              2.1371               0.0236
 45              2.1604               0.0233
 46              2.1834               0.0230
 47              2.2062               0.0228
```

48	2.2287	0.0225
49	2.2510	0.0223
50	2.2730	0.0220
51	2.2948	0.0218
52	2.3164	0.0216
53	2.3378	0.0214
54	2.3589	0.0212
55	2.3799	0.0210
56	2.4007	0.0208
57	2.4213	0.0206
58	2.4416	0.0204
59	2.4619	0.0202
60	2.4819	0.0200
61	2.5018	0.0199
62	2.5214	0.0197
63	2.5410	0.0195
64	2.5603	0.0194
65	2.5796	0.0192
66	2.5986	0.0191
67	2.6175	0.0189
68	2.6363	0.0188
69	2.6549	0.0186
70	2.6734	0.0185
71	2.6918	0.0184
72	2.7100	0.0182
73	2.7236	0.0136
74	2.7372	0.0135
75	2.7506	0.0134
76	2.7639	0.0133
77	2.7771	0.0132
78	2.7902	0.0131
79	2.8031	0.0130
80	2.8160	0.0129
81	2.8288	0.0128
82	2.8414	0.0127
83	2.8540	0.0126
84	2.8665	0.0125
85	2.8789	0.0124
86	2.8912	0.0123
87	2.9034	0.0122
88	2.9155	0.0121
89	2.9275	0.0120
90	2.9394	0.0119
91	2.9513	0.0119
92	2.9631	0.0118
93	2.9747	0.0117
94	2.9864	0.0116
95	2.9979	0.0115
96	3.0093	0.0115
97	3.0207	0.0114
98	3.0320	0.0113
99	3.0433	0.0112
100	3.0544	0.0112
101	3.0655	0.0111
102	3.0765	0.0110
103	3.0875	0.0110
104	3.0984	0.0109
105	3.1092	0.0108
106	3.1199	0.0108
107	3.1306	0.0107
108	3.1412	0.0106
109	3.1518	0.0106
110	3.1623	0.0105
111	3.1727	0.0104
112	3.1831	0.0104
113	3.1935	0.0103
114	3.2037	0.0103
115	3.2139	0.0102
116	3.2241	0.0102
117	3.2342	0.0101
118	3.2442	0.0100

119	3.2542	0.0100
120	3.2641	0.0099
121	3.2740	0.0099
122	3.2838	0.0098
123	3.2936	0.0098
124	3.3033	0.0097
125	3.3130	0.0097
126	3.3227	0.0096
127	3.3322	0.0096
128	3.3418	0.0095
129	3.3512	0.0095
130	3.3607	0.0094
131	3.3701	0.0094
132	3.3794	0.0093
133	3.3887	0.0093
134	3.3980	0.0093
135	3.4072	0.0092
136	3.4164	0.0092
137	3.4255	0.0091
138	3.4346	0.0091
139	3.4436	0.0090
140	3.4526	0.0090
141	3.4616	0.0090
142	3.4705	0.0089
143	3.4794	0.0089
144	3.4882	0.0088
145	3.4970	0.0088
146	3.5058	0.0088
147	3.5145	0.0087
148	3.5232	0.0087
149	3.5319	0.0087
150	3.5405	0.0086
151	3.5491	0.0086
152	3.5576	0.0085
153	3.5661	0.0085
154	3.5746	0.0085
155	3.5830	0.0084
156	3.5914	0.0084
157	3.5998	0.0084
158	3.6081	0.0083
159	3.6164	0.0083
160	3.6247	0.0083
161	3.6329	0.0082
162	3.6411	0.0082
163	3.6493	0.0082
164	3.6574	0.0081
165	3.6655	0.0081
166	3.6736	0.0081
167	3.6817	0.0080
168	3.6897	0.0080
169	3.6977	0.0080
170	3.7056	0.0080
171	3.7135	0.0079
172	3.7214	0.0079
173	3.7293	0.0079
174	3.7371	0.0078
175	3.7450	0.0078
176	3.7527	0.0078
177	3.7605	0.0078
178	3.7682	0.0077
179	3.7759	0.0077
180	3.7836	0.0077
181	3.7912	0.0076
182	3.7988	0.0076
183	3.8064	0.0076
184	3.8140	0.0076
185	3.8215	0.0075
186	3.8290	0.0075
187	3.8365	0.0075
188	3.8440	0.0075
189	3.8514	0.0074

190	3.8588	0.0074
191	3.8662	0.0074
192	3.8736	0.0074
193	3.8809	0.0073
194	3.8882	0.0073
195	3.8955	0.0073
196	3.9028	0.0073
197	3.9100	0.0072
198	3.9172	0.0072
199	3.9244	0.0072
200	3.9316	0.0072
201	3.9387	0.0071
202	3.9459	0.0071
203	3.9530	0.0071
204	3.9600	0.0071
205	3.9671	0.0071
206	3.9741	0.0070
207	3.9812	0.0070
208	3.9881	0.0070
209	3.9951	0.0070
210	4.0021	0.0070
211	4.0090	0.0069
212	4.0159	0.0069
213	4.0228	0.0069
214	4.0297	0.0069
215	4.0365	0.0068
216	4.0433	0.0068
217	4.0502	0.0068
218	4.0569	0.0068
219	4.0637	0.0068
220	4.0705	0.0067
221	4.0772	0.0067
222	4.0839	0.0067
223	4.0906	0.0067
224	4.0973	0.0067
225	4.1039	0.0067
226	4.1105	0.0066
227	4.1172	0.0066
228	4.1238	0.0066
229	4.1303	0.0066
230	4.1369	0.0066
231	4.1434	0.0065
232	4.1500	0.0065
233	4.1565	0.0065
234	4.1630	0.0065
235	4.1694	0.0065
236	4.1759	0.0065
237	4.1823	0.0064
238	4.1887	0.0064
239	4.1951	0.0064
240	4.2015	0.0064
241	4.2079	0.0064
242	4.2142	0.0064
243	4.2206	0.0063
244	4.2269	0.0063
245	4.2332	0.0063
246	4.2395	0.0063
247	4.2457	0.0063
248	4.2520	0.0063
249	4.2582	0.0062
250	4.2645	0.0062
251	4.2707	0.0062
252	4.2768	0.0062
253	4.2830	0.0062
254	4.2892	0.0062
255	4.2953	0.0061
256	4.3015	0.0061
257	4.3076	0.0061
258	4.3137	0.0061
259	4.3197	0.0061
260	4.3258	0.0061

261	4.3319	0.0061
262	4.3379	0.0060
263	4.3439	0.0060
264	4.3499	0.0060
265	4.3559	0.0060
266	4.3619	0.0060
267	4.3679	0.0060
268	4.3738	0.0060
269	4.3798	0.0059
270	4.3857	0.0059
271	4.3916	0.0059
272	4.3975	0.0059
273	4.4034	0.0059
274	4.4092	0.0059
275	4.4151	0.0059
276	4.4209	0.0058
277	4.4268	0.0058
278	4.4326	0.0058
279	4.4384	0.0058
280	4.4442	0.0058
281	4.4499	0.0058
282	4.4557	0.0058
283	4.4614	0.0057
284	4.4672	0.0057
285	4.4729	0.0057
286	4.4786	0.0057
287	4.4843	0.0057
288	4.4900	0.0057

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0057	0.0006	0.0051
2	0.0057	0.0006	0.0051
3	0.0057	0.0006	0.0051
4	0.0057	0.0006	0.0051
5	0.0058	0.0006	0.0052
6	0.0058	0.0006	0.0052
7	0.0058	0.0006	0.0052
8	0.0058	0.0006	0.0052
9	0.0058	0.0006	0.0052
10	0.0059	0.0006	0.0053
11	0.0059	0.0006	0.0053
12	0.0059	0.0006	0.0053
13	0.0059	0.0006	0.0053
14	0.0059	0.0006	0.0053
15	0.0060	0.0006	0.0054
16	0.0060	0.0006	0.0054
17	0.0060	0.0006	0.0054
18	0.0060	0.0006	0.0054
19	0.0061	0.0006	0.0054
20	0.0061	0.0006	0.0054
21	0.0061	0.0006	0.0055
22	0.0061	0.0006	0.0055
23	0.0061	0.0006	0.0055
24	0.0062	0.0006	0.0055
25	0.0062	0.0006	0.0056
26	0.0062	0.0006	0.0056
27	0.0062	0.0006	0.0056
28	0.0063	0.0006	0.0056
29	0.0063	0.0006	0.0056
30	0.0063	0.0006	0.0057
31	0.0063	0.0007	0.0057
32	0.0064	0.0007	0.0057
33	0.0064	0.0007	0.0057
34	0.0064	0.0007	0.0057
35	0.0064	0.0007	0.0058
36	0.0065	0.0007	0.0058
37	0.0065	0.0007	0.0058
38	0.0065	0.0007	0.0058

39	0.0065	0.0007	0.0059
40	0.0066	0.0007	0.0059
41	0.0066	0.0007	0.0059
42	0.0066	0.0007	0.0059
43	0.0067	0.0007	0.0060
44	0.0067	0.0007	0.0060
45	0.0067	0.0007	0.0060
46	0.0067	0.0007	0.0060
47	0.0068	0.0007	0.0061
48	0.0068	0.0007	0.0061
49	0.0068	0.0007	0.0061
50	0.0068	0.0007	0.0061
51	0.0069	0.0007	0.0062
52	0.0069	0.0007	0.0062
53	0.0070	0.0007	0.0062
54	0.0070	0.0007	0.0063
55	0.0070	0.0007	0.0063
56	0.0070	0.0007	0.0063
57	0.0071	0.0007	0.0064
58	0.0071	0.0007	0.0064
59	0.0071	0.0007	0.0064
60	0.0072	0.0007	0.0064
61	0.0072	0.0007	0.0065
62	0.0072	0.0007	0.0065
63	0.0073	0.0007	0.0065
64	0.0073	0.0008	0.0066
65	0.0074	0.0008	0.0066
66	0.0074	0.0008	0.0066
67	0.0074	0.0008	0.0067
68	0.0075	0.0008	0.0067
69	0.0075	0.0008	0.0067
70	0.0075	0.0008	0.0068
71	0.0076	0.0008	0.0068
72	0.0076	0.0008	0.0068
73	0.0077	0.0008	0.0069
74	0.0077	0.0008	0.0069
75	0.0078	0.0008	0.0070
76	0.0078	0.0008	0.0070
77	0.0078	0.0008	0.0070
78	0.0079	0.0008	0.0071
79	0.0079	0.0008	0.0071
80	0.0080	0.0008	0.0071
81	0.0080	0.0008	0.0072
82	0.0080	0.0008	0.0072
83	0.0081	0.0008	0.0073
84	0.0081	0.0008	0.0073
85	0.0082	0.0008	0.0074
86	0.0082	0.0008	0.0074
87	0.0083	0.0009	0.0074
88	0.0083	0.0009	0.0075
89	0.0084	0.0009	0.0075
90	0.0084	0.0009	0.0076
91	0.0085	0.0009	0.0076
92	0.0085	0.0009	0.0077
93	0.0086	0.0009	0.0077
94	0.0087	0.0009	0.0078
95	0.0087	0.0009	0.0078
96	0.0088	0.0009	0.0079
97	0.0088	0.0009	0.0079
98	0.0089	0.0009	0.0080
99	0.0090	0.0009	0.0080
100	0.0090	0.0009	0.0081
101	0.0091	0.0009	0.0082
102	0.0091	0.0009	0.0082
103	0.0092	0.0009	0.0083
104	0.0093	0.0010	0.0083
105	0.0093	0.0010	0.0084
106	0.0094	0.0010	0.0084
107	0.0095	0.0010	0.0085
108	0.0095	0.0010	0.0086
109	0.0096	0.0010	0.0086

110	0.0097	0.0010	0.0087
111	0.0098	0.0010	0.0088
112	0.0098	0.0010	0.0088
113	0.0099	0.0010	0.0089
114	0.0100	0.0010	0.0090
115	0.0101	0.0010	0.0091
116	0.0102	0.0010	0.0091
117	0.0103	0.0011	0.0092
118	0.0103	0.0011	0.0093
119	0.0104	0.0011	0.0094
120	0.0105	0.0011	0.0094
121	0.0106	0.0011	0.0095
122	0.0107	0.0011	0.0096
123	0.0108	0.0011	0.0097
124	0.0109	0.0011	0.0098
125	0.0110	0.0011	0.0099
126	0.0111	0.0011	0.0099
127	0.0112	0.0012	0.0101
128	0.0113	0.0012	0.0101
129	0.0115	0.0012	0.0103
130	0.0115	0.0012	0.0103
131	0.0117	0.0012	0.0105
132	0.0118	0.0012	0.0106
133	0.0119	0.0012	0.0107
134	0.0120	0.0012	0.0108
135	0.0122	0.0013	0.0109
136	0.0123	0.0013	0.0110
137	0.0125	0.0013	0.0112
138	0.0126	0.0013	0.0113
139	0.0128	0.0013	0.0115
140	0.0129	0.0013	0.0115
141	0.0131	0.0013	0.0117
142	0.0132	0.0014	0.0118
143	0.0134	0.0014	0.0120
144	0.0135	0.0014	0.0121
145	0.0182	0.0017	0.0166
146	0.0184	0.0017	0.0167
147	0.0186	0.0017	0.0170
148	0.0188	0.0017	0.0171
149	0.0191	0.0017	0.0174
150	0.0192	0.0017	0.0175
151	0.0195	0.0017	0.0179
152	0.0197	0.0017	0.0180
153	0.0200	0.0017	0.0184
154	0.0202	0.0017	0.0185
155	0.0206	0.0017	0.0189
156	0.0208	0.0017	0.0191
157	0.0212	0.0017	0.0195
158	0.0214	0.0017	0.0197
159	0.0218	0.0017	0.0201
160	0.0220	0.0017	0.0204
161	0.0225	0.0017	0.0208
162	0.0228	0.0017	0.0211
163	0.0233	0.0017	0.0216
164	0.0236	0.0017	0.0219
165	0.0241	0.0017	0.0225
166	0.0245	0.0017	0.0228
167	0.0251	0.0017	0.0234
168	0.0254	0.0017	0.0238
169	0.0258	0.0017	0.0242
170	0.0262	0.0017	0.0246
171	0.0271	0.0017	0.0254
172	0.0275	0.0017	0.0258
173	0.0285	0.0017	0.0268
174	0.0290	0.0017	0.0273
175	0.0301	0.0017	0.0285
176	0.0307	0.0017	0.0291
177	0.0321	0.0017	0.0304
178	0.0328	0.0017	0.0312
179	0.0345	0.0017	0.0328
180	0.0354	0.0017	0.0337

181	0.0374	0.0017	0.0358
182	0.0386	0.0017	0.0369
183	0.0413	0.0017	0.0397
184	0.0429	0.0017	0.0412
185	0.0396	0.0017	0.0379
186	0.0418	0.0017	0.0401
187	0.0474	0.0017	0.0458
188	0.0511	0.0017	0.0494
189	0.0661	0.0017	0.0645
190	0.0741	0.0017	0.0725
191	0.1039	0.0017	0.1022
192	0.1403	0.0017	0.1386
193	0.4000	0.0017	0.3983
194	0.0856	0.0017	0.0839
195	0.0557	0.0017	0.0540
196	0.0444	0.0017	0.0427
197	0.0447	0.0017	0.0430
198	0.0399	0.0017	0.0382
199	0.0364	0.0017	0.0347
200	0.0336	0.0017	0.0319
201	0.0314	0.0017	0.0297
202	0.0295	0.0017	0.0279
203	0.0280	0.0017	0.0263
204	0.0266	0.0017	0.0250
205	0.0258	0.0017	0.0241
206	0.0248	0.0017	0.0231
207	0.0238	0.0017	0.0222
208	0.0230	0.0017	0.0214
209	0.0223	0.0017	0.0206
210	0.0216	0.0017	0.0199
211	0.0210	0.0017	0.0193
212	0.0204	0.0017	0.0187
213	0.0199	0.0017	0.0182
214	0.0194	0.0017	0.0177
215	0.0189	0.0017	0.0172
216	0.0185	0.0017	0.0168
217	0.0136	0.0014	0.0122
218	0.0133	0.0014	0.0119
219	0.0130	0.0013	0.0116
220	0.0127	0.0013	0.0114
221	0.0124	0.0013	0.0111
222	0.0121	0.0012	0.0109
223	0.0119	0.0012	0.0106
224	0.0116	0.0012	0.0104
225	0.0114	0.0012	0.0102
226	0.0112	0.0011	0.0100
227	0.0110	0.0011	0.0098
228	0.0108	0.0011	0.0096
229	0.0106	0.0011	0.0095
230	0.0104	0.0011	0.0093
231	0.0102	0.0010	0.0092
232	0.0100	0.0010	0.0090
233	0.0099	0.0010	0.0089
234	0.0097	0.0010	0.0087
235	0.0096	0.0010	0.0086
236	0.0094	0.0010	0.0085
237	0.0093	0.0010	0.0083
238	0.0092	0.0009	0.0082
239	0.0090	0.0009	0.0081
240	0.0089	0.0009	0.0080
241	0.0088	0.0009	0.0079
242	0.0087	0.0009	0.0078
243	0.0086	0.0009	0.0077
244	0.0085	0.0009	0.0076
245	0.0084	0.0009	0.0075
246	0.0083	0.0009	0.0074
247	0.0082	0.0008	0.0073
248	0.0081	0.0008	0.0072
249	0.0080	0.0008	0.0072
250	0.0079	0.0008	0.0071
251	0.0078	0.0008	0.0070

252	0.0077	0.0008	0.0069
253	0.0076	0.0008	0.0069
254	0.0076	0.0008	0.0068
255	0.0075	0.0008	0.0067
256	0.0074	0.0008	0.0066
257	0.0073	0.0008	0.0066
258	0.0073	0.0007	0.0065
259	0.0072	0.0007	0.0065
260	0.0071	0.0007	0.0064
261	0.0071	0.0007	0.0063
262	0.0070	0.0007	0.0063
263	0.0069	0.0007	0.0062
264	0.0069	0.0007	0.0062
265	0.0068	0.0007	0.0061
266	0.0067	0.0007	0.0061
267	0.0067	0.0007	0.0060
268	0.0066	0.0007	0.0060
269	0.0066	0.0007	0.0059
270	0.0065	0.0007	0.0059
271	0.0065	0.0007	0.0058
272	0.0064	0.0007	0.0058
273	0.0064	0.0007	0.0057
274	0.0063	0.0006	0.0057
275	0.0063	0.0006	0.0056
276	0.0062	0.0006	0.0056
277	0.0062	0.0006	0.0055
278	0.0061	0.0006	0.0055
279	0.0061	0.0006	0.0055
280	0.0060	0.0006	0.0054
281	0.0060	0.0006	0.0054
282	0.0060	0.0006	0.0053
283	0.0059	0.0006	0.0053
284	0.0059	0.0006	0.0053
285	0.0058	0.0006	0.0052
286	0.0058	0.0006	0.0052
287	0.0057	0.0006	0.0052
288	0.0057	0.0006	0.0051

Total soil rain loss = 0.30(In)
Total effective rainfall = 4.19(In)
Peak flow rate in flood hydrograph = 5.49(CFS)

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24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0001	0.02	Q	|	|	|	|
0+10	0.0007	0.08	Q	|	|	|	|
0+15	0.0013	0.10	Q	|	|	|	|
0+20	0.0020	0.10	Q	|	|	|	|
0+25	0.0028	0.10	Q	|	|	|	|
0+30	0.0035	0.10	Q	|	|	|	|
0+35	0.0042	0.11	Q	|	|	|	|
0+40	0.0049	0.11	Q	|	|	|	|
0+45	0.0057	0.11	Q	|	|	|	|
0+50	0.0064	0.11	Q	|	|	|	|
0+55	0.0071	0.11	Q	|	|	|	|
1+ 0	0.0079	0.11	Q	|	|	|	|
1+ 5	0.0086	0.11	Q	|	|	|	|
1+10	0.0093	0.11	Q	|	|	|	|
1+15	0.0101	0.11	Q	|	|	|	|
1+20	0.0108	0.11	Q	|	|	|	|
1+25	0.0116	0.11	Q	|	|	|	|
1+30	0.0123	0.11	Q	|	|	|	|
1+35	0.0131	0.11	Q	|	|	|	|

1+40	0.0139	0.11	Q	|	|	|	|
1+45	0.0146	0.11	Q	|	|	|	|
1+50	0.0154	0.11	QV	|	|	|	|
1+55	0.0162	0.11	QV	|	|	|	|
2+ 0	0.0169	0.11	QV	|	|	|	|
2+ 5	0.0177	0.11	QV	|	|	|	|
2+10	0.0185	0.11	QV	|	|	|	|
2+15	0.0192	0.11	QV	|	|	|	|
2+20	0.0200	0.11	QV	|	|	|	|
2+25	0.0208	0.11	QV	|	|	|	|
2+30	0.0216	0.11	QV	|	|	|	|
2+35	0.0224	0.11	QV	|	|	|	|
2+40	0.0232	0.12	QV	|	|	|	|
2+45	0.0240	0.12	QV	|	|	|	|
2+50	0.0248	0.12	QV	|	|	|	|
2+55	0.0256	0.12	QV	|	|	|	|
3+ 0	0.0264	0.12	QV	|	|	|	|
3+ 5	0.0272	0.12	QV	|	|	|	|
3+10	0.0280	0.12	QV	|	|	|	|
3+15	0.0288	0.12	QV	|	|	|	|
3+20	0.0297	0.12	Q V	|	|	|	|
3+25	0.0305	0.12	Q V	|	|	|	|
3+30	0.0313	0.12	Q V	|	|	|	|
3+35	0.0321	0.12	Q V	|	|	|	|
3+40	0.0330	0.12	Q V	|	|	|	|
3+45	0.0338	0.12	Q V	|	|	|	|
3+50	0.0347	0.12	Q V	|	|	|	|
3+55	0.0355	0.12	Q V	|	|	|	|
4+ 0	0.0363	0.12	Q V	|	|	|	|
4+ 5	0.0372	0.12	Q V	|	|	|	|
4+10	0.0381	0.12	Q V	|	|	|	|
4+15	0.0389	0.12	Q V	|	|	|	|
4+20	0.0398	0.13	Q V	|	|	|	|
4+25	0.0406	0.13	Q V	|	|	|	|
4+30	0.0415	0.13	Q V	|	|	|	|
4+35	0.0424	0.13	Q V	|	|	|	|
4+40	0.0433	0.13	Q V	|	|	|	|
4+45	0.0442	0.13	Q V	|	|	|	|
4+50	0.0450	0.13	Q V	|	|	|	|
4+55	0.0459	0.13	Q V	|	|	|	|
5+ 0	0.0468	0.13	Q V	|	|	|	|
5+ 5	0.0477	0.13	Q V	|	|	|	|
5+10	0.0486	0.13	Q V	|	|	|	|
5+15	0.0495	0.13	Q V	|	|	|	|
5+20	0.0505	0.13	Q V	|	|	|	|
5+25	0.0514	0.13	Q V	|	|	|	|
5+30	0.0523	0.13	Q V	|	|	|	|
5+35	0.0532	0.13	Q V	|	|	|	|
5+40	0.0542	0.14	Q V	|	|	|	|
5+45	0.0551	0.14	Q V	|	|	|	|
5+50	0.0560	0.14	Q V	|	|	|	|
5+55	0.0570	0.14	Q V	|	|	|	|
6+ 0	0.0579	0.14	Q V	|	|	|	|
6+ 5	0.0589	0.14	Q V	|	|	|	|
6+10	0.0598	0.14	Q V	|	|	|	|
6+15	0.0608	0.14	Q V	|	|	|	|
6+20	0.0618	0.14	Q V	|	|	|	|
6+25	0.0628	0.14	Q V	|	|	|	|
6+30	0.0637	0.14	Q V	|	|	|	|
6+35	0.0647	0.14	Q V	|	|	|	|
6+40	0.0657	0.14	Q V	|	|	|	|
6+45	0.0667	0.14	Q V	|	|	|	|
6+50	0.0677	0.15	Q V	|	|	|	|
6+55	0.0687	0.15	Q V	|	|	|	|
7+ 0	0.0698	0.15	Q V	|	|	|	|
7+ 5	0.0708	0.15	Q V	|	|	|	|
7+10	0.0718	0.15	Q V	|	|	|	|
7+15	0.0728	0.15	Q V	|	|	|	|
7+20	0.0739	0.15	Q V	|	|	|	|
7+25	0.0749	0.15	Q V	|	|	|	|
7+30	0.0760	0.15	Q V	|	|	|	|

```
 7+35      0.0770      0.15  Q    V    |         |         |         |
 7+40      0.0781      0.15  Q    V    |         |         |         |
 7+45      0.0792      0.16  Q    V    |         |         |         |
 7+50      0.0803      0.16  Q    V    |         |         |         |
 7+55      0.0813      0.16  Q    V    |         |         |         |
 8+ 0      0.0824      0.16  Q    V    |         |         |         |
 8+ 5      0.0835      0.16  Q    V    |         |         |         |
 8+10      0.0846      0.16  Q    V    |         |         |         |
 8+15      0.0858      0.16  Q    V    |         |         |         |
 8+20      0.0869      0.16  Q    V    |         |         |         |
 8+25      0.0880      0.16  Q     V   |         |         |         |
 8+30      0.0891      0.17  Q     V   |         |         |         |
 8+35      0.0903      0.17  Q     V   |         |         |         |
 8+40      0.0914      0.17  Q     V   |         |         |         |
 8+45      0.0926      0.17  Q     V   |         |         |         |
 8+50      0.0938      0.17  Q     V   |         |         |         |
 8+55      0.0950      0.17  Q     V   |         |         |         |
 9+ 0      0.0961      0.17  Q     V   |         |         |         |
 9+ 5      0.0973      0.17  Q     V   |         |         |         |
 9+10      0.0985      0.18  Q     V   |         |         |         |
 9+15      0.0998      0.18  Q     V   |         |         |         |
 9+20      0.1010      0.18  Q     V   |         |         |         |
 9+25      0.1022      0.18  Q     V   |         |         |         |
 9+30      0.1035      0.18  Q      V  |         |         |         |
 9+35      0.1047      0.18  Q      V  |         |         |         |
 9+40      0.1060      0.18  Q      V  |         |         |         |
 9+45      0.1073      0.18  Q      V  |         |         |         |
 9+50      0.1085      0.19  Q      V  |         |         |         |
 9+55      0.1098      0.19  Q      V  |         |         |         |
10+ 0      0.1111      0.19  Q      V  |         |         |         |
10+ 5      0.1125      0.19  Q      V  |         |         |         |
10+10      0.1138      0.19  Q      V  |         |         |         |
10+15      0.1151      0.19  Q      V  |         |         |         |
10+20      0.1165      0.20  Q      V  |         |         |         |
10+25      0.1179      0.20  Q       V |         |         |         |
10+30      0.1192      0.20  Q       V |         |         |         |
10+35      0.1206      0.20  Q       V |         |         |         |
10+40      0.1220      0.20  Q       V |         |         |         |
10+45      0.1235      0.21  Q       V |         |         |         |
10+50      0.1249      0.21  Q       V |         |         |         |
10+55      0.1263      0.21  Q       V |         |         |         |
11+ 0      0.1278      0.21  Q       V |         |         |         |
11+ 5      0.1293      0.21  Q       V |         |         |         |
11+10      0.1308      0.22  Q       V |         |         |         |
11+15      0.1323      0.22  Q        V|         |         |         |
11+20      0.1338      0.22  Q        V|         |         |         |
11+25      0.1353      0.22  Q        V|         |         |         |
11+30      0.1369      0.23  Q        V|         |         |         |
11+35      0.1385      0.23  Q        V|         |         |         |
11+40      0.1401      0.23  Q        V|         |         |         |
11+45      0.1417      0.23  Q        V|         |         |         |
11+50      0.1433      0.24  Q        V|         |         |         |
11+55      0.1450      0.24  Q        V|         |         |         |
12+ 0      0.1467      0.24  Q         V         |         |         |
12+ 5      0.1485      0.26  |Q        V         |         |         |
12+10      0.1507      0.31  |Q        V         |         |         |
12+15      0.1529      0.33  |Q        V         |         |         |
12+20      0.1553      0.34  |Q        V         |         |         |
12+25      0.1577      0.35  |Q        V         |         |         |
12+30      0.1601      0.35  |Q        V         |         |         |
12+35      0.1626      0.36  |Q         |V        |         |         |
12+40      0.1650      0.36  |Q         |V        |         |         |
12+45      0.1676      0.37  |Q         |V        |         |         |
12+50      0.1701      0.37  |Q         |V        |         |         |
12+55      0.1727      0.38  |Q         |V        |         |         |
13+ 0      0.1754      0.38  |Q         |V        |         |         |
13+ 5      0.1780      0.39  |Q         | V       |         |         |
13+10      0.1808      0.39  |Q         | V       |         |         |
13+15      0.1835      0.40  |Q         | V       |         |         |
13+20      0.1863      0.41  |Q         | V       |         |         |
13+25      0.1892      0.41  |Q         | V       |         |         |
```

```
13+30       0.1921      0.42  |Q        |  V      |         |         |
13+35       0.1950      0.43  |Q        |  V      |         |         |
13+40       0.1980      0.44  |Q        |  V      |         |         |
13+45       0.2011      0.44  |Q        |  V      |         |         |
13+50       0.2042      0.45  |Q        |  V      |         |         |
13+55       0.2074      0.46  |Q        |   V     |         |         |
14+ 0       0.2107      0.47  |Q        |   V     |         |         |
14+ 5       0.2140      0.48  |Q        |   V     |         |         |
14+10       0.2174      0.49  |Q        |   V     |         |         |
14+15       0.2208      0.50  |Q        |    V    |         |         |
14+20       0.2243      0.51  | Q       |    V    |         |         |
14+25       0.2280      0.53  | Q       |    V    |         |         |
14+30       0.2317      0.54  | Q       |    V    |         |         |
14+35       0.2355      0.56  | Q       |     V   |         |         |
14+40       0.2394      0.57  | Q       |     V   |         |         |
14+45       0.2435      0.59  | Q       |     V   |         |         |
14+50       0.2477      0.61  | Q       |     V   |         |         |
14+55       0.2521      0.63  | Q       |      V  |         |         |
15+ 0       0.2566      0.66  | Q       |      V  |         |         |
15+ 5       0.2614      0.69  | Q       |      V  |         |         |
15+10       0.2663      0.72  | Q       |       V |         |         |
15+15       0.2715      0.75  |  Q      |       V |         |         |
15+20       0.2770      0.80  |  Q      |       V |         |         |
15+25       0.2826      0.81  |  Q      |        V|         |         |
15+30       0.2880      0.79  |  Q      |        V|         |         |
15+35       0.2937      0.83  |  Q      |         V         |         |
15+40       0.3000      0.91  |  Q      |         V         |         |
15+45       0.3072      1.04  |   Q     |         V         |         |
15+50       0.3158      1.26  |    Q    |         |V        |         |
15+55       0.3263      1.52  |     Q   |         | V       |         |
16+ 0       0.3405      2.05  |       Q |         |  V      |         |
16+ 5       0.3654      3.62  |         |   Q     |   V     |         |
16+10       0.4032      5.49  |         |         |Q     V  |         |
16+15       0.4217      2.69  |        Q|         |      V  |         |
16+20       0.4326      1.58  |     Q   |         |       V |         |
16+25       0.4399      1.07  |   Q     |         |         V         |
16+30       0.4464      0.93  |  Q      |         |         V         |
16+35       0.4519      0.81  |  Q      |         |         V         |
16+40       0.4569      0.72  | Q       |         |         |V        |
16+45       0.4615      0.66  | Q       |         |         |V        |
16+50       0.4657      0.61  | Q       |         |         |V        |
16+55       0.4697      0.57  | Q       |         |         | V       |
17+ 0       0.4734      0.54  | Q       |         |         | V       |
17+ 5       0.4769      0.51  | Q       |         |         | V       |
17+10       0.4803      0.49  |Q        |         |         | V       |
17+15       0.4836      0.47  |Q        |         |         |  V      |
17+20       0.4867      0.45  |Q        |         |         |  V      |
17+25       0.4897      0.44  |Q        |         |         |  V      |
17+30       0.4926      0.42  |Q        |         |         |  V      |
17+35       0.4955      0.41  |Q        |         |         |  V      |
17+40       0.4982      0.39  |Q        |         |         |   V     |
17+45       0.5008      0.38  |Q        |         |         |   V     |
17+50       0.5034      0.37  |Q        |         |         |   V     |
17+55       0.5059      0.36  |Q        |         |         |   V     |
18+ 0       0.5083      0.35  |Q        |         |         |   V     |
18+ 5       0.5105      0.33  |Q        |         |         |   V     |
18+10       0.5124      0.27  |Q        |         |         |   V     |
18+15       0.5141      0.25  |Q        |         |         |    V    |
18+20       0.5158      0.24  Q         |         |         |    V    |
18+25       0.5174      0.23  Q         |         |         |    V    |
18+30       0.5189      0.23  Q         |         |         |    V    |
18+35       0.5205      0.22  Q         |         |         |    V    |
18+40       0.5220      0.22  Q         |         |         |    V    |
18+45       0.5234      0.21  Q         |         |         |    V    |
18+50       0.5249      0.21  Q         |         |         |    V    |
18+55       0.5263      0.20  Q         |         |         |    V    |
19+ 0       0.5276      0.20  Q         |         |         |     V   |
19+ 5       0.5290      0.20  Q         |         |         |     V   |
19+10       0.5303      0.19  Q         |         |         |     V   |
19+15       0.5316      0.19  Q         |         |         |     V   |
19+20       0.5329      0.19  Q         |         |         |     V   |
```

```
  19+25       0.5342      0.18  Q          |          |          |     V    |
  19+30       0.5354      0.18  Q          |          |          |     V    |
  19+35       0.5367      0.18  Q          |          |          |     V    |
  19+40       0.5379      0.18  Q          |          |          |     V    |
  19+45       0.5390      0.17  Q          |          |          |     V    |
  19+50       0.5402      0.17  Q          |          |          |     V    |
  19+55       0.5414      0.17  Q          |          |          |     V    |
  20+ 0       0.5425      0.17  Q          |          |          |      V   |
  20+ 5       0.5436      0.16  Q          |          |          |      V   |
  20+10       0.5447      0.16  Q          |          |          |      V   |
  20+15       0.5458      0.16  Q          |          |          |      V   |
  20+20       0.5469      0.16  Q          |          |          |      V   |
  20+25       0.5480      0.15  Q          |          |          |      V   |
  20+30       0.5490      0.15  Q          |          |          |      V   |
  20+35       0.5501      0.15  Q          |          |          |      V   |
  20+40       0.5511      0.15  Q          |          |          |      V   |
  20+45       0.5521      0.15  Q          |          |          |      V   |
  20+50       0.5531      0.15  Q          |          |          |      V   |
  20+55       0.5541      0.14  Q          |          |          |      V   |
  21+ 0       0.5551      0.14  Q          |          |          |      V   |
  21+ 5       0.5561      0.14  Q          |          |          |      V   |
  21+10       0.5570      0.14  Q          |          |          |       V  |
  21+15       0.5580      0.14  Q          |          |          |       V  |
  21+20       0.5589      0.14  Q          |          |          |       V  |
  21+25       0.5598      0.14  Q          |          |          |       V  |
  21+30       0.5608      0.13  Q          |          |          |       V  |
  21+35       0.5617      0.13  Q          |          |          |       V  |
  21+40       0.5626      0.13  Q          |          |          |       V  |
  21+45       0.5635      0.13  Q          |          |          |       V  |
  21+50       0.5644      0.13  Q          |          |          |       V  |
  21+55       0.5653      0.13  Q          |          |          |       V  |
  22+ 0       0.5661      0.13  Q          |          |          |       V  |
  22+ 5       0.5670      0.13  Q          |          |          |       V  |
  22+10       0.5678      0.12  Q          |          |          |       V  |
  22+15       0.5687      0.12  Q          |          |          |       V  |
  22+20       0.5695      0.12  Q          |          |          |       V  |
  22+25       0.5704      0.12  Q          |          |          |       V  |
  22+30       0.5712      0.12  Q          |          |          |       V  |
  22+35       0.5720      0.12  Q          |          |          |        V|
  22+40       0.5728      0.12  Q          |          |          |        V|
  22+45       0.5736      0.12  Q          |          |          |        V|
  22+50       0.5744      0.12  Q          |          |          |        V|
  22+55       0.5752      0.12  Q          |          |          |        V|
  23+ 0       0.5760      0.11  Q          |          |          |        V|
  23+ 5       0.5768      0.11  Q          |          |          |        V|
  23+10       0.5776      0.11  Q          |          |          |        V|
  23+15       0.5783      0.11  Q          |          |          |        V|
  23+20       0.5791      0.11  Q          |          |          |        V|
  23+25       0.5799      0.11  Q          |          |          |        V|
  23+30       0.5806      0.11  Q          |          |          |        V|
  23+35       0.5814      0.11  Q          |          |          |        V|
  23+40       0.5821      0.11  Q          |          |          |        V|
  23+45       0.5828      0.11  Q          |          |          |        V|
  23+50       0.5836      0.11  Q          |          |          |        V|
  23+55       0.5843      0.11  Q          |          |          |        V|
  24+ 0       0.5850      0.10  Q          |          |          |        V|
  24+ 5       0.5856      0.08  Q          |          |          |        V|
  24+10       0.5858      0.03  Q          |          |          |        V|
  24+15       0.5858      0.01  Q          |          |          |        V|
  24+20       0.5859      0.00  Q          |          |          |        V|
  24+25       0.5859      0.00  Q          |          |          |        V|
  24+30       0.5859      0.00  Q          |          |          |        V|
-------------------------------------------------------------------------
```

- 100 Year 3 Hour Post-Development Unit Hydrograph – Area 'F'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989-2012, Version 7.2

       Study date  10/20/16   File Name prf10003.out


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------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'F' - 100 YEAR 3 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 100

       Antecedent Moisture Condition = 3

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 74.4       1.7          1.00     D     0.200     0.100    0.020

Area-averaged adjusted loss rate Fm (In/Hr) =  0.020

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC3)          Yield Fr
     0.17   0.100         74.4      90.5       1.05     0.807
     1.51   0.900         98.0      98.0       0.20     0.958

Area-averaged catchment yield fraction, Y =  0.943
Area-averaged low loss fraction, Yb =  0.057
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.091 (hours)
Watershed area =       1.68(Ac.)
Catchment Lag time =   0.073 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 114.8095
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.020(In/Hr)
Average low loss rate fraction (Yb) = 0.057 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.520(In)
Computed peak 30-minute rainfall =  1.090(In)
Specified peak 1-hour rainfall =  1.450(In)
Computed peak 3-hour rainfall =  2.430(In)
Specified peak 6-hour rainfall =  3.360(In)
Specified peak 24-hour rainfall =  5.630(In)


Rainfall depth area reduction factors:
Using a total area of       1.68(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000     Adjusted rainfall =  0.520(In)
```

```
30-minute factor = 1.000    Adjusted rainfall =  1.090(In)
1-hour factor = 1.000       Adjusted rainfall =  1.450(In)
3-hour factor = 1.000       Adjusted rainfall =  2.430(In)
6-hour factor = 1.000       Adjusted rainfall =  3.360(In)
24-hour factor = 1.000 Adjusted rainfall =  5.630(In)
--------------------------------------------------------------------

                     U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------
               (K =        20.32 (CFS))

  1               19.643                   3.991
  2               75.813                  11.412
  3               92.011                   3.291
  4               97.656                   1.147
  5               99.076                   0.288
  6               99.801                   0.147
  7              100.000                   0.040
--------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.5200               0.5200
  2              0.6923               0.1724
  3              0.8186               0.1262
  4              0.9218               0.1033
  5              1.0108               0.0890
  6              1.0899               0.0791
  7              1.1613               0.0714
  8              1.2270               0.0656
  9              1.2879               0.0610
 10              1.3450               0.0571
 11              1.3989               0.0538
 12              1.4499               0.0510
 13              1.5055               0.0556
 14              1.5588               0.0534
 15              1.6102               0.0514
 16              1.6598               0.0496
 17              1.7078               0.0480
 18              1.7543               0.0465
 19              1.7995               0.0452
 20              1.8434               0.0439
 21              1.8861               0.0428
 22              1.9278               0.0417
 23              1.9685               0.0407
 24              2.0083               0.0398
 25              2.0472               0.0389
 26              2.0853               0.0381
 27              2.1226               0.0373
 28              2.1592               0.0366
 29              2.1951               0.0359
 30              2.2304               0.0353
 31              2.2650               0.0346
 32              2.2991               0.0341
 33              2.3326               0.0335
 34              2.3656               0.0330
 35              2.3980               0.0325
 36              2.4300               0.0320
--------------------------------------------------------------------
Unit              Unit             Unit             Effective
Period            Rainfall         Soil-Loss        Rainfall
(number)            (In)           (In)               (In)
--------------------------------------------------------------------
  1              0.0320           0.0017             0.0303
  2              0.0325           0.0017             0.0308
  3              0.0335           0.0017             0.0318
  4              0.0341           0.0017             0.0324
  5              0.0353           0.0017             0.0336
  6              0.0359           0.0017             0.0342
```

7	0.0373	0.0017	0.0357
8	0.0381	0.0017	0.0364
9	0.0398	0.0017	0.0381
10	0.0407	0.0017	0.0390
11	0.0428	0.0017	0.0411
12	0.0439	0.0017	0.0422
13	0.0465	0.0017	0.0448
14	0.0480	0.0017	0.0463
15	0.0514	0.0017	0.0497
16	0.0534	0.0017	0.0517
17	0.0510	0.0017	0.0494
18	0.0538	0.0017	0.0522
19	0.0610	0.0017	0.0593
20	0.0656	0.0017	0.0640
21	0.0791	0.0017	0.0774
22	0.0890	0.0017	0.0873
23	0.1262	0.0017	0.1246
24	0.1724	0.0017	0.1707
25	0.5200	0.0017	0.5183
26	0.1033	0.0017	0.1016
27	0.0714	0.0017	0.0697
28	0.0571	0.0017	0.0554
29	0.0556	0.0017	0.0539
30	0.0496	0.0017	0.0479
31	0.0452	0.0017	0.0435
32	0.0417	0.0017	0.0400
33	0.0389	0.0017	0.0372
34	0.0366	0.0017	0.0349
35	0.0346	0.0017	0.0330
36	0.0330	0.0017	0.0313

Total soil rain loss = 0.06(In)
Total effective rainfall = 2.37(In)
Peak flow rate in flood hydrograph = 7.06(CFS)

++

3 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0008	0.12	Q				
0+10	0.0041	0.47	VQ				
0+15	0.0080	0.58	V Q				
0+20	0.0124	0.63	|VQ				
0+25	0.0169	0.65	| Q				
0+30	0.0215	0.68	| Q				
0+35	0.0263	0.70	| QV				
0+40	0.0313	0.72	| QV				
0+45	0.0364	0.74	| Q V				
0+50	0.0416	0.77	| Q V				
0+55	0.0471	0.79	| Q V				
1+ 0	0.0528	0.83	| Q V				
1+ 5	0.0587	0.86	| Q V				
1+10	0.0649	0.90	| Q V				
1+15	0.0714	0.94	| Q V				
1+20	0.0783	1.00	| Q V				
1+25	0.0853	1.02	| Q V				
1+30	0.0924	1.02	| Q |V				
1+35	0.0998	1.08	| Q | V				
1+40	0.1079	1.18	| Q | V				
1+45	0.1170	1.32	| Q | V				
1+50	0.1276	1.53	| Q | V				
1+55	0.1403	1.85	| Q | V				
2+ 0	0.1576	2.51	| Q V				
2+ 5	0.1890	4.56	| | Q | V			
2+10	0.2377	7.06	| | | Q |			

```
    2+15       0.2610      3.39  |          |  Q       |          |V         |
    2+20       0.2749      2.02  |        Q |          |          |  V       |
    2+25       0.2844      1.37  |     Q    |          |          |   V      |
    2+30       0.2925      1.18  |   Q      |          |          |    V     |
    2+35       0.2995      1.02  |   Q      |          |          |     V    |
    2+40       0.3058      0.91  |  Q       |          |          |     V    |
    2+45       0.3115      0.83  |  Q       |          |          |      V   |
    2+50       0.3168      0.77  |  Q       |          |          |       V  |
    2+55       0.3217      0.72  | Q        |          |          |       V  |
    3+ 0       0.3264      0.68  | Q        |          |          |        V |
    3+ 5       0.3300      0.52  | Q        |          |          |        V |
    3+10       0.3311      0.16  Q          |          |          |        V |
    3+15       0.3315      0.05  Q          |          |          |        V |
    3+20       0.3316      0.02  Q          |          |          |        V |
    3+25       0.3316      0.01  Q          |          |          |        V |
    3+30       0.3316      0.00  Q          |          |          |         V
-------------------------------------------------------------------------------
```

- 100 Year 6 Hour Post-Development Unit Hydrograph – Area 'F'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/20/16   File Name prf10006.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'F' - 100 YEAR 6 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 100

       Antecedent Moisture Condition = 3

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 74.4       1.7          1.00     D     0.200     0.100    0.020

Area-averaged adjusted loss rate Fm (In/Hr) =  0.020

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC3)          Yield Fr
     0.17   0.100         74.4      90.5       1.05     0.807
     1.51   0.900         98.0      98.0       0.20     0.958

Area-averaged catchment yield fraction, Y =  0.943
Area-averaged low loss fraction, Yb =  0.057
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.091 (hours)
Watershed area =       1.68(Ac.)
Catchment Lag time =   0.073 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 114.8095
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.020(In/Hr)
Average low loss rate fraction (Yb) = 0.057 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.520(In)
Computed peak 30-minute rainfall =  1.090(In)
Specified peak 1-hour rainfall =  1.450(In)
Computed peak 3-hour rainfall =  2.430(In)
Specified peak 6-hour rainfall =  3.360(In)
Specified peak 24-hour rainfall =  5.630(In)


Rainfall depth area reduction factors:
Using a total area of       1.68(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000     Adjusted rainfall =  0.520(In)
```

```
30-minute factor = 1.000    Adjusted rainfall =  1.090(In)
1-hour factor = 1.000       Adjusted rainfall =  1.450(In)
3-hour factor = 1.000       Adjusted rainfall =  2.430(In)
6-hour factor = 1.000       Adjusted rainfall =  3.360(In)
24-hour factor = 1.000 Adjusted rainfall =  5.630(In)
--------------------------------------------------------------------

                      U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------
               (K =        20.32 (CFS))

  1               19.643                   3.991
  2               75.813                  11.412
  3               92.011                   3.291
  4               97.656                   1.147
  5               99.076                   0.288
  6               99.801                   0.147
  7              100.000                   0.040
--------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.5200               0.5200
  2              0.6923               0.1724
  3              0.8186               0.1262
  4              0.9218               0.1033
  5              1.0108               0.0890
  6              1.0899               0.0791
  7              1.1613               0.0714
  8              1.2270               0.0656
  9              1.2879               0.0610
 10              1.3450               0.0571
 11              1.3989               0.0538
 12              1.4499               0.0510
 13              1.5055               0.0556
 14              1.5588               0.0534
 15              1.6102               0.0514
 16              1.6598               0.0496
 17              1.7078               0.0480
 18              1.7543               0.0465
 19              1.7995               0.0452
 20              1.8434               0.0439
 21              1.8861               0.0428
 22              1.9278               0.0417
 23              1.9685               0.0407
 24              2.0083               0.0398
 25              2.0472               0.0389
 26              2.0853               0.0381
 27              2.1226               0.0373
 28              2.1592               0.0366
 29              2.1951               0.0359
 30              2.2304               0.0353
 31              2.2650               0.0346
 32              2.2991               0.0341
 33              2.3326               0.0335
 34              2.3656               0.0330
 35              2.3980               0.0325
 36              2.4300               0.0320
 37              2.4613               0.0313
 38              2.4922               0.0309
 39              2.5226               0.0304
 40              2.5527               0.0300
 41              2.5823               0.0296
 42              2.6116               0.0293
 43              2.6404               0.0289
 44              2.6690               0.0285
 45              2.6972               0.0282
 46              2.7250               0.0279
 47              2.7526               0.0275
```

48	2.7798	0.0272
49	2.8067	0.0269
50	2.8334	0.0266
51	2.8597	0.0264
52	2.8858	0.0261
53	2.9116	0.0258
54	2.9372	0.0256
55	2.9625	0.0253
56	2.9875	0.0251
57	3.0123	0.0248
58	3.0369	0.0246
59	3.0613	0.0244
60	3.0855	0.0241
61	3.1094	0.0239
62	3.1331	0.0237
63	3.1566	0.0235
64	3.1800	0.0233
65	3.2031	0.0231
66	3.2260	0.0229
67	3.2488	0.0228
68	3.2714	0.0226
69	3.2938	0.0224
70	3.3160	0.0222
71	3.3381	0.0221
72	3.3600	0.0219

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0219	0.0013	0.0206
2	0.0221	0.0013	0.0208
3	0.0224	0.0013	0.0211
4	0.0226	0.0013	0.0213
5	0.0229	0.0013	0.0216
6	0.0231	0.0013	0.0218
7	0.0235	0.0013	0.0222
8	0.0237	0.0014	0.0224
9	0.0241	0.0014	0.0228
10	0.0244	0.0014	0.0230
11	0.0248	0.0014	0.0234
12	0.0251	0.0014	0.0236
13	0.0256	0.0015	0.0241
14	0.0258	0.0015	0.0243
15	0.0264	0.0015	0.0248
16	0.0266	0.0015	0.0251
17	0.0272	0.0016	0.0257
18	0.0275	0.0016	0.0260
19	0.0282	0.0016	0.0266
20	0.0285	0.0016	0.0269
21	0.0293	0.0017	0.0276
22	0.0296	0.0017	0.0280
23	0.0304	0.0017	0.0288
24	0.0309	0.0017	0.0292
25	0.0320	0.0017	0.0303
26	0.0325	0.0017	0.0308
27	0.0335	0.0017	0.0318
28	0.0341	0.0017	0.0324
29	0.0353	0.0017	0.0336
30	0.0359	0.0017	0.0342
31	0.0373	0.0017	0.0357
32	0.0381	0.0017	0.0364
33	0.0398	0.0017	0.0381
34	0.0407	0.0017	0.0390
35	0.0428	0.0017	0.0411
36	0.0439	0.0017	0.0422
37	0.0465	0.0017	0.0448
38	0.0480	0.0017	0.0463
39	0.0514	0.0017	0.0497
40	0.0534	0.0017	0.0517
41	0.0510	0.0017	0.0494

```
       42              0.0538          0.0017              0.0522
       43              0.0610          0.0017              0.0593
       44              0.0656          0.0017              0.0640
       45              0.0791          0.0017              0.0774
       46              0.0890          0.0017              0.0873
       47              0.1262          0.0017              0.1246
       48              0.1724          0.0017              0.1707
       49              0.5200          0.0017              0.5183
       50              0.1033          0.0017              0.1016
       51              0.0714          0.0017              0.0697
       52              0.0571          0.0017              0.0554
       53              0.0556          0.0017              0.0539
       54              0.0496          0.0017              0.0479
       55              0.0452          0.0017              0.0435
       56              0.0417          0.0017              0.0400
       57              0.0389          0.0017              0.0372
       58              0.0366          0.0017              0.0349
       59              0.0346          0.0017              0.0330
       60              0.0330          0.0017              0.0313
       61              0.0313          0.0017              0.0297
       62              0.0300          0.0017              0.0284
       63              0.0289          0.0017              0.0272
       64              0.0279          0.0016              0.0263
       65              0.0269          0.0015              0.0254
       66              0.0261          0.0015              0.0246
       67              0.0253          0.0015              0.0239
       68              0.0246          0.0014              0.0232
       69              0.0239          0.0014              0.0226
       70              0.0233          0.0013              0.0220
       71              0.0228          0.0013              0.0215
       72              0.0222          0.0013              0.0210
      ------------------------------------------------------------------------
      ------------------------------------------------------------------------
      Total soil rain loss =      0.11(In)
      Total effective rainfall =      3.25(In)
      Peak flow rate in flood hydrograph =      7.06(CFS)
      ------------------------------------------------------------------------
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          6 - H O U R    S T O R M
                    R u n o f f      H y d r o g r a p h
      ------------------------------------------------------------------------
                 Hydrograph in   5   Minute intervals ((CFS))

      ------------------------------------------------------------------------
 Time(h+m) Volume Ac.Ft   Q(CFS)  0        2.5       5.0       7.5      10.0
 ------------------------------------------------------------------------
   0+ 5       0.0006      0.08  Q         |         |         |         |
   0+10       0.0028      0.32  VQ        |         |         |         |
   0+15       0.0054      0.39  VQ        |         |         |         |
   0+20       0.0083      0.42  VQ        |         |         |         |
   0+25       0.0113      0.43  VQ        |         |         |         |
   0+30       0.0143      0.44  |Q        |         |         |         |
   0+35       0.0173      0.44  |Q        |         |         |         |
   0+40       0.0204      0.45  |Q        |         |         |         |
   0+45       0.0236      0.45  |QV       |         |         |         |
   0+50       0.0267      0.46  |QV       |         |         |         |
   0+55       0.0299      0.47  |QV       |         |         |         |
   1+ 0       0.0332      0.47  |QV       |         |         |         |
   1+ 5       0.0365      0.48  |Q V      |         |         |         |
   1+10       0.0399      0.49  |Q V      |         |         |         |
   1+15       0.0433      0.49  |Q V      |         |         |         |
   1+20       0.0467      0.50  | Q V     |         |         |         |
   1+25       0.0502      0.51  | Q V     |         |         |         |
   1+30       0.0538      0.52  | Q V     |         |         |         |
   1+35       0.0575      0.53  | Q  V    |         |         |         |
   1+40       0.0612      0.54  | Q  V    |         |         |         |
   1+45       0.0649      0.55  | Q  V    |         |         |         |
   1+50       0.0688      0.56  | Q   V   |         |         |         |
   1+55       0.0727      0.57  | Q   V   |         |         |         |
   2+ 0       0.0767      0.58  | Q   V   |         |         |         |
   2+ 5       0.0808      0.59  | Q    V  |         |         |         |
```

```
   2+10       0.0850      0.61  | Q    V  |          |          |          |
   2+15       0.0893      0.63  | Q    V  |          |          |          |
   2+20       0.0937      0.64  | Q     V |          |          |          |
   2+25       0.0982      0.66  | Q     V |          |          |          |
   2+30       0.1029      0.68  | Q      V|          |          |          |
   2+35       0.1077      0.70  | Q      V|          |          |          |
   2+40       0.1127      0.72  | Q      V|          |          |          |
   2+45       0.1177      0.74  | Q       V          |          |          |
   2+50       0.1230      0.77  |  Q      V          |          |          |
   2+55       0.1285      0.79  |  Q      |V         |          |          |
   3+ 0       0.1342      0.83  |  Q      |V         |          |          |
   3+ 5       0.1401      0.86  |  Q      | V        |          |          |
   3+10       0.1463      0.90  |  Q      | V        |          |          |
   3+15       0.1528      0.94  |  Q      |  V       |          |          |
   3+20       0.1597      1.00  |  Q      |   V      |          |          |
   3+25       0.1667      1.02  |   Q     |   V      |          |          |
   3+30       0.1738      1.02  |   Q     |    V     |          |          |
   3+35       0.1812      1.08  |   Q     |    V     |          |          |
   3+40       0.1893      1.18  |   Q     |     V    |          |          |
   3+45       0.1984      1.32  |    Q    |      V   |          |          |
   3+50       0.2090      1.53  |     Q   |       V  |          |          |
   3+55       0.2217      1.85  |      Q  |        V |          |          |
   4+ 0       0.2390      2.51  |         Q          |V         |          |
   4+ 5       0.2704      4.56  |          |       Q |  V       |          |
   4+10       0.3190      7.06  |          |         |       Q  |          |
   4+15       0.3424      3.39  |          |  Q      |         V|          |
   4+20       0.3563      2.02  |       Q  |         |          |V         |
   4+25       0.3658      1.37  |    Q     |         |          | V        |
   4+30       0.3739      1.18  |   Q      |         |          | V        |
   4+35       0.3809      1.02  |   Q      |         |          |  V       |
   4+40       0.3871      0.91  |  Q       |         |          |   V      |
   4+45       0.3929      0.83  |  Q       |         |          |   V      |
   4+50       0.3982      0.77  |  Q       |         |          |    V     |
   4+55       0.4031      0.72  | Q        |         |          |    V     |
   5+ 0       0.4078      0.68  | Q        |         |          |    V     |
   5+ 5       0.4122      0.64  | Q        |         |          |     V    |
   5+10       0.4164      0.61  | Q        |         |          |     V    |
   5+15       0.4204      0.58  | Q        |         |          |      V   |
   5+20       0.4243      0.56  | Q        |         |          |      V   |
   5+25       0.4280      0.54  | Q        |         |          |      V   |
   5+30       0.4316      0.52  | Q        |         |          |      V   |
   5+35       0.4350      0.50  | Q        |         |          |       V  |
   5+40       0.4384      0.49  |Q         |         |          |       V  |
   5+45       0.4416      0.47  |Q         |         |          |       V  |
   5+50       0.4448      0.46  |Q         |         |          |        V |
   5+55       0.4479      0.45  |Q         |         |          |        V |
   6+ 0       0.4509      0.44  |Q         |         |          |        V |
   6+ 5       0.4533      0.35  |Q         |         |          |        V |
   6+10       0.4540      0.10  Q          |         |          |        V |
   6+15       0.4543      0.03  Q          |         |          |        V |
   6+20       0.4543      0.01  Q          |         |          |        V |
   6+25       0.4544      0.00  Q          |         |          |        V |
   6+30       0.4544      0.00  Q          |         |          |         V
-------------------------------------------------------------------------
```

- 100 Year 12 Hour Post-Development Unit Hydrograph – Area 'F'

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       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/20/16   File Name prf10012.out


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Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

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RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'F' - 100 YEAR 12 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 100

       Antecedent Moisture Condition = 3

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 74.4       1.7          1.00     D     0.200     0.100    0.020

Area-averaged adjusted loss rate Fm (In/Hr) =  0.020

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC3)          Yield Fr
     0.17   0.100         74.4      90.5       1.05     0.807
     1.51   0.900         98.0      98.0       0.20     0.958

Area-averaged catchment yield fraction, Y =  0.943
Area-averaged low loss fraction, Yb =  0.057
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.091 (hours)
Watershed area =       1.68(Ac.)
Catchment Lag time =   0.073 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 114.8095
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.020(In/Hr)
Average low loss rate fraction (Yb) = 0.057 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.520(In)
Computed peak 30-minute rainfall =  1.090(In)
Specified peak 1-hour rainfall =  1.450(In)
Computed peak 3-hour rainfall =  2.430(In)
Specified peak 6-hour rainfall =  3.360(In)
Specified peak 24-hour rainfall =  5.630(In)


Rainfall depth area reduction factors:
Using a total area of       1.68(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000     Adjusted rainfall =  0.520(In)
```

```
30-minute factor = 1.000    Adjusted rainfall =  1.090(In)
1-hour factor = 1.000       Adjusted rainfall =  1.450(In)
3-hour factor = 1.000       Adjusted rainfall =  2.430(In)
6-hour factor = 1.000       Adjusted rainfall =  3.360(In)
24-hour factor = 1.000 Adjusted rainfall =  5.630(In)
--------------------------------------------------------------------

                      U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------
               (K =        20.32 (CFS))

  1               19.643                   3.991
  2               75.813                  11.412
  3               92.011                   3.291
  4               97.656                   1.147
  5               99.076                   0.288
  6               99.801                   0.147
  7              100.000                   0.040
--------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.5200               0.5200
  2              0.6923               0.1724
  3              0.8186               0.1262
  4              0.9218               0.1033
  5              1.0108               0.0890
  6              1.0899               0.0791
  7              1.1613               0.0714
  8              1.2270               0.0656
  9              1.2879               0.0610
 10              1.3450               0.0571
 11              1.3989               0.0538
 12              1.4499               0.0510
 13              1.5055               0.0556
 14              1.5588               0.0534
 15              1.6102               0.0514
 16              1.6598               0.0496
 17              1.7078               0.0480
 18              1.7543               0.0465
 19              1.7995               0.0452
 20              1.8434               0.0439
 21              1.8861               0.0428
 22              1.9278               0.0417
 23              1.9685               0.0407
 24              2.0083               0.0398
 25              2.0472               0.0389
 26              2.0853               0.0381
 27              2.1226               0.0373
 28              2.1592               0.0366
 29              2.1951               0.0359
 30              2.2304               0.0353
 31              2.2650               0.0346
 32              2.2991               0.0341
 33              2.3326               0.0335
 34              2.3656               0.0330
 35              2.3980               0.0325
 36              2.4300               0.0320
 37              2.4613               0.0313
 38              2.4922               0.0309
 39              2.5226               0.0304
 40              2.5527               0.0300
 41              2.5823               0.0296
 42              2.6116               0.0293
 43              2.6404               0.0289
 44              2.6690               0.0285
 45              2.6972               0.0282
 46              2.7250               0.0279
 47              2.7526               0.0275
```

48	2.7798	0.0272
49	2.8067	0.0269
50	2.8334	0.0266
51	2.8597	0.0264
52	2.8858	0.0261
53	2.9116	0.0258
54	2.9372	0.0256
55	2.9625	0.0253
56	2.9875	0.0251
57	3.0123	0.0248
58	3.0369	0.0246
59	3.0613	0.0244
60	3.0855	0.0241
61	3.1094	0.0239
62	3.1331	0.0237
63	3.1566	0.0235
64	3.1800	0.0233
65	3.2031	0.0231
66	3.2260	0.0229
67	3.2488	0.0228
68	3.2714	0.0226
69	3.2938	0.0224
70	3.3160	0.0222
71	3.3381	0.0221
72	3.3600	0.0219
73	3.3773	0.0173
74	3.3944	0.0172
75	3.4114	0.0170
76	3.4283	0.0169
77	3.4450	0.0167
78	3.4616	0.0166
79	3.4781	0.0165
80	3.4944	0.0163
81	3.5106	0.0162
82	3.5267	0.0161
83	3.5426	0.0160
84	3.5585	0.0158
85	3.5742	0.0157
86	3.5898	0.0156
87	3.6053	0.0155
88	3.6206	0.0154
89	3.6359	0.0153
90	3.6511	0.0152
91	3.6661	0.0151
92	3.6811	0.0149
93	3.6959	0.0148
94	3.7107	0.0147
95	3.7253	0.0146
96	3.7399	0.0146
97	3.7543	0.0145
98	3.7687	0.0144
99	3.7830	0.0143
100	3.7971	0.0142
101	3.8112	0.0141
102	3.8253	0.0140
103	3.8392	0.0139
104	3.8530	0.0138
105	3.8668	0.0138
106	3.8804	0.0137
107	3.8940	0.0136
108	3.9075	0.0135
109	3.9210	0.0134
110	3.9343	0.0134
111	3.9476	0.0133
112	3.9608	0.0132
113	3.9739	0.0131
114	3.9870	0.0131
115	4.0000	0.0130
116	4.0129	0.0129
117	4.0257	0.0128
118	4.0385	0.0128

119	4.0512	0.0127
120	4.0639	0.0126
121	4.0764	0.0126
122	4.0890	0.0125
123	4.1014	0.0124
124	4.1138	0.0124
125	4.1261	0.0123
126	4.1384	0.0123
127	4.1506	0.0122
128	4.1627	0.0121
129	4.1748	0.0121
130	4.1868	0.0120
131	4.1988	0.0120
132	4.2107	0.0119
133	4.2225	0.0118
134	4.2343	0.0118
135	4.2461	0.0117
136	4.2577	0.0117
137	4.2694	0.0116
138	4.2809	0.0116
139	4.2925	0.0115
140	4.3039	0.0115
141	4.3154	0.0114
142	4.3267	0.0114
143	4.3381	0.0113
144	4.3493	0.0113

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0113	0.0006	0.0106
2	0.0113	0.0006	0.0107
3	0.0114	0.0007	0.0108
4	0.0115	0.0007	0.0108
5	0.0116	0.0007	0.0109
6	0.0116	0.0007	0.0110
7	0.0117	0.0007	0.0111
8	0.0118	0.0007	0.0111
9	0.0119	0.0007	0.0112
10	0.0120	0.0007	0.0113
11	0.0121	0.0007	0.0114
12	0.0121	0.0007	0.0114
13	0.0123	0.0007	0.0116
14	0.0123	0.0007	0.0116
15	0.0124	0.0007	0.0117
16	0.0125	0.0007	0.0118
17	0.0126	0.0007	0.0119
18	0.0127	0.0007	0.0120
19	0.0128	0.0007	0.0121
20	0.0129	0.0007	0.0122
21	0.0131	0.0007	0.0123
22	0.0131	0.0008	0.0124
23	0.0133	0.0008	0.0125
24	0.0134	0.0008	0.0126
25	0.0135	0.0008	0.0127
26	0.0136	0.0008	0.0128
27	0.0138	0.0008	0.0130
28	0.0138	0.0008	0.0130
29	0.0140	0.0008	0.0132
30	0.0141	0.0008	0.0133
31	0.0143	0.0008	0.0135
32	0.0144	0.0008	0.0135
33	0.0146	0.0008	0.0137
34	0.0146	0.0008	0.0138
35	0.0148	0.0009	0.0140
36	0.0149	0.0009	0.0141
37	0.0152	0.0009	0.0143
38	0.0153	0.0009	0.0144
39	0.0155	0.0009	0.0146
40	0.0156	0.0009	0.0147

41	0.0158	0.0009	0.0149
42	0.0160	0.0009	0.0150
43	0.0162	0.0009	0.0153
44	0.0163	0.0009	0.0154
45	0.0166	0.0010	0.0156
46	0.0167	0.0010	0.0158
47	0.0170	0.0010	0.0160
48	0.0172	0.0010	0.0162
49	0.0219	0.0013	0.0206
50	0.0221	0.0013	0.0208
51	0.0224	0.0013	0.0211
52	0.0226	0.0013	0.0213
53	0.0229	0.0013	0.0216
54	0.0231	0.0013	0.0218
55	0.0235	0.0013	0.0222
56	0.0237	0.0014	0.0224
57	0.0241	0.0014	0.0228
58	0.0244	0.0014	0.0230
59	0.0248	0.0014	0.0234
60	0.0251	0.0014	0.0236
61	0.0256	0.0015	0.0241
62	0.0258	0.0015	0.0243
63	0.0264	0.0015	0.0248
64	0.0266	0.0015	0.0251
65	0.0272	0.0016	0.0257
66	0.0275	0.0016	0.0260
67	0.0282	0.0016	0.0266
68	0.0285	0.0016	0.0269
69	0.0293	0.0017	0.0276
70	0.0296	0.0017	0.0280
71	0.0304	0.0017	0.0288
72	0.0309	0.0017	0.0292
73	0.0320	0.0017	0.0303
74	0.0325	0.0017	0.0308
75	0.0335	0.0017	0.0318
76	0.0341	0.0017	0.0324
77	0.0353	0.0017	0.0336
78	0.0359	0.0017	0.0342
79	0.0373	0.0017	0.0357
80	0.0381	0.0017	0.0364
81	0.0398	0.0017	0.0381
82	0.0407	0.0017	0.0390
83	0.0428	0.0017	0.0411
84	0.0439	0.0017	0.0422
85	0.0465	0.0017	0.0448
86	0.0480	0.0017	0.0463
87	0.0514	0.0017	0.0497
88	0.0534	0.0017	0.0517
89	0.0510	0.0017	0.0494
90	0.0538	0.0017	0.0522
91	0.0610	0.0017	0.0593
92	0.0656	0.0017	0.0640
93	0.0791	0.0017	0.0774
94	0.0890	0.0017	0.0873
95	0.1262	0.0017	0.1246
96	0.1724	0.0017	0.1707
97	0.5200	0.0017	0.5183
98	0.1033	0.0017	0.1016
99	0.0714	0.0017	0.0697
100	0.0571	0.0017	0.0554
101	0.0556	0.0017	0.0539
102	0.0496	0.0017	0.0479
103	0.0452	0.0017	0.0435
104	0.0417	0.0017	0.0400
105	0.0389	0.0017	0.0372
106	0.0366	0.0017	0.0349
107	0.0346	0.0017	0.0330
108	0.0330	0.0017	0.0313
109	0.0313	0.0017	0.0297
110	0.0300	0.0017	0.0284
111	0.0289	0.0017	0.0272

112	0.0279	0.0016	0.0263
113	0.0269	0.0015	0.0254
114	0.0261	0.0015	0.0246
115	0.0253	0.0015	0.0239
116	0.0246	0.0014	0.0232
117	0.0239	0.0014	0.0226
118	0.0233	0.0013	0.0220
119	0.0228	0.0013	0.0215
120	0.0222	0.0013	0.0210
121	0.0173	0.0010	0.0163
122	0.0169	0.0010	0.0159
123	0.0165	0.0009	0.0155
124	0.0161	0.0009	0.0152
125	0.0157	0.0009	0.0148
126	0.0154	0.0009	0.0145
127	0.0151	0.0009	0.0142
128	0.0147	0.0008	0.0139
129	0.0145	0.0008	0.0136
130	0.0142	0.0008	0.0134
131	0.0139	0.0008	0.0131
132	0.0137	0.0008	0.0129
133	0.0134	0.0008	0.0127
134	0.0132	0.0008	0.0124
135	0.0130	0.0007	0.0122
136	0.0128	0.0007	0.0120
137	0.0126	0.0007	0.0119
138	0.0124	0.0007	0.0117
139	0.0122	0.0007	0.0115
140	0.0120	0.0007	0.0113
141	0.0118	0.0007	0.0112
142	0.0117	0.0007	0.0110
143	0.0115	0.0007	0.0109
144	0.0114	0.0007	0.0107

Total soil rain loss = 0.17(In)
Total effective rainfall = 4.18(In)
Peak flow rate in flood hydrograph = 7.06(CFS)

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12 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0003	0.04	Q				
0+10	0.0014	0.16	Q				
0+15	0.0028	0.20	Q				
0+20	0.0043	0.21	Q				
0+25	0.0058	0.22	Q				
0+30	0.0073	0.22	Q				
0+35	0.0088	0.22	Q				
0+40	0.0104	0.22	Q				
0+45	0.0119	0.23	Q				
0+50	0.0135	0.23	Q				
0+55	0.0151	0.23	QV				
1+ 0	0.0167	0.23	QV				
1+ 5	0.0183	0.23	QV				
1+10	0.0199	0.23	QV				
1+15	0.0215	0.24	QV				
1+20	0.0231	0.24	QV				
1+25	0.0248	0.24	QV				
1+30	0.0264	0.24	QV				
1+35	0.0281	0.24	QV				
1+40	0.0298	0.25	Q V				
1+45	0.0315	0.25	Q V				
1+50	0.0332	0.25	Q V				
1+55	0.0350	0.25	|QV				

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2+ 0       0.0367      0.25  |QV       |         |         |         |
2+ 5       0.0385      0.26  |QV       |         |         |         |
2+10       0.0403      0.26  |QV       |         |         |         |
2+15       0.0420      0.26  |QV       |         |         |         |
2+20       0.0439      0.26  |QV       |         |         |         |
2+25       0.0457      0.26  |Q V      |         |         |         |
2+30       0.0475      0.27  |Q V      |         |         |         |
2+35       0.0494      0.27  |Q V      |         |         |         |
2+40       0.0513      0.27  |Q V      |         |         |         |
2+45       0.0532      0.28  |Q V      |         |         |         |
2+50       0.0551      0.28  |Q V      |         |         |         |
2+55       0.0570      0.28  |Q V      |         |         |         |
3+ 0       0.0590      0.28  |Q  V     |         |         |         |
3+ 5       0.0609      0.29  |Q  V     |         |         |         |
3+10       0.0629      0.29  |Q  V     |         |         |         |
3+15       0.0649      0.29  |Q  V     |         |         |         |
3+20       0.0670      0.30  |Q  V     |         |         |         |
3+25       0.0690      0.30  |Q  V     |         |         |         |
3+30       0.0711      0.30  |Q  V     |         |         |         |
3+35       0.0732      0.31  |Q   V    |         |         |         |
3+40       0.0753      0.31  |Q   V    |         |         |         |
3+45       0.0775      0.31  |Q   V    |         |         |         |
3+50       0.0797      0.32  |Q   V    |         |         |         |
3+55       0.0819      0.32  |Q   V    |         |         |         |
4+ 0       0.0841      0.32  |Q   V    |         |         |         |
4+ 5       0.0865      0.35  |Q   V    |         |         |         |
4+10       0.0892      0.40  |Q    V   |         |         |         |
4+15       0.0921      0.42  |Q    V   |         |         |         |
4+20       0.0950      0.43  |Q    V   |         |         |         |
4+25       0.0980      0.43  |Q    V   |         |         |         |
4+30       0.1010      0.44  |Q    V   |         |         |         |
4+35       0.1041      0.44  |Q     V  |         |         |         |
4+40       0.1072      0.45  |Q     V  |         |         |         |
4+45       0.1103      0.45  |Q     V  |         |         |         |
4+50       0.1135      0.46  |Q     V  |         |         |         |
4+55       0.1167      0.47  |Q     V  |         |         |         |
5+ 0       0.1199      0.47  |Q      V |         |         |         |
5+ 5       0.1232      0.48  |Q      V |         |         |         |
5+10       0.1266      0.49  |Q      V |         |         |         |
5+15       0.1300      0.49  |Q      V |         |         |         |
5+20       0.1335      0.50  | Q      V|         |         |         |
5+25       0.1370      0.51  | Q      V|         |         |         |
5+30       0.1406      0.52  | Q      V|         |         |         |
5+35       0.1442      0.53  | Q      V|         |         |         |
5+40       0.1479      0.54  | Q       V         |         |         |
5+45       0.1517      0.55  | Q       V         |         |         |
5+50       0.1555      0.56  | Q       V         |         |         |
5+55       0.1594      0.57  | Q       V         |         |         |
6+ 0       0.1634      0.58  | Q       |V        |         |         |
6+ 5       0.1675      0.59  | Q       |V        |         |         |
6+10       0.1717      0.61  | Q       |V        |         |         |
6+15       0.1760      0.63  | Q       | V       |         |         |
6+20       0.1804      0.64  | Q       | V       |         |         |
6+25       0.1850      0.66  | Q       | V       |         |         |
6+30       0.1896      0.68  | Q       | V       |         |         |
6+35       0.1944      0.70  | Q       |  V      |         |         |
6+40       0.1994      0.72  | Q       |  V      |         |         |
6+45       0.2045      0.74  | Q       |  V      |         |         |
6+50       0.2098      0.77  |  Q      |   V     |         |         |
6+55       0.2152      0.79  |  Q      |   V     |         |         |
7+ 0       0.2209      0.83  |  Q      |    V    |         |         |
7+ 5       0.2268      0.86  |  Q      |    V    |         |         |
7+10       0.2330      0.90  |  Q      |    V    |         |         |
7+15       0.2395      0.94  |  Q      |     V   |         |         |
7+20       0.2464      1.00  |  Q      |     V   |         |         |
7+25       0.2535      1.02  |   Q     |      V  |         |         |
7+30       0.2605      1.02  |   Q     |      V  |         |         |
7+35       0.2679      1.08  |   Q     |       V |         |         |
7+40       0.2761      1.18  |   Q     |       V |         |         |
7+45       0.2851      1.32  |    Q    |        V|         |         |
7+50       0.2957      1.53  |     Q   |         V         |         |
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   7+55       0.3084      1.85  |      Q  |          |V         |          |
   8+ 0       0.3257      2.51  |         Q          | V        |          |
   8+ 5       0.3571      4.56  |          |       Q |   V      |          |
   8+10       0.4058      7.06  |          |         |      VQ  |          |
   8+15       0.4291      3.39  |          |  Q      |        V |          |
   8+20       0.4430      2.02  |        Q |         |          V          |
   8+25       0.4525      1.37  |    Q     |         |          V          |
   8+30       0.4606      1.18  |   Q      |         |          |V         |
   8+35       0.4676      1.02  |   Q      |         |          |V         |
   8+40       0.4739      0.91  |  Q       |         |          | V        |
   8+45       0.4796      0.83  |  Q       |         |          | V        |
   8+50       0.4849      0.77  |  Q       |         |          |  V       |
   8+55       0.4899      0.72  | Q        |         |          |  V       |
   9+ 0       0.4945      0.68  | Q        |         |          |  V       |
   9+ 5       0.4990      0.64  | Q        |         |          |   V      |
   9+10       0.5032      0.61  | Q        |         |          |   V      |
   9+15       0.5072      0.58  | Q        |         |          |   V      |
   9+20       0.5110      0.56  | Q        |         |          |   V      |
   9+25       0.5147      0.54  | Q        |         |          |    V     |
   9+30       0.5183      0.52  | Q        |         |          |    V     |
   9+35       0.5217      0.50  | Q        |         |          |    V     |
   9+40       0.5251      0.49  |Q         |         |          |    V     |
   9+45       0.5284      0.47  |Q         |         |          |     V    |
   9+50       0.5315      0.46  |Q         |         |          |     V    |
   9+55       0.5346      0.45  |Q         |         |          |     V    |
  10+ 0       0.5377      0.44  |Q         |         |          |     V    |
  10+ 5       0.5405      0.41  |Q         |         |          |     V    |
  10+10       0.5429      0.35  |Q         |         |          |      V   |
  10+15       0.5452      0.33  |Q         |         |          |      V   |
  10+20       0.5474      0.32  |Q         |         |          |      V   |
  10+25       0.5495      0.31  |Q         |         |          |      V   |
  10+30       0.5516      0.30  |Q         |         |          |      V   |
  10+35       0.5536      0.30  |Q         |         |          |      V   |
  10+40       0.5556      0.29  |Q         |         |          |       V  |
  10+45       0.5576      0.28  |Q         |         |          |       V  |
  10+50       0.5595      0.28  |Q         |         |          |       V  |
  10+55       0.5614      0.27  |Q         |         |          |       V  |
  11+ 0       0.5632      0.27  |Q         |         |          |       V  |
  11+ 5       0.5650      0.26  |Q         |         |          |       V  |
  11+10       0.5668      0.26  |Q         |         |          |       V  |
  11+15       0.5686      0.25  |Q         |         |          |       V  |
  11+20       0.5703      0.25  Q          |         |          |        V |
  11+25       0.5720      0.25  Q          |         |          |        V |
  11+30       0.5736      0.24  Q          |         |          |        V |
  11+35       0.5753      0.24  Q          |         |          |        V |
  11+40       0.5769      0.23  Q          |         |          |        V |
  11+45       0.5785      0.23  Q          |         |          |        V |
  11+50       0.5800      0.23  Q          |         |          |        V |
  11+55       0.5816      0.22  Q          |         |          |        V |
  12+ 0       0.5831      0.22  Q          |         |          |        V |
  12+ 5       0.5843      0.18  Q          |         |          |        V |
  12+10       0.5847      0.05  Q          |         |          |        V |
  12+15       0.5848      0.02  Q          |         |          |        V |
  12+20       0.5848      0.01  Q          |         |          |        V |
  12+25       0.5849      0.00  Q          |         |          |        V |
  12+30       0.5849      0.00  Q          |         |          |         V
--------------------------------------------------------------------------
```

- 100 Year 24 Hour Post-Development Unit Hydrograph – Area 'F'

```
       U n i t   H y d r o g r a p h   A n a l y s i s

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       Study date  10/20/16   File Name prf10012.out


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
------------------------------------------------------------------------------

Orange County Unit Hydrograph Hydrology Method
Manual Date(s) - October 1986, November 1996


Program License Serial Number 4094

------------------------------------------------------------------------
RANCHO LA HABRA HYDROLOGY STUDY
PROPOSED CONDITION UNIT HYDROGRAPH - AREA 'F' - 100 YEAR 12 HOUR STORM
HUNSAKER & ASSOCIATES, OCTOBER 3, 2016
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------

       Storm Event Year = 100

       Antecedent Moisture Condition = 3

 English (in-lb) Input Units Used
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

******** Area-averaged max loss rate, Fm ********


SCS curve  Area       Area       Soil     Fp      Ap      Fm
No.(AMCII) (Ac.)    Fraction     Group  (In/Hr)   (dec.)    (In/Hr)
 74.4       1.7          1.00     D     0.200     0.100    0.020

Area-averaged adjusted loss rate Fm (In/Hr) =  0.020

********* Area-Averaged low loss rate fraction, Yb **********

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC3)          Yield Fr
     0.17   0.100         74.4      90.5       1.05     0.807
     1.51   0.900         98.0      98.0       0.20     0.958

Area-averaged catchment yield fraction, Y =  0.943
Area-averaged low loss fraction, Yb =  0.057
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
User entry of time of concentration  =   0.091 (hours)
Watershed area =       1.68(Ac.)
Catchment Lag time =   0.073 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 114.8095
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.020(In/Hr)
Average low loss rate fraction (Yb) = 0.057 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall =  0.520(In)
Computed peak 30-minute rainfall =  1.090(In)
Specified peak 1-hour rainfall =  1.450(In)
Computed peak 3-hour rainfall =  2.430(In)
Specified peak 6-hour rainfall =  3.360(In)
Specified peak 24-hour rainfall =  5.630(In)


Rainfall depth area reduction factors:
Using a total area of       1.68(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000     Adjusted rainfall =  0.520(In)
```

```
30-minute factor = 1.000    Adjusted rainfall =  1.090(In)
1-hour factor = 1.000       Adjusted rainfall =  1.450(In)
3-hour factor = 1.000       Adjusted rainfall =  2.430(In)
6-hour factor = 1.000       Adjusted rainfall =  3.360(In)
24-hour factor = 1.000 Adjusted rainfall =  5.630(In)
--------------------------------------------------------------------

                     U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
--------------------------------------------------------------------
               (K =        20.32 (CFS))

  1               19.643                   3.991
  2               75.813                  11.412
  3               92.011                   3.291
  4               97.656                   1.147
  5               99.076                   0.288
  6               99.801                   0.147
  7              100.000                   0.040
--------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.5200               0.5200
  2              0.6923               0.1724
  3              0.8186               0.1262
  4              0.9218               0.1033
  5              1.0108               0.0890
  6              1.0899               0.0791
  7              1.1613               0.0714
  8              1.2270               0.0656
  9              1.2879               0.0610
 10              1.3450               0.0571
 11              1.3989               0.0538
 12              1.4499               0.0510
 13              1.5055               0.0556
 14              1.5588               0.0534
 15              1.6102               0.0514
 16              1.6598               0.0496
 17              1.7078               0.0480
 18              1.7543               0.0465
 19              1.7995               0.0452
 20              1.8434               0.0439
 21              1.8861               0.0428
 22              1.9278               0.0417
 23              1.9685               0.0407
 24              2.0083               0.0398
 25              2.0472               0.0389
 26              2.0853               0.0381
 27              2.1226               0.0373
 28              2.1592               0.0366
 29              2.1951               0.0359
 30              2.2304               0.0353
 31              2.2650               0.0346
 32              2.2991               0.0341
 33              2.3326               0.0335
 34              2.3656               0.0330
 35              2.3980               0.0325
 36              2.4300               0.0320
 37              2.4613               0.0313
 38              2.4922               0.0309
 39              2.5226               0.0304
 40              2.5527               0.0300
 41              2.5823               0.0296
 42              2.6116               0.0293
 43              2.6404               0.0289
 44              2.6690               0.0285
 45              2.6972               0.0282
 46              2.7250               0.0279
 47              2.7526               0.0275
```

48	2.7798	0.0272
49	2.8067	0.0269
50	2.8334	0.0266
51	2.8597	0.0264
52	2.8858	0.0261
53	2.9116	0.0258
54	2.9372	0.0256
55	2.9625	0.0253
56	2.9875	0.0251
57	3.0123	0.0248
58	3.0369	0.0246
59	3.0613	0.0244
60	3.0855	0.0241
61	3.1094	0.0239
62	3.1331	0.0237
63	3.1566	0.0235
64	3.1800	0.0233
65	3.2031	0.0231
66	3.2260	0.0229
67	3.2488	0.0228
68	3.2714	0.0226
69	3.2938	0.0224
70	3.3160	0.0222
71	3.3381	0.0221
72	3.3600	0.0219
73	3.3773	0.0173
74	3.3944	0.0172
75	3.4114	0.0170
76	3.4283	0.0169
77	3.4450	0.0167
78	3.4616	0.0166
79	3.4781	0.0165
80	3.4944	0.0163
81	3.5106	0.0162
82	3.5267	0.0161
83	3.5426	0.0160
84	3.5585	0.0158
85	3.5742	0.0157
86	3.5898	0.0156
87	3.6053	0.0155
88	3.6206	0.0154
89	3.6359	0.0153
90	3.6511	0.0152
91	3.6661	0.0151
92	3.6811	0.0149
93	3.6959	0.0148
94	3.7107	0.0147
95	3.7253	0.0146
96	3.7399	0.0146
97	3.7543	0.0145
98	3.7687	0.0144
99	3.7830	0.0143
100	3.7971	0.0142
101	3.8112	0.0141
102	3.8253	0.0140
103	3.8392	0.0139
104	3.8530	0.0138
105	3.8668	0.0138
106	3.8804	0.0137
107	3.8940	0.0136
108	3.9075	0.0135
109	3.9210	0.0134
110	3.9343	0.0134
111	3.9476	0.0133
112	3.9608	0.0132
113	3.9739	0.0131
114	3.9870	0.0131
115	4.0000	0.0130
116	4.0129	0.0129
117	4.0257	0.0128
118	4.0385	0.0128

119	4.0512	0.0127
120	4.0639	0.0126
121	4.0764	0.0126
122	4.0890	0.0125
123	4.1014	0.0124
124	4.1138	0.0124
125	4.1261	0.0123
126	4.1384	0.0123
127	4.1506	0.0122
128	4.1627	0.0121
129	4.1748	0.0121
130	4.1868	0.0120
131	4.1988	0.0120
132	4.2107	0.0119
133	4.2225	0.0118
134	4.2343	0.0118
135	4.2461	0.0117
136	4.2577	0.0117
137	4.2694	0.0116
138	4.2809	0.0116
139	4.2925	0.0115
140	4.3039	0.0115
141	4.3154	0.0114
142	4.3267	0.0114
143	4.3381	0.0113
144	4.3493	0.0113

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0113	0.0006	0.0106
2	0.0113	0.0006	0.0107
3	0.0114	0.0007	0.0108
4	0.0115	0.0007	0.0108
5	0.0116	0.0007	0.0109
6	0.0116	0.0007	0.0110
7	0.0117	0.0007	0.0111
8	0.0118	0.0007	0.0111
9	0.0119	0.0007	0.0112
10	0.0120	0.0007	0.0113
11	0.0121	0.0007	0.0114
12	0.0121	0.0007	0.0114
13	0.0123	0.0007	0.0116
14	0.0123	0.0007	0.0116
15	0.0124	0.0007	0.0117
16	0.0125	0.0007	0.0118
17	0.0126	0.0007	0.0119
18	0.0127	0.0007	0.0120
19	0.0128	0.0007	0.0121
20	0.0129	0.0007	0.0122
21	0.0131	0.0007	0.0123
22	0.0131	0.0008	0.0124
23	0.0133	0.0008	0.0125
24	0.0134	0.0008	0.0126
25	0.0135	0.0008	0.0127
26	0.0136	0.0008	0.0128
27	0.0138	0.0008	0.0130
28	0.0138	0.0008	0.0130
29	0.0140	0.0008	0.0132
30	0.0141	0.0008	0.0133
31	0.0143	0.0008	0.0135
32	0.0144	0.0008	0.0135
33	0.0146	0.0008	0.0137
34	0.0146	0.0008	0.0138
35	0.0148	0.0009	0.0140
36	0.0149	0.0009	0.0141
37	0.0152	0.0009	0.0143
38	0.0153	0.0009	0.0144
39	0.0155	0.0009	0.0146
40	0.0156	0.0009	0.0147

41	0.0158	0.0009	0.0149
42	0.0160	0.0009	0.0150
43	0.0162	0.0009	0.0153
44	0.0163	0.0009	0.0154
45	0.0166	0.0010	0.0156
46	0.0167	0.0010	0.0158
47	0.0170	0.0010	0.0160
48	0.0172	0.0010	0.0162
49	0.0219	0.0013	0.0206
50	0.0221	0.0013	0.0208
51	0.0224	0.0013	0.0211
52	0.0226	0.0013	0.0213
53	0.0229	0.0013	0.0216
54	0.0231	0.0013	0.0218
55	0.0235	0.0013	0.0222
56	0.0237	0.0014	0.0224
57	0.0241	0.0014	0.0228
58	0.0244	0.0014	0.0230
59	0.0248	0.0014	0.0234
60	0.0251	0.0014	0.0236
61	0.0256	0.0015	0.0241
62	0.0258	0.0015	0.0243
63	0.0264	0.0015	0.0248
64	0.0266	0.0015	0.0251
65	0.0272	0.0016	0.0257
66	0.0275	0.0016	0.0260
67	0.0282	0.0016	0.0266
68	0.0285	0.0016	0.0269
69	0.0293	0.0017	0.0276
70	0.0296	0.0017	0.0280
71	0.0304	0.0017	0.0288
72	0.0309	0.0017	0.0292
73	0.0320	0.0017	0.0303
74	0.0325	0.0017	0.0308
75	0.0335	0.0017	0.0318
76	0.0341	0.0017	0.0324
77	0.0353	0.0017	0.0336
78	0.0359	0.0017	0.0342
79	0.0373	0.0017	0.0357
80	0.0381	0.0017	0.0364
81	0.0398	0.0017	0.0381
82	0.0407	0.0017	0.0390
83	0.0428	0.0017	0.0411
84	0.0439	0.0017	0.0422
85	0.0465	0.0017	0.0448
86	0.0480	0.0017	0.0463
87	0.0514	0.0017	0.0497
88	0.0534	0.0017	0.0517
89	0.0510	0.0017	0.0494
90	0.0538	0.0017	0.0522
91	0.0610	0.0017	0.0593
92	0.0656	0.0017	0.0640
93	0.0791	0.0017	0.0774
94	0.0890	0.0017	0.0873
95	0.1262	0.0017	0.1246
96	0.1724	0.0017	0.1707
97	0.5200	0.0017	0.5183
98	0.1033	0.0017	0.1016
99	0.0714	0.0017	0.0697
100	0.0571	0.0017	0.0554
101	0.0556	0.0017	0.0539
102	0.0496	0.0017	0.0479
103	0.0452	0.0017	0.0435
104	0.0417	0.0017	0.0400
105	0.0389	0.0017	0.0372
106	0.0366	0.0017	0.0349
107	0.0346	0.0017	0.0330
108	0.0330	0.0017	0.0313
109	0.0313	0.0017	0.0297
110	0.0300	0.0017	0.0284
111	0.0289	0.0017	0.0272

```
      112              0.0279           0.0016             0.0263
      113              0.0269           0.0015             0.0254
      114              0.0261           0.0015             0.0246
      115              0.0253           0.0015             0.0239
      116              0.0246           0.0014             0.0232
      117              0.0239           0.0014             0.0226
      118              0.0233           0.0013             0.0220
      119              0.0228           0.0013             0.0215
      120              0.0222           0.0013             0.0210
      121              0.0173           0.0010             0.0163
      122              0.0169           0.0010             0.0159
      123              0.0165           0.0009             0.0155
      124              0.0161           0.0009             0.0152
      125              0.0157           0.0009             0.0148
      126              0.0154           0.0009             0.0145
      127              0.0151           0.0009             0.0142
      128              0.0147           0.0008             0.0139
      129              0.0145           0.0008             0.0136
      130              0.0142           0.0008             0.0134
      131              0.0139           0.0008             0.0131
      132              0.0137           0.0008             0.0129
      133              0.0134           0.0008             0.0127
      134              0.0132           0.0008             0.0124
      135              0.0130           0.0007             0.0122
      136              0.0128           0.0007             0.0120
      137              0.0126           0.0007             0.0119
      138              0.0124           0.0007             0.0117
      139              0.0122           0.0007             0.0115
      140              0.0120           0.0007             0.0113
      141              0.0118           0.0007             0.0112
      142              0.0117           0.0007             0.0110
      143              0.0115           0.0007             0.0109
      144              0.0114           0.0007             0.0107
      ------------------------------------------------------------------------
      ------------------------------------------------------------------------
      Total soil rain loss =      0.17(In)
      Total effective rainfall =      4.18(In)
      Peak flow rate in flood hydrograph =      7.06(CFS)
      ------------------------------------------------------------------------
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          12 - H O U R    S T O R M
                     R u n o f f      H y d r o g r a p h
      ------------------------------------------------------------------
                  Hydrograph in   5   Minute intervals ((CFS))

      ------------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0        2.5       5.0       7.5      10.0
----------------------------------------------------------------------------
  0+ 5       0.0003      0.04  Q         |         |         |         |
  0+10       0.0014      0.16  Q         |         |         |         |
  0+15       0.0028      0.20  Q         |         |         |         |
  0+20       0.0043      0.21  Q         |         |         |         |
  0+25       0.0058      0.22  Q         |         |         |         |
  0+30       0.0073      0.22  Q         |         |         |         |
  0+35       0.0088      0.22  Q         |         |         |         |
  0+40       0.0104      0.22  Q         |         |         |         |
  0+45       0.0119      0.23  Q         |         |         |         |
  0+50       0.0135      0.23  Q         |         |         |         |
  0+55       0.0151      0.23  QV        |         |         |         |
  1+ 0       0.0167      0.23  QV        |         |         |         |
  1+ 5       0.0183      0.23  QV        |         |         |         |
  1+10       0.0199      0.23  QV        |         |         |         |
  1+15       0.0215      0.24  QV        |         |         |         |
  1+20       0.0231      0.24  QV        |         |         |         |
  1+25       0.0248      0.24  QV        |         |         |         |
  1+30       0.0264      0.24  QV        |         |         |         |
  1+35       0.0281      0.24  QV        |         |         |         |
  1+40       0.0298      0.25  Q V       |         |         |         |
  1+45       0.0315      0.25  Q V       |         |         |         |
  1+50       0.0332      0.25  Q V       |         |         |         |
  1+55       0.0350      0.25  |QV       |         |         |         |
```

```
2+ 0       0.0367      0.25  |QV       |         |         |         |
2+ 5       0.0385      0.26  |QV       |         |         |         |
2+10       0.0403      0.26  |QV       |         |         |         |
2+15       0.0420      0.26  |QV       |         |         |         |
2+20       0.0439      0.26  |QV       |         |         |         |
2+25       0.0457      0.26  |Q V      |         |         |         |
2+30       0.0475      0.27  |Q V      |         |         |         |
2+35       0.0494      0.27  |Q V      |         |         |         |
2+40       0.0513      0.27  |Q V      |         |         |         |
2+45       0.0532      0.28  |Q V      |         |         |         |
2+50       0.0551      0.28  |Q V      |         |         |         |
2+55       0.0570      0.28  |Q V      |         |         |         |
3+ 0       0.0590      0.28  |Q  V     |         |         |         |
3+ 5       0.0609      0.29  |Q  V     |         |         |         |
3+10       0.0629      0.29  |Q  V     |         |         |         |
3+15       0.0649      0.29  |Q  V     |         |         |         |
3+20       0.0670      0.30  |Q  V     |         |         |         |
3+25       0.0690      0.30  |Q  V     |         |         |         |
3+30       0.0711      0.30  |Q  V     |         |         |         |
3+35       0.0732      0.31  |Q   V    |         |         |         |
3+40       0.0753      0.31  |Q   V    |         |         |         |
3+45       0.0775      0.31  |Q   V    |         |         |         |
3+50       0.0797      0.32  |Q   V    |         |         |         |
3+55       0.0819      0.32  |Q   V    |         |         |         |
4+ 0       0.0841      0.32  |Q   V    |         |         |         |
4+ 5       0.0865      0.35  |Q   V    |         |         |         |
4+10       0.0892      0.40  |Q    V   |         |         |         |
4+15       0.0921      0.42  |Q    V   |         |         |         |
4+20       0.0950      0.43  |Q    V   |         |         |         |
4+25       0.0980      0.43  |Q    V   |         |         |         |
4+30       0.1010      0.44  |Q    V   |         |         |         |
4+35       0.1041      0.44  |Q     V  |         |         |         |
4+40       0.1072      0.45  |Q     V  |         |         |         |
4+45       0.1103      0.45  |Q     V  |         |         |         |
4+50       0.1135      0.46  |Q     V  |         |         |         |
4+55       0.1167      0.47  |Q     V  |         |         |         |
5+ 0       0.1199      0.47  |Q      V |         |         |         |
5+ 5       0.1232      0.48  |Q      V |         |         |         |
5+10       0.1266      0.49  |Q      V |         |         |         |
5+15       0.1300      0.49  |Q      V |         |         |         |
5+20       0.1335      0.50  | Q      V|         |         |         |
5+25       0.1370      0.51  | Q      V|         |         |         |
5+30       0.1406      0.52  | Q      V|         |         |         |
5+35       0.1442      0.53  | Q      V|         |         |         |
5+40       0.1479      0.54  | Q       V         |         |         |
5+45       0.1517      0.55  | Q       V         |         |         |
5+50       0.1555      0.56  | Q       V         |         |         |
5+55       0.1594      0.57  | Q       V         |         |         |
6+ 0       0.1634      0.58  | Q       |V        |         |         |
6+ 5       0.1675      0.59  | Q       |V        |         |         |
6+10       0.1717      0.61  | Q       |V        |         |         |
6+15       0.1760      0.63  | Q       | V       |         |         |
6+20       0.1804      0.64  | Q       | V       |         |         |
6+25       0.1850      0.66  | Q       | V       |         |         |
6+30       0.1896      0.68  | Q       | V       |         |         |
6+35       0.1944      0.70  | Q       |  V      |         |         |
6+40       0.1994      0.72  | Q       |  V      |         |         |
6+45       0.2045      0.74  | Q       |  V      |         |         |
6+50       0.2098      0.77  |  Q      |   V     |         |         |
6+55       0.2152      0.79  |  Q      |   V     |         |         |
7+ 0       0.2209      0.83  |  Q      |    V    |         |         |
7+ 5       0.2268      0.86  |  Q      |    V    |         |         |
7+10       0.2330      0.90  |  Q      |    V    |         |         |
7+15       0.2395      0.94  |  Q      |     V   |         |         |
7+20       0.2464      1.00  |  Q      |     V   |         |         |
7+25       0.2535      1.02  |   Q     |      V  |         |         |
7+30       0.2605      1.02  |   Q     |      V  |         |         |
7+35       0.2679      1.08  |   Q     |       V |         |         |
7+40       0.2761      1.18  |   Q     |       V |         |         |
7+45       0.2851      1.32  |    Q    |        V|         |         |
7+50       0.2957      1.53  |     Q   |         V         |         |
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   7+55       0.3084      1.85  |      Q  |          |V         |          |
   8+ 0       0.3257      2.51  |         Q          | V        |          |
   8+ 5       0.3571      4.56  |          |       Q |   V      |          |
   8+10       0.4058      7.06  |          |         |      VQ  |          |
   8+15       0.4291      3.39  |          |  Q      |        V |          |
   8+20       0.4430      2.02  |        Q |         |          V          |
   8+25       0.4525      1.37  |    Q     |         |          V          |
   8+30       0.4606      1.18  |   Q      |         |          |V         |
   8+35       0.4676      1.02  |   Q      |         |          |V         |
   8+40       0.4739      0.91  |  Q       |         |          | V        |
   8+45       0.4796      0.83  |  Q       |         |          | V        |
   8+50       0.4849      0.77  |  Q       |         |          |  V       |
   8+55       0.4899      0.72  | Q        |         |          |  V       |
   9+ 0       0.4945      0.68  | Q        |         |          |  V       |
   9+ 5       0.4990      0.64  | Q        |         |          |   V      |
   9+10       0.5032      0.61  | Q        |         |          |   V      |
   9+15       0.5072      0.58  | Q        |         |          |   V      |
   9+20       0.5110      0.56  | Q        |         |          |   V      |
   9+25       0.5147      0.54  | Q        |         |          |    V     |
   9+30       0.5183      0.52  | Q        |         |          |    V     |
   9+35       0.5217      0.50  | Q        |         |          |    V     |
   9+40       0.5251      0.49  |Q         |         |          |    V     |
   9+45       0.5284      0.47  |Q         |         |          |     V    |
   9+50       0.5315      0.46  |Q         |         |          |     V    |
   9+55       0.5346      0.45  |Q         |         |          |     V    |
  10+ 0       0.5377      0.44  |Q         |         |          |     V    |
  10+ 5       0.5405      0.41  |Q         |         |          |     V    |
  10+10       0.5429      0.35  |Q         |         |          |      V   |
  10+15       0.5452      0.33  |Q         |         |          |      V   |
  10+20       0.5474      0.32  |Q         |         |          |      V   |
  10+25       0.5495      0.31  |Q         |         |          |      V   |
  10+30       0.5516      0.30  |Q         |         |          |      V   |
  10+35       0.5536      0.30  |Q         |         |          |      V   |
  10+40       0.5556      0.29  |Q         |         |          |       V  |
  10+45       0.5576      0.28  |Q         |         |          |       V  |
  10+50       0.5595      0.28  |Q         |         |          |       V  |
  10+55       0.5614      0.27  |Q         |         |          |       V  |
  11+ 0       0.5632      0.27  |Q         |         |          |       V  |
  11+ 5       0.5650      0.26  |Q         |         |          |       V  |
  11+10       0.5668      0.26  |Q         |         |          |       V  |
  11+15       0.5686      0.25  |Q         |         |          |       V  |
  11+20       0.5703      0.25  Q          |         |          |        V |
  11+25       0.5720      0.25  Q          |         |          |        V |
  11+30       0.5736      0.24  Q          |         |          |        V |
  11+35       0.5753      0.24  Q          |         |          |        V |
  11+40       0.5769      0.23  Q          |         |          |        V |
  11+45       0.5785      0.23  Q          |         |          |        V |
  11+50       0.5800      0.23  Q          |         |          |        V |
  11+55       0.5816      0.22  Q          |         |          |        V |
  12+ 0       0.5831      0.22  Q          |         |          |        V |
  12+ 5       0.5843      0.18  Q          |         |          |        V |
  12+10       0.5847      0.05  Q          |         |          |        V |
  12+15       0.5848      0.02  Q          |         |          |        V |
  12+20       0.5848      0.01  Q          |         |          |        V |
  12+25       0.5849      0.00  Q          |         |          |        V |
  12+30       0.5849      0.00  Q          |         |          |         V
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SECTION 4 - Routing Calculations

Basin 'C'

- 2, 5, 25 & 100 Year Routing Analysis

Basin 'C' Depth vs Volume

Elev	Area sf	Lift Volume ft	Total Volume cf	Ac-Ft	Depth Ft	Outflow (cfs)	Underground Storage Ac-Ft	Total Storage Ac-Ft
210.0	112464	55,568	865,476	19.87	10	1,147.750	2.07	21.93
209.5	109808	54,247	809,908	18.59	9.5	434.780	1.96	20.56
209.0	107178	10,654	755,661	17.35	9	67.119	1.86	19.21
208.9	105,895	93,494	745,008	17.10	8.9	48.208	1.84	18.94
208.0	101,870	99,190	651,514	14.96	8	45.022	1.65	16.61
207.0	96,509	93,864	552,324	12.68	7	41.188	1.45	14.13
206.0	91,218	88,624	458,461	10.52	6	36.950	1.24	11.76
205.0	86,030	83,539	369,837	8.49	5	32.145	1.03	9.52
204.0	81,048	78,596	286,298	6.57	4	26.456	0.83	7.40
203.0	76,144	73,784	207,702	4.77	3	19.070	0.62	5.39
202.0	71,424	69,174	133,918	3.07	2	1.617	0.41	3.49
201.5	69,174	34,024	98,768	2.27	1.5	1.075	0.31	2.58
201.0	66,923	64,744	64,744	1.49	1	0.692	0.21	1.69
200.5	64,744	31,827	31,827	0.73	0.5	0.692	0.10	0.83
200.0	62,565	0	0	0.00	0	0.000	0.00	0.00

BASIN "C" - Routing Calculations

FIND "H" FOR KNOWN MAXIMUM 100 YEAR FLOW

GIVEN: Q_{100} = 385.9 CFS TRIBUTARY TO INLET, CUT TO 48.4 CFS
STEEL PLATE W/ (3)-2.25" HOLES @ ELEV=1' AND 2'
INCLINED 2.00' X 2.06' GRATE ORIFICE AT 3.00'-3.50'
EMERGENCY SPILLWAY – 50'W, ELEV= 208.9
Basin Bottom Elev = 200.0

MWS Flowrate (cfs) = **0.69**

FORMULA(S) & CALCULATIONS:

CIRCULAR ORIFICE FORMULA: $Q=CA\sqrt{2gh}$ WHERE C= 0.66 G= 32.2

WEIR FORMULA: $Q=CL(H^{3/2})$ WHERE C= 3.33

Water Depth 10.0 **Water Surface Elevation** 210.0

4" DIAMETER ORIFICES FLOW TO:											
				210.0 ft					Orifice CL Elevation=	200.50	
		No. holes		Size (in)		Area					
AREA "A_O" = (AREA OF ORIFICE) =		3	x	4.000	=	0.2618		(3.14156R^2)			
		Oriface Elev									
H=	210.0	-	200.5	=	9.50	ft					
Q= CA√2gh =[	0.66	x	0.2618	x√(2 x	32.2	x	9.50	)] =	**4.274**	cfs	

4" DIAMETER ORIFICES FLOW TO:											
				210.0 ft					Orifice CL Elevation=	201.00	
		No. holes		Size (in)		Area					
AREA "A_O" = (AREA OF ORIFICE) =		3	x	4.000	=	0.2618		(3.14156R^2)			
H=	210.0	-	201	=	9.00	ft					
Q= CA√2gh =[	0.66	x	0.2618	x√(2 x	32.2	x	9.00	)] =	**4.160**	cfs	

4" DIAMETER ORIFICES FLOW TO:											
				210.0 ft					Orifice CL Elevation=	201.50	
		No. holes		Size (in)		Area					
AREA "A_O" = (AREA OF ORIFICE) =		3	x	4.000	=	0.2618		(3.14156R^2)			
H=	210.0	-	201.5	=	8.50	ft					
Q= CA√2gh =[	0.66	x	0.2618	x√(2 x	32.2	x	8.50	)] =	**4.043**	cfs	

4" DIAMETER ORIFICES FLOW TO:											
				210.0 ft					Orifice CL Elevation=	202.00	
		No. holes		Size (in)		Area					
AREA "A_O" = (AREA OF ORIFICE) =		3	x	4.000	=	0.2618		(3.14156R^2)			
H=	210.0	-	202	=	8.00	ft					
Q= CA√2gh =[	0.66	x	0.2618	x√(2 x	32.2	x	8.00	)] =	**3.922**	cfs	

GRATE FLOW										
AREA "A_O" = (AREA OF ORIFICE) =				2.50	x	2.00	=		5.00	sf
AREA "A_G" (AREA OF GRATE) = ½" FOR EVERY 2-1/2" = 20% REDUCTION										
EFFECTIVE AREA =				5.00	x	0.8	=		4.00	sf
H=	210.0	- (	203.50	+	204.00	) \	2	=	6.250	ft
Q= CA√2gh =[	0.66	x	4.0000	x√(2 x	32.2	x	6.25	)] =	**52.96**	cfs

MAXIMUM 100 YEAR PONDING RESULT:

100 YEAR W.S. E = 205.3

Q_{100} TOTAL = **70.055** cfs
(Mitigated Flow)

BASIN "C" - Routing Calculations

FIND "H" FOR KNOWN MAXIMUM 100 YEAR FLOW

GIVEN: Q100 = 385.9 CFS TRIBUTARY TO INLET, CUT TO 48.4 CFS
STEEL PLATE W/ (3)-2.25" HOLES @ ELEV=1' AND 2'
INCLINED 2.00' X 2.06' GRATE ORIFICE AT 3.00'-3.50'
EMERGENCY SPILLWAY – 50'W, ELEV= 208.9
Basin Bottom Elev = 200.0

MWS Flowrate (cfs) = 0.69200

FORMULA(S) & CALCULATIONS:

CIRCULAR ORIFICE FORMULA: $Q=CA\sqrt{2gh}$ WHERE C= 0.66 G= 32.2

WEIR FORMULA: $Q=CL(H^{3/2})$ WHERE C= 3.33

Water Depth 0.5 **Water Surface Elevation** 200.5

4" DIAMETER ORIFICES FLOW TO:											
				200.5 ft					Orifice CL Elevation=	200.50	
		No. holes		Size (in)		Area					
AREA "A_O" = (AREA OF ORIFICE) =		3	x	4.0	=	0.2618		(3.14156R^2)			
		Oriface Elev									
H=	200.5	-	200.5	=	0.00	ft					
Q= CA√2gh =[	0.66	x	0.2618	x√(2 x	32.2	x	0.00	)] =	**0.000**	cfs	

4" DIAMETER ORIFICES FLOW TO:											
				200.5 ft					Orifice CL Elevation=	201.00	
		No. holes		Size (in)		Area					
AREA "A_O" = (AREA OF ORIFICE) =		3	x	4.0	=	0.2618		(3.14156R^2)			
H=	200.5	-	201.0	=	-0.50	ft					
Q= CA√2gh =[	0.66	x	0.2618	x√(2 x	32.2	x	-0.50	)] =	**0.000**	cfs	

4" DIAMETER ORIFICES FLOW TO:											
				200.5 ft					Orifice CL Elevation=	201.50	
		No. holes		Size (in)		Area					
AREA "A_O" = (AREA OF ORIFICE) =		3	x	4.0	=	0.2618		(3.14156R^2)			
H=	200.5	-	201.5	=	-1.00	ft					
Q= CA√2gh =[	0.66	x	0.2618	x√(2 x	32.2	x	-1.00	)] =	**0.000**	cfs	

4" DIAMETER ORIFICES FLOW TO:											
				200.5 ft					Orifice CL Elevation=	202.00	
		No. holes		Size (in)		Area					
AREA "A_O" = (AREA OF ORIFICE) =		3	x	4.0	=	0.2618		(3.14156R^2)			
H=	200.5	-	202.0	=	-1.50	ft					
Q= CA√2gh =[	0.66	x	0.2618	x√(2 x	32.2	x	-1.50	)] =	**0.000**	cfs	

AREA "A_O" = (AREA OF ORIFICE) =				2.50	x	2.00	=	5.00	sf	
AREA "A_G" (AREA OF GRATE) = ½" FOR EVERY 2-1/2" = 20% REDUCTION										
EFFECTIVE AREA =				5.00	x	0.8	=	4.00	sf	
H=	200.5	- (	203.50	+ 204.00	) \	2	=	0.000	ft	
Q= CA√2gh =[	0.66	x	4.0000	x√(2 x	32.2	x	0.00	)] =	**0.00**	cfs

MAXIMUM 100 YEAR PONDING RESULT:

Q_{100} TOTAL = 0.692 cfs (Mitigated Flow)

100 YEAR W.S. E = 205.3

9.5

BASIN "C" - Routing Calculations

FIND "H" FOR KNOWN MAXIMUM 100 YEAR FLOW

GIVEN: Q100 = 385.9 CFS TRIBUTARY TO INLET, CUT TO 48.4 CFS
STEEL PLATE W/ (3)-2.25" HOLES @ ELEV=1' AND 2'
INCLINED 2.00' X 2.06' GRATE ORIFICE AT 3.00'-3.50'
EMERGENCY SPILLWAY – 50'W, ELEV= 208.9
Basin Bottom Elev = 200.0

MWS Flowrate (cfs) = 0.69200

FORMULA(S) & CALCULATIONS:

CIRCULAR ORIFICE FORMULA: $Q=CA\sqrt{2gh}$ WHERE C= 0.66 G= 32.2

WEIR FORMULA: $Q=CL(H^{3/2})$ WHERE C= 3.33

Water Depth 1.0 **Water Surface Elevation** 201.0

4" DIAMETER ORIFICES FLOW TO:												
201.0 ft											Orifice CL Elevation=	200.50
		No. holes		Size (in)		Area						
AREA "A_O" = (AREA OF ORIFICE) =		3	x	4.0	=	0.2618		(3.14156R^2)				
		Oriface Elev										
H=	201.0	-	200.5	=	0.50	ft						
Q= CA√2gh =[	0.66	x	0.2618	x√(2 x	32.2	x	0.50	)]	=	**0.980**	cfs	

4" DIAMETER ORIFICES FLOW TO:												
201.0 ft											Orifice CL Elevation=	201.00
		No. holes		Size (in)		Area						
AREA "A_O" = (AREA OF ORIFICE) =		3	x	4.0	=	0.2618		(3.14156R^2)				
H=	201.0	-	201.0	=	0.00	ft						
Q= CA√2gh =[	0.66	x	0.2618	x√(2 x	32.2	x	0.00	)]	=	**0.000**	cfs	

4" DIAMETER ORIFICES FLOW TO:												
201.0 ft											Orifice CL Elevation=	201.50
		No. holes		Size (in)		Area						
AREA "A_O" = (AREA OF ORIFICE) =		3	x	4.0	=	0.2618		(3.14156R^2)				
H=	201.0	-	201.5	=	-0.50	ft						
Q= CA√2gh =[	0.66	x	0.2618	x√(2 x	32.2	x	-0.50	)]	=	**0.000**	cfs	

4" DIAMETER ORIFICES FLOW TO:												
201.0 ft											Orifice CL Elevation=	202.00
		No. holes		Size (in)		Area						
AREA "A_O" = (AREA OF ORIFICE) =		3	x	4.0	=	0.2618		(3.14156R^2)				
H=	201.0	-	202.0	=	-1.00	ft						
Q= CA√2gh =[	0.66	x	0.2618	x√(2 x	32.2	x	-1.00	)]	=	**0.000**	cfs	

AREA "A_O" = (AREA OF ORIFICE) =				2.50	x	2.00	=		5.00	sf	
AREA "A_G" (AREA OF GRATE) = ½" FOR EVERY 2-1/2" = 20% REDUCTION											
EFFECTIVE AREA =				5.00	x	0.8	=		4.00	sf	
H=	201.0	- (	203.50	+ 204.00	) \	2	=		0.000	ft	
Q= CA√2gh =[	0.66	x	4.0000	x√(2 x	32.2	x	0.00	)]	=	**0.00**	cfs

MAXIMUM 100 YEAR PONDING RESULT:

Q_{100} TOTAL = 1.6725 cfs

(Mitigated Flow)

100 YEAR W.S. E = 205.3

BASIN "C" - Routing Calculations

FIND "H" FOR KNOWN MAXIMUM 100 YEAR FLOW

GIVEN: Q100 = 385.9 CFS TRIBUTARY TO INLET, CUT TO 48.4 CFS
STEEL PLATE W/ (3)-2.25" HOLES @ ELEV=1' AND 2'
INCLINED 2.00' X 2.06' GRATE ORIFICE AT 3.00'-3.50'
EMERGENCY SPILLWAY – 50'W, ELEV= 208.9
Basin Bottom Elev = 200.0

MWS Flowrate (cfs) = 0.69200

FORMULA(S) & CALCULATIONS:

CIRCULAR ORIFICE FORMULA: $Q=CA\sqrt{2gh}$ WHERE C= 0.66 G= 32.2

WEIR FORMULA: $Q=CL(H^{3/2})$ WHERE C= 3.33

Water Depth 1.5 **Water Surface Elevation** 201.5

4" DIAMETER ORIFICES FLOW TO:											
				201.5 ft					Orifice CL Elevation=	200.50	
		No. holes		Size (in)		Area					
AREA "A_O" = (AREA OF ORIFICE) =		3	x	4.0	=	0.2618		(3.14156R^2)			
		Oriface Elev									
H=	201.5	-	200.5	=	1.00	ft					
Q= CA√2gh =[	0.66	x	0.2618	x√(2 x	32.2	x	1.00	)] =	**1.387**	cfs	

4" DIAMETER ORIFICES FLOW TO:											
				201.5 ft					Orifice CL Elevation=	201.00	
		No. holes		Size (in)		Area					
AREA "A_O" = (AREA OF ORIFICE) =		3	x	4.0	=	0.2618		(3.14156R^2)			
H=	201.5	-	201.0	=	0.50	ft					
Q= CA√2gh =[	0.66	x	0.2618	x√(2 x	32.2	x	0.50	)] =	**0.980**	cfs	

4" DIAMETER ORIFICES FLOW TO:											
				201.5 ft					Orifice CL Elevation=	201.50	
		No. holes		Size (in)		Area					
AREA "A_O" = (AREA OF ORIFICE) =		3	x	4.0	=	0.2618		(3.14156R^2)			
H=	201.5	-	201.5	=	0.00	ft					
Q= CA√2gh =[	0.66	x	0.2618	x√(2 x	32.2	x	0.00	)] =	**0.000**	cfs	

4" DIAMETER ORIFICES FLOW TO:											
				201.5 ft					Orifice CL Elevation=	202.00	
		No. holes		Size (in)		Area					
AREA "A_O" = (AREA OF ORIFICE) =		3	x	4.0	=	0.2618		(3.14156R^2)			
H=	201.5	-	202.0	=	-0.50	ft					
Q= CA√2gh =[	0.66	x	0.2618	x√(2 x	32.2	x	-0.50	)] =	**0.000**	cfs	

AREA "A_O" = (AREA OF ORIFICE) =				2.50	x	2.00	=	5.00	sf	
AREA "A_G" (AREA OF GRATE) = ½" FOR EVERY 2-1/2" = 20% REDUCTION										
EFFECTIVE AREA =				5.00	x	0.8	=	4.00	sf	
H=	201.5	- (	203.50	+ 204.00	) \	2	=	0.000	ft	
Q= CA√2gh =[	0.66	x	4.0000	x√(2 x	32.2	x	0.00	)] =	**0.00**	cfs

MAXIMUM 100 YEAR PONDING RESULT:

100 YEAR W.S. E = **205.3**

Q_{100} TOTAL = **3.0591** cfs
(Mitigated Flow)

BASIN "C" - Routing Calculations

FIND "H" FOR KNOWN MAXIMUM 100 YEAR FLOW

GIVEN: Q100 = 385.9 CFS TRIBUTARY TO INLET, CUT TO 48.4 CFS
STEEL PLATE W/ (3)-2.25" HOLES @ ELEV=1' AND 2'
INCLINED 2.00' X 2.06' GRATE ORIFICE AT 3.00'-3.50'
EMERGENCY SPILLWAY – 50'W, ELEV= 208.9
Basin Bottom Elev = 200.0

MWS Flowrate (cfs) = 0.69200

FORMULA(S) & CALCULATIONS:

CIRCULAR ORIFICE FORMULA: $Q=CA\sqrt{2gh}$ WHERE C= 0.66 G= 32.2

WEIR FORMULA: $Q=CL(H^{3/2})$ WHERE C= 3.33

Water Depth 2.0 **Water Surface Elevation** 202.0

4" DIAMETER ORIFICES FLOW TO:											
				202.00 ft					Orifice CL Elevation=	200.50	
		No. holes		Size (in)		Area					
AREA "A_O" = (AREA OF ORIFICE) =		3	x	4.0	=	0.2618		(3.14156R^2)			
		Oriface Elev									
H=	202.0	-	200.5	=	1.50	ft					
Q= CA√2gh =[	0.66	x	0.2618	x√(2 x	32.2	x	1.50	)] =	**1.698**	cfs	

4" DIAMETER ORIFICES FLOW TO:											
				202.0 ft					Orifice CL Elevation=	201.00	
		No. holes		Size (in)		Area					
AREA "A_O" = (AREA OF ORIFICE) =		3	x	4.0	=	0.2618		(3.14156R^2)			
H=	202.0	-	201.0	=	1.00	ft					
Q= CA√2gh =[	0.66	x	0.2618	x√(2 x	32.2	x	1.00	)] =	**1.387**	cfs	

4" DIAMETER ORIFICES FLOW TO:											
				202.0 ft					Orifice CL Elevation=	201.50	
		No. holes		Size (in)		Area					
AREA "A_O" = (AREA OF ORIFICE) =		3	x	4.0	=	0.2618		(3.14156R^2)			
H=	202.0	-	201.5	=	0.50	ft					
Q= CA√2gh =[	0.66	x	0.2618	x√(2 x	32.2	x	0.50	)] =	**0.980**	cfs	

4" DIAMETER ORIFICES FLOW TO:											
				202.0 ft					Orifice CL Elevation=	202.00	
		No. holes		Size (in)		Area					
AREA "A_O" = (AREA OF ORIFICE) =		3	x	4.0	=	0.2618		(3.14156R^2)			
H=	202.0	-	202.0	=	0.00	ft					
Q= CA√2gh =[	0.66	x	0.2618	x√(2 x	32.2	x	0.00	)] =	**0.000**	cfs	

AREA "A_O" = (AREA OF ORIFICE) =				2.50	x	2.00	=	5.00	sf	
AREA "A_G" (AREA OF GRATE) = ½" FOR EVERY 2-1/2" = 20% REDUCTION										
EFFECTIVE AREA =				5.00	x	0.8	=	4.00	sf	
H=	202.0	- (	203.50	+ 204.00	) \	2	=	0.000	ft	
Q= CA√2gh =[	0.66	x	4.0000	x√(2 x	32.2	x	0.00	)] =	**0.00**	cfs

MAXIMUM 100 YEAR PONDING RESULT:

100 YEAR W.S. E = **205.3**

Q_{100} TOTAL = **4.757** cfs
(Mitigated Flow)

BASIN "C" - Routing Calculations

FIND "H" FOR KNOWN MAXIMUM 100 YEAR FLOW

GIVEN: Q100 = 385.9 CFS TRIBUTARY TO INLET, CUT TO 48.4 CFS
STEEL PLATE W/ (3)-2.25" HOLES @ ELEV=1' AND 2'
INCLINED 2.00' X 2.06' GRATE ORIFICE AT 3.00'-3.50'
EMERGENCY SPILLWAY – 50'W, ELEV= 208.9
Basin Bottom Elev = 200.0

MWS Flowrate (cfs) = 0.69200

FORMULA(S) & CALCULATIONS:

CIRCULAR ORIFICE FORMULA: $Q=CA\sqrt{2gh}$ WHERE C= 0.66 G= 32.2

WEIR FORMULA: $Q=CL(H^{3/2})$ WHERE C= 3.33

Water Depth 3.0 **Water Surface Elevation** 203.0

4" DIAMETER ORIFICES FLOW TO:											
203.0 ft										Orifice CL Elevation=	200.50
		No. holes		Size (in)		Area					
AREA "A_O" = (AREA OF ORIFICE) =		3	x	4.0	=	0.2618		(3.14156R^2)			
		Oriface Elev									
H=	203.0	-	200.5	=	2.50	ft					
Q= CA√2gh =[	0.66	x	0.2618	x√(2 x	32.2	x	2.50	)]	=	**2.192**	cfs

4" DIAMETER ORIFICES FLOW TO:											
203.0 ft										Orifice CL Elevation=	201.00
		No. holes		Size (in)		Area					
AREA "A_O" = (AREA OF ORIFICE) =		3	x	4.0	=	0.2618		(3.14156R^2)			
H=	203.0	-	201.0	=	2.00	ft					
Q= CA√2gh =[	0.66	x	0.2618	x√(2 x	32.2	x	2.00	)]	=	**1.961**	cfs

4" DIAMETER ORIFICES FLOW TO:											
203.0 ft										Orifice CL Elevation=	201.50
		No. holes		Size (in)		Area					
AREA "A_O" = (AREA OF ORIFICE) =		3	x	4.0	=	0.2618		(3.14156R^2)			
H=	203.0	-	201.5	=	1.50	ft					
Q= CA√2gh =[	0.66	x	0.2618	x√(2 x	32.2	x	1.50	)]	=	**1.698**	cfs

4" DIAMETER ORIFICES FLOW TO:											
203.0 ft										Orifice CL Elevation=	202.00
		No. holes		Size (in)		Area					
AREA "A_O" = (AREA OF ORIFICE) =		3	x	4.0	=	0.2618		(3.14156R^2)			
H=	203.0	-	202.0	=	1.00	ft					
Q= CA√2gh =[	0.66	x	0.2618	x√(2 x	32.2	x	1.00	)]	=	**1.387**	cfs

AREA "A_O" = (AREA OF ORIFICE) =					2.50	x	2.00	=		5.00	sf
AREA "A_G" (AREA OF GRATE) = ½" FOR EVERY 2-1/2" = 20% REDUCTION											
EFFECTIVE AREA =					5.00	x	0.8	=		4.00	sf
H=	203.0	-	(203.50	+	204.00	) \	2	=		0.000	ft
Q= CA√2gh =[	0.66	x	4.0000	x√(2 x	32.2	x	0.00	)]	=	**0.00**	cfs

MAXIMUM 100 YEAR PONDING RESULT:

Q_{100} TOTAL = 7.930 cfs

(Mitigated Flow)

100 YEAR W.S. E = 205.3

BASIN "C" - Routing Calculations

FIND "H" FOR KNOWN MAXIMUM 100 YEAR FLOW

GIVEN: Q100 = 385.9 CFS TRIBUTARY TO INLET, CUT TO 48.4 CFS
STEEL PLATE W/ (3)-2.25" HOLES @ ELEV=1' AND 2'
INCLINED 2.00' X 2.06' GRATE ORIFICE AT 3.00'-3.50'
EMERGENCY SPILLWAY – 50'W, ELEV= 208.9
Basin Bottom Elev = 200.0
MWS Flowrate (cfs) = 0.69200

FORMULA(S) & CALCULATIONS:

CIRCULAR ORIFICE FORMULA: $Q=CA\sqrt{2gh}$ WHERE C= 0.66 G= 32.2
WEIR FORMULA: $Q=CL(H^{3/2})$ WHERE C= 3.33

Water Depth 4.0 **Water Surface Elevation** 204.0

4" DIAMETER ORIFICES FLOW TO:												
204.0 ft											Orifice CL Elevation=	200.50
		No. holes		Size (in)		Area						
AREA "A_O" = (AREA OF ORIFICE) =		3	x	4.0	=	0.2618		(3.14156R^2)				
		Oriface Elev										
H=	204.0	-	200.5	=	3.50	ft						
Q= CA√2gh =[	0.66	x	0.2618	x√(2 x	32.2	x	3.50	)]	=	**2.594**	cfs	

4" DIAMETER ORIFICES FLOW TO:												
204.0 ft											Orifice CL Elevation=	201.00
		No. holes		Size (in)		Area						
AREA "A_O" = (AREA OF ORIFICE) =		3	x	4.0	=	0.2618		(3.14156R^2)				
H=	204.0	-	201.0	=	3.00	ft						
Q= CA√2gh =[	0.66	x	0.2618	x√(2 x	32.2	x	3.00	)]	=	**2.402**	cfs	

4" DIAMETER ORIFICES FLOW TO:												
204.0 ft											Orifice CL Elevation=	201.50
		No. holes		Size (in)		Area						
AREA "A_O" = (AREA OF ORIFICE) =		3	x	4.0	=	0.2618		(3.14156R^2)				
H=	204.0	-	201.5	=	2.50	ft						
Q= CA√2gh =[	0.66	x	0.2618	x√(2 x	32.2	x	2.50	)]	=	**2.192**	cfs	

4" DIAMETER ORIFICES FLOW TO:												
204.0 ft											Orifice CL Elevation=	202.00
		No. holes		Size (in)		Area						
AREA "A_O" = (AREA OF ORIFICE) =		3	x	4.0	=	0.2618		(3.14156R^2)				
H=	204.0	-	202.0	=	2.00	ft						
Q= CA√2gh =[	0.66	x	0.2618	x√(2 x	32.2	x	2.00	)]	=	**1.961**	cfs	

AREA "A_O" = (AREA OF ORIFICE) =				2.50	x	2.00	=	5.00	sf		
AREA "A_G" (AREA OF GRATE) = ½" FOR EVERY 2-1/2" = 20% REDUCTION											
EFFECTIVE AREA =				5.00	x	0.8	=	4.00	sf		
H=	204.0	- (	203.50	+	204.00	) \	2	=	0.250	ft	
Q= CA√2gh =[	0.66	x	4.0000	x√(2 x	32.2	x	0.25	)]	=	**10.59**	cfs

MAXIMUM 100 YEAR PONDING RESULT:

Q_{100} TOTAL = 20.434 cfs
(Mitigated Flow)

100 YEAR W.S. E = 205.3

BASIN "C" - Routing Calculations

FIND "H" FOR KNOWN MAXIMUM 100 YEAR FLOW

GIVEN: Q100 = 385.9 CFS TRIBUTARY TO INLET, CUT TO 48.4 CFS
STEEL PLATE W/ (3)-2.25" HOLES @ ELEV=1' AND 2'
INCLINED 2.00' X 2.06' GRATE ORIFICE AT 3.00'-3.50'
EMERGENCY SPILLWAY – 50'W, ELEV= 208.9
Basin Bottom Elev = 200.0
MWS Flowrate (cfs) = 0.69200

FORMULA(S) & CALCULATIONS:

CIRCULAR ORIFICE FORMULA: $Q=CA\sqrt{2gh}$ WHERE C= 0.66 G= 32.2
WEIR FORMULA: $Q=CL(H^{3/2})$ WHERE C= 3.33

Water Depth 5.0 **Water Surface Elevation** 205.0

4" DIAMETER ORIFICES FLOW TO:												
205.0 ft											Orifice CL Elevation=	200.50
		No. holes			Size (in)			Area				
AREA "A_O" = (AREA OF ORIFICE) =		3	x		4.0	=		0.2618		(3.14156R^2)		
		Oriface Elev										
H=	205.0	-	200.5	=	4.50	ft						
Q= CA√2gh =[	0.66	x	0.2618	x√(2 x	32.2	x	4.50	)]	=	**2.941**	cfs	

4" DIAMETER ORIFICES FLOW TO:												
205.0 ft											Orifice CL Elevation=	201.00
		No. holes			Size (in)			Area				
AREA "A_O" = (AREA OF ORIFICE) =		3	x		4.0	=		0.2618		(3.14156R^2)		
H=	205.0	-	201.0	=	4.00	ft						
Q= CA√2gh =[	0.66	x	0.2618	x√(2 x	32.2	x	4.00	)]	=	**2.773**	cfs	

4" DIAMETER ORIFICES FLOW TO:												
205.0 ft											Orifice CL Elevation=	201.50
		No. holes			Size (in)			Area				
AREA "A_O" = (AREA OF ORIFICE) =		3	x		4.0	=		0.2618		(3.14156R^2)		
H=	205.0	-	201.5	=	3.50	ft						
Q= CA√2gh =[	0.66	x	0.2618	x√(2 x	32.2	x	3.50	)]	=	**2.594**	cfs	

4" DIAMETER ORIFICES FLOW TO:												
205.0 ft											Orifice CL Elevation=	202.00
		No. holes			Size (in)			Area				
AREA "A_O" = (AREA OF ORIFICE) =		3	x		4.0	=		0.2618		(3.14156R^2)		
H=	205.0	-	202.0	=	3.00	ft						
Q= CA√2gh =[	0.66	x	0.2618	x√(2 x	32.2	x	3.00	)]	=	**2.402**	cfs	

AREA "A_O" = (AREA OF ORIFICE) =					2.50	x	2.00	=		5.00	sf
AREA "A_G" (AREA OF GRATE) = ½" FOR EVERY 2-1/2" = 20% REDUCTION											
EFFECTIVE AREA =					5.00	x	0.8	=		4.00	sf
H=	205.0	-	(203.50	+	204.00	) \	2	=		1.250	ft
Q= CA√2gh =[	0.66	x	4.0000	x√(2 x	32.2	x	1.25	)]	=	**23.69**	cfs

MAXIMUM 100 YEAR PONDING RESULT:

100 YEAR W.S. E = **205.3**

Q_{100} TOTAL = **35.089** cfs
(Mitigated Flow)

BASIN "C" - Routing Calculations

FIND "H" FOR KNOWN MAXIMUM 100 YEAR FLOW

GIVEN: Q100 = 385.9 CFS TRIBUTARY TO INLET, CUT TO 48.4 CFS
STEEL PLATE W/ (3)-2.25" HOLES @ ELEV=1' AND 2'
INCLINED 2.00' X 2.06' GRATE ORIFICE AT 3.00'-3.50'
EMERGENCY SPILLWAY – 50'W, ELEV= 208.9
Basin Bottom Elev = 200.0

MWS Flowrate (cfs) = 0.69200

FORMULA(S) & CALCULATIONS:

CIRCULAR ORIFICE FORMULA: $Q=CA\sqrt{2gh}$ WHERE C= 0.66 G= 32.2

WEIR FORMULA: $Q=CL(H^{3/2})$ WHERE C= 3.33

Water Depth 6.0 **Water Surface Elevation** 206.0

4" DIAMETER ORIFICES FLOW TO:				206.0 **ft**					Orifice CL Elevation=	200.50
		No. holes		Size (in)		Area				
AREA "A_O" = (AREA OF ORIFICE) =		3	x	4.0	=	0.2618		(3.14156R^2)		
		Oriface Elev								
H=	206.0	-	200.5	=	5.50	ft				
Q= CA√2gh =[	0.66	x	0.2618	x√(2 x	32.2	x	5.50	)] =	**3.252**	cfs
4" DIAMETER ORIFICES FLOW TO:				206.0 **ft**					Orifice CL Elevation=	201.00
		No. holes		Size (in)		Area				
AREA "A_O" = (AREA OF ORIFICE) =		3	x	4.0	=	0.2618		(3.14156R^2)		
H=	206.0	-	201.0	=	5.00	ft				
Q= CA√2gh =[	0.66	x	0.2618	x√(2 x	32.2	x	5.00	)] =	**3.101**	cfs
4" DIAMETER ORIFICES FLOW TO:				206.0 **ft**					Orifice CL Elevation=	201.50
		No. holes		Size (in)		Area				
AREA "A_O" = (AREA OF ORIFICE) =		3	x	4.0	=	0.2618		(3.14156R^2)		
H=	206.0	-	201.5	=	4.50	ft				
Q= CA√2gh =[	0.66	x	0.2618	x√(2 x	32.2	x	4.50	)] =	**2.941**	cfs
4" DIAMETER ORIFICES FLOW TO:				206.0 **ft**					Orifice CL Elevation=	202.00
		No. holes		Size (in)		Area				
AREA "A_O" = (AREA OF ORIFICE) =		3	x	4.0	=	0.2618		(3.14156R^2)		
H=	206.0	-	202.0	=	4.00	ft				
Q= CA√2gh =[	0.66	x	0.2618	x√(2 x	32.2	x	4.00	)] =	**2.773**	cfs

AREA "A_O" = (AREA OF ORIFICE) =				2.50	x	2.00	=		5.00	sf
AREA "A_G" (AREA OF GRATE) = ½" FOR EVERY 2-1/2" = 20% REDUCTION										
EFFECTIVE AREA =				5.00	x	0.8	=		4.00	sf
H=	206.0	- (	203.50	+	204.00	) \	2	=	2.250	ft
Q= CA√2gh =[	0.66	x	4.0000	x√(2 x	32.2	x	2.25	)] =	**31.78**	cfs

MAXIMUM 100 YEAR PONDING RESULT:

100 YEAR W.S. E = **205.3**

Q_{100} TOTAL = **44.538** cfs
(Mitigated Flow)

BASIN "C" - Routing Calculations

FIND "H" FOR KNOWN MAXIMUM 100 YEAR FLOW

GIVEN: Q100 = 385.9 CFS TRIBUTARY TO INLET, CUT TO 48.4 CFS
STEEL PLATE W/ (3)-2.25" HOLES @ ELEV=1' AND 2'
INCLINED 2.00' X 2.06' GRATE ORIFICE AT 3.00'-3.50'
EMERGENCY SPILLWAY – 50'W, ELEV= 208.9
Basin Bottom Elev = 200.0
MWS Flowrate (cfs) = 0.69200

FORMULA(S) & CALCULATIONS:

CIRCULAR ORIFICE FORMULA: $Q=CA\sqrt{2gh}$ WHERE C= 0.66 G= 32.2
WEIR FORMULA: $Q=CL(H^{3/2})$ WHERE C= 3.33

Water Depth 7.0 **Water Surface Elevation** 207.0

4" DIAMETER ORIFICES FLOW TO:				207.0 ft				Orifice CL Elevation= 200.50		
		No. holes		Size (in)		Area				
AREA "A_O" = (AREA OF ORIFICE) =		3	x	4.0	=	0.2618		(3.14156R^2)		
		Oriface Elev								
H=	207.0	-	200.5	=	6.50	ft				
Q= CA√2gh =[	0.66	x	0.2618	x√(2 x	32.2	x	6.50	)] =	**3.535**	cfs

4" DIAMETER ORIFICES FLOW TO:				207.0 ft				Orifice CL Elevation= 201.00		
		No. holes		Size (in)		Area				
AREA "A_O" = (AREA OF ORIFICE) =		3	x	4.0	=	0.2618		(3.14156R^2)		
H=	207.0	-	201.0	=	6.00	ft				
Q= CA√2gh =[	0.66	x	0.2618	x√(2 x	32.2	x	6.00	)] =	**3.396**	cfs

4" DIAMETER ORIFICES FLOW TO:				207.0 ft				Orifice CL Elevation= 201.50		
		No. holes		Size (in)		Area				
AREA "A_O" = (AREA OF ORIFICE) =		3	x	4.0	=	0.2618		(3.14156R^2)		
H=	207.0	-	201.5	=	5.50	ft				
Q= CA√2gh =[	0.66	x	0.2618	x√(2 x	32.2	x	5.50	)] =	**3.252**	cfs

4" DIAMETER ORIFICES FLOW TO:				207.0 ft				Orifice CL Elevation= 202.00		
		No. holes		Size (in)		Area				
AREA "A_O" = (AREA OF ORIFICE) =		3	x	4.0	=	0.2618		(3.14156R^2)		
H=	207.0	-	202.0	=	5.00	ft				
Q= CA√2gh =[	0.66	x	0.2618	x√(2 x	32.2	x	5.00	)] =	**3.101**	cfs

AREA "A_O" = (AREA OF ORIFICE) =				2.50	x	2.00	=		5.00	sf
AREA "A_G" (AREA OF GRATE) = ½" FOR EVERY 2-1/2" = 20% REDUCTION										
EFFECTIVE AREA =				5.00	x	0.8	=		4.00	sf
H=	207.0	- (	203.50	+ 204.00	) \	2	=		3.250	ft
Q= CA√2gh =[	0.66	x	4.0000	x√(2 x	32.2	x	3.25	)] =	**38.19**	cfs

MAXIMUM 100 YEAR PONDING RESULT:

Q_{100} TOTAL = **52.170** cfs

100 YEAR W.S. E = **205.3**

(Mitigated Flow)

BASIN "C" - Routing Calculations

FIND "H" FOR KNOWN MAXIMUM 100 YEAR FLOW

GIVEN: Q100 = 385.9 CFS TRIBUTARY TO INLET, CUT TO 48.4 CFS
STEEL PLATE W/ (3)-2.25" HOLES @ ELEV=1' AND 2'
INCLINED 2.00' X 2.06' GRATE ORIFICE AT 3.00'-3.50'
EMERGENCY SPILLWAY – 50'W, ELEV= 208.9
Basin Bottom Elev = 200.0

MWS Flowrate (cfs) = 0.69200

FORMULA(S) & CALCULATIONS:

CIRCULAR ORIFICE FORMULA: $Q=CA\sqrt{2gh}$ WHERE C= 0.66 G= 32.2

WEIR FORMULA: $Q=CL(H^{3/2})$ WHERE C= 3.33

Water Depth 8.0 **Water Surface Elevation** 208.0

4" DIAMETER ORIFICES FLOW TO:				208.0 **ft**					Orifice CL Elevation=	200.50
		No. holes		Size (in)		Area				
AREA "A_O" = (AREA OF ORIFICE) =		3	x	4.0	=	0.2618		(3.14156R^2)		
		Oriface Elev								
H=	208.0	-	200.5	=	7.50	ft				
Q= CA√2gh =[	0.66	x	0.2618	x√(2 x	32.2	x	7.50	)] =	**3.797**	cfs
4" DIAMETER ORIFICES FLOW TO:				208.0 **ft**					Orifice CL Elevation=	201.00
		No. holes		Size (in)		Area				
AREA "A_O" = (AREA OF ORIFICE) =		3	x	4.0	=	0.2618		(3.14156R^2)		
H=	208.0	-	201.0	=	7.00	ft				
Q= CA√2gh =[	0.66	x	0.2618	x√(2 x	32.2	x	7.00	)] =	**3.669**	cfs
4" DIAMETER ORIFICES FLOW TO:				208.0 **ft**					Orifice CL Elevation=	201.50
		No. holes		Size (in)		Area				
AREA "A_O" = (AREA OF ORIFICE) =		3	x	4.0	=	0.2618		(3.14156R^2)		
H=	208.0	-	201.5	=	6.50	ft				
Q= CA√2gh =[	0.66	x	0.2618	x√(2 x	32.2	x	6.50	)] =	**3.535**	cfs
4" DIAMETER ORIFICES FLOW TO:				208.0 **ft**					Orifice CL Elevation=	202.00
		No. holes		Size (in)		Area				
AREA "A_O" = (AREA OF ORIFICE) =		3	x	4.0	=	0.2618		(3.14156R^2)		
H=	208.0	-	202.0	=	6.00	ft				
Q= CA√2gh =[	0.66	x	0.2618	x√(2 x	32.2	x	6.00	)] =	**3.396**	cfs
AREA "A_O" = (AREA OF ORIFICE) =				2.50	x	2.00	=		5.00	sf
AREA "A_G" (AREA OF GRATE) = ½" FOR EVERY 2-1/2" = 20% REDUCTION										
EFFECTIVE AREA =				5.00	x	0.8	=		4.00	sf
H=	208.0	- (	203.50	+	204.00	) \	2	=	4.250	ft
Q= CA√2gh =[	0.66	x	4.0000	x√(2 x	32.2	x	4.25	)] =	**43.68**	cfs

MAXIMUM 100 YEAR PONDING RESULT:

100 YEAR W.S. E = **205.3**

Q_{100} TOTAL = **58.766** cfs
(Mitigated Flow)

BASIN "C" - Routing Calculations

FIND "H" FOR KNOWN MAXIMUM 100 YEAR FLOW

GIVEN: Q100 = 385.9 CFS TRIBUTARY TO INLET, CUT TO 48.4 CFS
STEEL PLATE W/ (3)-2.25" HOLES @ ELEV=1' AND 2'
INCLINED 2.00' X 2.06' GRATE ORIFICE AT 3.00'-3.50'
EMERGENCY SPILLWAY – 50'W, ELEV= 208.9
Basin Bottom Elev = 200.0

MWS Flowrate (cfs) = 0.69200

FORMULA(S) & CALCULATIONS:

CIRCULAR ORIFICE FORMULA: $Q=CA\sqrt{2gh}$ WHERE C= 0.66 G= 32.2

WEIR FORMULA: $Q=CL(H^{3/2})$ WHERE C= 3.33

Water Depth 8.9 **Water Surface Elevation** 208.9

4" DIAMETER ORIFICES FLOW TO:					208.9 **ft**				Orifice CL Elevation=	200.50
		No. holes			Size (in)		Area			
AREA "A_O" = (AREA OF ORIFICE) =		3	x		4.0	=	0.2618		(3.14156R^2)	
		Oriface Elev								
H=	208.9	-	200.5	=	8.40	ft				
Q= CA√2gh =[	0.66	x	0.2618	x√(2 x	32.2	x	8.40	)] =	**4.019**	cfs

4" DIAMETER ORIFICES FLOW TO:					208.9 **ft**				Orifice CL Elevation=	201.00
		No. holes			Size (in)		Area			
AREA "A_O" = (AREA OF ORIFICE) =		3	x		4.0	=	0.2618		(3.14156R^2)	
H=	208.9	-	201.0	=	7.90	ft				
Q= CA√2gh =[	0.66	x	0.2618	x√(2 x	32.2	x	7.90	)] =	**3.897**	cfs

4" DIAMETER ORIFICES FLOW TO:					208.9 **ft**				Orifice CL Elevation=	201.50
		No. holes			Size (in)		Area			
AREA "A_O" = (AREA OF ORIFICE) =		3	x		4.0	=	0.2618		(3.14156R^2)	
H=	208.9	-	201.5	=	7.40	ft				
Q= CA√2gh =[	0.66	x	0.2618	x√(2 x	32.2	x	7.40	)] =	**3.772**	cfs

4" DIAMETER ORIFICES FLOW TO:					208.9 **ft**				Orifice CL Elevation=	202.00
		No. holes			Size (in)		Area			
AREA "A_O" = (AREA OF ORIFICE) =		3	x		4.0	=	0.2618		(3.14156R^2)	
H=	208.9	-	202.0	=	6.90	ft				
Q= CA√2gh =[	0.66	x	0.2618	x√(2 x	32.2	x	6.90	)] =	**3.642**	cfs

AREA "A_O" = (AREA OF ORIFICE) =					2.50	x	2.00	=	5.00	sf
AREA "A_G" (AREA OF GRATE) = ½" FOR EVERY 2-1/2" = 20% REDUCTION										
EFFECTIVE AREA =					5.00	x	0.8	=	4.00	sf
H=	208.9	- (	203.50	+	204.00	) \	2	=	5.150	ft
Q= CA√2gh =[	0.66	x	4.0000	x√(2 x	32.2	x	5.15	)] =	**48.08**	cfs

MAXIMUM 100 YEAR PONDING RESULT:

100 YEAR W.S. E = **205.3**

Q_{100} TOTAL = **64.101** cfs
(Mitigated Flow)

BASIN "C" - Routing Calculations

FIND "H" FOR KNOWN MAXIMUM 100 YEAR FLOW

GIVEN: Q100 = 385.9 CFS TRIBUTARY TO INLET, CUT TO 48.4 CFS
STEEL PLATE W/ (3)-2.25" HOLES @ ELEV=1' AND 2'
INCLINED 2.00' X 2.06' GRATE ORIFICE AT 3.00'-3.50'
EMERGENCY SPILLWAY – 50'W, ELEV= 208.9
Basin Bottom Elev = 200.0

MWS Flowrate (cfs) = 0.69200

FORMULA(S) & CALCULATIONS:

CIRCULAR ORIFICE FORMULA: $Q=CA\sqrt{2gh}$ WHERE C= 0.66 G= 32.2

WEIR FORMULA: $Q=CL(H^{3/2})$ WHERE C= 3.33

Water Depth 9.0 **Water Surface Elevation** 209.0

4" DIAMETER ORIFICES FLOW TO:				209.0 **ft**					Orifice CL Elevation=	200.50
		No. holes		Size (in)		Area				
AREA "A_O" = (AREA OF ORIFICE) =		3	x	4.0	=	0.2618		(3.14156R^2)		
		Oriface Elev								
H=	209.0	-	200.5	=	8.50	ft				
Q= CA√2gh =[	0.66	x	0.2618	x√(2 x	32.2	x	8.50	)] =	**4.043**	cfs
4" DIAMETER ORIFICES FLOW TO:				209.0 **ft**					Orifice CL Elevation=	201.00
		No. holes		Size (in)		Area				
AREA "A_O" = (AREA OF ORIFICE) =		3	x	4.0	=	0.2618		(3.14156R^2)		
H=	209.0	-	201.0	=	8.00	ft				
Q= CA√2gh =[	0.66	x	0.2618	x√(2 x	32.2	x	8.00	)] =	**3.922**	cfs
4" DIAMETER ORIFICES FLOW TO:				209.0 **ft**					Orifice CL Elevation=	201.50
		No. holes		Size (in)		Area				
AREA "A_O" = (AREA OF ORIFICE) =		3	x	4.0	=	0.2618		(3.14156R^2)		
H=	209.0	-	201.5	=	7.50	ft				
Q= CA√2gh =[	0.66	x	0.2618	x√(2 x	32.2	x	7.50	)] =	**3.797**	cfs
4" DIAMETER ORIFICES FLOW TO:				209.0 **ft**					Orifice CL Elevation=	202.00
		No. holes		Size (in)		Area				
AREA "A_O" = (AREA OF ORIFICE) =		3	x	4.0	=	0.2618		(3.14156R^2)		
H=	209.0	-	202.0	=	7.00	ft				
Q= CA√2gh =[	0.66	x	0.2618	x√(2 x	32.2	x	7.00	)] =	**3.669**	cfs
AREA "A_O" = (AREA OF ORIFICE) =				2.50	x	2.00	=		5.00	sf
AREA "A_G" (AREA OF GRATE) = ½" FOR EVERY 2-1/2" = 20% REDUCTION										
EFFECTIVE AREA =				5.00	x	0.8	=		4.00	sf
H=	209.0	-	(203.50	+	204.00	) \	2	=	5.250	ft
Q= CA√2gh =[	0.66	x	4.0000	x√(2 x	32.2	x	5.25	)] =	**48.54**	cfs

MAXIMUM 100 YEAR PONDING RESULT:

100 YEAR W.S. E = **205.3**

Q_{100} TOTAL = **83.236** cfs
(Mitigated Flow)

BASIN "C" - Routing Calculations

FIND "H" FOR KNOWN MAXIMUM 100 YEAR FLOW

GIVEN: Q100 = 385.9 CFS TRIBUTARY TO INLET, CUT TO 48.4 CFS
STEEL PLATE W/ (3)-2.25" HOLES @ ELEV=1' AND 2'
INCLINED 2.00' X 2.06' GRATE ORIFICE AT 3.00'-3.50'
EMERGENCY SPILLWAY – 50'W, ELEV= 208.9
Basin Bottom Elev = 200.0
MWS Flowrate (cfs) = 0.69200

FORMULA(S) & CALCULATIONS:

CIRCULAR ORIFICE FORMULA: $Q=CA\sqrt{2gh}$ WHERE C= 0.66 G= 32.2
WEIR FORMULA: $Q=CL(H^{3/2})$ WHERE C= 3.33

Water Depth 9.5 **Water Surface Elevation** 209.5

4" DIAMETER ORIFICES FLOW TO:											
				209.5 ft					Orifice CL Elevation=	200.50	
		No. holes		Size (in)		Area					
AREA "A_O" = (AREA OF ORIFICE) =		3	x	4.0	=	0.2618		(3.14156R^2)			
		Oriface Elev									
H=	209.5	-	200.5	=	9.00	ft					
Q= CA√2gh =[	0.66	x	0.2618	x√(2 x	32.2	x	9.00	)] =	**4.160**	cfs	

4" DIAMETER ORIFICES FLOW TO:											
				209.5 ft					Orifice CL Elevation=	201.00	
		No. holes		Size (in)		Area					
AREA "A_O" = (AREA OF ORIFICE) =		3	x	4.0	=	0.2618		(3.14156R^2)			
H=	209.5	-	201.0	=	8.50	ft					
Q= CA√2gh =[	0.66	x	0.2618	x√(2 x	32.2	x	8.50	)] =	**4.043**	cfs	

4" DIAMETER ORIFICES FLOW TO:											
				209.5 ft					Orifice CL Elevation=	201.50	
		No. holes		Size (in)		Area					
AREA "A_O" = (AREA OF ORIFICE) =		3	x	4.0	=	0.2618		(3.14156R^2)			
H=	209.5	-	201.5	=	8.00	ft					
Q= CA√2gh =[	0.66	x	0.2618	x√(2 x	32.2	x	8.00	)] =	**3.922**	cfs	

4" DIAMETER ORIFICES FLOW TO:											
				209.5 ft					Orifice CL Elevation=	202.00	
		No. holes		Size (in)		Area					
AREA "A_O" = (AREA OF ORIFICE) =		3	x	4.0	=	0.2618		(3.14156R^2)			
H=	209.5	-	202.0	=	7.50	ft					
Q= CA√2gh =[	0.66	x	0.2618	x√(2 x	32.2	x	7.50	)] =	**3.797**	cfs	

AREA "A_O" = (AREA OF ORIFICE) =				2.50	x	2.00	=	5.00	sf	
AREA "A_G" (AREA OF GRATE) = ½" FOR EVERY 2-1/2" = 20% REDUCTION										
EFFECTIVE AREA =				5.00	x	0.8	=	4.00	sf	
H=	209.5	- (	203.50	+ 204.00	) \	2	=	5.750	ft	
Q= CA√2gh =[	0.66	x	4.0000	x√(2 x	32.2	x	5.75	)] =	**50.80**	cfs

MAXIMUM 100 YEAR PONDING RESULT:

100 YEAR W.S. E = **205.3**

Q_{100} TOTAL = **448.796** cfs
(Mitigated Flow)

BASIN "C" - Routing Calculations

FIND "H" FOR KNOWN MAXIMUM 100 YEAR FLOW

GIVEN: Q100 = 385.9 CFS TRIBUTARY TO INLET, CUT TO 48.4 CFS
STEEL PLATE W/ (3)-2.25" HOLES @ ELEV=1' AND 2'
INCLINED 2.00' X 2.06' GRATE ORIFICE AT 3.00'-3.50'
EMERGENCY SPILLWAY – 50'W, ELEV= 208.9
Basin Bottom Elev = 200.0

MWS Flowrate (cfs) = 0.69200

FORMULA(S) & CALCULATIONS:

CIRCULAR ORIFICE FORMULA: $Q=CA\sqrt{2gh}$ WHERE C= 0.66 G= 32.2

WEIR FORMULA: $Q=CL(H^{3/2})$ WHERE C= 3.33

Water Depth 10.0 **Water Surface Elevation** 210.0

4" DIAMETER ORIFICES FLOW TO:				210.0 **ft**					Orifice CL Elevation=	200.50
		No. holes		Size (in)		Area				
AREA "A_O" = (AREA OF ORIFICE) =		3	x	4.0	=	0.2618		(3.14156R^2)		
		Oriface Elev								
H=	210.0	-	200.5	=	9.50	ft				
Q= CA√2gh =[	0.66	x	0.2618	x√(2 x	32.2	x	9.50	)] =	**4.274**	cfs
4" DIAMETER ORIFICES FLOW TO:				210.0 **ft**					Orifice CL Elevation=	201.00
		No. holes		Size (in)		Area				
AREA "A_O" = (AREA OF ORIFICE) =		3	x	4.0	=	0.2618		(3.14156R^2)		
H=	210.0	-	201.0	=	9.00	ft				
Q= CA√2gh =[	0.66	x	0.2618	x√(2 x	32.2	x	9.00	)] =	**4.160**	cfs
4" DIAMETER ORIFICES FLOW TO:				210.0 **ft**					Orifice CL Elevation=	201.50
		No. holes		Size (in)		Area				
AREA "A_O" = (AREA OF ORIFICE) =		3	x	4.0	=	0.2618		(3.14156R^2)		
H=	210.0	-	201.5	=	8.50	ft				
Q= CA√2gh =[	0.66	x	0.2618	x√(2 x	32.2	x	8.50	)] =	**4.043**	cfs
4" DIAMETER ORIFICES FLOW TO:				210.0 **ft**					Orifice CL Elevation=	202.00
		No. holes		Size (in)		Area				
AREA "A_O" = (AREA OF ORIFICE) =		3	x	4.0	=	0.2618		(3.14156R^2)		
H=	210.0	-	202.0	=	8.00	ft				
Q= CA√2gh =[	0.66	x	0.2618	x√(2 x	32.2	x	8.00	)] =	**3.922**	cfs

AREA "A_O" = (AREA OF ORIFICE) =				2.50	x	2.00	=		5.00	sf
AREA "A_G" (AREA OF GRATE) = ½" FOR EVERY 2-1/2" = 20% REDUCTION										
EFFECTIVE AREA =				5.00	x	0.8	=		4.00	sf
H=	210.0	- (	203.50	+	204.00	) \	2	=	6.250	ft
Q= CA√2gh =[	0.66	x	4.0000	x√(2 x	32.2	x	6.25	)] =	**52.96**	cfs

MAXIMUM 100 YEAR PONDING RESULT:

100 YEAR W.S. E = **205.3**

Q_{100} TOTAL = **1159.965** cfs
(Mitigated Flow)

Basin 'C' – Routing Analysis

- Basin 'C' - 2 Year 3 Hour Storm Routing Analysis

```
                  FLOOD HYDROGRAPH ROUTING PROGRAM
          Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012
                      Study date: 03/20/17

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WESTRIDGE HYDROLOGY STUDY
PROPOSED ROUTING - BASIN 'C' - 2 YEAR 3 HOUR STORM
HUNSAKER & ASSOCIATES, MARCH 20, 2017
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------


Program License Serial Number 4094

------------------------------------------------------------------------
******************** HYDROGRAPH INFORMATION **********************

               From study/file name: PRC00203.rte
*****************************HYDROGRAPH DATA*****************************
               Number of intervals =    53
               Time interval =    5.0 (Min.)
               Maximum/Peak flow rate =      104.107 (CFS)
               Total volume =       4.312 (Ac.Ft)
       Status of hydrographs being held in storage
                   Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
       Peak (CFS)      0.000     0.000     0.000     0.000     0.000
       Vol (Ac.Ft)     0.000     0.000     0.000     0.000     0.000
************************************************************************



++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      300.000 to Point/Station      301.000
**** RETARDING BASIN ROUTING ****
________________________________________________________________________

User entry of depth-outflow-storage data
------------------------------------------------------------------------
Total number of inflow hydrograph intervals = 53
Hydrograph time unit =  5.000 (Min.)
Initial depth in storage basin =   0.00(Ft.)
------------------------------------------------------------------------
------------------------------------------------------------------------
Initial basin depth =   0.00 (Ft.)
Initial basin storage =      0.00 (Ac.Ft)
Initial basin outflow =   0.00 (CFS)
------------------------------------------------------------------------
------------------------------------------------------------------------
Depth vs. Storage and Depth vs. Discharge data:
 Basin Depth  Storage    Outflow   (S-O*dt/2)   (S+O*dt/2)
     (Ft.)    (Ac.Ft)    (CFS)     (Ac.Ft)    (Ac.Ft)
------------------------------------------------------------------------
   0.000      0.000      0.000      0.000        0.000
   0.500      0.834      0.692      0.832        0.836
   1.000      1.693      1.672      1.687        1.699
   1.500      2.577      3.059      2.566        2.588
   2.000      3.488      4.757      3.472        3.504
   3.000      5.388      7.930      5.361        5.415
   4.000      7.399     20.434      7.329        7.469
   5.000      9.523     35.089      9.402        9.644
   6.000     11.764     44.538     11.611       11.917
   7.000     14.126     52.170     13.946       14.306
   8.000     16.610     58.766     16.408       16.812
   8.900     18.942     83.236     18.655       19.229
   9.000     19.207     83.236     18.920       19.494
   9.500     20.556    448.796     19.011       22.101
  10.000     21.935   1159.965     17.941       25.929
```

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0	26.0	52.05	78.08	104.11	Depth (Ft.)
0.083	0.12	0.00	0.000	O	|	|	|	|	0.00
0.167	0.58	0.00	0.003	O	|	|	|	|	0.00
0.250	1.81	0.01	0.011	O	|	|	|	|	0.01
0.333	2.81	0.02	0.027	O	|	|	|	|	0.02
0.417	3.29	0.04	0.048	OI	|	|	|	|	0.03
0.500	3.65	0.06	0.071	OI	|	|	|	|	0.04
0.583	3.94	0.08	0.097	OI	|	|	|	|	0.06
0.667	4.18	0.10	0.124	OI	|	|	|	|	0.07
0.750	4.41	0.13	0.153	OI	|	|	|	|	0.09
0.833	4.60	0.15	0.183	OI	|	|	|	|	0.11
0.917	4.79	0.18	0.214	OI	|	|	|	|	0.13
1.000	4.96	0.20	0.247	OI	|	|	|	|	0.15
1.083	5.16	0.23	0.280	OI	|	|	|	|	0.17
1.167	5.36	0.26	0.314	OI	|	|	|	|	0.19
1.250	5.59	0.29	0.350	OI	|	|	|	|	0.21
1.333	5.84	0.32	0.387	OI	|	|	|	|	0.23
1.417	6.10	0.35	0.426	OI	|	|	|	|	0.26
1.500	6.31	0.39	0.466	OI	|	|	|	|	0.28
1.583	6.43	0.42	0.508	OI	|	|	|	|	0.30
1.667	6.87	0.46	0.550	O I	|	|	|	|	0.33
1.750	8.24	0.50	0.599	O I	|	|	|	|	0.36
1.833	10.68	0.55	0.661	O I	|	|	|	|	0.40
1.917	15.11	0.62	0.745	O I	|	|	|	|	0.45
2.000	21.97	0.73	0.868	O I	|	|	|	|	0.52
2.083	38.59	0.96	1.071	O	| I	|	|	|	0.64
2.167	65.78	1.36	1.423	O	|	| I	|	|	0.84
2.250	104.11	2.15	1.995	O	|	|	|	I	1.17
2.333	83.86	3.15	2.625	O	|	|	|I	|	1.53
2.417	47.53	3.95	3.053	|O	| I	|	|	|	1.76
2.500	33.28	4.41	3.302	|O	| I	|	|	|	1.90
2.583	24.95	4.73	3.471	|O	I|	|	|	|	1.99
2.667	19.55	4.93	3.591	|O	I |	|	|	|	2.05
2.750	15.30	5.07	3.677	|O I	|	|	|	|	2.10
2.833	11.92	5.17	3.735	|O I	|	|	|	|	2.13
2.917	9.17	5.23	3.772	|OI	|	|	|	|	2.15
3.000	7.20	5.26	3.792	|OI	|	|	|	|	2.16
3.083	6.31	5.28	3.802	|O	|	|	|	|	2.17
3.167	5.22	5.29	3.806	|O	|	|	|	|	2.17
3.250	3.67	5.28	3.800	|O	|	|	|	|	2.16
3.333	2.50	5.25	3.785	IO	|	|	|	|	2.16
3.417	1.65	5.22	3.763	IO	|	|	|	|	2.14
3.500	1.13	5.17	3.737	IO	|	|	|	|	2.13
3.583	0.56	5.12	3.707	IO	|	|	|	|	2.12
3.667	0.36	5.07	3.675	IO	|	|	|	|	2.10
3.750	0.23	5.02	3.643	IO	|	|	|	|	2.08
3.833	0.15	4.96	3.610	IO	|	|	|	|	2.06
3.917	0.10	4.90	3.576	IO	|	|	|	|	2.05
4.000	0.07	4.85	3.543	IO	|	|	|	|	2.03
4.083	0.05	4.79	3.511	IO	|	|	|	|	2.01
4.167	0.04	4.74	3.478	IO	|	|	|	|	1.99
4.250	0.03	4.68	3.446	IO	|	|	|	|	1.98
4.333	0.01	4.62	3.414	IO	|	|	|	|	1.96
4.417	0.01	4.56	3.383	IO	|	|	|	|	1.94
4.500	0.00	4.50	3.351	IO	|	|	|	|	1.92
4.583	0.00	4.44	3.321	IO	|	|	|	|	1.91
4.667	0.00	4.39	3.290	IO	|	|	|	|	1.89
4.750	0.00	4.33	3.260	IO	|	|	|	|	1.87
4.833	0.00	4.28	3.230	IO	|	|	|	|	1.86
4.917	0.00	4.22	3.201	IO	|	|	|	|	1.84
5.000	0.00	4.17	3.172	IO	|	|	|	|	1.83
5.083	0.00	4.12	3.144	IO	|	|	|	|	1.81
5.167	0.00	4.06	3.116	IO	|	|	|	|	1.80
5.250	0.00	4.01	3.088	IO	|	|	|	|	1.78

5.333	0.00	3.96	3.060	IO				1.77
5.417	0.00	3.91	3.033	IO				1.75
5.500	0.00	3.86	3.006	IO				1.74
5.583	0.00	3.81	2.980	IO				1.72
5.667	0.00	3.76	2.954	IO				1.71
5.750	0.00	3.71	2.928	IO				1.69
5.833	0.00	3.67	2.903	IO				1.68
5.917	0.00	3.62	2.878	IO				1.67
6.000	0.00	3.57	2.853	IO				1.65
6.083	0.00	3.53	2.829	IO				1.64
6.167	0.00	3.48	2.804	IO				1.62
6.250	0.00	3.44	2.781	IO				1.61
6.333	0.00	3.39	2.757	IO				1.60
6.417	0.00	3.35	2.734	IO				1.59
6.500	0.00	3.31	2.711	IO				1.57
6.583	0.00	3.27	2.688	IO				1.56
6.667	0.00	3.22	2.666	O				1.55
6.750	0.00	3.18	2.644	O				1.54
6.833	0.00	3.14	2.622	O				1.52
6.917	0.00	3.10	2.601	O				1.51
7.000	0.00	3.06	2.579	O				1.50
7.083	0.00	3.03	2.558	O				1.49
7.167	0.00	3.00	2.538	O				1.48
7.250	0.00	2.96	2.517	O				1.47
7.333	0.00	2.93	2.497	O				1.45
7.417	0.00	2.90	2.477	O				1.44
7.500	0.00	2.87	2.457	O				1.43
7.583	0.00	2.84	2.437	O				1.42
7.667	0.00	2.81	2.418	O				1.41
7.750	0.00	2.78	2.398	O				1.40
7.833	0.00	2.75	2.379	O				1.39
7.917	0.00	2.72	2.361	O				1.38
8.000	0.00	2.69	2.342	O				1.37
8.083	0.00	2.66	2.323	O				1.36
8.167	0.00	2.63	2.305	O				1.35
8.250	0.00	2.60	2.287	O				1.34
8.333	0.00	2.58	2.269	O				1.33
8.417	0.00	2.55	2.252	O				1.32
8.500	0.00	2.52	2.234	O				1.31
8.583	0.00	2.49	2.217	O				1.30
8.667	0.00	2.47	2.200	O				1.29
8.750	0.00	2.44	2.183	O				1.28
8.833	0.00	2.41	2.166	O				1.27
8.917	0.00	2.39	2.150	O				1.26
9.000	0.00	2.36	2.133	O				1.25
9.083	0.00	2.34	2.117	O				1.24
9.167	0.00	2.31	2.101	O				1.23
9.250	0.00	2.29	2.085	O				1.22
9.333	0.00	2.26	2.070	O				1.21
9.417	0.00	2.24	2.054	O				1.20
9.500	0.00	2.21	2.039	O				1.20
9.583	0.00	2.19	2.024	O				1.19
9.667	0.00	2.17	2.009	O				1.18
9.750	0.00	2.14	1.994	O				1.17
9.833	0.00	2.12	1.979	O				1.16
9.917	0.00	2.10	1.965	O				1.15
10.000	0.00	2.08	1.950	O				1.15
10.083	0.00	2.05	1.936	O				1.14
10.167	0.00	2.03	1.922	O				1.13
10.250	0.00	2.01	1.908	O				1.12
10.333	0.00	1.99	1.894	O				1.11
10.417	0.00	1.97	1.881	O				1.11
10.500	0.00	1.95	1.867	O				1.10
10.583	0.00	1.92	1.854	O				1.09
10.667	0.00	1.90	1.841	O				1.08
10.750	0.00	1.88	1.828	O				1.08
10.833	0.00	1.86	1.815	O				1.07
10.917	0.00	1.84	1.802	O				1.06
11.000	0.00	1.82	1.789	O				1.05
11.083	0.00	1.80	1.777	O				1.05
11.167	0.00	1.78	1.765	O				1.04

11.250	0.00	1.77	1.752	O	|	|	|	|	1.03
11.333	0.00	1.75	1.740	O	|	|	|	|	1.03
11.417	0.00	1.73	1.728	O	|	|	|	|	1.02
11.500	0.00	1.71	1.716	O	|	|	|	|	1.01
11.583	0.00	1.69	1.705	O	|	|	|	|	1.01
11.667	0.00	1.67	1.693	O	|	|	|	|	1.00
11.750	0.00	1.66	1.682	O	|	|	|	|	0.99
11.833	0.00	1.65	1.670	O	|	|	|	|	0.99
11.917	0.00	1.63	1.659	O	|	|	|	|	0.98
12.000	0.00	1.62	1.648	O	|	|	|	|	0.97
12.083	0.00	1.61	1.637	O	|	|	|	|	0.97
12.167	0.00	1.60	1.626	O	|	|	|	|	0.96
12.250	0.00	1.58	1.615	O	|	|	|	|	0.95
12.333	0.00	1.57	1.604	O	|	|	|	|	0.95
12.417	0.00	1.56	1.593	O	|	|	|	|	0.94
12.500	0.00	1.55	1.582	O	|	|	|	|	0.94
12.583	0.00	1.53	1.572	O	|	|	|	|	0.93
12.667	0.00	1.52	1.561	O	|	|	|	|	0.92
12.750	0.00	1.51	1.551	O	|	|	|	|	0.92
12.833	0.00	1.50	1.540	O	|	|	|	|	0.91
12.917	0.00	1.49	1.530	O	|	|	|	|	0.91
13.000	0.00	1.47	1.520	O	|	|	|	|	0.90
13.083	0.00	1.46	1.510	O	|	|	|	|	0.89
13.167	0.00	1.45	1.500	O	|	|	|	|	0.89
13.250	0.00	1.44	1.490	O	|	|	|	|	0.88
13.333	0.00	1.43	1.480	O	|	|	|	|	0.88
13.417	0.00	1.42	1.470	O	|	|	|	|	0.87
13.500	0.00	1.41	1.460	O	|	|	|	|	0.86
13.583	0.00	1.40	1.451	O	|	|	|	|	0.86
13.667	0.00	1.38	1.441	O	|	|	|	|	0.85
13.750	0.00	1.37	1.432	O	|	|	|	|	0.85
13.833	0.00	1.36	1.422	O	|	|	|	|	0.84
13.917	0.00	1.35	1.413	O	|	|	|	|	0.84
14.000	0.00	1.34	1.404	O	|	|	|	|	0.83
14.083	0.00	1.33	1.394	O	|	|	|	|	0.83
14.167	0.00	1.32	1.385	O	|	|	|	|	0.82
14.250	0.00	1.31	1.376	O	|	|	|	|	0.82
14.333	0.00	1.30	1.367	O	|	|	|	|	0.81
14.417	0.00	1.29	1.358	O	|	|	|	|	0.81
14.500	0.00	1.28	1.350	O	|	|	|	|	0.80
14.583	0.00	1.27	1.341	O	|	|	|	|	0.79
14.667	0.00	1.26	1.332	O	|	|	|	|	0.79
14.750	0.00	1.25	1.323	O	|	|	|	|	0.78
14.833	0.00	1.24	1.315	O	|	|	|	|	0.78
14.917	0.00	1.23	1.306	O	|	|	|	|	0.77
15.000	0.00	1.22	1.298	O	|	|	|	|	0.77
15.083	0.00	1.21	1.289	O	|	|	|	|	0.77
15.167	0.00	1.20	1.281	O	|	|	|	|	0.76
15.250	0.00	1.19	1.273	O	|	|	|	|	0.76
15.333	0.00	1.18	1.265	O	|	|	|	|	0.75
15.417	0.00	1.17	1.257	O	|	|	|	|	0.75
15.500	0.00	1.16	1.249	O	|	|	|	|	0.74
15.583	0.00	1.16	1.241	O	|	|	|	|	0.74
15.667	0.00	1.15	1.233	O	|	|	|	|	0.73
15.750	0.00	1.14	1.225	O	|	|	|	|	0.73
15.833	0.00	1.13	1.217	O	|	|	|	|	0.72
15.917	0.00	1.12	1.209	O	|	|	|	|	0.72
16.000	0.00	1.11	1.202	O	|	|	|	|	0.71
16.083	0.00	1.10	1.194	O	|	|	|	|	0.71
16.167	0.00	1.09	1.186	O	|	|	|	|	0.71
16.250	0.00	1.09	1.179	O	|	|	|	|	0.70
16.333	0.00	1.08	1.171	O	|	|	|	|	0.70
16.417	0.00	1.07	1.164	O	|	|	|	|	0.69
16.500	0.00	1.06	1.157	O	|	|	|	|	0.69
16.583	0.00	1.05	1.149	O	|	|	|	|	0.68
16.667	0.00	1.04	1.142	O	|	|	|	|	0.68
16.750	0.00	1.04	1.135	O	|	|	|	|	0.68
16.833	0.00	1.03	1.128	O	|	|	|	|	0.67
16.917	0.00	1.02	1.121	O	|	|	|	|	0.67
17.000	0.00	1.01	1.114	O	|	|	|	|	0.66
17.083	0.00	1.00	1.107	O	|	|	|	|	0.66

17.167	0.00	1.00	1.100	O	|	|	|	|	0.65
17.250	0.00	0.99	1.093	O	|	|	|	|	0.65
17.333	0.00	0.98	1.086	O	|	|	|	|	0.65
17.417	0.00	0.97	1.080	O	|	|	|	|	0.64
17.500	0.00	0.96	1.073	O	|	|	|	|	0.64
17.583	0.00	0.96	1.066	O	|	|	|	|	0.64
17.667	0.00	0.95	1.060	O	|	|	|	|	0.63
17.750	0.00	0.94	1.053	O	|	|	|	|	0.63
17.833	0.00	0.93	1.047	O	|	|	|	|	0.62
17.917	0.00	0.93	1.040	O	|	|	|	|	0.62
18.000	0.00	0.92	1.034	O	|	|	|	|	0.62
18.083	0.00	0.91	1.028	O	|	|	|	|	0.61
18.167	0.00	0.91	1.022	O	|	|	|	|	0.61
18.250	0.00	0.90	1.015	O	|	|	|	|	0.61
18.333	0.00	0.89	1.009	O	|	|	|	|	0.60
18.417	0.00	0.88	1.003	O	|	|	|	|	0.60
18.500	0.00	0.88	0.997	O	|	|	|	|	0.59
18.583	0.00	0.87	0.991	O	|	|	|	|	0.59
18.667	0.00	0.86	0.985	O	|	|	|	|	0.59
18.750	0.00	0.86	0.979	O	|	|	|	|	0.58
18.833	0.00	0.85	0.973	O	|	|	|	|	0.58
18.917	0.00	0.84	0.967	O	|	|	|	|	0.58
19.000	0.00	0.84	0.962	O	|	|	|	|	0.57
19.083	0.00	0.83	0.956	O	|	|	|	|	0.57
19.167	0.00	0.82	0.950	O	|	|	|	|	0.57
19.250	0.00	0.82	0.944	O	|	|	|	|	0.56
19.333	0.00	0.81	0.939	O	|	|	|	|	0.56
19.417	0.00	0.81	0.933	O	|	|	|	|	0.56
19.500	0.00	0.80	0.928	O	|	|	|	|	0.55
19.583	0.00	0.79	0.922	O	|	|	|	|	0.55
19.667	0.00	0.79	0.917	O	|	|	|	|	0.55
19.750	0.00	0.78	0.911	O	|	|	|	|	0.55
19.833	0.00	0.77	0.906	O	|	|	|	|	0.54
19.917	0.00	0.77	0.901	O	|	|	|	|	0.54
20.000	0.00	0.76	0.895	O	|	|	|	|	0.54
20.083	0.00	0.76	0.890	O	|	|	|	|	0.53
20.167	0.00	0.75	0.885	O	|	|	|	|	0.53
20.250	0.00	0.74	0.880	O	|	|	|	|	0.53
20.333	0.00	0.74	0.875	O	|	|	|	|	0.52
20.417	0.00	0.73	0.870	O	|	|	|	|	0.52
20.500	0.00	0.73	0.865	O	|	|	|	|	0.52
20.583	0.00	0.72	0.860	O	|	|	|	|	0.51
20.667	0.00	0.72	0.855	O	|	|	|	|	0.51
20.750	0.00	0.71	0.850	O	|	|	|	|	0.51
20.833	0.00	0.70	0.845	O	|	|	|	|	0.51
20.917	0.00	0.70	0.840	O	|	|	|	|	0.50
21.000	0.00	0.69	0.835	O	|	|	|	|	0.50
21.083	0.00	0.69	0.831	O	|	|	|	|	0.50
21.167	0.00	0.69	0.826	O	|	|	|	|	0.50
21.250	0.00	0.68	0.821	O	|	|	|	|	0.49
21.333	0.00	0.68	0.816	O	|	|	|	|	0.49
21.417	0.00	0.67	0.812	O	|	|	|	|	0.49
21.500	0.00	0.67	0.807	O	|	|	|	|	0.48
21.583	0.00	0.67	0.803	O	|	|	|	|	0.48
21.667	0.00	0.66	0.798	O	|	|	|	|	0.48
21.750	0.00	0.66	0.793	O	|	|	|	|	0.48
21.833	0.00	0.65	0.789	O	|	|	|	|	0.47
21.917	0.00	0.65	0.784	O	|	|	|	|	0.47
22.000	0.00	0.65	0.780	O	|	|	|	|	0.47
22.083	0.00	0.64	0.776	O	|	|	|	|	0.46
22.167	0.00	0.64	0.771	O	|	|	|	|	0.46
22.250	0.00	0.64	0.767	O	|	|	|	|	0.46
22.333	0.00	0.63	0.762	O	|	|	|	|	0.46
22.417	0.00	0.63	0.758	O	|	|	|	|	0.45
22.500	0.00	0.63	0.754	O	|	|	|	|	0.45
22.583	0.00	0.62	0.749	O	|	|	|	|	0.45
22.667	0.00	0.62	0.745	O	|	|	|	|	0.45
22.750	0.00	0.61	0.741	O	|	|	|	|	0.44
22.833	0.00	0.61	0.737	O	|	|	|	|	0.44
22.917	0.00	0.61	0.732	O	|	|	|	|	0.44
23.000	0.00	0.60	0.728	O	|	|	|	|	0.44

23.083	0.00	0.60	0.724	O					0.43
23.167	0.00	0.60	0.720	O					0.43
23.250	0.00	0.59	0.716	O					0.43
23.333	0.00	0.59	0.712	O					0.43
23.417	0.00	0.59	0.708	O					0.42
23.500	0.00	0.58	0.704	O					0.42
23.583	0.00	0.58	0.700	O					0.42
23.667	0.00	0.58	0.696	O					0.42
23.750	0.00	0.57	0.692	O					0.41
23.833	0.00	0.57	0.688	O					0.41
23.917	0.00	0.57	0.684	O					0.41
24.000	0.00	0.56	0.680	O					0.41
24.083	0.00	0.56	0.676	O					0.41
24.167	0.00	0.56	0.672	O					0.40
24.250	0.00	0.55	0.668	O					0.40
24.333	0.00	0.55	0.665	O					0.40
24.417	0.00	0.55	0.661	O					0.40
24.500	0.00	0.55	0.657	O					0.39
24.583	0.00	0.54	0.653	O					0.39
24.667	0.00	0.54	0.650	O					0.39
24.750	0.00	0.54	0.646	O					0.39
24.833	0.00	0.53	0.642	O					0.39
24.917	0.00	0.53	0.639	O					0.38
25.000	0.00	0.53	0.635	O					0.38
25.083	0.00	0.52	0.631	O					0.38
25.167	0.00	0.52	0.628	O					0.38
25.250	0.00	0.52	0.624	O					0.37
25.333	0.00	0.51	0.621	O					0.37
25.417	0.00	0.51	0.617	O					0.37
25.500	0.00	0.51	0.614	O					0.37
25.583	0.00	0.51	0.610	O					0.37
25.667	0.00	0.50	0.607	O					0.36
25.750	0.00	0.50	0.603	O					0.36
25.833	0.00	0.50	0.600	O					0.36
25.917	0.00	0.49	0.596	O					0.36
26.000	0.00	0.49	0.593	O					0.36
26.083	0.00	0.49	0.590	O					0.35
26.167	0.00	0.49	0.586	O					0.35
26.250	0.00	0.48	0.583	O					0.35
26.333	0.00	0.48	0.579	O					0.35
26.417	0.00	0.48	0.576	O					0.35
26.500	0.00	0.48	0.573	O					0.34
26.583	0.00	0.47	0.570	O					0.34
26.667	0.00	0.47	0.566	O					0.34
26.750	0.00	0.47	0.563	O					0.34
26.833	0.00	0.46	0.560	O					0.34
26.917	0.00	0.46	0.557	O					0.33
27.000	0.00	0.46	0.554	O					0.33
27.083	0.00	0.46	0.550	O					0.33
27.167	0.00	0.45	0.547	O					0.33
27.250	0.00	0.45	0.544	O					0.33
27.333	0.00	0.45	0.541	O					0.32
27.417	0.00	0.45	0.538	O					0.32
27.500	0.00	0.44	0.535	O					0.32
27.583	0.00	0.44	0.532	O					0.32
27.667	0.00	0.44	0.529	O					0.32
27.750	0.00	0.44	0.526	O					0.32
27.833	0.00	0.43	0.523	O					0.31
27.917	0.00	0.43	0.520	O					0.31
28.000	0.00	0.43	0.517	O					0.31
28.083	0.00	0.43	0.514	O					0.31
28.167	0.00	0.42	0.511	O					0.31
28.250	0.00	0.42	0.508	O					0.30
28.333	0.00	0.42	0.505	O					0.30
28.417	0.00	0.42	0.502	O					0.30
28.500	0.00	0.41	0.499	O					0.30
28.583	0.00	0.41	0.497	O					0.30
28.667	0.00	0.41	0.494	O					0.30
28.750	0.00	0.41	0.491	O					0.29
28.833	0.00	0.41	0.488	O					0.29
28.917	0.00	0.40	0.485	O					0.29

29.000	0.00	0.40	0.483	O	|	|	|	|	0.29
29.083	0.00	0.40	0.480	O	|	|	|	|	0.29
29.167	0.00	0.40	0.477	O	|	|	|	|	0.29
29.250	0.00	0.39	0.474	O	|	|	|	|	0.28
29.333	0.00	0.39	0.472	O	|	|	|	|	0.28
29.417	0.00	0.39	0.469	O	|	|	|	|	0.28
29.500	0.00	0.39	0.466	O	|	|	|	|	0.28
29.583	0.00	0.38	0.464	O	|	|	|	|	0.28
29.667	0.00	0.38	0.461	O	|	|	|	|	0.28
29.750	0.00	0.38	0.458	O	|	|	|	|	0.27
29.833	0.00	0.38	0.456	O	|	|	|	|	0.27
29.917	0.00	0.38	0.453	O	|	|	|	|	0.27
30.000	0.00	0.37	0.451	O	|	|	|	|	0.27
30.083	0.00	0.37	0.448	O	|	|	|	|	0.27
30.167	0.00	0.37	0.446	O	|	|	|	|	0.27
30.250	0.00	0.37	0.443	O	|	|	|	|	0.27
30.333	0.00	0.37	0.440	O	|	|	|	|	0.26
30.417	0.00	0.36	0.438	O	|	|	|	|	0.26
30.500	0.00	0.36	0.435	O	|	|	|	|	0.26
30.583	0.00	0.36	0.433	O	|	|	|	|	0.26
30.667	0.00	0.36	0.431	O	|	|	|	|	0.26
30.750	0.00	0.36	0.428	O	|	|	|	|	0.26
30.833	0.00	0.35	0.426	O	|	|	|	|	0.26
30.917	0.00	0.35	0.423	O	|	|	|	|	0.25
31.000	0.00	0.35	0.421	O	|	|	|	|	0.25
31.083	0.00	0.35	0.418	O	|	|	|	|	0.25
31.167	0.00	0.35	0.416	O	|	|	|	|	0.25
31.250	0.00	0.34	0.414	O	|	|	|	|	0.25
31.333	0.00	0.34	0.411	O	|	|	|	|	0.25
31.417	0.00	0.34	0.409	O	|	|	|	|	0.25
31.500	0.00	0.34	0.407	O	|	|	|	|	0.24
31.583	0.00	0.34	0.404	O	|	|	|	|	0.24
31.667	0.00	0.33	0.402	O	|	|	|	|	0.24
31.750	0.00	0.33	0.400	O	|	|	|	|	0.24
31.833	0.00	0.33	0.397	O	|	|	|	|	0.24
31.917	0.00	0.33	0.395	O	|	|	|	|	0.24
32.000	0.00	0.33	0.393	O	|	|	|	|	0.24
32.083	0.00	0.32	0.391	O	|	|	|	|	0.23
32.167	0.00	0.32	0.388	O	|	|	|	|	0.23
32.250	0.00	0.32	0.386	O	|	|	|	|	0.23
32.333	0.00	0.32	0.384	O	|	|	|	|	0.23
32.417	0.00	0.32	0.382	O	|	|	|	|	0.23
32.500	0.00	0.32	0.380	O	|	|	|	|	0.23
32.583	0.00	0.31	0.377	O	|	|	|	|	0.23
32.667	0.00	0.31	0.375	O	|	|	|	|	0.23
32.750	0.00	0.31	0.373	O	|	|	|	|	0.22
32.833	0.00	0.31	0.371	O	|	|	|	|	0.22
32.917	0.00	0.31	0.369	O	|	|	|	|	0.22
33.000	0.00	0.30	0.367	O	|	|	|	|	0.22
33.083	0.00	0.30	0.365	O	|	|	|	|	0.22
33.167	0.00	0.30	0.363	O	|	|	|	|	0.22
33.250	0.00	0.30	0.361	O	|	|	|	|	0.22
33.333	0.00	0.30	0.359	O	|	|	|	|	0.21
33.417	0.00	0.30	0.357	O	|	|	|	|	0.21
33.500	0.00	0.29	0.354	O	|	|	|	|	0.21
33.583	0.00	0.29	0.352	O	|	|	|	|	0.21
33.667	0.00	0.29	0.350	O	|	|	|	|	0.21
33.750	0.00	0.29	0.348	O	|	|	|	|	0.21
33.833	0.00	0.29	0.346	O	|	|	|	|	0.21
33.917	0.00	0.29	0.345	O	|	|	|	|	0.21
34.000	0.00	0.28	0.343	O	|	|	|	|	0.21
34.083	0.00	0.28	0.341	O	|	|	|	|	0.20
34.167	0.00	0.28	0.339	O	|	|	|	|	0.20
34.250	0.00	0.28	0.337	O	|	|	|	|	0.20
34.333	0.00	0.28	0.335	O	|	|	|	|	0.20
34.417	0.00	0.28	0.333	O	|	|	|	|	0.20
34.500	0.00	0.27	0.331	O	|	|	|	|	0.20
34.583	0.00	0.27	0.329	O	|	|	|	|	0.20
34.667	0.00	0.27	0.327	O	|	|	|	|	0.20
34.750	0.00	0.27	0.325	O	|	|	|	|	0.20
34.833	0.00	0.27	0.324	O	|	|	|	|	0.19

34.917	0.00	0.27	0.322	O	|	|	|	|	0.19
35.000	0.00	0.27	0.320	O	|	|	|	|	0.19
35.083	0.00	0.26	0.318	O	|	|	|	|	0.19
35.167	0.00	0.26	0.316	O	|	|	|	|	0.19
35.250	0.00	0.26	0.314	O	|	|	|	|	0.19
35.333	0.00	0.26	0.313	O	|	|	|	|	0.19
35.417	0.00	0.26	0.311	O	|	|	|	|	0.19
35.500	0.00	0.26	0.309	O	|	|	|	|	0.19
35.583	0.00	0.25	0.307	O	|	|	|	|	0.18
35.667	0.00	0.25	0.306	O	|	|	|	|	0.18
35.750	0.00	0.25	0.304	O	|	|	|	|	0.18
35.833	0.00	0.25	0.302	O	|	|	|	|	0.18
35.917	0.00	0.25	0.300	O	|	|	|	|	0.18
36.000	0.00	0.25	0.299	O	|	|	|	|	0.18
36.083	0.00	0.25	0.297	O	|	|	|	|	0.18
36.167	0.00	0.24	0.295	O	|	|	|	|	0.18
36.250	0.00	0.24	0.294	O	|	|	|	|	0.18
36.333	0.00	0.24	0.292	O	|	|	|	|	0.18
36.417	0.00	0.24	0.290	O	|	|	|	|	0.17
36.500	0.00	0.24	0.289	O	|	|	|	|	0.17
36.583	0.00	0.24	0.287	O	|	|	|	|	0.17
36.667	0.00	0.24	0.285	O	|	|	|	|	0.17
36.750	0.00	0.24	0.284	O	|	|	|	|	0.17
36.833	0.00	0.23	0.282	O	|	|	|	|	0.17
36.917	0.00	0.23	0.280	O	|	|	|	|	0.17
37.000	0.00	0.23	0.279	O	|	|	|	|	0.17
37.083	0.00	0.23	0.277	O	|	|	|	|	0.17
37.167	0.00	0.23	0.276	O	|	|	|	|	0.17
37.250	0.00	0.23	0.274	O	|	|	|	|	0.16
37.333	0.00	0.23	0.273	O	|	|	|	|	0.16
37.417	0.00	0.22	0.271	O	|	|	|	|	0.16
37.500	0.00	0.22	0.269	O	|	|	|	|	0.16
37.583	0.00	0.22	0.268	O	|	|	|	|	0.16
37.667	0.00	0.22	0.266	O	|	|	|	|	0.16
37.750	0.00	0.22	0.265	O	|	|	|	|	0.16
37.833	0.00	0.22	0.263	O	|	|	|	|	0.16
37.917	0.00	0.22	0.262	O	|	|	|	|	0.16
38.000	0.00	0.22	0.260	O	|	|	|	|	0.16
38.083	0.00	0.21	0.259	O	|	|	|	|	0.16
38.167	0.00	0.21	0.257	O	|	|	|	|	0.15
38.250	0.00	0.21	0.256	O	|	|	|	|	0.15
38.333	0.00	0.21	0.254	O	|	|	|	|	0.15
38.417	0.00	0.21	0.253	O	|	|	|	|	0.15
38.500	0.00	0.21	0.252	O	|	|	|	|	0.15
38.583	0.00	0.21	0.250	O	|	|	|	|	0.15
38.667	0.00	0.21	0.249	O	|	|	|	|	0.15
38.750	0.00	0.21	0.247	O	|	|	|	|	0.15
38.833	0.00	0.20	0.246	O	|	|	|	|	0.15
38.917	0.00	0.20	0.245	O	|	|	|	|	0.15
39.000	0.00	0.20	0.243	O	|	|	|	|	0.15
39.083	0.00	0.20	0.242	O	|	|	|	|	0.14
39.167	0.00	0.20	0.240	O	|	|	|	|	0.14
39.250	0.00	0.20	0.239	O	|	|	|	|	0.14
39.333	0.00	0.20	0.238	O	|	|	|	|	0.14
39.417	0.00	0.20	0.236	O	|	|	|	|	0.14
39.500	0.00	0.19	0.235	O	|	|	|	|	0.14
39.583	0.00	0.19	0.234	O	|	|	|	|	0.14
39.667	0.00	0.19	0.232	O	|	|	|	|	0.14
39.750	0.00	0.19	0.231	O	|	|	|	|	0.14
39.833	0.00	0.19	0.230	O	|	|	|	|	0.14
39.917	0.00	0.19	0.228	O	|	|	|	|	0.14
40.000	0.00	0.19	0.227	O	|	|	|	|	0.14
40.083	0.00	0.19	0.226	O	|	|	|	|	0.14
40.167	0.00	0.19	0.224	O	|	|	|	|	0.13
40.250	0.00	0.19	0.223	O	|	|	|	|	0.13
40.333	0.00	0.18	0.222	O	|	|	|	|	0.13
40.417	0.00	0.18	0.221	O	|	|	|	|	0.13
40.500	0.00	0.18	0.219	O	|	|	|	|	0.13
40.583	0.00	0.18	0.218	O	|	|	|	|	0.13
40.667	0.00	0.18	0.217	O	|	|	|	|	0.13
40.750	0.00	0.18	0.216	O	|	|	|	|	0.13

40.833	0.00	0.18	0.214	O	|	|	|	|	0.13
40.917	0.00	0.18	0.213	O	|	|	|	|	0.13
41.000	0.00	0.18	0.212	O	|	|	|	|	0.13
41.083	0.00	0.17	0.211	O	|	|	|	|	0.13
41.167	0.00	0.17	0.210	O	|	|	|	|	0.13
41.250	0.00	0.17	0.208	O	|	|	|	|	0.12
41.333	0.00	0.17	0.207	O	|	|	|	|	0.12
41.417	0.00	0.17	0.206	O	|	|	|	|	0.12
41.500	0.00	0.17	0.205	O	|	|	|	|	0.12
41.583	0.00	0.17	0.204	O	|	|	|	|	0.12
41.667	0.00	0.17	0.202	O	|	|	|	|	0.12
41.750	0.00	0.17	0.201	O	|	|	|	|	0.12
41.833	0.00	0.17	0.200	O	|	|	|	|	0.12
41.917	0.00	0.17	0.199	O	|	|	|	|	0.12
42.000	0.00	0.16	0.198	O	|	|	|	|	0.12
42.083	0.00	0.16	0.197	O	|	|	|	|	0.12
42.167	0.00	0.16	0.196	O	|	|	|	|	0.12
42.250	0.00	0.16	0.195	O	|	|	|	|	0.12
42.333	0.00	0.16	0.193	O	|	|	|	|	0.12
42.417	0.00	0.16	0.192	O	|	|	|	|	0.12
42.500	0.00	0.16	0.191	O	|	|	|	|	0.11
42.583	0.00	0.16	0.190	O	|	|	|	|	0.11
42.667	0.00	0.16	0.189	O	|	|	|	|	0.11
42.750	0.00	0.16	0.188	O	|	|	|	|	0.11
42.833	0.00	0.16	0.187	O	|	|	|	|	0.11
42.917	0.00	0.15	0.186	O	|	|	|	|	0.11
43.000	0.00	0.15	0.185	O	|	|	|	|	0.11
43.083	0.00	0.15	0.184	O	|	|	|	|	0.11
43.167	0.00	0.15	0.183	O	|	|	|	|	0.11
43.250	0.00	0.15	0.182	O	|	|	|	|	0.11
43.333	0.00	0.15	0.181	O	|	|	|	|	0.11
43.417	0.00	0.15	0.180	O	|	|	|	|	0.11
43.500	0.00	0.15	0.179	O	|	|	|	|	0.11
43.583	0.00	0.15	0.178	O	|	|	|	|	0.11
43.667	0.00	0.15	0.177	O	|	|	|	|	0.11
43.750	0.00	0.15	0.176	O	|	|	|	|	0.11
43.833	0.00	0.14	0.175	O	|	|	|	|	0.10
43.917	0.00	0.14	0.174	O	|	|	|	|	0.10
44.000	0.00	0.14	0.173	O	|	|	|	|	0.10
44.083	0.00	0.14	0.172	O	|	|	|	|	0.10
44.167	0.00	0.14	0.171	O	|	|	|	|	0.10
44.250	0.00	0.14	0.170	O	|	|	|	|	0.10
44.333	0.00	0.14	0.169	O	|	|	|	|	0.10
44.417	0.00	0.14	0.168	O	|	|	|	|	0.10
44.500	0.00	0.14	0.167	O	|	|	|	|	0.10
44.583	0.00	0.14	0.166	O	|	|	|	|	0.10
44.667	0.00	0.14	0.165	O	|	|	|	|	0.10
44.750	0.00	0.14	0.164	O	|	|	|	|	0.10
44.833	0.00	0.14	0.163	O	|	|	|	|	0.10
44.917	0.00	0.13	0.162	O	|	|	|	|	0.10
45.000	0.00	0.13	0.161	O	|	|	|	|	0.10
45.083	0.00	0.13	0.160	O	|	|	|	|	0.10
45.167	0.00	0.13	0.159	O	|	|	|	|	0.10
45.250	0.00	0.13	0.158	O	|	|	|	|	0.09
45.333	0.00	0.13	0.157	O	|	|	|	|	0.09
45.417	0.00	0.13	0.157	O	|	|	|	|	0.09
45.500	0.00	0.13	0.156	O	|	|	|	|	0.09
45.583	0.00	0.13	0.155	O	|	|	|	|	0.09
45.667	0.00	0.13	0.154	O	|	|	|	|	0.09
45.750	0.00	0.13	0.153	O	|	|	|	|	0.09
45.833	0.00	0.13	0.152	O	|	|	|	|	0.09
45.917	0.00	0.13	0.151	O	|	|	|	|	0.09
46.000	0.00	0.12	0.150	O	|	|	|	|	0.09
46.083	0.00	0.12	0.150	O	|	|	|	|	0.09
46.167	0.00	0.12	0.149	O	|	|	|	|	0.09
46.250	0.00	0.12	0.148	O	|	|	|	|	0.09
46.333	0.00	0.12	0.147	O	|	|	|	|	0.09
46.417	0.00	0.12	0.146	O	|	|	|	|	0.09
46.500	0.00	0.12	0.145	O	|	|	|	|	0.09
46.583	0.00	0.12	0.145	O	|	|	|	|	0.09
46.667	0.00	0.12	0.144	O	|	|	|	|	0.09

46.750	0.00	0.12	0.143	O	|	|	|	|	0.09
46.833	0.00	0.12	0.142	O	|	|	|	|	0.09
46.917	0.00	0.12	0.141	O	|	|	|	|	0.08
47.000	0.00	0.12	0.140	O	|	|	|	|	0.08
47.083	0.00	0.12	0.140	O	|	|	|	|	0.08
47.167	0.00	0.12	0.139	O	|	|	|	|	0.08
47.250	0.00	0.11	0.138	O	|	|	|	|	0.08
47.333	0.00	0.11	0.137	O	|	|	|	|	0.08
47.417	0.00	0.11	0.137	O	|	|	|	|	0.08
47.500	0.00	0.11	0.136	O	|	|	|	|	0.08
47.583	0.00	0.11	0.135	O	|	|	|	|	0.08
47.667	0.00	0.11	0.134	O	|	|	|	|	0.08
47.750	0.00	0.11	0.133	O	|	|	|	|	0.08
47.833	0.00	0.11	0.133	O	|	|	|	|	0.08
47.917	0.00	0.11	0.132	O	|	|	|	|	0.08
48.000	0.00	0.11	0.131	O	|	|	|	|	0.08
48.083	0.00	0.11	0.130	O	|	|	|	|	0.08
48.167	0.00	0.11	0.130	O	|	|	|	|	0.08
48.250	0.00	0.11	0.129	O	|	|	|	|	0.08
48.333	0.00	0.11	0.128	O	|	|	|	|	0.08
48.417	0.00	0.11	0.127	O	|	|	|	|	0.08
48.500	0.00	0.11	0.127	O	|	|	|	|	0.08
48.583	0.00	0.10	0.126	O	|	|	|	|	0.08
48.667	0.00	0.10	0.125	O	|	|	|	|	0.08
48.750	0.00	0.10	0.125	O	|	|	|	|	0.07
48.833	0.00	0.10	0.124	O	|	|	|	|	0.07
48.917	0.00	0.10	0.123	O	|	|	|	|	0.07
49.000	0.00	0.10	0.122	O	|	|	|	|	0.07
49.083	0.00	0.10	0.122	O	|	|	|	|	0.07
49.167	0.00	0.10	0.121	O	|	|	|	|	0.07
49.250	0.00	0.10	0.120	O	|	|	|	|	0.07
49.333	0.00	0.10	0.120	O	|	|	|	|	0.07
49.417	0.00	0.10	0.119	O	|	|	|	|	0.07
49.500	0.00	0.10	0.118	O	|	|	|	|	0.07
49.583	0.00	0.10	0.118	O	|	|	|	|	0.07
49.667	0.00	0.10	0.117	O	|	|	|	|	0.07
49.750	0.00	0.10	0.116	O	|	|	|	|	0.07
49.833	0.00	0.10	0.116	O	|	|	|	|	0.07
49.917	0.00	0.10	0.115	O	|	|	|	|	0.07
50.000	0.00	0.09	0.114	O	|	|	|	|	0.07
50.083	0.00	0.09	0.114	O	|	|	|	|	0.07
50.167	0.00	0.09	0.113	O	|	|	|	|	0.07
50.250	0.00	0.09	0.112	O	|	|	|	|	0.07
50.333	0.00	0.09	0.112	O	|	|	|	|	0.07
50.417	0.00	0.09	0.111	O	|	|	|	|	0.07
50.500	0.00	0.09	0.110	O	|	|	|	|	0.07
50.583	0.00	0.09	0.110	O	|	|	|	|	0.07
50.667	0.00	0.09	0.109	O	|	|	|	|	0.07
50.750	0.00	0.09	0.109	O	|	|	|	|	0.07
50.833	0.00	0.09	0.108	O	|	|	|	|	0.06
50.917	0.00	0.09	0.107	O	|	|	|	|	0.06
51.000	0.00	0.09	0.107	O	|	|	|	|	0.06
51.083	0.00	0.09	0.106	O	|	|	|	|	0.06
51.167	0.00	0.09	0.106	O	|	|	|	|	0.06
51.250	0.00	0.09	0.105	O	|	|	|	|	0.06
51.333	0.00	0.09	0.104	O	|	|	|	|	0.06
51.417	0.00	0.09	0.104	O	|	|	|	|	0.06
51.500	0.00	0.09	0.103	O	|	|	|	|	0.06
51.583	0.00	0.09	0.103	O	|	|	|	|	0.06
51.667	0.00	0.08	0.102	O	|	|	|	|	0.06
51.750	0.00	0.08	0.101	O	|	|	|	|	0.06
51.833	0.00	0.08	0.101	O	|	|	|	|	0.06
51.917	0.00	0.08	0.100	O	|	|	|	|	0.06
52.000	0.00	0.08	0.100	O	|	|	|	|	0.06
52.083	0.00	0.08	0.099	O	|	|	|	|	0.06
52.167	0.00	0.08	0.099	O	|	|	|	|	0.06
52.250	0.00	0.08	0.098	O	|	|	|	|	0.06
52.333	0.00	0.08	0.097	O	|	|	|	|	0.06
52.417	0.00	0.08	0.097	O	|	|	|	|	0.06
52.500	0.00	0.08	0.096	O	|	|	|	|	0.06
52.583	0.00	0.08	0.096	O	|	|	|	|	0.06

52.667	0.00	0.08	0.095	O	|	|	|	|	0.06
52.750	0.00	0.08	0.095	O	|	|	|	|	0.06
52.833	0.00	0.08	0.094	O	|	|	|	|	0.06
52.917	0.00	0.08	0.094	O	|	|	|	|	0.06
53.000	0.00	0.08	0.093	O	|	|	|	|	0.06
53.083	0.00	0.08	0.093	O	|	|	|	|	0.06
53.167	0.00	0.08	0.092	O	|	|	|	|	0.06
53.250	0.00	0.08	0.092	O	|	|	|	|	0.05
53.333	0.00	0.08	0.091	O	|	|	|	|	0.05
53.417	0.00	0.08	0.090	O	|	|	|	|	0.05
53.500	0.00	0.07	0.090	O	|	|	|	|	0.05
53.583	0.00	0.07	0.089	O	|	|	|	|	0.05
53.667	0.00	0.07	0.089	O	|	|	|	|	0.05
53.750	0.00	0.07	0.088	O	|	|	|	|	0.05
53.833	0.00	0.07	0.088	O	|	|	|	|	0.05
53.917	0.00	0.07	0.087	O	|	|	|	|	0.05
54.000	0.00	0.07	0.087	O	|	|	|	|	0.05
54.083	0.00	0.07	0.086	O	|	|	|	|	0.05
54.167	0.00	0.07	0.086	O	|	|	|	|	0.05
54.250	0.00	0.07	0.085	O	|	|	|	|	0.05
54.333	0.00	0.07	0.085	O	|	|	|	|	0.05
54.417	0.00	0.07	0.084	O	|	|	|	|	0.05
54.500	0.00	0.07	0.084	O	|	|	|	|	0.05
54.583	0.00	0.07	0.084	O	|	|	|	|	0.05
54.667	0.00	0.07	0.083	O	|	|	|	|	0.05
54.750	0.00	0.07	0.083	O	|	|	|	|	0.05
54.833	0.00	0.07	0.082	O	|	|	|	|	0.05
54.917	0.00	0.07	0.082	O	|	|	|	|	0.05
55.000	0.00	0.07	0.081	O	|	|	|	|	0.05
55.083	0.00	0.07	0.081	O	|	|	|	|	0.05
55.167	0.00	0.07	0.080	O	|	|	|	|	0.05
55.250	0.00	0.07	0.080	O	|	|	|	|	0.05
55.333	0.00	0.07	0.079	O	|	|	|	|	0.05
55.417	0.00	0.07	0.079	O	|	|	|	|	0.05
55.500	0.00	0.07	0.078	O	|	|	|	|	0.05
55.583	0.00	0.06	0.078	O	|	|	|	|	0.05
55.667	0.00	0.06	0.078	O	|	|	|	|	0.05
55.750	0.00	0.06	0.077	O	|	|	|	|	0.05
55.833	0.00	0.06	0.077	O	|	|	|	|	0.05
55.917	0.00	0.06	0.076	O	|	|	|	|	0.05
56.000	0.00	0.06	0.076	O	|	|	|	|	0.05
56.083	0.00	0.06	0.075	O	|	|	|	|	0.05
56.167	0.00	0.06	0.075	O	|	|	|	|	0.04
56.250	0.00	0.06	0.074	O	|	|	|	|	0.04
56.333	0.00	0.06	0.074	O	|	|	|	|	0.04
56.417	0.00	0.06	0.074	O	|	|	|	|	0.04
56.500	0.00	0.06	0.073	O	|	|	|	|	0.04
56.583	0.00	0.06	0.073	O	|	|	|	|	0.04
56.667	0.00	0.06	0.072	O	|	|	|	|	0.04
56.750	0.00	0.06	0.072	O	|	|	|	|	0.04
56.833	0.00	0.06	0.072	O	|	|	|	|	0.04
56.917	0.00	0.06	0.071	O	|	|	|	|	0.04
57.000	0.00	0.06	0.071	O	|	|	|	|	0.04
57.083	0.00	0.06	0.070	O	|	|	|	|	0.04
57.167	0.00	0.06	0.070	O	|	|	|	|	0.04
57.250	0.00	0.06	0.070	O	|	|	|	|	0.04
57.333	0.00	0.06	0.069	O	|	|	|	|	0.04
57.417	0.00	0.06	0.069	O	|	|	|	|	0.04
57.500	0.00	0.06	0.068	O	|	|	|	|	0.04
57.583	0.00	0.06	0.068	O	|	|	|	|	0.04
57.667	0.00	0.06	0.068	O	|	|	|	|	0.04
57.750	0.00	0.06	0.067	O	|	|	|	|	0.04
57.833	0.00	0.06	0.067	O	|	|	|	|	0.04
57.917	0.00	0.06	0.066	O	|	|	|	|	0.04
58.000	0.00	0.05	0.066	O	|	|	|	|	0.04
58.083	0.00	0.05	0.066	O	|	|	|	|	0.04
58.167	0.00	0.05	0.065	O	|	|	|	|	0.04
58.250	0.00	0.05	0.065	O	|	|	|	|	0.04
58.333	0.00	0.05	0.065	O	|	|	|	|	0.04
58.417	0.00	0.05	0.064	O	|	|	|	|	0.04
58.500	0.00	0.05	0.064	O	|	|	|	|	0.04

58.583	0.00	0.05	0.063	O	|	|	|	|	0.04
58.667	0.00	0.05	0.063	O	|	|	|	|	0.04
58.750	0.00	0.05	0.063	O	|	|	|	|	0.04
58.833	0.00	0.05	0.062	O	|	|	|	|	0.04
58.917	0.00	0.05	0.062	O	|	|	|	|	0.04
59.000	0.00	0.05	0.062	O	|	|	|	|	0.04
59.083	0.00	0.05	0.061	O	|	|	|	|	0.04
59.167	0.00	0.05	0.061	O	|	|	|	|	0.04
59.250	0.00	0.05	0.061	O	|	|	|	|	0.04
59.333	0.00	0.05	0.060	O	|	|	|	|	0.04
59.417	0.00	0.05	0.060	O	|	|	|	|	0.04
59.500	0.00	0.05	0.060	O	|	|	|	|	0.04
59.583	0.00	0.05	0.059	O	|	|	|	|	0.04
59.667	0.00	0.05	0.059	O	|	|	|	|	0.04
59.750	0.00	0.05	0.059	O	|	|	|	|	0.04
59.833	0.00	0.05	0.058	O	|	|	|	|	0.03
59.917	0.00	0.05	0.058	O	|	|	|	|	0.03
60.000	0.00	0.05	0.058	O	|	|	|	|	0.03
60.083	0.00	0.05	0.057	O	|	|	|	|	0.03
60.167	0.00	0.05	0.057	O	|	|	|	|	0.03
60.250	0.00	0.05	0.057	O	|	|	|	|	0.03
60.333	0.00	0.05	0.056	O	|	|	|	|	0.03
60.417	0.00	0.05	0.056	O	|	|	|	|	0.03
60.500	0.00	0.05	0.056	O	|	|	|	|	0.03
60.583	0.00	0.05	0.055	O	|	|	|	|	0.03
60.667	0.00	0.05	0.055	O	|	|	|	|	0.03
60.750	0.00	0.05	0.055	O	|	|	|	|	0.03
60.833	0.00	0.05	0.054	O	|	|	|	|	0.03
60.917	0.00	0.04	0.054	O	|	|	|	|	0.03
61.000	0.00	0.04	0.054	O	|	|	|	|	0.03
61.083	0.00	0.04	0.053	O	|	|	|	|	0.03
61.167	0.00	0.04	0.053	O	|	|	|	|	0.03
61.250	0.00	0.04	0.053	O	|	|	|	|	0.03
61.333	0.00	0.04	0.053	O	|	|	|	|	0.03
61.417	0.00	0.04	0.052	O	|	|	|	|	0.03
61.500	0.00	0.04	0.052	O	|	|	|	|	0.03
61.583	0.00	0.04	0.052	O	|	|	|	|	0.03
61.667	0.00	0.04	0.051	O	|	|	|	|	0.03
61.750	0.00	0.04	0.051	O	|	|	|	|	0.03
61.833	0.00	0.04	0.051	O	|	|	|	|	0.03
61.917	0.00	0.04	0.051	O	|	|	|	|	0.03
62.000	0.00	0.04	0.050	O	|	|	|	|	0.03
62.083	0.00	0.04	0.050	O	|	|	|	|	0.03
62.167	0.00	0.04	0.050	O	|	|	|	|	0.03
62.250	0.00	0.04	0.049	O	|	|	|	|	0.03
62.333	0.00	0.04	0.049	O	|	|	|	|	0.03
62.417	0.00	0.04	0.049	O	|	|	|	|	0.03
62.500	0.00	0.04	0.049	O	|	|	|	|	0.03
62.583	0.00	0.04	0.048	O	|	|	|	|	0.03
62.667	0.00	0.04	0.048	O	|	|	|	|	0.03
62.750	0.00	0.04	0.048	O	|	|	|	|	0.03
62.833	0.00	0.04	0.047	O	|	|	|	|	0.03
62.917	0.00	0.04	0.047	O	|	|	|	|	0.03
63.000	0.00	0.04	0.047	O	|	|	|	|	0.03
63.083	0.00	0.04	0.047	O	|	|	|	|	0.03
63.167	0.00	0.04	0.046	O	|	|	|	|	0.03
63.250	0.00	0.04	0.046	O	|	|	|	|	0.03
63.333	0.00	0.04	0.046	O	|	|	|	|	0.03
63.417	0.00	0.04	0.046	O	|	|	|	|	0.03
63.500	0.00	0.04	0.045	O	|	|	|	|	0.03
63.583	0.00	0.04	0.045	O	|	|	|	|	0.03
63.667	0.00	0.04	0.045	O	|	|	|	|	0.03
63.750	0.00	0.04	0.045	O	|	|	|	|	0.03
63.833	0.00	0.04	0.044	O	|	|	|	|	0.03
63.917	0.00	0.04	0.044	O	|	|	|	|	0.03
64.000	0.00	0.04	0.044	O	|	|	|	|	0.03
64.083	0.00	0.04	0.044	O	|	|	|	|	0.03
64.167	0.00	0.04	0.043	O	|	|	|	|	0.03
64.250	0.00	0.04	0.043	O	|	|	|	|	0.03
64.333	0.00	0.04	0.043	O	|	|	|	|	0.03
64.417	0.00	0.04	0.043	O	|	|	|	|	0.03

64.500	0.00	0.04	0.042	O	|	|	|	|	0.03
64.583	0.00	0.03	0.042	O	|	|	|	|	0.03
64.667	0.00	0.03	0.042	O	|	|	|	|	0.03
64.750	0.00	0.03	0.042	O	|	|	|	|	0.02
64.833	0.00	0.03	0.041	O	|	|	|	|	0.02
64.917	0.00	0.03	0.041	O	|	|	|	|	0.02
65.000	0.00	0.03	0.041	O	|	|	|	|	0.02
65.083	0.00	0.03	0.041	O	|	|	|	|	0.02
65.167	0.00	0.03	0.040	O	|	|	|	|	0.02
65.250	0.00	0.03	0.040	O	|	|	|	|	0.02
65.333	0.00	0.03	0.040	O	|	|	|	|	0.02
65.417	0.00	0.03	0.040	O	|	|	|	|	0.02
65.500	0.00	0.03	0.040	O	|	|	|	|	0.02
65.583	0.00	0.03	0.039	O	|	|	|	|	0.02
65.667	0.00	0.03	0.039	O	|	|	|	|	0.02
65.750	0.00	0.03	0.039	O	|	|	|	|	0.02
65.833	0.00	0.03	0.039	O	|	|	|	|	0.02
65.917	0.00	0.03	0.038	O	|	|	|	|	0.02
66.000	0.00	0.03	0.038	O	|	|	|	|	0.02
66.083	0.00	0.03	0.038	O	|	|	|	|	0.02
66.167	0.00	0.03	0.038	O	|	|	|	|	0.02
66.250	0.00	0.03	0.038	O	|	|	|	|	0.02
66.333	0.00	0.03	0.037	O	|	|	|	|	0.02
66.417	0.00	0.03	0.037	O	|	|	|	|	0.02
66.500	0.00	0.03	0.037	O	|	|	|	|	0.02
66.583	0.00	0.03	0.037	O	|	|	|	|	0.02
66.667	0.00	0.03	0.036	O	|	|	|	|	0.02
66.750	0.00	0.03	0.036	O	|	|	|	|	0.02
66.833	0.00	0.03	0.036	O	|	|	|	|	0.02
66.917	0.00	0.03	0.036	O	|	|	|	|	0.02
67.000	0.00	0.03	0.036	O	|	|	|	|	0.02
67.083	0.00	0.03	0.035	O	|	|	|	|	0.02
67.167	0.00	0.03	0.035	O	|	|	|	|	0.02
67.250	0.00	0.03	0.035	O	|	|	|	|	0.02
67.333	0.00	0.03	0.035	O	|	|	|	|	0.02
67.417	0.00	0.03	0.035	O	|	|	|	|	0.02
67.500	0.00	0.03	0.034	O	|	|	|	|	0.02
67.583	0.00	0.03	0.034	O	|	|	|	|	0.02
67.667	0.00	0.03	0.034	O	|	|	|	|	0.02
67.750	0.00	0.03	0.034	O	|	|	|	|	0.02
67.833	0.00	0.03	0.034	O	|	|	|	|	0.02
67.917	0.00	0.03	0.033	O	|	|	|	|	0.02
68.000	0.00	0.03	0.033	O	|	|	|	|	0.02
68.083	0.00	0.03	0.033	O	|	|	|	|	0.02
68.167	0.00	0.03	0.033	O	|	|	|	|	0.02
68.250	0.00	0.03	0.033	O	|	|	|	|	0.02
68.333	0.00	0.03	0.033	O	|	|	|	|	0.02
68.417	0.00	0.03	0.032	O	|	|	|	|	0.02
68.500	0.00	0.03	0.032	O	|	|	|	|	0.02
68.583	0.00	0.03	0.032	O	|	|	|	|	0.02
68.667	0.00	0.03	0.032	O	|	|	|	|	0.02
68.750	0.00	0.03	0.032	O	|	|	|	|	0.02
68.833	0.00	0.03	0.031	O	|	|	|	|	0.02
68.917	0.00	0.03	0.031	O	|	|	|	|	0.02
69.000	0.00	0.03	0.031	O	|	|	|	|	0.02
69.083	0.00	0.03	0.031	O	|	|	|	|	0.02
69.167	0.00	0.03	0.031	O	|	|	|	|	0.02
69.250	0.00	0.03	0.031	O	|	|	|	|	0.02
69.333	0.00	0.03	0.030	O	|	|	|	|	0.02
69.417	0.00	0.03	0.030	O	|	|	|	|	0.02
69.500	0.00	0.02	0.030	O	|	|	|	|	0.02
69.583	0.00	0.02	0.030	O	|	|	|	|	0.02
69.667	0.00	0.02	0.030	O	|	|	|	|	0.02
69.750	0.00	0.02	0.030	O	|	|	|	|	0.02
69.833	0.00	0.02	0.029	O	|	|	|	|	0.02
69.917	0.00	0.02	0.029	O	|	|	|	|	0.02
70.000	0.00	0.02	0.029	O	|	|	|	|	0.02
70.083	0.00	0.02	0.029	O	|	|	|	|	0.02
70.167	0.00	0.02	0.029	O	|	|	|	|	0.02
70.250	0.00	0.02	0.029	O	|	|	|	|	0.02
70.333	0.00	0.02	0.028	O	|	|	|	|	0.02

70.417	0.00	0.02	0.028	O					0.02
70.500	0.00	0.02	0.028	O					0.02
70.583	0.00	0.02	0.028	O					0.02
70.667	0.00	0.02	0.028	O					0.02
70.750	0.00	0.02	0.028	O					0.02
70.833	0.00	0.02	0.027	O					0.02
70.917	0.00	0.02	0.027	O					0.02
71.000	0.00	0.02	0.027	O					0.02
71.083	0.00	0.02	0.027	O					0.02
71.167	0.00	0.02	0.027	O					0.02
71.250	0.00	0.02	0.027	O					0.02
71.333	0.00	0.02	0.026	O					0.02
71.417	0.00	0.02	0.026	O					0.02
71.500	0.00	0.02	0.026	O					0.02
71.583	0.00	0.02	0.026	O					0.02
71.667	0.00	0.02	0.026	O					0.02
71.750	0.00	0.02	0.026	O					0.02
71.833	0.00	0.02	0.026	O					0.02
71.917	0.00	0.02	0.025	O					0.02
72.000	0.00	0.02	0.025	O					0.02
72.083	0.00	0.02	0.025	O					0.02
72.167	0.00	0.02	0.025	O					0.01
72.250	0.00	0.02	0.025	O					0.01
72.333	0.00	0.02	0.025	O					0.01
72.417	0.00	0.02	0.025	O					0.01
72.500	0.00	0.02	0.024	O					0.01
72.583	0.00	0.02	0.024	O					0.01
72.667	0.00	0.02	0.024	O					0.01
72.750	0.00	0.02	0.024	O					0.01
72.833	0.00	0.02	0.024	O					0.01
72.917	0.00	0.02	0.024	O					0.01
73.000	0.00	0.02	0.024	O					0.01
73.083	0.00	0.02	0.023	O					0.01
73.167	0.00	0.02	0.023	O					0.01
73.250	0.00	0.02	0.023	O					0.01
73.333	0.00	0.02	0.023	O					0.01
73.417	0.00	0.02	0.023	O					0.01
73.500	0.00	0.02	0.023	O					0.01
73.583	0.00	0.02	0.023	O					0.01
73.667	0.00	0.02	0.023	O					0.01
73.750	0.00	0.02	0.022	O					0.01
73.833	0.00	0.02	0.022	O					0.01
73.917	0.00	0.02	0.022	O					0.01
74.000	0.00	0.02	0.022	O					0.01
74.083	0.00	0.02	0.022	O					0.01
74.167	0.00	0.02	0.022	O					0.01
74.250	0.00	0.02	0.022	O					0.01
74.333	0.00	0.02	0.022	O					0.01
74.417	0.00	0.02	0.021	O					0.01
74.500	0.00	0.02	0.021	O					0.01
74.583	0.00	0.02	0.021	O					0.01
74.667	0.00	0.02	0.021	O					0.01
74.750	0.00	0.02	0.021	O					0.01
74.833	0.00	0.02	0.021	O					0.01
74.917	0.00	0.02	0.021	O					0.01
75.000	0.00	0.02	0.021	O					0.01
75.083	0.00	0.02	0.020	O					0.01
75.167	0.00	0.02	0.020	O					0.01
75.250	0.00	0.02	0.020	O					0.01
75.333	0.00	0.02	0.020	O					0.01
75.417	0.00	0.02	0.020	O					0.01
75.500	0.00	0.02	0.020	O					0.01
75.583	0.00	0.02	0.020	O					0.01
75.667	0.00	0.02	0.020	O					0.01
75.750	0.00	0.02	0.020	O					0.01
75.833	0.00	0.02	0.019	O					0.01
75.917	0.00	0.02	0.019	O					0.01
76.000	0.00	0.02	0.019	O					0.01
76.083	0.00	0.02	0.019	O					0.01
76.167	0.00	0.02	0.019	O					0.01
76.250	0.00	0.02	0.019	O					0.01

76.333	0.00	0.02	0.019	O	|	|	|	|	0.01
76.417	0.00	0.02	0.019	O	|	|	|	|	0.01
76.500	0.00	0.02	0.019	O	|	|	|	|	0.01
76.583	0.00	0.02	0.018	O	|	|	|	|	0.01
76.667	0.00	0.02	0.018	O	|	|	|	|	0.01
76.750	0.00	0.02	0.018	O	|	|	|	|	0.01
76.833	0.00	0.02	0.018	O	|	|	|	|	0.01
76.917	0.00	0.01	0.018	O	|	|	|	|	0.01
77.000	0.00	0.01	0.018	O	|	|	|	|	0.01
77.083	0.00	0.01	0.018	O	|	|	|	|	0.01
77.167	0.00	0.01	0.018	O	|	|	|	|	0.01
77.250	0.00	0.01	0.018	O	|	|	|	|	0.01
77.333	0.00	0.01	0.018	O	|	|	|	|	0.01
77.417	0.00	0.01	0.017	O	|	|	|	|	0.01
77.500	0.00	0.01	0.017	O	|	|	|	|	0.01
77.583	0.00	0.01	0.017	O	|	|	|	|	0.01
77.667	0.00	0.01	0.017	O	|	|	|	|	0.01
77.750	0.00	0.01	0.017	O	|	|	|	|	0.01
77.833	0.00	0.01	0.017	O	|	|	|	|	0.01
77.917	0.00	0.01	0.017	O	|	|	|	|	0.01
78.000	0.00	0.01	0.017	O	|	|	|	|	0.01
78.083	0.00	0.01	0.017	O	|	|	|	|	0.01
78.167	0.00	0.01	0.017	O	|	|	|	|	0.01
78.250	0.00	0.01	0.016	O	|	|	|	|	0.01
78.333	0.00	0.01	0.016	O	|	|	|	|	0.01
78.417	0.00	0.01	0.016	O	|	|	|	|	0.01
78.500	0.00	0.01	0.016	O	|	|	|	|	0.01
78.583	0.00	0.01	0.016	O	|	|	|	|	0.01
78.667	0.00	0.01	0.016	O	|	|	|	|	0.01
78.750	0.00	0.01	0.016	O	|	|	|	|	0.01
78.833	0.00	0.01	0.016	O	|	|	|	|	0.01
78.917	0.00	0.01	0.016	O	|	|	|	|	0.01
79.000	0.00	0.01	0.016	O	|	|	|	|	0.01
79.083	0.00	0.01	0.016	O	|	|	|	|	0.01
79.167	0.00	0.01	0.015	O	|	|	|	|	0.01
79.250	0.00	0.01	0.015	O	|	|	|	|	0.01
79.333	0.00	0.01	0.015	O	|	|	|	|	0.01
79.417	0.00	0.01	0.015	O	|	|	|	|	0.01
79.500	0.00	0.01	0.015	O	|	|	|	|	0.01
79.583	0.00	0.01	0.015	O	|	|	|	|	0.01
79.667	0.00	0.01	0.015	O	|	|	|	|	0.01
79.750	0.00	0.01	0.015	O	|	|	|	|	0.01
79.833	0.00	0.01	0.015	O	|	|	|	|	0.01
79.917	0.00	0.01	0.015	O	|	|	|	|	0.01
80.000	0.00	0.01	0.015	O	|	|	|	|	0.01
80.083	0.00	0.01	0.015	O	|	|	|	|	0.01
80.167	0.00	0.01	0.014	O	|	|	|	|	0.01
80.250	0.00	0.01	0.014	O	|	|	|	|	0.01
80.333	0.00	0.01	0.014	O	|	|	|	|	0.01
80.417	0.00	0.01	0.014	O	|	|	|	|	0.01
80.500	0.00	0.01	0.014	O	|	|	|	|	0.01
80.583	0.00	0.01	0.014	O	|	|	|	|	0.01
80.667	0.00	0.01	0.014	O	|	|	|	|	0.01
80.750	0.00	0.01	0.014	O	|	|	|	|	0.01
80.833	0.00	0.01	0.014	O	|	|	|	|	0.01
80.917	0.00	0.01	0.014	O	|	|	|	|	0.01
81.000	0.00	0.01	0.014	O	|	|	|	|	0.01
81.083	0.00	0.01	0.014	O	|	|	|	|	0.01
81.167	0.00	0.01	0.013	O	|	|	|	|	0.01
81.250	0.00	0.01	0.013	O	|	|	|	|	0.01
81.333	0.00	0.01	0.013	O	|	|	|	|	0.01
81.417	0.00	0.01	0.013	O	|	|	|	|	0.01
81.500	0.00	0.01	0.013	O	|	|	|	|	0.01
81.583	0.00	0.01	0.013	O	|	|	|	|	0.01
81.667	0.00	0.01	0.013	O	|	|	|	|	0.01
81.750	0.00	0.01	0.013	O	|	|	|	|	0.01
81.833	0.00	0.01	0.013	O	|	|	|	|	0.01
81.917	0.00	0.01	0.013	O	|	|	|	|	0.01
82.000	0.00	0.01	0.013	O	|	|	|	|	0.01
82.083	0.00	0.01	0.013	O	|	|	|	|	0.01
82.167	0.00	0.01	0.013	O	|	|	|	|	0.01

82.250	0.00	0.01	0.013	O	|	|	|	|	0.01
82.333	0.00	0.01	0.012	O	|	|	|	|	0.01
82.417	0.00	0.01	0.012	O	|	|	|	|	0.01
82.500	0.00	0.01	0.012	O	|	|	|	|	0.01
82.583	0.00	0.01	0.012	O	|	|	|	|	0.01
82.667	0.00	0.01	0.012	O	|	|	|	|	0.01
82.750	0.00	0.01	0.012	O	|	|	|	|	0.01
82.833	0.00	0.01	0.012	O	|	|	|	|	0.01
82.917	0.00	0.01	0.012	O	|	|	|	|	0.01
83.000	0.00	0.01	0.012	O	|	|	|	|	0.01
83.083	0.00	0.01	0.012	O	|	|	|	|	0.01
83.167	0.00	0.01	0.012	O	|	|	|	|	0.01
83.250	0.00	0.01	0.012	O	|	|	|	|	0.01
83.333	0.00	0.01	0.012	O	|	|	|	|	0.01
83.417	0.00	0.01	0.012	O	|	|	|	|	0.01
83.500	0.00	0.01	0.011	O	|	|	|	|	0.01
83.583	0.00	0.01	0.011	O	|	|	|	|	0.01
83.667	0.00	0.01	0.011	O	|	|	|	|	0.01
83.750	0.00	0.01	0.011	O	|	|	|	|	0.01
83.833	0.00	0.01	0.011	O	|	|	|	|	0.01
83.917	0.00	0.01	0.011	O	|	|	|	|	0.01
84.000	0.00	0.01	0.011	O	|	|	|	|	0.01
84.083	0.00	0.01	0.011	O	|	|	|	|	0.01
84.167	0.00	0.01	0.011	O	|	|	|	|	0.01
84.250	0.00	0.01	0.011	O	|	|	|	|	0.01
84.333	0.00	0.01	0.011	O	|	|	|	|	0.01
84.417	0.00	0.01	0.011	O	|	|	|	|	0.01
84.500	0.00	0.01	0.011	O	|	|	|	|	0.01
84.583	0.00	0.01	0.011	O	|	|	|	|	0.01
84.667	0.00	0.01	0.011	O	|	|	|	|	0.01
84.750	0.00	0.01	0.011	O	|	|	|	|	0.01
84.833	0.00	0.01	0.010	O	|	|	|	|	0.01
84.917	0.00	0.01	0.010	O	|	|	|	|	0.01
85.000	0.00	0.01	0.010	O	|	|	|	|	0.01
85.083	0.00	0.01	0.010	O	|	|	|	|	0.01
85.167	0.00	0.01	0.010	O	|	|	|	|	0.01
85.250	0.00	0.01	0.010	O	|	|	|	|	0.01
85.333	0.00	0.01	0.010	O	|	|	|	|	0.01
85.417	0.00	0.01	0.010	O	|	|	|	|	0.01
85.500	0.00	0.01	0.010	O	|	|	|	|	0.01
85.583	0.00	0.01	0.010	O	|	|	|	|	0.01
85.667	0.00	0.01	0.010	O	|	|	|	|	0.01
85.750	0.00	0.01	0.010	O	|	|	|	|	0.01
85.833	0.00	0.01	0.010	O	|	|	|	|	0.01
85.917	0.00	0.01	0.010	O	|	|	|	|	0.01
86.000	0.00	0.01	0.010	O	|	|	|	|	0.01
86.083	0.00	0.01	0.010	O	|	|	|	|	0.01
86.167	0.00	0.01	0.010	O	|	|	|	|	0.01
86.250	0.00	0.01	0.010	O	|	|	|	|	0.01
86.333	0.00	0.01	0.009	O	|	|	|	|	0.01
86.417	0.00	0.01	0.009	O	|	|	|	|	0.01
86.500	0.00	0.01	0.009	O	|	|	|	|	0.01
86.583	0.00	0.01	0.009	O	|	|	|	|	0.01
86.667	0.00	0.01	0.009	O	|	|	|	|	0.01
86.750	0.00	0.01	0.009	O	|	|	|	|	0.01
86.833	0.00	0.01	0.009	O	|	|	|	|	0.01
86.917	0.00	0.01	0.009	O	|	|	|	|	0.01
87.000	0.00	0.01	0.009	O	|	|	|	|	0.01
87.083	0.00	0.01	0.009	O	|	|	|	|	0.01
87.167	0.00	0.01	0.009	O	|	|	|	|	0.01
87.250	0.00	0.01	0.009	O	|	|	|	|	0.01
87.333	0.00	0.01	0.009	O	|	|	|	|	0.01
87.417	0.00	0.01	0.009	O	|	|	|	|	0.01
87.500	0.00	0.01	0.009	O	|	|	|	|	0.01
87.583	0.00	0.01	0.009	O	|	|	|	|	0.01
87.667	0.00	0.01	0.009	O	|	|	|	|	0.01
87.750	0.00	0.01	0.009	O	|	|	|	|	0.01
87.833	0.00	0.01	0.009	O	|	|	|	|	0.01
87.917	0.00	0.01	0.008	O	|	|	|	|	0.01
88.000	0.00	0.01	0.008	O	|	|	|	|	0.01
88.083	0.00	0.01	0.008	O	|	|	|	|	0.01

88.167	0.00	0.01	0.008	O	|	|	|	|	0.01
88.250	0.00	0.01	0.008	O	|	|	|	|	0.00
88.333	0.00	0.01	0.008	O	|	|	|	|	0.00
88.417	0.00	0.01	0.008	O	|	|	|	|	0.00
88.500	0.00	0.01	0.008	O	|	|	|	|	0.00
88.583	0.00	0.01	0.008	O	|	|	|	|	0.00
88.667	0.00	0.01	0.008	O	|	|	|	|	0.00
88.750	0.00	0.01	0.008	O	|	|	|	|	0.00
88.833	0.00	0.01	0.008	O	|	|	|	|	0.00
88.917	0.00	0.01	0.008	O	|	|	|	|	0.00
89.000	0.00	0.01	0.008	O	|	|	|	|	0.00
89.083	0.00	0.01	0.008	O	|	|	|	|	0.00
89.167	0.00	0.01	0.008	O	|	|	|	|	0.00
89.250	0.00	0.01	0.008	O	|	|	|	|	0.00
89.333	0.00	0.01	0.008	O	|	|	|	|	0.00
89.417	0.00	0.01	0.008	O	|	|	|	|	0.00
89.500	0.00	0.01	0.008	O	|	|	|	|	0.00
89.583	0.00	0.01	0.008	O	|	|	|	|	0.00
89.667	0.00	0.01	0.008	O	|	|	|	|	0.00
89.750	0.00	0.01	0.007	O	|	|	|	|	0.00
89.833	0.00	0.01	0.007	O	|	|	|	|	0.00
89.917	0.00	0.01	0.007	O	|	|	|	|	0.00
90.000	0.00	0.01	0.007	O	|	|	|	|	0.00
90.083	0.00	0.01	0.007	O	|	|	|	|	0.00
90.167	0.00	0.01	0.007	O	|	|	|	|	0.00
90.250	0.00	0.01	0.007	O	|	|	|	|	0.00
90.333	0.00	0.01	0.007	O	|	|	|	|	0.00
90.417	0.00	0.01	0.007	O	|	|	|	|	0.00
90.500	0.00	0.01	0.007	O	|	|	|	|	0.00
90.583	0.00	0.01	0.007	O	|	|	|	|	0.00
90.667	0.00	0.01	0.007	O	|	|	|	|	0.00
90.750	0.00	0.01	0.007	O	|	|	|	|	0.00
90.833	0.00	0.01	0.007	O	|	|	|	|	0.00
90.917	0.00	0.01	0.007	O	|	|	|	|	0.00
91.000	0.00	0.01	0.007	O	|	|	|	|	0.00
91.083	0.00	0.01	0.007	O	|	|	|	|	0.00
91.167	0.00	0.01	0.007	O	|	|	|	|	0.00
91.250	0.00	0.01	0.007	O	|	|	|	|	0.00
91.333	0.00	0.01	0.007	O	|	|	|	|	0.00
91.417	0.00	0.01	0.007	O	|	|	|	|	0.00
91.500	0.00	0.01	0.007	O	|	|	|	|	0.00
91.583	0.00	0.01	0.007	O	|	|	|	|	0.00
91.667	0.00	0.01	0.007	O	|	|	|	|	0.00
91.750	0.00	0.01	0.007	O	|	|	|	|	0.00
91.833	0.00	0.01	0.006	O	|	|	|	|	0.00
91.917	0.00	0.01	0.006	O	|	|	|	|	0.00
92.000	0.00	0.01	0.006	O	|	|	|	|	0.00
92.083	0.00	0.01	0.006	O	|	|	|	|	0.00
92.167	0.00	0.01	0.006	O	|	|	|	|	0.00
92.250	0.00	0.01	0.006	O	|	|	|	|	0.00
92.333	0.00	0.01	0.006	O	|	|	|	|	0.00
92.417	0.00	0.01	0.006	O	|	|	|	|	0.00
92.500	0.00	0.01	0.006	O	|	|	|	|	0.00
92.583	0.00	0.01	0.006	O	|	|	|	|	0.00
92.667	0.00	0.01	0.006	O	|	|	|	|	0.00
92.750	0.00	0.01	0.006	O	|	|	|	|	0.00
92.833	0.00	0.01	0.006	O	|	|	|	|	0.00
92.917	0.00	0.01	0.006	O	|	|	|	|	0.00
93.000	0.00	0.00	0.006	O	|	|	|	|	0.00
93.083	0.00	0.00	0.006	O	|	|	|	|	0.00
93.167	0.00	0.00	0.006	O	|	|	|	|	0.00
93.250	0.00	0.00	0.006	O	|	|	|	|	0.00
93.333	0.00	0.00	0.006	O	|	|	|	|	0.00
93.417	0.00	0.00	0.006	O	|	|	|	|	0.00
93.500	0.00	0.00	0.006	O	|	|	|	|	0.00
93.583	0.00	0.00	0.006	O	|	|	|	|	0.00
93.667	0.00	0.00	0.006	O	|	|	|	|	0.00
93.750	0.00	0.00	0.006	O	|	|	|	|	0.00
93.833	0.00	0.00	0.006	O	|	|	|	|	0.00
93.917	0.00	0.00	0.006	O	|	|	|	|	0.00
94.000	0.00	0.00	0.006	O	|	|	|	|	0.00

94.083	0.00	0.00	0.006	O	|	|	|	|	0.00
94.167	0.00	0.00	0.006	O	|	|	|	|	0.00
94.250	0.00	0.00	0.006	O	|	|	|	|	0.00
94.333	0.00	0.00	0.005	O	|	|	|	|	0.00
94.417	0.00	0.00	0.005	O	|	|	|	|	0.00
94.500	0.00	0.00	0.005	O	|	|	|	|	0.00
94.583	0.00	0.00	0.005	O	|	|	|	|	0.00
94.667	0.00	0.00	0.005	O	|	|	|	|	0.00
94.750	0.00	0.00	0.005	O	|	|	|	|	0.00
94.833	0.00	0.00	0.005	O	|	|	|	|	0.00
94.917	0.00	0.00	0.005	O	|	|	|	|	0.00
95.000	0.00	0.00	0.005	O	|	|	|	|	0.00
95.083	0.00	0.00	0.005	O	|	|	|	|	0.00
95.167	0.00	0.00	0.005	O	|	|	|	|	0.00
95.250	0.00	0.00	0.005	O	|	|	|	|	0.00
95.333	0.00	0.00	0.005	O	|	|	|	|	0.00
95.417	0.00	0.00	0.005	O	|	|	|	|	0.00
95.500	0.00	0.00	0.005	O	|	|	|	|	0.00
95.583	0.00	0.00	0.005	O	|	|	|	|	0.00
95.667	0.00	0.00	0.005	O	|	|	|	|	0.00
95.750	0.00	0.00	0.005	O	|	|	|	|	0.00
95.833	0.00	0.00	0.005	O	|	|	|	|	0.00
95.917	0.00	0.00	0.005	O	|	|	|	|	0.00
96.000	0.00	0.00	0.005	O	|	|	|	|	0.00
96.083	0.00	0.00	0.005	O	|	|	|	|	0.00
96.167	0.00	0.00	0.005	O	|	|	|	|	0.00
96.250	0.00	0.00	0.005	O	|	|	|	|	0.00
96.333	0.00	0.00	0.005	O	|	|	|	|	0.00
96.417	0.00	0.00	0.005	O	|	|	|	|	0.00
96.500	0.00	0.00	0.005	O	|	|	|	|	0.00
96.583	0.00	0.00	0.005	O	|	|	|	|	0.00
96.667	0.00	0.00	0.005	O	|	|	|	|	0.00
96.750	0.00	0.00	0.005	O	|	|	|	|	0.00
96.833	0.00	0.00	0.005	O	|	|	|	|	0.00
96.917	0.00	0.00	0.005	O	|	|	|	|	0.00
97.000	0.00	0.00	0.005	O	|	|	|	|	0.00
97.083	0.00	0.00	0.005	O	|	|	|	|	0.00
97.167	0.00	0.00	0.005	O	|	|	|	|	0.00
97.250	0.00	0.00	0.004	O	|	|	|	|	0.00
97.333	0.00	0.00	0.004	O	|	|	|	|	0.00
97.417	0.00	0.00	0.004	O	|	|	|	|	0.00
97.500	0.00	0.00	0.004	O	|	|	|	|	0.00
97.583	0.00	0.00	0.004	O	|	|	|	|	0.00
97.667	0.00	0.00	0.004	O	|	|	|	|	0.00
97.750	0.00	0.00	0.004	O	|	|	|	|	0.00
97.833	0.00	0.00	0.004	O	|	|	|	|	0.00
97.917	0.00	0.00	0.004	O	|	|	|	|	0.00
98.000	0.00	0.00	0.004	O	|	|	|	|	0.00
98.083	0.00	0.00	0.004	O	|	|	|	|	0.00
98.167	0.00	0.00	0.004	O	|	|	|	|	0.00
98.250	0.00	0.00	0.004	O	|	|	|	|	0.00
98.333	0.00	0.00	0.004	O	|	|	|	|	0.00
98.417	0.00	0.00	0.004	O	|	|	|	|	0.00
98.500	0.00	0.00	0.004	O	|	|	|	|	0.00
98.583	0.00	0.00	0.004	O	|	|	|	|	0.00
98.667	0.00	0.00	0.004	O	|	|	|	|	0.00
98.750	0.00	0.00	0.004	O	|	|	|	|	0.00
98.833	0.00	0.00	0.004	O	|	|	|	|	0.00
98.917	0.00	0.00	0.004	O	|	|	|	|	0.00
99.000	0.00	0.00	0.004	O	|	|	|	|	0.00
99.083	0.00	0.00	0.004	O	|	|	|	|	0.00
99.167	0.00	0.00	0.004	O	|	|	|	|	0.00
99.250	0.00	0.00	0.004	O	|	|	|	|	0.00
99.333	0.00	0.00	0.004	O	|	|	|	|	0.00
99.417	0.00	0.00	0.004	O	|	|	|	|	0.00
99.500	0.00	0.00	0.004	O	|	|	|	|	0.00
99.583	0.00	0.00	0.004	O	|	|	|	|	0.00
99.667	0.00	0.00	0.004	O	|	|	|	|	0.00
99.750	0.00	0.00	0.004	O	|	|	|	|	0.00
99.833	0.00	0.00	0.004	O	|	|	|	|	0.00
99.917	0.00	0.00	0.004	O	|	|	|	|	0.00

100.000	0.00	0.00	0.004	O	|	|	|	|	0.00
100.083	0.00	0.00	0.004	O	|	|	|	|	0.00
100.167	0.00	0.00	0.004	O	|	|	|	|	0.00
100.250	0.00	0.00	0.004	O	|	|	|	|	0.00
100.333	0.00	0.00	0.004	O	|	|	|	|	0.00
100.417	0.00	0.00	0.004	O	|	|	|	|	0.00
100.500	0.00	0.00	0.004	O	|	|	|	|	0.00
100.583	0.00	0.00	0.004	O	|	|	|	|	0.00
100.667	0.00	0.00	0.004	O	|	|	|	|	0.00
100.750	0.00	0.00	0.004	O	|	|	|	|	0.00
100.833	0.00	0.00	0.004	O	|	|	|	|	0.00
100.917	0.00	0.00	0.003	O	|	|	|	|	0.00
101.000	0.00	0.00	0.003	O	|	|	|	|	0.00
101.083	0.00	0.00	0.003	O	|	|	|	|	0.00
101.167	0.00	0.00	0.003	O	|	|	|	|	0.00
101.250	0.00	0.00	0.003	O	|	|	|	|	0.00
101.333	0.00	0.00	0.003	O	|	|	|	|	0.00
101.417	0.00	0.00	0.003	O	|	|	|	|	0.00
101.500	0.00	0.00	0.003	O	|	|	|	|	0.00
101.583	0.00	0.00	0.003	O	|	|	|	|	0.00
101.667	0.00	0.00	0.003	O	|	|	|	|	0.00
101.750	0.00	0.00	0.003	O	|	|	|	|	0.00
101.833	0.00	0.00	0.003	O	|	|	|	|	0.00
101.917	0.00	0.00	0.003	O	|	|	|	|	0.00
102.000	0.00	0.00	0.003	O	|	|	|	|	0.00
102.083	0.00	0.00	0.003	O	|	|	|	|	0.00
102.167	0.00	0.00	0.003	O	|	|	|	|	0.00
102.250	0.00	0.00	0.003	O	|	|	|	|	0.00
102.333	0.00	0.00	0.003	O	|	|	|	|	0.00
102.417	0.00	0.00	0.003	O	|	|	|	|	0.00
102.500	0.00	0.00	0.003	O	|	|	|	|	0.00
102.583	0.00	0.00	0.003	O	|	|	|	|	0.00
102.667	0.00	0.00	0.003	O	|	|	|	|	0.00
102.750	0.00	0.00	0.003	O	|	|	|	|	0.00
102.833	0.00	0.00	0.003	O	|	|	|	|	0.00
102.917	0.00	0.00	0.003	O	|	|	|	|	0.00
103.000	0.00	0.00	0.003	O	|	|	|	|	0.00
103.083	0.00	0.00	0.003	O	|	|	|	|	0.00
103.167	0.00	0.00	0.003	O	|	|	|	|	0.00
103.250	0.00	0.00	0.003	O	|	|	|	|	0.00
103.333	0.00	0.00	0.003	O	|	|	|	|	0.00
103.417	0.00	0.00	0.003	O	|	|	|	|	0.00
103.500	0.00	0.00	0.003	O	|	|	|	|	0.00
103.583	0.00	0.00	0.003	O	|	|	|	|	0.00
103.667	0.00	0.00	0.003	O	|	|	|	|	0.00
103.750	0.00	0.00	0.003	O	|	|	|	|	0.00
103.833	0.00	0.00	0.003	O	|	|	|	|	0.00
103.917	0.00	0.00	0.003	O	|	|	|	|	0.00
104.000	0.00	0.00	0.003	O	|	|	|	|	0.00
104.083	0.00	0.00	0.003	O	|	|	|	|	0.00
104.167	0.00	0.00	0.003	O	|	|	|	|	0.00
104.250	0.00	0.00	0.003	O	|	|	|	|	0.00
104.333	0.00	0.00	0.003	O	|	|	|	|	0.00
104.417	0.00	0.00	0.003	O	|	|	|	|	0.00
104.500	0.00	0.00	0.003	O	|	|	|	|	0.00
104.583	0.00	0.00	0.003	O	|	|	|	|	0.00
104.667	0.00	0.00	0.003	O	|	|	|	|	0.00
104.750	0.00	0.00	0.003	O	|	|	|	|	0.00
104.833	0.00	0.00	0.003	O	|	|	|	|	0.00
104.917	0.00	0.00	0.003	O	|	|	|	|	0.00
105.000	0.00	0.00	0.003	O	|	|	|	|	0.00
105.083	0.00	0.00	0.003	O	|	|	|	|	0.00
105.167	0.00	0.00	0.003	O	|	|	|	|	0.00
105.250	0.00	0.00	0.003	O	|	|	|	|	0.00
105.333	0.00	0.00	0.003	O	|	|	|	|	0.00
105.417	0.00	0.00	0.003	O	|	|	|	|	0.00
105.500	0.00	0.00	0.003	O	|	|	|	|	0.00
105.583	0.00	0.00	0.003	O	|	|	|	|	0.00
105.667	0.00	0.00	0.003	O	|	|	|	|	0.00
105.750	0.00	0.00	0.002	O	|	|	|	|	0.00
105.833	0.00	0.00	0.002	O	|	|	|	|	0.00

105.917	0.00	0.00	0.002	O	|	|	|	|	0.00
106.000	0.00	0.00	0.002	O	|	|	|	|	0.00
106.083	0.00	0.00	0.002	O	|	|	|	|	0.00
106.167	0.00	0.00	0.002	O	|	|	|	|	0.00
106.250	0.00	0.00	0.002	O	|	|	|	|	0.00
106.333	0.00	0.00	0.002	O	|	|	|	|	0.00
106.417	0.00	0.00	0.002	O	|	|	|	|	0.00
106.500	0.00	0.00	0.002	O	|	|	|	|	0.00
106.583	0.00	0.00	0.002	O	|	|	|	|	0.00
106.667	0.00	0.00	0.002	O	|	|	|	|	0.00
106.750	0.00	0.00	0.002	O	|	|	|	|	0.00
106.833	0.00	0.00	0.002	O	|	|	|	|	0.00
106.917	0.00	0.00	0.002	O	|	|	|	|	0.00
107.000	0.00	0.00	0.002	O	|	|	|	|	0.00
107.083	0.00	0.00	0.002	O	|	|	|	|	0.00
107.167	0.00	0.00	0.002	O	|	|	|	|	0.00
107.250	0.00	0.00	0.002	O	|	|	|	|	0.00
107.333	0.00	0.00	0.002	O	|	|	|	|	0.00
107.417	0.00	0.00	0.002	O	|	|	|	|	0.00
107.500	0.00	0.00	0.002	O	|	|	|	|	0.00
107.583	0.00	0.00	0.002	O	|	|	|	|	0.00
107.667	0.00	0.00	0.002	O	|	|	|	|	0.00
107.750	0.00	0.00	0.002	O	|	|	|	|	0.00
107.833	0.00	0.00	0.002	O	|	|	|	|	0.00
107.917	0.00	0.00	0.002	O	|	|	|	|	0.00
108.000	0.00	0.00	0.002	O	|	|	|	|	0.00
108.083	0.00	0.00	0.002	O	|	|	|	|	0.00
108.167	0.00	0.00	0.002	O	|	|	|	|	0.00
108.250	0.00	0.00	0.002	O	|	|	|	|	0.00
108.333	0.00	0.00	0.002	O	|	|	|	|	0.00
108.417	0.00	0.00	0.002	O	|	|	|	|	0.00
108.500	0.00	0.00	0.002	O	|	|	|	|	0.00
108.583	0.00	0.00	0.002	O	|	|	|	|	0.00
108.667	0.00	0.00	0.002	O	|	|	|	|	0.00
108.750	0.00	0.00	0.002	O	|	|	|	|	0.00
108.833	0.00	0.00	0.002	O	|	|	|	|	0.00
108.917	0.00	0.00	0.002	O	|	|	|	|	0.00
109.000	0.00	0.00	0.002	O	|	|	|	|	0.00
109.083	0.00	0.00	0.002	O	|	|	|	|	0.00
109.167	0.00	0.00	0.002	O	|	|	|	|	0.00
109.250	0.00	0.00	0.002	O	|	|	|	|	0.00
109.333	0.00	0.00	0.002	O	|	|	|	|	0.00
109.417	0.00	0.00	0.002	O	|	|	|	|	0.00
109.500	0.00	0.00	0.002	O	|	|	|	|	0.00
109.583	0.00	0.00	0.002	O	|	|	|	|	0.00
109.667	0.00	0.00	0.002	O	|	|	|	|	0.00
109.750	0.00	0.00	0.002	O	|	|	|	|	0.00
109.833	0.00	0.00	0.002	O	|	|	|	|	0.00
109.917	0.00	0.00	0.002	O	|	|	|	|	0.00
110.000	0.00	0.00	0.002	O	|	|	|	|	0.00
110.083	0.00	0.00	0.002	O	|	|	|	|	0.00
110.167	0.00	0.00	0.002	O	|	|	|	|	0.00
110.250	0.00	0.00	0.002	O	|	|	|	|	0.00
110.333	0.00	0.00	0.002	O	|	|	|	|	0.00
110.417	0.00	0.00	0.002	O	|	|	|	|	0.00
110.500	0.00	0.00	0.002	O	|	|	|	|	0.00
110.583	0.00	0.00	0.002	O	|	|	|	|	0.00
110.667	0.00	0.00	0.002	O	|	|	|	|	0.00
110.750	0.00	0.00	0.002	O	|	|	|	|	0.00
110.833	0.00	0.00	0.002	O	|	|	|	|	0.00
110.917	0.00	0.00	0.002	O	|	|	|	|	0.00
111.000	0.00	0.00	0.002	O	|	|	|	|	0.00
111.083	0.00	0.00	0.002	O	|	|	|	|	0.00
111.167	0.00	0.00	0.002	O	|	|	|	|	0.00
111.250	0.00	0.00	0.002	O	|	|	|	|	0.00
111.333	0.00	0.00	0.002	O	|	|	|	|	0.00
111.417	0.00	0.00	0.002	O	|	|	|	|	0.00
111.500	0.00	0.00	0.002	O	|	|	|	|	0.00
111.583	0.00	0.00	0.002	O	|	|	|	|	0.00
111.667	0.00	0.00	0.002	O	|	|	|	|	0.00

```
Remaining water in basin =    0.00 (Ac.Ft)


****************************HYDROGRAPH DATA****************************
               Number of intervals =  1340
               Time interval =    5.0 (Min.)
               Maximum/Peak flow rate =        5.288 (CFS)
               Total volume =       4.311 (Ac.Ft)
       Status of hydrographs being held in storage
                   Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
       Peak (CFS)      0.000     0.000     0.000     0.000     0.000
       Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
************************************************************************

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- Basin 'C' - 2 Year 6 Hour Storm Routing Analysis

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                  FLOOD HYDROGRAPH ROUTING PROGRAM
          Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012
                      Study date: 03/20/17

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WESTRIDGE HYDROLOGY STUDY
PROPOSED ROUTING - BASIN 'C' - 2 YEAR 6 HOUR STORM
HUNSAKER & ASSOCIATES, MARCH 20, 2017
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------


Program License Serial Number 4094

------------------------------------------------------------------------
******************** HYDROGRAPH INFORMATION **********************

               From study/file name: PRC00206.rte
*****************************HYDROGRAPH DATA*****************************
               Number of intervals =    89
               Time interval =    5.0 (Min.)
               Maximum/Peak flow rate =      104.107 (CFS)
               Total volume =       5.097 (Ac.Ft)
       Status of hydrographs being held in storage
                   Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
       Peak (CFS)      0.000     0.000     0.000     0.000     0.000
       Vol (Ac.Ft)     0.000     0.000     0.000     0.000     0.000
************************************************************************



++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      300.000 to Point/Station      301.000
**** RETARDING BASIN ROUTING ****
________________________________________________________________________

User entry of depth-outflow-storage data
------------------------------------------------------------------------
Total number of inflow hydrograph intervals = 89
Hydrograph time unit =  5.000 (Min.)
Initial depth in storage basin =   0.00(Ft.)
------------------------------------------------------------------------
------------------------------------------------------------------------
Initial basin depth =   0.00 (Ft.)
Initial basin storage =      0.00 (Ac.Ft)
Initial basin outflow =   0.00 (CFS)
------------------------------------------------------------------------
------------------------------------------------------------------------
Depth vs. Storage and Depth vs. Discharge data:
 Basin Depth  Storage    Outflow   (S-O*dt/2)   (S+O*dt/2)
     (Ft.)    (Ac.Ft)    (CFS)     (Ac.Ft)    (Ac.Ft)
------------------------------------------------------------------------
   0.000      0.000      0.000      0.000        0.000
   0.500      0.834      0.692      0.832        0.836
   1.000      1.693      1.672      1.687        1.699
   1.500      2.577      3.059      2.566        2.588
   2.000      3.488      4.757      3.472        3.504
   3.000      5.388      7.930      5.361        5.415
   4.000      7.399     20.434      7.329        7.469
   5.000      9.523     35.089      9.402        9.644
   6.000     11.764     44.538     11.611       11.917
   7.000     14.126     52.170     13.946       14.306
   8.000     16.610     58.766     16.408       16.812
   8.900     18.942     83.236     18.655       19.229
   9.000     19.207     83.236     18.920       19.494
   9.500     20.556    448.796     19.011       22.101
  10.000     21.935   1159.965     17.941       25.929
```

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0	26.0	52.05	78.08	104.11	Depth (Ft.)
0.083	0.08	0.00	0.000	O	|	|	|	|	0.00
0.167	0.38	0.00	0.002	O	|	|	|	|	0.00
0.250	1.18	0.01	0.007	O	|	|	|	|	0.00
0.333	1.82	0.01	0.017	O	|	|	|	|	0.01
0.417	2.11	0.03	0.031	O	|	|	|	|	0.02
0.500	2.32	0.04	0.046	O	|	|	|	|	0.03
0.583	2.48	0.05	0.062	O	|	|	|	|	0.04
0.667	2.60	0.07	0.079	O	|	|	|	|	0.05
0.750	2.70	0.08	0.097	O	|	|	|	|	0.06
0.833	2.78	0.10	0.115	O	|	|	|	|	0.07
0.917	2.85	0.11	0.134	O	|	|	|	|	0.08
1.000	2.90	0.13	0.153	O	|	|	|	|	0.09
1.083	2.95	0.14	0.172	O	|	|	|	|	0.10
1.167	3.00	0.16	0.191	O	|	|	|	|	0.11
1.250	3.05	0.18	0.211	O	|	|	|	|	0.13
1.333	3.10	0.19	0.231	O	|	|	|	|	0.14
1.417	3.15	0.21	0.251	O	|	|	|	|	0.15
1.500	3.21	0.23	0.272	O	|	|	|	|	0.16
1.583	3.26	0.24	0.292	OI	|	|	|	|	0.18
1.667	3.31	0.26	0.313	OI	|	|	|	|	0.19
1.750	3.37	0.28	0.334	OI	|	|	|	|	0.20
1.833	3.43	0.30	0.356	OI	|	|	|	|	0.21
1.917	3.50	0.31	0.378	OI	|	|	|	|	0.23
2.000	3.56	0.33	0.400	OI	|	|	|	|	0.24
2.083	3.64	0.35	0.422	OI	|	|	|	|	0.25
2.167	3.74	0.37	0.445	OI	|	|	|	|	0.27
2.250	3.87	0.39	0.469	OI	|	|	|	|	0.28
2.333	4.00	0.41	0.493	OI	|	|	|	|	0.30
2.417	4.11	0.43	0.518	OI	|	|	|	|	0.31
2.500	4.22	0.45	0.544	OI	|	|	|	|	0.33
2.583	4.33	0.47	0.570	OI	|	|	|	|	0.34
2.667	4.45	0.50	0.597	OI	|	|	|	|	0.36
2.750	4.58	0.52	0.624	OI	|	|	|	|	0.37
2.833	4.71	0.54	0.653	OI	|	|	|	|	0.39
2.917	4.86	0.57	0.682	OI	|	|	|	|	0.41
3.000	5.02	0.59	0.712	OI	|	|	|	|	0.43
3.083	5.20	0.62	0.743	OI	|	|	|	|	0.45
3.167	5.39	0.64	0.775	OI	|	|	|	|	0.46
3.250	5.61	0.67	0.808	OI	|	|	|	|	0.48
3.333	5.85	0.70	0.843	OI	|	|	|	|	0.51
3.417	6.11	0.74	0.879	OI	|	|	|	|	0.53
3.500	6.31	0.79	0.917	OI	|	|	|	|	0.55
3.583	6.43	0.83	0.955	OI	|	|	|	|	0.57
3.667	6.87	0.88	0.995	O I	|	|	|	|	0.59
3.750	8.24	0.93	1.041	O I	|	|	|	|	0.62
3.833	10.68	0.99	1.099	O I	|	|	|	|	0.65
3.917	15.11	1.09	1.181	O I	|	|	|	|	0.70
4.000	21.97	1.22	1.301	O I	|	|	|	|	0.77
4.083	38.59	1.45	1.500	O	I |	|	|	|	0.89
4.167	65.78	1.92	1.848	O	|	I |	|	|	1.09
4.250	104.11	2.81	2.417	O	|	|	|	I	1.41
4.333	83.86	3.92	3.041	|O	|	|	I |	|	1.75
4.417	47.53	4.71	3.464	|O	| I	|	|	|	1.99
4.500	33.28	5.12	3.708	|O	I |	|	|	|	2.12
4.583	24.95	5.40	3.872	|O	I |	|	|	|	2.20
4.667	19.55	5.59	3.988	|O	I |	|	|	|	2.26
4.750	15.30	5.73	4.069	|O I	|	|	|	|	2.31
4.833	11.92	5.82	4.123	|O I	|	|	|	|	2.33
4.917	9.17	5.87	4.155	|OI	|	|	|	|	2.35
5.000	7.20	5.90	4.171	|OI	|	|	|	|	2.36
5.083	6.43	5.91	4.177	|O	|	|	|	|	2.36
5.167	5.77	5.91	4.178	|O	|	|	|	|	2.36
5.250	5.34	5.91	4.176	|O	|	|	|	|	2.36

5.333	5.01	5.90	4.171	|O	|	|	|	|	2.36
5.417	4.45	5.88	4.163	|O	|	|	|	|	2.36
5.500	4.09	5.87	4.152	|O	|	|	|	|	2.35
5.583	3.60	5.84	4.138	|O	|	|	|	|	2.34
5.667	3.43	5.82	4.122	|O	|	|	|	|	2.33
5.750	3.29	5.79	4.105	|O	|	|	|	|	2.32
5.833	3.18	5.76	4.088	IO	|	|	|	|	2.32
5.917	3.08	5.73	4.070	IO	|	|	|	|	2.31
6.000	2.99	5.70	4.051	IO	|	|	|	|	2.30
6.083	2.83	5.67	4.032	IO	|	|	|	|	2.29
6.167	2.46	5.63	4.012	IO	|	|	|	|	2.28
6.250	1.60	5.59	3.987	IO	|	|	|	|	2.26
6.333	0.94	5.54	3.957	IO	|	|	|	|	2.25
6.417	0.64	5.49	3.925	IO	|	|	|	|	2.23
6.500	0.45	5.43	3.891	IO	|	|	|	|	2.21
6.583	0.31	5.37	3.856	IO	|	|	|	|	2.19
6.667	0.21	5.31	3.821	IO	|	|	|	|	2.18
6.750	0.14	5.25	3.786	IO	|	|	|	|	2.16
6.833	0.09	5.20	3.751	IO	|	|	|	|	2.14
6.917	0.06	5.14	3.716	IO	|	|	|	|	2.12
7.000	0.04	5.08	3.681	IO	|	|	|	|	2.10
7.083	0.03	5.02	3.646	IO	|	|	|	|	2.08
7.167	0.02	4.96	3.612	IO	|	|	|	|	2.07
7.250	0.02	4.91	3.578	IO	|	|	|	|	2.05
7.333	0.01	4.85	3.545	IO	|	|	|	|	2.03
7.417	0.00	4.80	3.512	IO	|	|	|	|	2.01
7.500	0.00	4.74	3.479	IO	|	|	|	|	1.99
7.583	0.00	4.68	3.446	IO	|	|	|	|	1.98
7.667	0.00	4.62	3.414	IO	|	|	|	|	1.96
7.750	0.00	4.56	3.383	IO	|	|	|	|	1.94
7.833	0.00	4.50	3.352	IO	|	|	|	|	1.93
7.917	0.00	4.45	3.321	IO	|	|	|	|	1.91
8.000	0.00	4.39	3.290	IO	|	|	|	|	1.89
8.083	0.00	4.33	3.260	IO	|	|	|	|	1.88
8.167	0.00	4.28	3.231	IO	|	|	|	|	1.86
8.250	0.00	4.22	3.201	IO	|	|	|	|	1.84
8.333	0.00	4.17	3.172	IO	|	|	|	|	1.83
8.417	0.00	4.12	3.144	IO	|	|	|	|	1.81
8.500	0.00	4.06	3.116	IO	|	|	|	|	1.80
8.583	0.00	4.01	3.088	IO	|	|	|	|	1.78
8.667	0.00	3.96	3.061	IO	|	|	|	|	1.77
8.750	0.00	3.91	3.033	IO	|	|	|	|	1.75
8.833	0.00	3.86	3.007	IO	|	|	|	|	1.74
8.917	0.00	3.81	2.980	IO	|	|	|	|	1.72
9.000	0.00	3.76	2.954	IO	|	|	|	|	1.71
9.083	0.00	3.71	2.928	IO	|	|	|	|	1.69
9.167	0.00	3.67	2.903	IO	|	|	|	|	1.68
9.250	0.00	3.62	2.878	IO	|	|	|	|	1.67
9.333	0.00	3.57	2.853	IO	|	|	|	|	1.65
9.417	0.00	3.53	2.829	IO	|	|	|	|	1.64
9.500	0.00	3.48	2.805	IO	|	|	|	|	1.62
9.583	0.00	3.44	2.781	IO	|	|	|	|	1.61
9.667	0.00	3.39	2.757	IO	|	|	|	|	1.60
9.750	0.00	3.35	2.734	IO	|	|	|	|	1.59
9.833	0.00	3.31	2.711	IO	|	|	|	|	1.57
9.917	0.00	3.27	2.688	IO	|	|	|	|	1.56
10.000	0.00	3.22	2.666	O	|	|	|	|	1.55
10.083	0.00	3.18	2.644	O	|	|	|	|	1.54
10.167	0.00	3.14	2.622	O	|	|	|	|	1.52
10.250	0.00	3.10	2.601	O	|	|	|	|	1.51
10.333	0.00	3.06	2.579	O	|	|	|	|	1.50
10.417	0.00	3.03	2.558	O	|	|	|	|	1.49
10.500	0.00	3.00	2.538	O	|	|	|	|	1.48
10.583	0.00	2.97	2.517	O	|	|	|	|	1.47
10.667	0.00	2.93	2.497	O	|	|	|	|	1.45
10.750	0.00	2.90	2.477	O	|	|	|	|	1.44
10.833	0.00	2.87	2.457	O	|	|	|	|	1.43
10.917	0.00	2.84	2.437	O	|	|	|	|	1.42
11.000	0.00	2.81	2.418	O	|	|	|	|	1.41
11.083	0.00	2.78	2.399	O	|	|	|	|	1.40
11.167	0.00	2.75	2.379	O	|	|	|	|	1.39

11.250	0.00	2.72	2.361	O	|	|	|	|	1.38
11.333	0.00	2.69	2.342	O	|	|	|	|	1.37
11.417	0.00	2.66	2.324	O	|	|	|	|	1.36
11.500	0.00	2.63	2.305	O	|	|	|	|	1.35
11.583	0.00	2.60	2.287	O	|	|	|	|	1.34
11.667	0.00	2.58	2.269	O	|	|	|	|	1.33
11.750	0.00	2.55	2.252	O	|	|	|	|	1.32
11.833	0.00	2.52	2.234	O	|	|	|	|	1.31
11.917	0.00	2.49	2.217	O	|	|	|	|	1.30
12.000	0.00	2.47	2.200	O	|	|	|	|	1.29
12.083	0.00	2.44	2.183	O	|	|	|	|	1.28
12.167	0.00	2.41	2.166	O	|	|	|	|	1.27
12.250	0.00	2.39	2.150	O	|	|	|	|	1.26
12.333	0.00	2.36	2.133	O	|	|	|	|	1.25
12.417	0.00	2.34	2.117	O	|	|	|	|	1.24
12.500	0.00	2.31	2.101	O	|	|	|	|	1.23
12.583	0.00	2.29	2.085	O	|	|	|	|	1.22
12.667	0.00	2.26	2.070	O	|	|	|	|	1.21
12.750	0.00	2.24	2.054	O	|	|	|	|	1.20
12.833	0.00	2.21	2.039	O	|	|	|	|	1.20
12.917	0.00	2.19	2.024	O	|	|	|	|	1.19
13.000	0.00	2.17	2.009	O	|	|	|	|	1.18
13.083	0.00	2.14	1.994	O	|	|	|	|	1.17
13.167	0.00	2.12	1.979	O	|	|	|	|	1.16
13.250	0.00	2.10	1.965	O	|	|	|	|	1.15
13.333	0.00	2.08	1.950	O	|	|	|	|	1.15
13.417	0.00	2.05	1.936	O	|	|	|	|	1.14
13.500	0.00	2.03	1.922	O	|	|	|	|	1.13
13.583	0.00	2.01	1.908	O	|	|	|	|	1.12
13.667	0.00	1.99	1.894	O	|	|	|	|	1.11
13.750	0.00	1.97	1.881	O	|	|	|	|	1.11
13.833	0.00	1.95	1.867	O	|	|	|	|	1.10
13.917	0.00	1.92	1.854	O	|	|	|	|	1.09
14.000	0.00	1.90	1.841	O	|	|	|	|	1.08
14.083	0.00	1.88	1.828	O	|	|	|	|	1.08
14.167	0.00	1.86	1.815	O	|	|	|	|	1.07
14.250	0.00	1.84	1.802	O	|	|	|	|	1.06
14.333	0.00	1.82	1.789	O	|	|	|	|	1.05
14.417	0.00	1.80	1.777	O	|	|	|	|	1.05
14.500	0.00	1.78	1.765	O	|	|	|	|	1.04
14.583	0.00	1.77	1.752	O	|	|	|	|	1.03
14.667	0.00	1.75	1.740	O	|	|	|	|	1.03
14.750	0.00	1.73	1.728	O	|	|	|	|	1.02
14.833	0.00	1.71	1.716	O	|	|	|	|	1.01
14.917	0.00	1.69	1.705	O	|	|	|	|	1.01
15.000	0.00	1.67	1.693	O	|	|	|	|	1.00
15.083	0.00	1.66	1.682	O	|	|	|	|	0.99
15.167	0.00	1.65	1.670	O	|	|	|	|	0.99
15.250	0.00	1.63	1.659	O	|	|	|	|	0.98
15.333	0.00	1.62	1.648	O	|	|	|	|	0.97
15.417	0.00	1.61	1.637	O	|	|	|	|	0.97
15.500	0.00	1.60	1.626	O	|	|	|	|	0.96
15.583	0.00	1.58	1.615	O	|	|	|	|	0.95
15.667	0.00	1.57	1.604	O	|	|	|	|	0.95
15.750	0.00	1.56	1.593	O	|	|	|	|	0.94
15.833	0.00	1.55	1.582	O	|	|	|	|	0.94
15.917	0.00	1.53	1.572	O	|	|	|	|	0.93
16.000	0.00	1.52	1.561	O	|	|	|	|	0.92
16.083	0.00	1.51	1.551	O	|	|	|	|	0.92
16.167	0.00	1.50	1.541	O	|	|	|	|	0.91
16.250	0.00	1.49	1.530	O	|	|	|	|	0.91
16.333	0.00	1.47	1.520	O	|	|	|	|	0.90
16.417	0.00	1.46	1.510	O	|	|	|	|	0.89
16.500	0.00	1.45	1.500	O	|	|	|	|	0.89
16.583	0.00	1.44	1.490	O	|	|	|	|	0.88
16.667	0.00	1.43	1.480	O	|	|	|	|	0.88
16.750	0.00	1.42	1.470	O	|	|	|	|	0.87
16.833	0.00	1.41	1.461	O	|	|	|	|	0.86
16.917	0.00	1.40	1.451	O	|	|	|	|	0.86
17.000	0.00	1.38	1.441	O	|	|	|	|	0.85
17.083	0.00	1.37	1.432	O	|	|	|	|	0.85

17.167	0.00	1.36	1.422	O	|	|	|	|	0.84
17.250	0.00	1.35	1.413	O	|	|	|	|	0.84
17.333	0.00	1.34	1.404	O	|	|	|	|	0.83
17.417	0.00	1.33	1.395	O	|	|	|	|	0.83
17.500	0.00	1.32	1.385	O	|	|	|	|	0.82
17.583	0.00	1.31	1.376	O	|	|	|	|	0.82
17.667	0.00	1.30	1.367	O	|	|	|	|	0.81
17.750	0.00	1.29	1.358	O	|	|	|	|	0.81
17.833	0.00	1.28	1.350	O	|	|	|	|	0.80
17.917	0.00	1.27	1.341	O	|	|	|	|	0.79
18.000	0.00	1.26	1.332	O	|	|	|	|	0.79
18.083	0.00	1.25	1.323	O	|	|	|	|	0.78
18.167	0.00	1.24	1.315	O	|	|	|	|	0.78
18.250	0.00	1.23	1.306	O	|	|	|	|	0.77
18.333	0.00	1.22	1.298	O	|	|	|	|	0.77
18.417	0.00	1.21	1.290	O	|	|	|	|	0.77
18.500	0.00	1.20	1.281	O	|	|	|	|	0.76
18.583	0.00	1.19	1.273	O	|	|	|	|	0.76
18.667	0.00	1.18	1.265	O	|	|	|	|	0.75
18.750	0.00	1.17	1.257	O	|	|	|	|	0.75
18.833	0.00	1.17	1.249	O	|	|	|	|	0.74
18.917	0.00	1.16	1.241	O	|	|	|	|	0.74
19.000	0.00	1.15	1.233	O	|	|	|	|	0.73
19.083	0.00	1.14	1.225	O	|	|	|	|	0.73
19.167	0.00	1.13	1.217	O	|	|	|	|	0.72
19.250	0.00	1.12	1.209	O	|	|	|	|	0.72
19.333	0.00	1.11	1.202	O	|	|	|	|	0.71
19.417	0.00	1.10	1.194	O	|	|	|	|	0.71
19.500	0.00	1.09	1.186	O	|	|	|	|	0.71
19.583	0.00	1.09	1.179	O	|	|	|	|	0.70
19.667	0.00	1.08	1.171	O	|	|	|	|	0.70
19.750	0.00	1.07	1.164	O	|	|	|	|	0.69
19.833	0.00	1.06	1.157	O	|	|	|	|	0.69
19.917	0.00	1.05	1.149	O	|	|	|	|	0.68
20.000	0.00	1.04	1.142	O	|	|	|	|	0.68
20.083	0.00	1.04	1.135	O	|	|	|	|	0.68
20.167	0.00	1.03	1.128	O	|	|	|	|	0.67
20.250	0.00	1.02	1.121	O	|	|	|	|	0.67
20.333	0.00	1.01	1.114	O	|	|	|	|	0.66
20.417	0.00	1.00	1.107	O	|	|	|	|	0.66
20.500	0.00	1.00	1.100	O	|	|	|	|	0.65
20.583	0.00	0.99	1.093	O	|	|	|	|	0.65
20.667	0.00	0.98	1.086	O	|	|	|	|	0.65
20.750	0.00	0.97	1.080	O	|	|	|	|	0.64
20.833	0.00	0.96	1.073	O	|	|	|	|	0.64
20.917	0.00	0.96	1.066	O	|	|	|	|	0.64
21.000	0.00	0.95	1.060	O	|	|	|	|	0.63
21.083	0.00	0.94	1.053	O	|	|	|	|	0.63
21.167	0.00	0.93	1.047	O	|	|	|	|	0.62
21.250	0.00	0.93	1.041	O	|	|	|	|	0.62
21.333	0.00	0.92	1.034	O	|	|	|	|	0.62
21.417	0.00	0.91	1.028	O	|	|	|	|	0.61
21.500	0.00	0.91	1.022	O	|	|	|	|	0.61
21.583	0.00	0.90	1.015	O	|	|	|	|	0.61
21.667	0.00	0.89	1.009	O	|	|	|	|	0.60
21.750	0.00	0.88	1.003	O	|	|	|	|	0.60
21.833	0.00	0.88	0.997	O	|	|	|	|	0.59
21.917	0.00	0.87	0.991	O	|	|	|	|	0.59
22.000	0.00	0.86	0.985	O	|	|	|	|	0.59
22.083	0.00	0.86	0.979	O	|	|	|	|	0.58
22.167	0.00	0.85	0.973	O	|	|	|	|	0.58
22.250	0.00	0.84	0.967	O	|	|	|	|	0.58
22.333	0.00	0.84	0.962	O	|	|	|	|	0.57
22.417	0.00	0.83	0.956	O	|	|	|	|	0.57
22.500	0.00	0.82	0.950	O	|	|	|	|	0.57
22.583	0.00	0.82	0.944	O	|	|	|	|	0.56
22.667	0.00	0.81	0.939	O	|	|	|	|	0.56
22.750	0.00	0.81	0.933	O	|	|	|	|	0.56
22.833	0.00	0.80	0.928	O	|	|	|	|	0.55
22.917	0.00	0.79	0.922	O	|	|	|	|	0.55
23.000	0.00	0.79	0.917	O	|	|	|	|	0.55

23.083	0.00	0.78	0.911	O	|	|	|	|	0.55
23.167	0.00	0.77	0.906	O	|	|	|	|	0.54
23.250	0.00	0.77	0.901	O	|	|	|	|	0.54
23.333	0.00	0.76	0.896	O	|	|	|	|	0.54
23.417	0.00	0.76	0.890	O	|	|	|	|	0.53
23.500	0.00	0.75	0.885	O	|	|	|	|	0.53
23.583	0.00	0.74	0.880	O	|	|	|	|	0.53
23.667	0.00	0.74	0.875	O	|	|	|	|	0.52
23.750	0.00	0.73	0.870	O	|	|	|	|	0.52
23.833	0.00	0.73	0.865	O	|	|	|	|	0.52
23.917	0.00	0.72	0.860	O	|	|	|	|	0.51
24.000	0.00	0.72	0.855	O	|	|	|	|	0.51
24.083	0.00	0.71	0.850	O	|	|	|	|	0.51
24.167	0.00	0.70	0.845	O	|	|	|	|	0.51
24.250	0.00	0.70	0.840	O	|	|	|	|	0.50
24.333	0.00	0.69	0.835	O	|	|	|	|	0.50
24.417	0.00	0.69	0.831	O	|	|	|	|	0.50
24.500	0.00	0.69	0.826	O	|	|	|	|	0.50
24.583	0.00	0.68	0.821	O	|	|	|	|	0.49
24.667	0.00	0.68	0.817	O	|	|	|	|	0.49
24.750	0.00	0.67	0.812	O	|	|	|	|	0.49
24.833	0.00	0.67	0.807	O	|	|	|	|	0.48
24.917	0.00	0.67	0.803	O	|	|	|	|	0.48
25.000	0.00	0.66	0.798	O	|	|	|	|	0.48
25.083	0.00	0.66	0.794	O	|	|	|	|	0.48
25.167	0.00	0.65	0.789	O	|	|	|	|	0.47
25.250	0.00	0.65	0.785	O	|	|	|	|	0.47
25.333	0.00	0.65	0.780	O	|	|	|	|	0.47
25.417	0.00	0.64	0.776	O	|	|	|	|	0.46
25.500	0.00	0.64	0.771	O	|	|	|	|	0.46
25.583	0.00	0.64	0.767	O	|	|	|	|	0.46
25.667	0.00	0.63	0.762	O	|	|	|	|	0.46
25.750	0.00	0.63	0.758	O	|	|	|	|	0.45
25.833	0.00	0.63	0.754	O	|	|	|	|	0.45
25.917	0.00	0.62	0.749	O	|	|	|	|	0.45
26.000	0.00	0.62	0.745	O	|	|	|	|	0.45
26.083	0.00	0.61	0.741	O	|	|	|	|	0.44
26.167	0.00	0.61	0.737	O	|	|	|	|	0.44
26.250	0.00	0.61	0.733	O	|	|	|	|	0.44
26.333	0.00	0.60	0.728	O	|	|	|	|	0.44
26.417	0.00	0.60	0.724	O	|	|	|	|	0.43
26.500	0.00	0.60	0.720	O	|	|	|	|	0.43
26.583	0.00	0.59	0.716	O	|	|	|	|	0.43
26.667	0.00	0.59	0.712	O	|	|	|	|	0.43
26.750	0.00	0.59	0.708	O	|	|	|	|	0.42
26.833	0.00	0.58	0.704	O	|	|	|	|	0.42
26.917	0.00	0.58	0.700	O	|	|	|	|	0.42
27.000	0.00	0.58	0.696	O	|	|	|	|	0.42
27.083	0.00	0.57	0.692	O	|	|	|	|	0.41
27.167	0.00	0.57	0.688	O	|	|	|	|	0.41
27.250	0.00	0.57	0.684	O	|	|	|	|	0.41
27.333	0.00	0.56	0.680	O	|	|	|	|	0.41
27.417	0.00	0.56	0.676	O	|	|	|	|	0.41
27.500	0.00	0.56	0.672	O	|	|	|	|	0.40
27.583	0.00	0.55	0.669	O	|	|	|	|	0.40
27.667	0.00	0.55	0.665	O	|	|	|	|	0.40
27.750	0.00	0.55	0.661	O	|	|	|	|	0.40
27.833	0.00	0.55	0.657	O	|	|	|	|	0.39
27.917	0.00	0.54	0.653	O	|	|	|	|	0.39
28.000	0.00	0.54	0.650	O	|	|	|	|	0.39
28.083	0.00	0.54	0.646	O	|	|	|	|	0.39
28.167	0.00	0.53	0.642	O	|	|	|	|	0.39
28.250	0.00	0.53	0.639	O	|	|	|	|	0.38
28.333	0.00	0.53	0.635	O	|	|	|	|	0.38
28.417	0.00	0.52	0.631	O	|	|	|	|	0.38
28.500	0.00	0.52	0.628	O	|	|	|	|	0.38
28.583	0.00	0.52	0.624	O	|	|	|	|	0.37
28.667	0.00	0.51	0.621	O	|	|	|	|	0.37
28.750	0.00	0.51	0.617	O	|	|	|	|	0.37
28.833	0.00	0.51	0.614	O	|	|	|	|	0.37
28.917	0.00	0.51	0.610	O	|	|	|	|	0.37

29.000	0.00	0.50	0.607	O	|	|	|	|	0.36
29.083	0.00	0.50	0.603	O	|	|	|	|	0.36
29.167	0.00	0.50	0.600	O	|	|	|	|	0.36
29.250	0.00	0.49	0.596	O	|	|	|	|	0.36
29.333	0.00	0.49	0.593	O	|	|	|	|	0.36
29.417	0.00	0.49	0.590	O	|	|	|	|	0.35
29.500	0.00	0.49	0.586	O	|	|	|	|	0.35
29.583	0.00	0.48	0.583	O	|	|	|	|	0.35
29.667	0.00	0.48	0.580	O	|	|	|	|	0.35
29.750	0.00	0.48	0.576	O	|	|	|	|	0.35
29.833	0.00	0.48	0.573	O	|	|	|	|	0.34
29.917	0.00	0.47	0.570	O	|	|	|	|	0.34
30.000	0.00	0.47	0.566	O	|	|	|	|	0.34
30.083	0.00	0.47	0.563	O	|	|	|	|	0.34
30.167	0.00	0.46	0.560	O	|	|	|	|	0.34
30.250	0.00	0.46	0.557	O	|	|	|	|	0.33
30.333	0.00	0.46	0.554	O	|	|	|	|	0.33
30.417	0.00	0.46	0.550	O	|	|	|	|	0.33
30.500	0.00	0.45	0.547	O	|	|	|	|	0.33
30.583	0.00	0.45	0.544	O	|	|	|	|	0.33
30.667	0.00	0.45	0.541	O	|	|	|	|	0.32
30.750	0.00	0.45	0.538	O	|	|	|	|	0.32
30.833	0.00	0.44	0.535	O	|	|	|	|	0.32
30.917	0.00	0.44	0.532	O	|	|	|	|	0.32
31.000	0.00	0.44	0.529	O	|	|	|	|	0.32
31.083	0.00	0.44	0.526	O	|	|	|	|	0.32
31.167	0.00	0.43	0.523	O	|	|	|	|	0.31
31.250	0.00	0.43	0.520	O	|	|	|	|	0.31
31.333	0.00	0.43	0.517	O	|	|	|	|	0.31
31.417	0.00	0.43	0.514	O	|	|	|	|	0.31
31.500	0.00	0.42	0.511	O	|	|	|	|	0.31
31.583	0.00	0.42	0.508	O	|	|	|	|	0.30
31.667	0.00	0.42	0.505	O	|	|	|	|	0.30
31.750	0.00	0.42	0.502	O	|	|	|	|	0.30
31.833	0.00	0.41	0.500	O	|	|	|	|	0.30
31.917	0.00	0.41	0.497	O	|	|	|	|	0.30
32.000	0.00	0.41	0.494	O	|	|	|	|	0.30
32.083	0.00	0.41	0.491	O	|	|	|	|	0.29
32.167	0.00	0.41	0.488	O	|	|	|	|	0.29
32.250	0.00	0.40	0.485	O	|	|	|	|	0.29
32.333	0.00	0.40	0.483	O	|	|	|	|	0.29
32.417	0.00	0.40	0.480	O	|	|	|	|	0.29
32.500	0.00	0.40	0.477	O	|	|	|	|	0.29
32.583	0.00	0.39	0.474	O	|	|	|	|	0.28
32.667	0.00	0.39	0.472	O	|	|	|	|	0.28
32.750	0.00	0.39	0.469	O	|	|	|	|	0.28
32.833	0.00	0.39	0.466	O	|	|	|	|	0.28
32.917	0.00	0.38	0.464	O	|	|	|	|	0.28
33.000	0.00	0.38	0.461	O	|	|	|	|	0.28
33.083	0.00	0.38	0.458	O	|	|	|	|	0.27
33.167	0.00	0.38	0.456	O	|	|	|	|	0.27
33.250	0.00	0.38	0.453	O	|	|	|	|	0.27
33.333	0.00	0.37	0.451	O	|	|	|	|	0.27
33.417	0.00	0.37	0.448	O	|	|	|	|	0.27
33.500	0.00	0.37	0.446	O	|	|	|	|	0.27
33.583	0.00	0.37	0.443	O	|	|	|	|	0.27
33.667	0.00	0.37	0.440	O	|	|	|	|	0.26
33.750	0.00	0.36	0.438	O	|	|	|	|	0.26
33.833	0.00	0.36	0.435	O	|	|	|	|	0.26
33.917	0.00	0.36	0.433	O	|	|	|	|	0.26
34.000	0.00	0.36	0.431	O	|	|	|	|	0.26
34.083	0.00	0.36	0.428	O	|	|	|	|	0.26
34.167	0.00	0.35	0.426	O	|	|	|	|	0.26
34.250	0.00	0.35	0.423	O	|	|	|	|	0.25
34.333	0.00	0.35	0.421	O	|	|	|	|	0.25
34.417	0.00	0.35	0.418	O	|	|	|	|	0.25
34.500	0.00	0.35	0.416	O	|	|	|	|	0.25
34.583	0.00	0.34	0.414	O	|	|	|	|	0.25
34.667	0.00	0.34	0.411	O	|	|	|	|	0.25
34.750	0.00	0.34	0.409	O	|	|	|	|	0.25
34.833	0.00	0.34	0.407	O	|	|	|	|	0.24

34.917	0.00	0.34	0.404	O	|	|	|	|	0.24
35.000	0.00	0.33	0.402	O	|	|	|	|	0.24
35.083	0.00	0.33	0.400	O	|	|	|	|	0.24
35.167	0.00	0.33	0.397	O	|	|	|	|	0.24
35.250	0.00	0.33	0.395	O	|	|	|	|	0.24
35.333	0.00	0.33	0.393	O	|	|	|	|	0.24
35.417	0.00	0.32	0.391	O	|	|	|	|	0.23
35.500	0.00	0.32	0.388	O	|	|	|	|	0.23
35.583	0.00	0.32	0.386	O	|	|	|	|	0.23
35.667	0.00	0.32	0.384	O	|	|	|	|	0.23
35.750	0.00	0.32	0.382	O	|	|	|	|	0.23
35.833	0.00	0.32	0.380	O	|	|	|	|	0.23
35.917	0.00	0.31	0.378	O	|	|	|	|	0.23
36.000	0.00	0.31	0.375	O	|	|	|	|	0.23
36.083	0.00	0.31	0.373	O	|	|	|	|	0.22
36.167	0.00	0.31	0.371	O	|	|	|	|	0.22
36.250	0.00	0.31	0.369	O	|	|	|	|	0.22
36.333	0.00	0.30	0.367	O	|	|	|	|	0.22
36.417	0.00	0.30	0.365	O	|	|	|	|	0.22
36.500	0.00	0.30	0.363	O	|	|	|	|	0.22
36.583	0.00	0.30	0.361	O	|	|	|	|	0.22
36.667	0.00	0.30	0.359	O	|	|	|	|	0.21
36.750	0.00	0.30	0.357	O	|	|	|	|	0.21
36.833	0.00	0.29	0.355	O	|	|	|	|	0.21
36.917	0.00	0.29	0.352	O	|	|	|	|	0.21
37.000	0.00	0.29	0.350	O	|	|	|	|	0.21
37.083	0.00	0.29	0.348	O	|	|	|	|	0.21
37.167	0.00	0.29	0.347	O	|	|	|	|	0.21
37.250	0.00	0.29	0.345	O	|	|	|	|	0.21
37.333	0.00	0.28	0.343	O	|	|	|	|	0.21
37.417	0.00	0.28	0.341	O	|	|	|	|	0.20
37.500	0.00	0.28	0.339	O	|	|	|	|	0.20
37.583	0.00	0.28	0.337	O	|	|	|	|	0.20
37.667	0.00	0.28	0.335	O	|	|	|	|	0.20
37.750	0.00	0.28	0.333	O	|	|	|	|	0.20
37.833	0.00	0.27	0.331	O	|	|	|	|	0.20
37.917	0.00	0.27	0.329	O	|	|	|	|	0.20
38.000	0.00	0.27	0.327	O	|	|	|	|	0.20
38.083	0.00	0.27	0.325	O	|	|	|	|	0.20
38.167	0.00	0.27	0.324	O	|	|	|	|	0.19
38.250	0.00	0.27	0.322	O	|	|	|	|	0.19
38.333	0.00	0.27	0.320	O	|	|	|	|	0.19
38.417	0.00	0.26	0.318	O	|	|	|	|	0.19
38.500	0.00	0.26	0.316	O	|	|	|	|	0.19
38.583	0.00	0.26	0.314	O	|	|	|	|	0.19
38.667	0.00	0.26	0.313	O	|	|	|	|	0.19
38.750	0.00	0.26	0.311	O	|	|	|	|	0.19
38.833	0.00	0.26	0.309	O	|	|	|	|	0.19
38.917	0.00	0.25	0.307	O	|	|	|	|	0.18
39.000	0.00	0.25	0.306	O	|	|	|	|	0.18
39.083	0.00	0.25	0.304	O	|	|	|	|	0.18
39.167	0.00	0.25	0.302	O	|	|	|	|	0.18
39.250	0.00	0.25	0.300	O	|	|	|	|	0.18
39.333	0.00	0.25	0.299	O	|	|	|	|	0.18
39.417	0.00	0.25	0.297	O	|	|	|	|	0.18
39.500	0.00	0.24	0.295	O	|	|	|	|	0.18
39.583	0.00	0.24	0.294	O	|	|	|	|	0.18
39.667	0.00	0.24	0.292	O	|	|	|	|	0.18
39.750	0.00	0.24	0.290	O	|	|	|	|	0.17
39.833	0.00	0.24	0.289	O	|	|	|	|	0.17
39.917	0.00	0.24	0.287	O	|	|	|	|	0.17
40.000	0.00	0.24	0.285	O	|	|	|	|	0.17
40.083	0.00	0.24	0.284	O	|	|	|	|	0.17
40.167	0.00	0.23	0.282	O	|	|	|	|	0.17
40.250	0.00	0.23	0.280	O	|	|	|	|	0.17
40.333	0.00	0.23	0.279	O	|	|	|	|	0.17
40.417	0.00	0.23	0.277	O	|	|	|	|	0.17
40.500	0.00	0.23	0.276	O	|	|	|	|	0.17
40.583	0.00	0.23	0.274	O	|	|	|	|	0.16
40.667	0.00	0.23	0.273	O	|	|	|	|	0.16
40.750	0.00	0.22	0.271	O	|	|	|	|	0.16

40.833	0.00	0.22	0.269	O	|	|	|	|	0.16
40.917	0.00	0.22	0.268	O	|	|	|	|	0.16
41.000	0.00	0.22	0.266	O	|	|	|	|	0.16
41.083	0.00	0.22	0.265	O	|	|	|	|	0.16
41.167	0.00	0.22	0.263	O	|	|	|	|	0.16
41.250	0.00	0.22	0.262	O	|	|	|	|	0.16
41.333	0.00	0.22	0.260	O	|	|	|	|	0.16
41.417	0.00	0.21	0.259	O	|	|	|	|	0.16
41.500	0.00	0.21	0.257	O	|	|	|	|	0.15
41.583	0.00	0.21	0.256	O	|	|	|	|	0.15
41.667	0.00	0.21	0.255	O	|	|	|	|	0.15
41.750	0.00	0.21	0.253	O	|	|	|	|	0.15
41.833	0.00	0.21	0.252	O	|	|	|	|	0.15
41.917	0.00	0.21	0.250	O	|	|	|	|	0.15
42.000	0.00	0.21	0.249	O	|	|	|	|	0.15
42.083	0.00	0.21	0.247	O	|	|	|	|	0.15
42.167	0.00	0.20	0.246	O	|	|	|	|	0.15
42.250	0.00	0.20	0.245	O	|	|	|	|	0.15
42.333	0.00	0.20	0.243	O	|	|	|	|	0.15
42.417	0.00	0.20	0.242	O	|	|	|	|	0.14
42.500	0.00	0.20	0.240	O	|	|	|	|	0.14
42.583	0.00	0.20	0.239	O	|	|	|	|	0.14
42.667	0.00	0.20	0.238	O	|	|	|	|	0.14
42.750	0.00	0.20	0.236	O	|	|	|	|	0.14
42.833	0.00	0.19	0.235	O	|	|	|	|	0.14
42.917	0.00	0.19	0.234	O	|	|	|	|	0.14
43.000	0.00	0.19	0.232	O	|	|	|	|	0.14
43.083	0.00	0.19	0.231	O	|	|	|	|	0.14
43.167	0.00	0.19	0.230	O	|	|	|	|	0.14
43.250	0.00	0.19	0.228	O	|	|	|	|	0.14
43.333	0.00	0.19	0.227	O	|	|	|	|	0.14
43.417	0.00	0.19	0.226	O	|	|	|	|	0.14
43.500	0.00	0.19	0.224	O	|	|	|	|	0.13
43.583	0.00	0.19	0.223	O	|	|	|	|	0.13
43.667	0.00	0.18	0.222	O	|	|	|	|	0.13
43.750	0.00	0.18	0.221	O	|	|	|	|	0.13
43.833	0.00	0.18	0.219	O	|	|	|	|	0.13
43.917	0.00	0.18	0.218	O	|	|	|	|	0.13
44.000	0.00	0.18	0.217	O	|	|	|	|	0.13
44.083	0.00	0.18	0.216	O	|	|	|	|	0.13
44.167	0.00	0.18	0.214	O	|	|	|	|	0.13
44.250	0.00	0.18	0.213	O	|	|	|	|	0.13
44.333	0.00	0.18	0.212	O	|	|	|	|	0.13
44.417	0.00	0.17	0.211	O	|	|	|	|	0.13
44.500	0.00	0.17	0.210	O	|	|	|	|	0.13
44.583	0.00	0.17	0.208	O	|	|	|	|	0.12
44.667	0.00	0.17	0.207	O	|	|	|	|	0.12
44.750	0.00	0.17	0.206	O	|	|	|	|	0.12
44.833	0.00	0.17	0.205	O	|	|	|	|	0.12
44.917	0.00	0.17	0.204	O	|	|	|	|	0.12
45.000	0.00	0.17	0.202	O	|	|	|	|	0.12
45.083	0.00	0.17	0.201	O	|	|	|	|	0.12
45.167	0.00	0.17	0.200	O	|	|	|	|	0.12
45.250	0.00	0.17	0.199	O	|	|	|	|	0.12
45.333	0.00	0.16	0.198	O	|	|	|	|	0.12
45.417	0.00	0.16	0.197	O	|	|	|	|	0.12
45.500	0.00	0.16	0.196	O	|	|	|	|	0.12
45.583	0.00	0.16	0.195	O	|	|	|	|	0.12
45.667	0.00	0.16	0.193	O	|	|	|	|	0.12
45.750	0.00	0.16	0.192	O	|	|	|	|	0.12
45.833	0.00	0.16	0.191	O	|	|	|	|	0.11
45.917	0.00	0.16	0.190	O	|	|	|	|	0.11
46.000	0.00	0.16	0.189	O	|	|	|	|	0.11
46.083	0.00	0.16	0.188	O	|	|	|	|	0.11
46.167	0.00	0.16	0.187	O	|	|	|	|	0.11
46.250	0.00	0.15	0.186	O	|	|	|	|	0.11
46.333	0.00	0.15	0.185	O	|	|	|	|	0.11
46.417	0.00	0.15	0.184	O	|	|	|	|	0.11
46.500	0.00	0.15	0.183	O	|	|	|	|	0.11
46.583	0.00	0.15	0.182	O	|	|	|	|	0.11
46.667	0.00	0.15	0.181	O	|	|	|	|	0.11

46.750	0.00	0.15	0.180	O	|	|	|	|	0.11
46.833	0.00	0.15	0.179	O	|	|	|	|	0.11
46.917	0.00	0.15	0.178	O	|	|	|	|	0.11
47.000	0.00	0.15	0.177	O	|	|	|	|	0.11
47.083	0.00	0.15	0.176	O	|	|	|	|	0.11
47.167	0.00	0.14	0.175	O	|	|	|	|	0.10
47.250	0.00	0.14	0.174	O	|	|	|	|	0.10
47.333	0.00	0.14	0.173	O	|	|	|	|	0.10
47.417	0.00	0.14	0.172	O	|	|	|	|	0.10
47.500	0.00	0.14	0.171	O	|	|	|	|	0.10
47.583	0.00	0.14	0.170	O	|	|	|	|	0.10
47.667	0.00	0.14	0.169	O	|	|	|	|	0.10
47.750	0.00	0.14	0.168	O	|	|	|	|	0.10
47.833	0.00	0.14	0.167	O	|	|	|	|	0.10
47.917	0.00	0.14	0.166	O	|	|	|	|	0.10
48.000	0.00	0.14	0.165	O	|	|	|	|	0.10
48.083	0.00	0.14	0.164	O	|	|	|	|	0.10
48.167	0.00	0.14	0.163	O	|	|	|	|	0.10
48.250	0.00	0.13	0.162	O	|	|	|	|	0.10
48.333	0.00	0.13	0.161	O	|	|	|	|	0.10
48.417	0.00	0.13	0.160	O	|	|	|	|	0.10
48.500	0.00	0.13	0.159	O	|	|	|	|	0.10
48.583	0.00	0.13	0.158	O	|	|	|	|	0.09
48.667	0.00	0.13	0.157	O	|	|	|	|	0.09
48.750	0.00	0.13	0.157	O	|	|	|	|	0.09
48.833	0.00	0.13	0.156	O	|	|	|	|	0.09
48.917	0.00	0.13	0.155	O	|	|	|	|	0.09
49.000	0.00	0.13	0.154	O	|	|	|	|	0.09
49.083	0.00	0.13	0.153	O	|	|	|	|	0.09
49.167	0.00	0.13	0.152	O	|	|	|	|	0.09
49.250	0.00	0.13	0.151	O	|	|	|	|	0.09
49.333	0.00	0.12	0.150	O	|	|	|	|	0.09
49.417	0.00	0.12	0.150	O	|	|	|	|	0.09
49.500	0.00	0.12	0.149	O	|	|	|	|	0.09
49.583	0.00	0.12	0.148	O	|	|	|	|	0.09
49.667	0.00	0.12	0.147	O	|	|	|	|	0.09
49.750	0.00	0.12	0.146	O	|	|	|	|	0.09
49.833	0.00	0.12	0.145	O	|	|	|	|	0.09
49.917	0.00	0.12	0.145	O	|	|	|	|	0.09
50.000	0.00	0.12	0.144	O	|	|	|	|	0.09
50.083	0.00	0.12	0.143	O	|	|	|	|	0.09
50.167	0.00	0.12	0.142	O	|	|	|	|	0.09
50.250	0.00	0.12	0.141	O	|	|	|	|	0.08
50.333	0.00	0.12	0.140	O	|	|	|	|	0.08
50.417	0.00	0.12	0.140	O	|	|	|	|	0.08
50.500	0.00	0.12	0.139	O	|	|	|	|	0.08
50.583	0.00	0.11	0.138	O	|	|	|	|	0.08
50.667	0.00	0.11	0.137	O	|	|	|	|	0.08
50.750	0.00	0.11	0.137	O	|	|	|	|	0.08
50.833	0.00	0.11	0.136	O	|	|	|	|	0.08
50.917	0.00	0.11	0.135	O	|	|	|	|	0.08
51.000	0.00	0.11	0.134	O	|	|	|	|	0.08
51.083	0.00	0.11	0.133	O	|	|	|	|	0.08
51.167	0.00	0.11	0.133	O	|	|	|	|	0.08
51.250	0.00	0.11	0.132	O	|	|	|	|	0.08
51.333	0.00	0.11	0.131	O	|	|	|	|	0.08
51.417	0.00	0.11	0.130	O	|	|	|	|	0.08
51.500	0.00	0.11	0.130	O	|	|	|	|	0.08
51.583	0.00	0.11	0.129	O	|	|	|	|	0.08
51.667	0.00	0.11	0.128	O	|	|	|	|	0.08
51.750	0.00	0.11	0.127	O	|	|	|	|	0.08
51.833	0.00	0.11	0.127	O	|	|	|	|	0.08
51.917	0.00	0.10	0.126	O	|	|	|	|	0.08
52.000	0.00	0.10	0.125	O	|	|	|	|	0.08
52.083	0.00	0.10	0.125	O	|	|	|	|	0.07
52.167	0.00	0.10	0.124	O	|	|	|	|	0.07
52.250	0.00	0.10	0.123	O	|	|	|	|	0.07
52.333	0.00	0.10	0.122	O	|	|	|	|	0.07
52.417	0.00	0.10	0.122	O	|	|	|	|	0.07
52.500	0.00	0.10	0.121	O	|	|	|	|	0.07
52.583	0.00	0.10	0.120	O	|	|	|	|	0.07

52.667	0.00	0.10	0.120	O	|	|	|	|	0.07
52.750	0.00	0.10	0.119	O	|	|	|	|	0.07
52.833	0.00	0.10	0.118	O	|	|	|	|	0.07
52.917	0.00	0.10	0.118	O	|	|	|	|	0.07
53.000	0.00	0.10	0.117	O	|	|	|	|	0.07
53.083	0.00	0.10	0.116	O	|	|	|	|	0.07
53.167	0.00	0.10	0.116	O	|	|	|	|	0.07
53.250	0.00	0.10	0.115	O	|	|	|	|	0.07
53.333	0.00	0.09	0.114	O	|	|	|	|	0.07
53.417	0.00	0.09	0.114	O	|	|	|	|	0.07
53.500	0.00	0.09	0.113	O	|	|	|	|	0.07
53.583	0.00	0.09	0.112	O	|	|	|	|	0.07
53.667	0.00	0.09	0.112	O	|	|	|	|	0.07
53.750	0.00	0.09	0.111	O	|	|	|	|	0.07
53.833	0.00	0.09	0.110	O	|	|	|	|	0.07
53.917	0.00	0.09	0.110	O	|	|	|	|	0.07
54.000	0.00	0.09	0.109	O	|	|	|	|	0.07
54.083	0.00	0.09	0.109	O	|	|	|	|	0.07
54.167	0.00	0.09	0.108	O	|	|	|	|	0.06
54.250	0.00	0.09	0.107	O	|	|	|	|	0.06
54.333	0.00	0.09	0.107	O	|	|	|	|	0.06
54.417	0.00	0.09	0.106	O	|	|	|	|	0.06
54.500	0.00	0.09	0.106	O	|	|	|	|	0.06
54.583	0.00	0.09	0.105	O	|	|	|	|	0.06
54.667	0.00	0.09	0.104	O	|	|	|	|	0.06
54.750	0.00	0.09	0.104	O	|	|	|	|	0.06
54.833	0.00	0.09	0.103	O	|	|	|	|	0.06
54.917	0.00	0.09	0.103	O	|	|	|	|	0.06
55.000	0.00	0.08	0.102	O	|	|	|	|	0.06
55.083	0.00	0.08	0.101	O	|	|	|	|	0.06
55.167	0.00	0.08	0.101	O	|	|	|	|	0.06
55.250	0.00	0.08	0.100	O	|	|	|	|	0.06
55.333	0.00	0.08	0.100	O	|	|	|	|	0.06
55.417	0.00	0.08	0.099	O	|	|	|	|	0.06
55.500	0.00	0.08	0.099	O	|	|	|	|	0.06
55.583	0.00	0.08	0.098	O	|	|	|	|	0.06
55.667	0.00	0.08	0.097	O	|	|	|	|	0.06
55.750	0.00	0.08	0.097	O	|	|	|	|	0.06
55.833	0.00	0.08	0.096	O	|	|	|	|	0.06
55.917	0.00	0.08	0.096	O	|	|	|	|	0.06
56.000	0.00	0.08	0.095	O	|	|	|	|	0.06
56.083	0.00	0.08	0.095	O	|	|	|	|	0.06
56.167	0.00	0.08	0.094	O	|	|	|	|	0.06
56.250	0.00	0.08	0.094	O	|	|	|	|	0.06
56.333	0.00	0.08	0.093	O	|	|	|	|	0.06
56.417	0.00	0.08	0.093	O	|	|	|	|	0.06
56.500	0.00	0.08	0.092	O	|	|	|	|	0.06
56.583	0.00	0.08	0.092	O	|	|	|	|	0.05
56.667	0.00	0.08	0.091	O	|	|	|	|	0.05
56.750	0.00	0.08	0.090	O	|	|	|	|	0.05
56.833	0.00	0.07	0.090	O	|	|	|	|	0.05
56.917	0.00	0.07	0.089	O	|	|	|	|	0.05
57.000	0.00	0.07	0.089	O	|	|	|	|	0.05
57.083	0.00	0.07	0.088	O	|	|	|	|	0.05
57.167	0.00	0.07	0.088	O	|	|	|	|	0.05
57.250	0.00	0.07	0.087	O	|	|	|	|	0.05
57.333	0.00	0.07	0.087	O	|	|	|	|	0.05
57.417	0.00	0.07	0.086	O	|	|	|	|	0.05
57.500	0.00	0.07	0.086	O	|	|	|	|	0.05
57.583	0.00	0.07	0.085	O	|	|	|	|	0.05
57.667	0.00	0.07	0.085	O	|	|	|	|	0.05
57.750	0.00	0.07	0.084	O	|	|	|	|	0.05
57.833	0.00	0.07	0.084	O	|	|	|	|	0.05
57.917	0.00	0.07	0.084	O	|	|	|	|	0.05
58.000	0.00	0.07	0.083	O	|	|	|	|	0.05
58.083	0.00	0.07	0.083	O	|	|	|	|	0.05
58.167	0.00	0.07	0.082	O	|	|	|	|	0.05
58.250	0.00	0.07	0.082	O	|	|	|	|	0.05
58.333	0.00	0.07	0.081	O	|	|	|	|	0.05
58.417	0.00	0.07	0.081	O	|	|	|	|	0.05
58.500	0.00	0.07	0.080	O	|	|	|	|	0.05

58.583	0.00	0.07	0.080	O	|	|	|	|	0.05
58.667	0.00	0.07	0.079	O	|	|	|	|	0.05
58.750	0.00	0.07	0.079	O	|	|	|	|	0.05
58.833	0.00	0.07	0.078	O	|	|	|	|	0.05
58.917	0.00	0.06	0.078	O	|	|	|	|	0.05
59.000	0.00	0.06	0.078	O	|	|	|	|	0.05
59.083	0.00	0.06	0.077	O	|	|	|	|	0.05
59.167	0.00	0.06	0.077	O	|	|	|	|	0.05
59.250	0.00	0.06	0.076	O	|	|	|	|	0.05
59.333	0.00	0.06	0.076	O	|	|	|	|	0.05
59.417	0.00	0.06	0.075	O	|	|	|	|	0.05
59.500	0.00	0.06	0.075	O	|	|	|	|	0.04
59.583	0.00	0.06	0.074	O	|	|	|	|	0.04
59.667	0.00	0.06	0.074	O	|	|	|	|	0.04
59.750	0.00	0.06	0.074	O	|	|	|	|	0.04
59.833	0.00	0.06	0.073	O	|	|	|	|	0.04
59.917	0.00	0.06	0.073	O	|	|	|	|	0.04
60.000	0.00	0.06	0.072	O	|	|	|	|	0.04
60.083	0.00	0.06	0.072	O	|	|	|	|	0.04
60.167	0.00	0.06	0.072	O	|	|	|	|	0.04
60.250	0.00	0.06	0.071	O	|	|	|	|	0.04
60.333	0.00	0.06	0.071	O	|	|	|	|	0.04
60.417	0.00	0.06	0.070	O	|	|	|	|	0.04
60.500	0.00	0.06	0.070	O	|	|	|	|	0.04
60.583	0.00	0.06	0.070	O	|	|	|	|	0.04
60.667	0.00	0.06	0.069	O	|	|	|	|	0.04
60.750	0.00	0.06	0.069	O	|	|	|	|	0.04
60.833	0.00	0.06	0.068	O	|	|	|	|	0.04
60.917	0.00	0.06	0.068	O	|	|	|	|	0.04
61.000	0.00	0.06	0.068	O	|	|	|	|	0.04
61.083	0.00	0.06	0.067	O	|	|	|	|	0.04
61.167	0.00	0.06	0.067	O	|	|	|	|	0.04
61.250	0.00	0.06	0.066	O	|	|	|	|	0.04
61.333	0.00	0.05	0.066	O	|	|	|	|	0.04
61.417	0.00	0.05	0.066	O	|	|	|	|	0.04
61.500	0.00	0.05	0.065	O	|	|	|	|	0.04
61.583	0.00	0.05	0.065	O	|	|	|	|	0.04
61.667	0.00	0.05	0.065	O	|	|	|	|	0.04
61.750	0.00	0.05	0.064	O	|	|	|	|	0.04
61.833	0.00	0.05	0.064	O	|	|	|	|	0.04
61.917	0.00	0.05	0.063	O	|	|	|	|	0.04
62.000	0.00	0.05	0.063	O	|	|	|	|	0.04
62.083	0.00	0.05	0.063	O	|	|	|	|	0.04
62.167	0.00	0.05	0.062	O	|	|	|	|	0.04
62.250	0.00	0.05	0.062	O	|	|	|	|	0.04
62.333	0.00	0.05	0.062	O	|	|	|	|	0.04
62.417	0.00	0.05	0.061	O	|	|	|	|	0.04
62.500	0.00	0.05	0.061	O	|	|	|	|	0.04
62.583	0.00	0.05	0.061	O	|	|	|	|	0.04
62.667	0.00	0.05	0.060	O	|	|	|	|	0.04
62.750	0.00	0.05	0.060	O	|	|	|	|	0.04
62.833	0.00	0.05	0.060	O	|	|	|	|	0.04
62.917	0.00	0.05	0.059	O	|	|	|	|	0.04
63.000	0.00	0.05	0.059	O	|	|	|	|	0.04
63.083	0.00	0.05	0.059	O	|	|	|	|	0.04
63.167	0.00	0.05	0.058	O	|	|	|	|	0.03
63.250	0.00	0.05	0.058	O	|	|	|	|	0.03
63.333	0.00	0.05	0.058	O	|	|	|	|	0.03
63.417	0.00	0.05	0.057	O	|	|	|	|	0.03
63.500	0.00	0.05	0.057	O	|	|	|	|	0.03
63.583	0.00	0.05	0.057	O	|	|	|	|	0.03
63.667	0.00	0.05	0.056	O	|	|	|	|	0.03
63.750	0.00	0.05	0.056	O	|	|	|	|	0.03
63.833	0.00	0.05	0.056	O	|	|	|	|	0.03
63.917	0.00	0.05	0.055	O	|	|	|	|	0.03
64.000	0.00	0.05	0.055	O	|	|	|	|	0.03
64.083	0.00	0.05	0.055	O	|	|	|	|	0.03
64.167	0.00	0.05	0.054	O	|	|	|	|	0.03
64.250	0.00	0.04	0.054	O	|	|	|	|	0.03
64.333	0.00	0.04	0.054	O	|	|	|	|	0.03
64.417	0.00	0.04	0.053	O	|	|	|	|	0.03

64.500	0.00	0.04	0.053	O	|	|	|	|	0.03
64.583	0.00	0.04	0.053	O	|	|	|	|	0.03
64.667	0.00	0.04	0.053	O	|	|	|	|	0.03
64.750	0.00	0.04	0.052	O	|	|	|	|	0.03
64.833	0.00	0.04	0.052	O	|	|	|	|	0.03
64.917	0.00	0.04	0.052	O	|	|	|	|	0.03
65.000	0.00	0.04	0.051	O	|	|	|	|	0.03
65.083	0.00	0.04	0.051	O	|	|	|	|	0.03
65.167	0.00	0.04	0.051	O	|	|	|	|	0.03
65.250	0.00	0.04	0.051	O	|	|	|	|	0.03
65.333	0.00	0.04	0.050	O	|	|	|	|	0.03
65.417	0.00	0.04	0.050	O	|	|	|	|	0.03
65.500	0.00	0.04	0.050	O	|	|	|	|	0.03
65.583	0.00	0.04	0.049	O	|	|	|	|	0.03
65.667	0.00	0.04	0.049	O	|	|	|	|	0.03
65.750	0.00	0.04	0.049	O	|	|	|	|	0.03
65.833	0.00	0.04	0.049	O	|	|	|	|	0.03
65.917	0.00	0.04	0.048	O	|	|	|	|	0.03
66.000	0.00	0.04	0.048	O	|	|	|	|	0.03
66.083	0.00	0.04	0.048	O	|	|	|	|	0.03
66.167	0.00	0.04	0.047	O	|	|	|	|	0.03
66.250	0.00	0.04	0.047	O	|	|	|	|	0.03
66.333	0.00	0.04	0.047	O	|	|	|	|	0.03
66.417	0.00	0.04	0.047	O	|	|	|	|	0.03
66.500	0.00	0.04	0.046	O	|	|	|	|	0.03
66.583	0.00	0.04	0.046	O	|	|	|	|	0.03
66.667	0.00	0.04	0.046	O	|	|	|	|	0.03
66.750	0.00	0.04	0.046	O	|	|	|	|	0.03
66.833	0.00	0.04	0.045	O	|	|	|	|	0.03
66.917	0.00	0.04	0.045	O	|	|	|	|	0.03
67.000	0.00	0.04	0.045	O	|	|	|	|	0.03
67.083	0.00	0.04	0.045	O	|	|	|	|	0.03
67.167	0.00	0.04	0.044	O	|	|	|	|	0.03
67.250	0.00	0.04	0.044	O	|	|	|	|	0.03
67.333	0.00	0.04	0.044	O	|	|	|	|	0.03
67.417	0.00	0.04	0.044	O	|	|	|	|	0.03
67.500	0.00	0.04	0.043	O	|	|	|	|	0.03
67.583	0.00	0.04	0.043	O	|	|	|	|	0.03
67.667	0.00	0.04	0.043	O	|	|	|	|	0.03
67.750	0.00	0.04	0.043	O	|	|	|	|	0.03
67.833	0.00	0.04	0.042	O	|	|	|	|	0.03
67.917	0.00	0.03	0.042	O	|	|	|	|	0.03
68.000	0.00	0.03	0.042	O	|	|	|	|	0.03
68.083	0.00	0.03	0.042	O	|	|	|	|	0.02
68.167	0.00	0.03	0.041	O	|	|	|	|	0.02
68.250	0.00	0.03	0.041	O	|	|	|	|	0.02
68.333	0.00	0.03	0.041	O	|	|	|	|	0.02
68.417	0.00	0.03	0.041	O	|	|	|	|	0.02
68.500	0.00	0.03	0.040	O	|	|	|	|	0.02
68.583	0.00	0.03	0.040	O	|	|	|	|	0.02
68.667	0.00	0.03	0.040	O	|	|	|	|	0.02
68.750	0.00	0.03	0.040	O	|	|	|	|	0.02
68.833	0.00	0.03	0.040	O	|	|	|	|	0.02
68.917	0.00	0.03	0.039	O	|	|	|	|	0.02
69.000	0.00	0.03	0.039	O	|	|	|	|	0.02
69.083	0.00	0.03	0.039	O	|	|	|	|	0.02
69.167	0.00	0.03	0.039	O	|	|	|	|	0.02
69.250	0.00	0.03	0.038	O	|	|	|	|	0.02
69.333	0.00	0.03	0.038	O	|	|	|	|	0.02
69.417	0.00	0.03	0.038	O	|	|	|	|	0.02
69.500	0.00	0.03	0.038	O	|	|	|	|	0.02
69.583	0.00	0.03	0.038	O	|	|	|	|	0.02
69.667	0.00	0.03	0.037	O	|	|	|	|	0.02
69.750	0.00	0.03	0.037	O	|	|	|	|	0.02
69.833	0.00	0.03	0.037	O	|	|	|	|	0.02
69.917	0.00	0.03	0.037	O	|	|	|	|	0.02
70.000	0.00	0.03	0.036	O	|	|	|	|	0.02
70.083	0.00	0.03	0.036	O	|	|	|	|	0.02
70.167	0.00	0.03	0.036	O	|	|	|	|	0.02
70.250	0.00	0.03	0.036	O	|	|	|	|	0.02
70.333	0.00	0.03	0.036	O	|	|	|	|	0.02

70.417	0.00	0.03	0.035	O					0.02
70.500	0.00	0.03	0.035	O					0.02
70.583	0.00	0.03	0.035	O					0.02
70.667	0.00	0.03	0.035	O					0.02
70.750	0.00	0.03	0.035	O					0.02
70.833	0.00	0.03	0.034	O					0.02
70.917	0.00	0.03	0.034	O					0.02
71.000	0.00	0.03	0.034	O					0.02
71.083	0.00	0.03	0.034	O					0.02
71.167	0.00	0.03	0.034	O					0.02
71.250	0.00	0.03	0.033	O					0.02
71.333	0.00	0.03	0.033	O					0.02
71.417	0.00	0.03	0.033	O					0.02
71.500	0.00	0.03	0.033	O					0.02
71.583	0.00	0.03	0.033	O					0.02
71.667	0.00	0.03	0.033	O					0.02
71.750	0.00	0.03	0.032	O					0.02
71.833	0.00	0.03	0.032	O					0.02
71.917	0.00	0.03	0.032	O					0.02
72.000	0.00	0.03	0.032	O					0.02
72.083	0.00	0.03	0.032	O					0.02
72.167	0.00	0.03	0.031	O					0.02
72.250	0.00	0.03	0.031	O					0.02
72.333	0.00	0.03	0.031	O					0.02
72.417	0.00	0.03	0.031	O					0.02
72.500	0.00	0.03	0.031	O					0.02
72.583	0.00	0.03	0.031	O					0.02
72.667	0.00	0.03	0.030	O					0.02
72.750	0.00	0.03	0.030	O					0.02
72.833	0.00	0.02	0.030	O					0.02
72.917	0.00	0.02	0.030	O					0.02
73.000	0.00	0.02	0.030	O					0.02
73.083	0.00	0.02	0.030	O					0.02
73.167	0.00	0.02	0.029	O					0.02
73.250	0.00	0.02	0.029	O					0.02
73.333	0.00	0.02	0.029	O					0.02
73.417	0.00	0.02	0.029	O					0.02
73.500	0.00	0.02	0.029	O					0.02
73.583	0.00	0.02	0.029	O					0.02
73.667	0.00	0.02	0.028	O					0.02
73.750	0.00	0.02	0.028	O					0.02
73.833	0.00	0.02	0.028	O					0.02
73.917	0.00	0.02	0.028	O					0.02
74.000	0.00	0.02	0.028	O					0.02
74.083	0.00	0.02	0.028	O					0.02
74.167	0.00	0.02	0.027	O					0.02
74.250	0.00	0.02	0.027	O					0.02
74.333	0.00	0.02	0.027	O					0.02
74.417	0.00	0.02	0.027	O					0.02
74.500	0.00	0.02	0.027	O					0.02
74.583	0.00	0.02	0.027	O					0.02
74.667	0.00	0.02	0.026	O					0.02
74.750	0.00	0.02	0.026	O					0.02
74.833	0.00	0.02	0.026	O					0.02
74.917	0.00	0.02	0.026	O					0.02
75.000	0.00	0.02	0.026	O					0.02
75.083	0.00	0.02	0.026	O					0.02
75.167	0.00	0.02	0.026	O					0.02
75.250	0.00	0.02	0.025	O					0.02
75.333	0.00	0.02	0.025	O					0.02
75.417	0.00	0.02	0.025	O					0.02
75.500	0.00	0.02	0.025	O					0.01
75.583	0.00	0.02	0.025	O					0.01
75.667	0.00	0.02	0.025	O					0.01
75.750	0.00	0.02	0.025	O					0.01
75.833	0.00	0.02	0.024	O					0.01
75.917	0.00	0.02	0.024	O					0.01
76.000	0.00	0.02	0.024	O					0.01
76.083	0.00	0.02	0.024	O					0.01
76.167	0.00	0.02	0.024	O					0.01
76.250	0.00	0.02	0.024	O					0.01

76.333	0.00	0.02	0.024	O	|	|	|	|	0.01
76.417	0.00	0.02	0.023	O	|	|	|	|	0.01
76.500	0.00	0.02	0.023	O	|	|	|	|	0.01
76.583	0.00	0.02	0.023	O	|	|	|	|	0.01
76.667	0.00	0.02	0.023	O	|	|	|	|	0.01
76.750	0.00	0.02	0.023	O	|	|	|	|	0.01
76.833	0.00	0.02	0.023	O	|	|	|	|	0.01
76.917	0.00	0.02	0.023	O	|	|	|	|	0.01
77.000	0.00	0.02	0.023	O	|	|	|	|	0.01
77.083	0.00	0.02	0.022	O	|	|	|	|	0.01
77.167	0.00	0.02	0.022	O	|	|	|	|	0.01
77.250	0.00	0.02	0.022	O	|	|	|	|	0.01
77.333	0.00	0.02	0.022	O	|	|	|	|	0.01
77.417	0.00	0.02	0.022	O	|	|	|	|	0.01
77.500	0.00	0.02	0.022	O	|	|	|	|	0.01
77.583	0.00	0.02	0.022	O	|	|	|	|	0.01
77.667	0.00	0.02	0.022	O	|	|	|	|	0.01
77.750	0.00	0.02	0.021	O	|	|	|	|	0.01
77.833	0.00	0.02	0.021	O	|	|	|	|	0.01
77.917	0.00	0.02	0.021	O	|	|	|	|	0.01
78.000	0.00	0.02	0.021	O	|	|	|	|	0.01
78.083	0.00	0.02	0.021	O	|	|	|	|	0.01
78.167	0.00	0.02	0.021	O	|	|	|	|	0.01
78.250	0.00	0.02	0.021	O	|	|	|	|	0.01
78.333	0.00	0.02	0.021	O	|	|	|	|	0.01
78.417	0.00	0.02	0.020	O	|	|	|	|	0.01
78.500	0.00	0.02	0.020	O	|	|	|	|	0.01
78.583	0.00	0.02	0.020	O	|	|	|	|	0.01
78.667	0.00	0.02	0.020	O	|	|	|	|	0.01
78.750	0.00	0.02	0.020	O	|	|	|	|	0.01
78.833	0.00	0.02	0.020	O	|	|	|	|	0.01
78.917	0.00	0.02	0.020	O	|	|	|	|	0.01
79.000	0.00	0.02	0.020	O	|	|	|	|	0.01
79.083	0.00	0.02	0.020	O	|	|	|	|	0.01
79.167	0.00	0.02	0.019	O	|	|	|	|	0.01
79.250	0.00	0.02	0.019	O	|	|	|	|	0.01
79.333	0.00	0.02	0.019	O	|	|	|	|	0.01
79.417	0.00	0.02	0.019	O	|	|	|	|	0.01
79.500	0.00	0.02	0.019	O	|	|	|	|	0.01
79.583	0.00	0.02	0.019	O	|	|	|	|	0.01
79.667	0.00	0.02	0.019	O	|	|	|	|	0.01
79.750	0.00	0.02	0.019	O	|	|	|	|	0.01
79.833	0.00	0.02	0.019	O	|	|	|	|	0.01
79.917	0.00	0.02	0.018	O	|	|	|	|	0.01
80.000	0.00	0.02	0.018	O	|	|	|	|	0.01
80.083	0.00	0.02	0.018	O	|	|	|	|	0.01
80.167	0.00	0.02	0.018	O	|	|	|	|	0.01
80.250	0.00	0.01	0.018	O	|	|	|	|	0.01
80.333	0.00	0.01	0.018	O	|	|	|	|	0.01
80.417	0.00	0.01	0.018	O	|	|	|	|	0.01
80.500	0.00	0.01	0.018	O	|	|	|	|	0.01
80.583	0.00	0.01	0.018	O	|	|	|	|	0.01
80.667	0.00	0.01	0.018	O	|	|	|	|	0.01
80.750	0.00	0.01	0.017	O	|	|	|	|	0.01
80.833	0.00	0.01	0.017	O	|	|	|	|	0.01
80.917	0.00	0.01	0.017	O	|	|	|	|	0.01
81.000	0.00	0.01	0.017	O	|	|	|	|	0.01
81.083	0.00	0.01	0.017	O	|	|	|	|	0.01
81.167	0.00	0.01	0.017	O	|	|	|	|	0.01
81.250	0.00	0.01	0.017	O	|	|	|	|	0.01
81.333	0.00	0.01	0.017	O	|	|	|	|	0.01
81.417	0.00	0.01	0.017	O	|	|	|	|	0.01
81.500	0.00	0.01	0.017	O	|	|	|	|	0.01
81.583	0.00	0.01	0.016	O	|	|	|	|	0.01
81.667	0.00	0.01	0.016	O	|	|	|	|	0.01
81.750	0.00	0.01	0.016	O	|	|	|	|	0.01
81.833	0.00	0.01	0.016	O	|	|	|	|	0.01
81.917	0.00	0.01	0.016	O	|	|	|	|	0.01
82.000	0.00	0.01	0.016	O	|	|	|	|	0.01
82.083	0.00	0.01	0.016	O	|	|	|	|	0.01
82.167	0.00	0.01	0.016	O	|	|	|	|	0.01

82.250	0.00	0.01	0.016	O	|	|	|	|	0.01
82.333	0.00	0.01	0.016	O	|	|	|	|	0.01
82.417	0.00	0.01	0.016	O	|	|	|	|	0.01
82.500	0.00	0.01	0.015	O	|	|	|	|	0.01
82.583	0.00	0.01	0.015	O	|	|	|	|	0.01
82.667	0.00	0.01	0.015	O	|	|	|	|	0.01
82.750	0.00	0.01	0.015	O	|	|	|	|	0.01
82.833	0.00	0.01	0.015	O	|	|	|	|	0.01
82.917	0.00	0.01	0.015	O	|	|	|	|	0.01
83.000	0.00	0.01	0.015	O	|	|	|	|	0.01
83.083	0.00	0.01	0.015	O	|	|	|	|	0.01
83.167	0.00	0.01	0.015	O	|	|	|	|	0.01
83.250	0.00	0.01	0.015	O	|	|	|	|	0.01
83.333	0.00	0.01	0.015	O	|	|	|	|	0.01
83.417	0.00	0.01	0.015	O	|	|	|	|	0.01
83.500	0.00	0.01	0.014	O	|	|	|	|	0.01
83.583	0.00	0.01	0.014	O	|	|	|	|	0.01
83.667	0.00	0.01	0.014	O	|	|	|	|	0.01
83.750	0.00	0.01	0.014	O	|	|	|	|	0.01
83.833	0.00	0.01	0.014	O	|	|	|	|	0.01
83.917	0.00	0.01	0.014	O	|	|	|	|	0.01
84.000	0.00	0.01	0.014	O	|	|	|	|	0.01
84.083	0.00	0.01	0.014	O	|	|	|	|	0.01
84.167	0.00	0.01	0.014	O	|	|	|	|	0.01
84.250	0.00	0.01	0.014	O	|	|	|	|	0.01
84.333	0.00	0.01	0.014	O	|	|	|	|	0.01
84.417	0.00	0.01	0.014	O	|	|	|	|	0.01
84.500	0.00	0.01	0.013	O	|	|	|	|	0.01
84.583	0.00	0.01	0.013	O	|	|	|	|	0.01
84.667	0.00	0.01	0.013	O	|	|	|	|	0.01
84.750	0.00	0.01	0.013	O	|	|	|	|	0.01
84.833	0.00	0.01	0.013	O	|	|	|	|	0.01
84.917	0.00	0.01	0.013	O	|	|	|	|	0.01
85.000	0.00	0.01	0.013	O	|	|	|	|	0.01
85.083	0.00	0.01	0.013	O	|	|	|	|	0.01
85.167	0.00	0.01	0.013	O	|	|	|	|	0.01
85.250	0.00	0.01	0.013	O	|	|	|	|	0.01
85.333	0.00	0.01	0.013	O	|	|	|	|	0.01
85.417	0.00	0.01	0.013	O	|	|	|	|	0.01
85.500	0.00	0.01	0.013	O	|	|	|	|	0.01
85.583	0.00	0.01	0.013	O	|	|	|	|	0.01
85.667	0.00	0.01	0.012	O	|	|	|	|	0.01
85.750	0.00	0.01	0.012	O	|	|	|	|	0.01
85.833	0.00	0.01	0.012	O	|	|	|	|	0.01
85.917	0.00	0.01	0.012	O	|	|	|	|	0.01
86.000	0.00	0.01	0.012	O	|	|	|	|	0.01
86.083	0.00	0.01	0.012	O	|	|	|	|	0.01
86.167	0.00	0.01	0.012	O	|	|	|	|	0.01
86.250	0.00	0.01	0.012	O	|	|	|	|	0.01
86.333	0.00	0.01	0.012	O	|	|	|	|	0.01
86.417	0.00	0.01	0.012	O	|	|	|	|	0.01
86.500	0.00	0.01	0.012	O	|	|	|	|	0.01
86.583	0.00	0.01	0.012	O	|	|	|	|	0.01
86.667	0.00	0.01	0.012	O	|	|	|	|	0.01
86.750	0.00	0.01	0.012	O	|	|	|	|	0.01
86.833	0.00	0.01	0.011	O	|	|	|	|	0.01
86.917	0.00	0.01	0.011	O	|	|	|	|	0.01
87.000	0.00	0.01	0.011	O	|	|	|	|	0.01
87.083	0.00	0.01	0.011	O	|	|	|	|	0.01
87.167	0.00	0.01	0.011	O	|	|	|	|	0.01
87.250	0.00	0.01	0.011	O	|	|	|	|	0.01
87.333	0.00	0.01	0.011	O	|	|	|	|	0.01
87.417	0.00	0.01	0.011	O	|	|	|	|	0.01
87.500	0.00	0.01	0.011	O	|	|	|	|	0.01
87.583	0.00	0.01	0.011	O	|	|	|	|	0.01
87.667	0.00	0.01	0.011	O	|	|	|	|	0.01
87.750	0.00	0.01	0.011	O	|	|	|	|	0.01
87.833	0.00	0.01	0.011	O	|	|	|	|	0.01
87.917	0.00	0.01	0.011	O	|	|	|	|	0.01
88.000	0.00	0.01	0.011	O	|	|	|	|	0.01
88.083	0.00	0.01	0.011	O	|	|	|	|	0.01

88.167	0.00	0.01	0.010	O					0.01
88.250	0.00	0.01	0.010	O					0.01
88.333	0.00	0.01	0.010	O					0.01
88.417	0.00	0.01	0.010	O					0.01
88.500	0.00	0.01	0.010	O					0.01
88.583	0.00	0.01	0.010	O					0.01
88.667	0.00	0.01	0.010	O					0.01
88.750	0.00	0.01	0.010	O					0.01
88.833	0.00	0.01	0.010	O					0.01
88.917	0.00	0.01	0.010	O					0.01
89.000	0.00	0.01	0.010	O					0.01
89.083	0.00	0.01	0.010	O					0.01
89.167	0.00	0.01	0.010	O					0.01
89.250	0.00	0.01	0.010	O					0.01
89.333	0.00	0.01	0.010	O					0.01
89.417	0.00	0.01	0.010	O					0.01
89.500	0.00	0.01	0.010	O					0.01
89.583	0.00	0.01	0.010	O					0.01
89.667	0.00	0.01	0.009	O					0.01
89.750	0.00	0.01	0.009	O					0.01
89.833	0.00	0.01	0.009	O					0.01
89.917	0.00	0.01	0.009	O					0.01
90.000	0.00	0.01	0.009	O					0.01
90.083	0.00	0.01	0.009	O					0.01
90.167	0.00	0.01	0.009	O					0.01
90.250	0.00	0.01	0.009	O					0.01
90.333	0.00	0.01	0.009	O					0.01
90.417	0.00	0.01	0.009	O					0.01
90.500	0.00	0.01	0.009	O					0.01
90.583	0.00	0.01	0.009	O					0.01
90.667	0.00	0.01	0.009	O					0.01
90.750	0.00	0.01	0.009	O					0.01
90.833	0.00	0.01	0.009	O					0.01
90.917	0.00	0.01	0.009	O					0.01
91.000	0.00	0.01	0.009	O					0.01
91.083	0.00	0.01	0.009	O					0.01
91.167	0.00	0.01	0.009	O					0.01
91.250	0.00	0.01	0.008	O					0.01
91.333	0.00	0.01	0.008	O					0.01
91.417	0.00	0.01	0.008	O					0.01
91.500	0.00	0.01	0.008	O					0.01
91.583	0.00	0.01	0.008	O					0.00
91.667	0.00	0.01	0.008	O					0.00
91.750	0.00	0.01	0.008	O					0.00
91.833	0.00	0.01	0.008	O					0.00
91.917	0.00	0.01	0.008	O					0.00
92.000	0.00	0.01	0.008	O					0.00
92.083	0.00	0.01	0.008	O					0.00
92.167	0.00	0.01	0.008	O					0.00
92.250	0.00	0.01	0.008	O					0.00
92.333	0.00	0.01	0.008	O					0.00
92.417	0.00	0.01	0.008	O					0.00
92.500	0.00	0.01	0.008	O					0.00
92.583	0.00	0.01	0.008	O					0.00
92.667	0.00	0.01	0.008	O					0.00
92.750	0.00	0.01	0.008	O					0.00
92.833	0.00	0.01	0.008	O					0.00
92.917	0.00	0.01	0.008	O					0.00
93.000	0.00	0.01	0.008	O					0.00
93.083	0.00	0.01	0.007	O					0.00
93.167	0.00	0.01	0.007	O					0.00
93.250	0.00	0.01	0.007	O					0.00
93.333	0.00	0.01	0.007	O					0.00
93.417	0.00	0.01	0.007	O					0.00
93.500	0.00	0.01	0.007	O					0.00
93.583	0.00	0.01	0.007	O					0.00
93.667	0.00	0.01	0.007	O					0.00
93.750	0.00	0.01	0.007	O					0.00
93.833	0.00	0.01	0.007	O					0.00
93.917	0.00	0.01	0.007	O					0.00
94.000	0.00	0.01	0.007	O					0.00

94.083	0.00	0.01	0.007	O					0.00
94.167	0.00	0.01	0.007	O					0.00
94.250	0.00	0.01	0.007	O					0.00
94.333	0.00	0.01	0.007	O					0.00
94.417	0.00	0.01	0.007	O					0.00
94.500	0.00	0.01	0.007	O					0.00
94.583	0.00	0.01	0.007	O					0.00
94.667	0.00	0.01	0.007	O					0.00
94.750	0.00	0.01	0.007	O					0.00
94.833	0.00	0.01	0.007	O					0.00
94.917	0.00	0.01	0.007	O					0.00
95.000	0.00	0.01	0.007	O					0.00
95.083	0.00	0.01	0.007	O					0.00
95.167	0.00	0.01	0.006	O					0.00
95.250	0.00	0.01	0.006	O					0.00
95.333	0.00	0.01	0.006	O					0.00
95.417	0.00	0.01	0.006	O					0.00
95.500	0.00	0.01	0.006	O					0.00
95.583	0.00	0.01	0.006	O					0.00
95.667	0.00	0.01	0.006	O					0.00
95.750	0.00	0.01	0.006	O					0.00
95.833	0.00	0.01	0.006	O					0.00
95.917	0.00	0.01	0.006	O					0.00
96.000	0.00	0.01	0.006	O					0.00
96.083	0.00	0.01	0.006	O					0.00
96.167	0.00	0.01	0.006	O					0.00
96.250	0.00	0.01	0.006	O					0.00
96.333	0.00	0.00	0.006	O					0.00
96.417	0.00	0.00	0.006	O					0.00
96.500	0.00	0.00	0.006	O					0.00
96.583	0.00	0.00	0.006	O					0.00
96.667	0.00	0.00	0.006	O					0.00
96.750	0.00	0.00	0.006	O					0.00
96.833	0.00	0.00	0.006	O					0.00
96.917	0.00	0.00	0.006	O					0.00
97.000	0.00	0.00	0.006	O					0.00
97.083	0.00	0.00	0.006	O					0.00
97.167	0.00	0.00	0.006	O					0.00
97.250	0.00	0.00	0.006	O					0.00
97.333	0.00	0.00	0.006	O					0.00
97.417	0.00	0.00	0.006	O					0.00
97.500	0.00	0.00	0.006	O					0.00
97.583	0.00	0.00	0.006	O					0.00
97.667	0.00	0.00	0.005	O					0.00
97.750	0.00	0.00	0.005	O					0.00
97.833	0.00	0.00	0.005	O					0.00
97.917	0.00	0.00	0.005	O					0.00
98.000	0.00	0.00	0.005	O					0.00
98.083	0.00	0.00	0.005	O					0.00
98.167	0.00	0.00	0.005	O					0.00
98.250	0.00	0.00	0.005	O					0.00
98.333	0.00	0.00	0.005	O					0.00
98.417	0.00	0.00	0.005	O					0.00
98.500	0.00	0.00	0.005	O					0.00
98.583	0.00	0.00	0.005	O					0.00
98.667	0.00	0.00	0.005	O					0.00
98.750	0.00	0.00	0.005	O					0.00
98.833	0.00	0.00	0.005	O					0.00
98.917	0.00	0.00	0.005	O					0.00
99.000	0.00	0.00	0.005	O					0.00
99.083	0.00	0.00	0.005	O					0.00
99.167	0.00	0.00	0.005	O					0.00
99.250	0.00	0.00	0.005	O					0.00
99.333	0.00	0.00	0.005	O					0.00
99.417	0.00	0.00	0.005	O					0.00
99.500	0.00	0.00	0.005	O					0.00
99.583	0.00	0.00	0.005	O					0.00
99.667	0.00	0.00	0.005	O					0.00
99.750	0.00	0.00	0.005	O					0.00
99.833	0.00	0.00	0.005	O					0.00
99.917	0.00	0.00	0.005	O					0.00

100.000	0.00	0.00	0.005	O					0.00
100.083	0.00	0.00	0.005	O					0.00
100.167	0.00	0.00	0.005	O					0.00
100.250	0.00	0.00	0.005	O					0.00
100.333	0.00	0.00	0.005	O					0.00
100.417	0.00	0.00	0.005	O					0.00
100.500	0.00	0.00	0.005	O					0.00
100.583	0.00	0.00	0.004	O					0.00
100.667	0.00	0.00	0.004	O					0.00
100.750	0.00	0.00	0.004	O					0.00
100.833	0.00	0.00	0.004	O					0.00
100.917	0.00	0.00	0.004	O					0.00
101.000	0.00	0.00	0.004	O					0.00
101.083	0.00	0.00	0.004	O					0.00
101.167	0.00	0.00	0.004	O					0.00
101.250	0.00	0.00	0.004	O					0.00
101.333	0.00	0.00	0.004	O					0.00
101.417	0.00	0.00	0.004	O					0.00
101.500	0.00	0.00	0.004	O					0.00
101.583	0.00	0.00	0.004	O					0.00
101.667	0.00	0.00	0.004	O					0.00
101.750	0.00	0.00	0.004	O					0.00
101.833	0.00	0.00	0.004	O					0.00
101.917	0.00	0.00	0.004	O					0.00
102.000	0.00	0.00	0.004	O					0.00
102.083	0.00	0.00	0.004	O					0.00
102.167	0.00	0.00	0.004	O					0.00
102.250	0.00	0.00	0.004	O					0.00
102.333	0.00	0.00	0.004	O					0.00
102.417	0.00	0.00	0.004	O					0.00
102.500	0.00	0.00	0.004	O					0.00
102.583	0.00	0.00	0.004	O					0.00
102.667	0.00	0.00	0.004	O					0.00
102.750	0.00	0.00	0.004	O					0.00
102.833	0.00	0.00	0.004	O					0.00
102.917	0.00	0.00	0.004	O					0.00
103.000	0.00	0.00	0.004	O					0.00
103.083	0.00	0.00	0.004	O					0.00
103.167	0.00	0.00	0.004	O					0.00
103.250	0.00	0.00	0.004	O					0.00
103.333	0.00	0.00	0.004	O					0.00
103.417	0.00	0.00	0.004	O					0.00
103.500	0.00	0.00	0.004	O					0.00
103.583	0.00	0.00	0.004	O					0.00
103.667	0.00	0.00	0.004	O					0.00
103.750	0.00	0.00	0.004	O					0.00
103.833	0.00	0.00	0.004	O					0.00
103.917	0.00	0.00	0.004	O					0.00
104.000	0.00	0.00	0.004	O					0.00
104.083	0.00	0.00	0.004	O					0.00
104.167	0.00	0.00	0.004	O					0.00
104.250	0.00	0.00	0.003	O					0.00
104.333	0.00	0.00	0.003	O					0.00
104.417	0.00	0.00	0.003	O					0.00
104.500	0.00	0.00	0.003	O					0.00
104.583	0.00	0.00	0.003	O					0.00
104.667	0.00	0.00	0.003	O					0.00
104.750	0.00	0.00	0.003	O					0.00
104.833	0.00	0.00	0.003	O					0.00
104.917	0.00	0.00	0.003	O					0.00
105.000	0.00	0.00	0.003	O					0.00
105.083	0.00	0.00	0.003	O					0.00
105.167	0.00	0.00	0.003	O					0.00
105.250	0.00	0.00	0.003	O					0.00
105.333	0.00	0.00	0.003	O					0.00
105.417	0.00	0.00	0.003	O					0.00
105.500	0.00	0.00	0.003	O					0.00
105.583	0.00	0.00	0.003	O					0.00
105.667	0.00	0.00	0.003	O					0.00
105.750	0.00	0.00	0.003	O					0.00
105.833	0.00	0.00	0.003	O					0.00

105.917	0.00	0.00	0.003	O	|	|	|	|	0.00
106.000	0.00	0.00	0.003	O	|	|	|	|	0.00
106.083	0.00	0.00	0.003	O	|	|	|	|	0.00
106.167	0.00	0.00	0.003	O	|	|	|	|	0.00
106.250	0.00	0.00	0.003	O	|	|	|	|	0.00
106.333	0.00	0.00	0.003	O	|	|	|	|	0.00
106.417	0.00	0.00	0.003	O	|	|	|	|	0.00
106.500	0.00	0.00	0.003	O	|	|	|	|	0.00
106.583	0.00	0.00	0.003	O	|	|	|	|	0.00
106.667	0.00	0.00	0.003	O	|	|	|	|	0.00
106.750	0.00	0.00	0.003	O	|	|	|	|	0.00
106.833	0.00	0.00	0.003	O	|	|	|	|	0.00
106.917	0.00	0.00	0.003	O	|	|	|	|	0.00
107.000	0.00	0.00	0.003	O	|	|	|	|	0.00
107.083	0.00	0.00	0.003	O	|	|	|	|	0.00
107.167	0.00	0.00	0.003	O	|	|	|	|	0.00
107.250	0.00	0.00	0.003	O	|	|	|	|	0.00
107.333	0.00	0.00	0.003	O	|	|	|	|	0.00
107.417	0.00	0.00	0.003	O	|	|	|	|	0.00
107.500	0.00	0.00	0.003	O	|	|	|	|	0.00
107.583	0.00	0.00	0.003	O	|	|	|	|	0.00
107.667	0.00	0.00	0.003	O	|	|	|	|	0.00
107.750	0.00	0.00	0.003	O	|	|	|	|	0.00
107.833	0.00	0.00	0.003	O	|	|	|	|	0.00
107.917	0.00	0.00	0.003	O	|	|	|	|	0.00
108.000	0.00	0.00	0.003	O	|	|	|	|	0.00
108.083	0.00	0.00	0.003	O	|	|	|	|	0.00
108.167	0.00	0.00	0.003	O	|	|	|	|	0.00
108.250	0.00	0.00	0.003	O	|	|	|	|	0.00
108.333	0.00	0.00	0.003	O	|	|	|	|	0.00
108.417	0.00	0.00	0.003	O	|	|	|	|	0.00
108.500	0.00	0.00	0.003	O	|	|	|	|	0.00
108.583	0.00	0.00	0.003	O	|	|	|	|	0.00
108.667	0.00	0.00	0.003	O	|	|	|	|	0.00
108.750	0.00	0.00	0.003	O	|	|	|	|	0.00
108.833	0.00	0.00	0.003	O	|	|	|	|	0.00
108.917	0.00	0.00	0.003	O	|	|	|	|	0.00
109.000	0.00	0.00	0.003	O	|	|	|	|	0.00
109.083	0.00	0.00	0.003	O	|	|	|	|	0.00
109.167	0.00	0.00	0.002	O	|	|	|	|	0.00
109.250	0.00	0.00	0.002	O	|	|	|	|	0.00
109.333	0.00	0.00	0.002	O	|	|	|	|	0.00
109.417	0.00	0.00	0.002	O	|	|	|	|	0.00
109.500	0.00	0.00	0.002	O	|	|	|	|	0.00
109.583	0.00	0.00	0.002	O	|	|	|	|	0.00
109.667	0.00	0.00	0.002	O	|	|	|	|	0.00
109.750	0.00	0.00	0.002	O	|	|	|	|	0.00
109.833	0.00	0.00	0.002	O	|	|	|	|	0.00
109.917	0.00	0.00	0.002	O	|	|	|	|	0.00
110.000	0.00	0.00	0.002	O	|	|	|	|	0.00
110.083	0.00	0.00	0.002	O	|	|	|	|	0.00
110.167	0.00	0.00	0.002	O	|	|	|	|	0.00
110.250	0.00	0.00	0.002	O	|	|	|	|	0.00
110.333	0.00	0.00	0.002	O	|	|	|	|	0.00
110.417	0.00	0.00	0.002	O	|	|	|	|	0.00
110.500	0.00	0.00	0.002	O	|	|	|	|	0.00
110.583	0.00	0.00	0.002	O	|	|	|	|	0.00
110.667	0.00	0.00	0.002	O	|	|	|	|	0.00
110.750	0.00	0.00	0.002	O	|	|	|	|	0.00
110.833	0.00	0.00	0.002	O	|	|	|	|	0.00
110.917	0.00	0.00	0.002	O	|	|	|	|	0.00
111.000	0.00	0.00	0.002	O	|	|	|	|	0.00
111.083	0.00	0.00	0.002	O	|	|	|	|	0.00
111.167	0.00	0.00	0.002	O	|	|	|	|	0.00
111.250	0.00	0.00	0.002	O	|	|	|	|	0.00
111.333	0.00	0.00	0.002	O	|	|	|	|	0.00
111.417	0.00	0.00	0.002	O	|	|	|	|	0.00
111.500	0.00	0.00	0.002	O	|	|	|	|	0.00
111.583	0.00	0.00	0.002	O	|	|	|	|	0.00
111.667	0.00	0.00	0.002	O	|	|	|	|	0.00
111.750	0.00	0.00	0.002	O	|	|	|	|	0.00

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111.833    0.00    0.00      0.002  O       |       |       |       |      0.00
111.917    0.00    0.00      0.002  O       |       |       |       |      0.00
112.000    0.00    0.00      0.002  O       |       |       |       |      0.00
112.083    0.00    0.00      0.002  O       |       |       |       |      0.00
112.167    0.00    0.00      0.002  O       |       |       |       |      0.00
112.250    0.00    0.00      0.002  O       |       |       |       |      0.00
112.333    0.00    0.00      0.002  O       |       |       |       |      0.00
112.417    0.00    0.00      0.002  O       |       |       |       |      0.00
112.500    0.00    0.00      0.002  O       |       |       |       |      0.00
112.583    0.00    0.00      0.002  O       |       |       |       |      0.00
112.667    0.00    0.00      0.002  O       |       |       |       |      0.00
112.750    0.00    0.00      0.002  O       |       |       |       |      0.00
112.833    0.00    0.00      0.002  O       |       |       |       |      0.00
112.917    0.00    0.00      0.002  O       |       |       |       |      0.00
113.000    0.00    0.00      0.002  O       |       |       |       |      0.00
113.083    0.00    0.00      0.002  O       |       |       |       |      0.00
113.167    0.00    0.00      0.002  O       |       |       |       |      0.00
113.250    0.00    0.00      0.002  O       |       |       |       |      0.00
113.333    0.00    0.00      0.002  O       |       |       |       |      0.00
113.417    0.00    0.00      0.002  O       |       |       |       |      0.00
113.500    0.00    0.00      0.002  O       |       |       |       |      0.00
113.583    0.00    0.00      0.002  O       |       |       |       |      0.00
113.667    0.00    0.00      0.002  O       |       |       |       |      0.00
113.750    0.00    0.00      0.002  O       |       |       |       |      0.00
113.833    0.00    0.00      0.002  O       |       |       |       |      0.00
113.917    0.00    0.00      0.002  O       |       |       |       |      0.00
114.000    0.00    0.00      0.002  O       |       |       |       |      0.00
114.083    0.00    0.00      0.002  O       |       |       |       |      0.00
114.167    0.00    0.00      0.002  O       |       |       |       |      0.00
114.250    0.00    0.00      0.002  O       |       |       |       |      0.00
114.333    0.00    0.00      0.002  O       |       |       |       |      0.00
114.417    0.00    0.00      0.002  O       |       |       |       |      0.00
114.500    0.00    0.00      0.002  O       |       |       |       |      0.00
114.583    0.00    0.00      0.002  O       |       |       |       |      0.00
114.667    0.00    0.00      0.002  O       |       |       |       |      0.00
114.750    0.00    0.00      0.002  O       |       |       |       |      0.00
114.833    0.00    0.00      0.002  O       |       |       |       |      0.00
114.917    0.00    0.00      0.002  O       |       |       |       |      0.00
115.000    0.00    0.00      0.002  O       |       |       |       |      0.00

        Remaining water in basin =    0.00 (Ac.Ft)

        ****************************HYDROGRAPH DATA****************************
                      Number of intervals =  1380
                      Time interval =    5.0 (Min.)
                      Maximum/Peak flow rate =        5.910 (CFS)
                      Total volume =       5.095 (Ac.Ft)
               Status of hydrographs being held in storage
                         Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
               Peak (CFS)      0.000     0.000     0.000     0.000     0.000
               Vol (Ac.Ft)     0.000     0.000     0.000     0.000     0.000
        ***********************************************************************

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- Basin 'C' - 2 Year 12 Hour Storm Routing Analysis

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                  FLOOD HYDROGRAPH ROUTING PROGRAM
            Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012
                        Study date: 03/20/17

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WESTRIDGE HYDROLOGY STUDY
PROPOSED ROUTING - BASIN 'C' - 2 YEAR 12 HOUR STORM
HUNSAKER & ASSOCIATES, MARCH 20, 2017
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------


Program License Serial Number 4094

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******************** HYDROGRAPH INFORMATION **********************

               From study/file name: PRC00212.rte
*****************************HYDROGRAPH DATA*****************************
               Number of intervals =   161
               Time interval =    5.0 (Min.)
               Maximum/Peak flow rate =      104.107 (CFS)
               Total volume =       5.956 (Ac.Ft)
       Status of hydrographs being held in storage
                   Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
       Peak (CFS)      0.000     0.000     0.000     0.000     0.000
       Vol (Ac.Ft)     0.000     0.000     0.000     0.000     0.000
************************************************************************



++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      300.000 to Point/Station      301.000
**** RETARDING BASIN ROUTING ****
________________________________________________________________________

User entry of depth-outflow-storage data
------------------------------------------------------------------------
Total number of inflow hydrograph intervals = 161
Hydrograph time unit =  5.000 (Min.)
Initial depth in storage basin =   0.00(Ft.)
------------------------------------------------------------------------
------------------------------------------------------------------------
Initial basin depth =   0.00 (Ft.)
Initial basin storage =      0.00 (Ac.Ft)
Initial basin outflow =   0.00 (CFS)
------------------------------------------------------------------------
------------------------------------------------------------------------
Depth vs. Storage and Depth vs. Discharge data:
 Basin Depth  Storage    Outflow   (S-O*dt/2)   (S+O*dt/2)
     (Ft.)    (Ac.Ft)    (CFS)     (Ac.Ft)    (Ac.Ft)
------------------------------------------------------------------------
   0.000      0.000      0.000      0.000        0.000
   0.500      0.834      0.692      0.832        0.836
   1.000      1.693      1.672      1.687        1.699
   1.500      2.577      3.059      2.566        2.588
   2.000      3.488      4.757      3.472        3.504
   3.000      5.388      7.930      5.361        5.415
   4.000      7.399     20.434      7.329        7.469
   5.000      9.523     35.089      9.402        9.644
   6.000     11.764     44.538     11.611       11.917
   7.000     14.126     52.170     13.946       14.306
   8.000     16.610     58.766     16.408       16.812
   8.900     18.942     83.236     18.655       19.229
   9.000     19.207     83.236     18.920       19.494
   9.500     20.556    448.796     19.011       22.101
  10.000     21.935   1159.965     17.941       25.929
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Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0	26.0	52.05	78.08	104.11	Depth (Ft.)
0.083	0.04	0.00	0.000	O	|	|	|	|	0.00
0.167	0.20	0.00	0.001	O	|	|	|	|	0.00
0.250	0.63	0.00	0.004	O	|	|	|	|	0.00
0.333	0.96	0.01	0.009	O	|	|	|	|	0.01
0.417	1.12	0.01	0.016	O	|	|	|	|	0.01
0.500	1.22	0.02	0.024	O	|	|	|	|	0.01
0.583	1.30	0.03	0.033	O	|	|	|	|	0.02
0.667	1.36	0.03	0.042	O	|	|	|	|	0.03
0.750	1.40	0.04	0.051	O	|	|	|	|	0.03
0.833	1.43	0.05	0.060	O	|	|	|	|	0.04
0.917	1.46	0.06	0.070	O	|	|	|	|	0.04
1.000	1.48	0.07	0.080	O	|	|	|	|	0.05
1.083	1.49	0.07	0.089	O	|	|	|	|	0.05
1.167	1.51	0.08	0.099	O	|	|	|	|	0.06
1.250	1.52	0.09	0.109	O	|	|	|	|	0.07
1.333	1.54	0.10	0.119	O	|	|	|	|	0.07
1.417	1.55	0.11	0.129	O	|	|	|	|	0.08
1.500	1.56	0.12	0.139	O	|	|	|	|	0.08
1.583	1.58	0.12	0.149	O	|	|	|	|	0.09
1.667	1.59	0.13	0.159	O	|	|	|	|	0.10
1.750	1.60	0.14	0.169	O	|	|	|	|	0.10
1.833	1.61	0.15	0.179	O	|	|	|	|	0.11
1.917	1.63	0.16	0.189	O	|	|	|	|	0.11
2.000	1.64	0.17	0.199	O	|	|	|	|	0.12
2.083	1.65	0.17	0.209	O	|	|	|	|	0.13
2.167	1.67	0.18	0.220	O	|	|	|	|	0.13
2.250	1.68	0.19	0.230	O	|	|	|	|	0.14
2.333	1.70	0.20	0.240	O	|	|	|	|	0.14
2.417	1.71	0.21	0.250	O	|	|	|	|	0.15
2.500	1.73	0.22	0.261	O	|	|	|	|	0.16
2.583	1.74	0.23	0.271	O	|	|	|	|	0.16
2.667	1.76	0.23	0.282	O	|	|	|	|	0.17
2.750	1.77	0.24	0.292	O	|	|	|	|	0.18
2.833	1.79	0.25	0.303	O	|	|	|	|	0.18
2.917	1.81	0.26	0.313	O	|	|	|	|	0.19
3.000	1.83	0.27	0.324	O	|	|	|	|	0.19
3.083	1.84	0.28	0.335	O	|	|	|	|	0.20
3.167	1.86	0.29	0.346	O	|	|	|	|	0.21
3.250	1.88	0.30	0.357	O	|	|	|	|	0.21
3.333	1.90	0.30	0.368	O	|	|	|	|	0.22
3.417	1.92	0.31	0.379	O	|	|	|	|	0.23
3.500	1.94	0.32	0.390	O	|	|	|	|	0.23
3.583	1.96	0.33	0.401	O	|	|	|	|	0.24
3.667	1.98	0.34	0.412	O	|	|	|	|	0.25
3.750	2.01	0.35	0.424	O	|	|	|	|	0.25
3.833	2.03	0.36	0.435	O	|	|	|	|	0.26
3.917	2.05	0.37	0.447	O	|	|	|	|	0.27
4.000	2.08	0.38	0.458	O	|	|	|	|	0.27
4.083	2.12	0.39	0.470	O	|	|	|	|	0.28
4.167	2.20	0.40	0.482	O	|	|	|	|	0.29
4.250	2.37	0.41	0.495	O	|	|	|	|	0.30
4.333	2.51	0.42	0.509	O	|	|	|	|	0.31
4.417	2.58	0.43	0.524	O	|	|	|	|	0.31
4.500	2.65	0.45	0.538	O	|	|	|	|	0.32
4.583	2.70	0.46	0.554	O	|	|	|	|	0.33
4.667	2.75	0.47	0.569	O	|	|	|	|	0.34
4.750	2.80	0.49	0.585	O	|	|	|	|	0.35
4.833	2.84	0.50	0.601	O	|	|	|	|	0.36
4.917	2.89	0.51	0.618	O	|	|	|	|	0.37
5.000	2.93	0.53	0.634	O	|	|	|	|	0.38
5.083	2.97	0.54	0.651	O	|	|	|	|	0.39
5.167	3.01	0.55	0.667	O	|	|	|	|	0.40
5.250	3.06	0.57	0.685	O	|	|	|	|	0.41

5.333	3.11	0.58	0.702	O	|	|	|	|	0.42
5.417	3.16	0.60	0.719	O	|	|	|	|	0.43
5.500	3.21	0.61	0.737	O	|	|	|	|	0.44
5.583	3.26	0.63	0.755	OI	|	|	|	|	0.45
5.667	3.31	0.64	0.773	OI	|	|	|	|	0.46
5.750	3.37	0.66	0.792	OI	|	|	|	|	0.47
5.833	3.43	0.67	0.811	OI	|	|	|	|	0.49
5.917	3.50	0.69	0.830	OI	|	|	|	|	0.50
6.000	3.56	0.71	0.849	OI	|	|	|	|	0.51
6.083	3.64	0.73	0.869	OI	|	|	|	|	0.52
6.167	3.74	0.76	0.890	OI	|	|	|	|	0.53
6.250	3.87	0.78	0.910	OI	|	|	|	|	0.54
6.333	4.00	0.80	0.932	OI	|	|	|	|	0.56
6.417	4.11	0.83	0.954	OI	|	|	|	|	0.57
6.500	4.22	0.86	0.977	OI	|	|	|	|	0.58
6.583	4.33	0.88	1.001	OI	|	|	|	|	0.60
6.667	4.45	0.91	1.025	OI	|	|	|	|	0.61
6.750	4.58	0.94	1.050	OI	|	|	|	|	0.63
6.833	4.71	0.97	1.075	OI	|	|	|	|	0.64
6.917	4.86	1.00	1.101	OI	|	|	|	|	0.66
7.000	5.02	1.03	1.128	OI	|	|	|	|	0.67
7.083	5.20	1.06	1.156	OI	|	|	|	|	0.69
7.167	5.39	1.09	1.185	OI	|	|	|	|	0.70
7.250	5.61	1.13	1.215	OI	|	|	|	|	0.72
7.333	5.85	1.16	1.247	OI	|	|	|	|	0.74
7.417	6.11	1.20	1.280	OI	|	|	|	|	0.76
7.500	6.31	1.24	1.314	OI	|	|	|	|	0.78
7.583	6.43	1.28	1.350	OI	|	|	|	|	0.80
7.667	6.87	1.32	1.386	O I	|	|	|	|	0.82
7.750	8.24	1.37	1.429	O I	|	|	|	|	0.85
7.833	10.68	1.43	1.485	O I	|	|	|	|	0.88
7.917	15.11	1.52	1.563	O I	|	|	|	|	0.92
8.000	21.97	1.66	1.680	O I	|	|	|	|	0.99
8.083	38.59	1.96	1.876	O	| I	|	|	|	1.10
8.167	65.78	2.50	2.220	O	|	| I	|	|	1.30
8.250	104.11	3.45	2.785	|O	|	|	|	I	1.61
8.333	83.86	4.60	3.404	|O	|	|	|I	|	1.95
8.417	47.53	5.32	3.823	|O	| I	|	|	|	2.18
8.500	33.28	5.72	4.063	|O	| I	|	|	|	2.30
8.583	24.95	5.98	4.223	|O	I|	|	|	|	2.39
8.667	19.55	6.17	4.335	|O	I |	|	|	|	2.45
8.750	15.30	6.30	4.412	|O I	|	|	|	|	2.49
8.833	11.92	6.38	4.462	|O I	|	|	|	|	2.51
8.917	9.17	6.43	4.490	|OI	|	|	|	|	2.53
9.000	7.20	6.45	4.502	|OI	|	|	|	|	2.53
9.083	6.43	6.45	4.505	|O	|	|	|	|	2.54
9.167	5.77	6.45	4.502	|O	|	|	|	|	2.53
9.250	5.34	6.44	4.496	|O	|	|	|	|	2.53
9.333	5.01	6.43	4.487	|O	|	|	|	|	2.53
9.417	4.45	6.41	4.476	|O	|	|	|	|	2.52
9.500	4.09	6.38	4.461	|O	|	|	|	|	2.51
9.583	3.60	6.35	4.444	|O	|	|	|	|	2.50
9.667	3.43	6.32	4.424	|O	|	|	|	|	2.49
9.750	3.29	6.29	4.404	|O	|	|	|	|	2.48
9.833	3.18	6.25	4.383	IO	|	|	|	|	2.47
9.917	3.08	6.22	4.362	IO	|	|	|	|	2.46
10.000	2.99	6.18	4.340	IO	|	|	|	|	2.45
10.083	2.89	6.14	4.318	IO	|	|	|	|	2.44
10.167	2.76	6.10	4.295	IO	|	|	|	|	2.42
10.250	2.55	6.07	4.271	IO	|	|	|	|	2.41
10.333	2.38	6.02	4.247	IO	|	|	|	|	2.40
10.417	2.27	5.98	4.221	IO	|	|	|	|	2.39
10.500	2.18	5.94	4.196	IO	|	|	|	|	2.37
10.583	2.11	5.90	4.170	IO	|	|	|	|	2.36
10.667	2.04	5.85	4.144	IO	|	|	|	|	2.35
10.750	1.99	5.81	4.117	IO	|	|	|	|	2.33
10.833	1.94	5.76	4.091	IO	|	|	|	|	2.32
10.917	1.89	5.72	4.065	IO	|	|	|	|	2.30
11.000	1.85	5.68	4.038	IO	|	|	|	|	2.29
11.083	1.81	5.63	4.012	IO	|	|	|	|	2.28
11.167	1.78	5.59	3.986	IO	|	|	|	|	2.26

11.250	1.75	5.54	3.960	IO	|	|	|	|	2.25
11.333	1.71	5.50	3.933	IO	|	|	|	|	2.23
11.417	1.68	5.46	3.907	IO	|	|	|	|	2.22
11.500	1.65	5.41	3.881	IO	|	|	|	|	2.21
11.583	1.63	5.37	3.856	IO	|	|	|	|	2.19
11.667	1.60	5.33	3.830	IO	|	|	|	|	2.18
11.750	1.58	5.29	3.804	IO	|	|	|	|	2.17
11.833	1.55	5.24	3.779	IO	|	|	|	|	2.15
11.917	1.53	5.20	3.753	IO	|	|	|	|	2.14
12.000	1.51	5.16	3.728	IO	|	|	|	|	2.13
12.083	1.44	5.12	3.703	IO	|	|	|	|	2.11
12.167	1.26	5.07	3.677	IO	|	|	|	|	2.10
12.250	0.83	5.03	3.650	IO	|	|	|	|	2.09
12.333	0.48	4.98	3.620	IO	|	|	|	|	2.07
12.417	0.33	4.92	3.588	IO	|	|	|	|	2.05
12.500	0.23	4.87	3.557	IO	|	|	|	|	2.04
12.583	0.16	4.82	3.525	IO	|	|	|	|	2.02
12.667	0.11	4.76	3.492	IO	|	|	|	|	2.00
12.750	0.07	4.71	3.460	IO	|	|	|	|	1.98
12.833	0.04	4.65	3.429	IO	|	|	|	|	1.97
12.917	0.03	4.59	3.397	IO	|	|	|	|	1.95
13.000	0.02	4.53	3.366	IO	|	|	|	|	1.93
13.083	0.02	4.47	3.335	IO	|	|	|	|	1.92
13.167	0.01	4.42	3.305	IO	|	|	|	|	1.90
13.250	0.01	4.36	3.274	IO	|	|	|	|	1.88
13.333	0.00	4.30	3.245	IO	|	|	|	|	1.87
13.417	0.00	4.25	3.215	IO	|	|	|	|	1.85
13.500	0.00	4.19	3.186	IO	|	|	|	|	1.83
13.583	0.00	4.14	3.157	IO	|	|	|	|	1.82
13.667	0.00	4.09	3.129	IO	|	|	|	|	1.80
13.750	0.00	4.04	3.101	IO	|	|	|	|	1.79
13.833	0.00	3.98	3.073	IO	|	|	|	|	1.77
13.917	0.00	3.93	3.046	IO	|	|	|	|	1.76
14.000	0.00	3.88	3.019	IO	|	|	|	|	1.74
14.083	0.00	3.83	2.993	IO	|	|	|	|	1.73
14.167	0.00	3.78	2.966	IO	|	|	|	|	1.71
14.250	0.00	3.74	2.941	IO	|	|	|	|	1.70
14.333	0.00	3.69	2.915	IO	|	|	|	|	1.69
14.417	0.00	3.64	2.890	IO	|	|	|	|	1.67
14.500	0.00	3.60	2.865	IO	|	|	|	|	1.66
14.583	0.00	3.55	2.840	IO	|	|	|	|	1.64
14.667	0.00	3.50	2.816	IO	|	|	|	|	1.63
14.750	0.00	3.46	2.792	IO	|	|	|	|	1.62
14.833	0.00	3.42	2.768	IO	|	|	|	|	1.60
14.917	0.00	3.37	2.745	IO	|	|	|	|	1.59
15.000	0.00	3.33	2.722	IO	|	|	|	|	1.58
15.083	0.00	3.29	2.699	IO	|	|	|	|	1.57
15.167	0.00	3.24	2.677	O	|	|	|	|	1.55
15.250	0.00	3.20	2.654	O	|	|	|	|	1.54
15.333	0.00	3.16	2.632	O	|	|	|	|	1.53
15.417	0.00	3.12	2.611	O	|	|	|	|	1.52
15.500	0.00	3.08	2.589	O	|	|	|	|	1.51
15.583	0.00	3.05	2.568	O	|	|	|	|	1.50
15.667	0.00	3.01	2.547	O	|	|	|	|	1.48
15.750	0.00	2.98	2.527	O	|	|	|	|	1.47
15.833	0.00	2.95	2.506	O	|	|	|	|	1.46
15.917	0.00	2.92	2.486	O	|	|	|	|	1.45
16.000	0.00	2.89	2.466	O	|	|	|	|	1.44
16.083	0.00	2.85	2.446	O	|	|	|	|	1.43
16.167	0.00	2.82	2.427	O	|	|	|	|	1.42
16.250	0.00	2.79	2.408	O	|	|	|	|	1.40
16.333	0.00	2.76	2.388	O	|	|	|	|	1.39
16.417	0.00	2.73	2.370	O	|	|	|	|	1.38
16.500	0.00	2.70	2.351	O	|	|	|	|	1.37
16.583	0.00	2.68	2.332	O	|	|	|	|	1.36
16.667	0.00	2.65	2.314	O	|	|	|	|	1.35
16.750	0.00	2.62	2.296	O	|	|	|	|	1.34
16.833	0.00	2.59	2.278	O	|	|	|	|	1.33
16.917	0.00	2.56	2.260	O	|	|	|	|	1.32
17.000	0.00	2.53	2.243	O	|	|	|	|	1.31
17.083	0.00	2.51	2.225	O	|	|	|	|	1.30

17.167	0.00	2.48	2.208	O	|	|	|	|	1.29
17.250	0.00	2.45	2.191	O	|	|	|	|	1.28
17.333	0.00	2.43	2.174	O	|	|	|	|	1.27
17.417	0.00	2.40	2.158	O	|	|	|	|	1.26
17.500	0.00	2.38	2.141	O	|	|	|	|	1.25
17.583	0.00	2.35	2.125	O	|	|	|	|	1.24
17.667	0.00	2.32	2.109	O	|	|	|	|	1.24
17.750	0.00	2.30	2.093	O	|	|	|	|	1.23
17.833	0.00	2.27	2.077	O	|	|	|	|	1.22
17.917	0.00	2.25	2.062	O	|	|	|	|	1.21
18.000	0.00	2.23	2.046	O	|	|	|	|	1.20
18.083	0.00	2.20	2.031	O	|	|	|	|	1.19
18.167	0.00	2.18	2.016	O	|	|	|	|	1.18
18.250	0.00	2.16	2.001	O	|	|	|	|	1.17
18.333	0.00	2.13	1.986	O	|	|	|	|	1.17
18.417	0.00	2.11	1.972	O	|	|	|	|	1.16
18.500	0.00	2.09	1.957	O	|	|	|	|	1.15
18.583	0.00	2.06	1.943	O	|	|	|	|	1.14
18.667	0.00	2.04	1.929	O	|	|	|	|	1.13
18.750	0.00	2.02	1.915	O	|	|	|	|	1.13
18.833	0.00	2.00	1.901	O	|	|	|	|	1.12
18.917	0.00	1.98	1.887	O	|	|	|	|	1.11
19.000	0.00	1.96	1.874	O	|	|	|	|	1.10
19.083	0.00	1.93	1.860	O	|	|	|	|	1.09
19.167	0.00	1.91	1.847	O	|	|	|	|	1.09
19.250	0.00	1.89	1.834	O	|	|	|	|	1.08
19.333	0.00	1.87	1.821	O	|	|	|	|	1.07
19.417	0.00	1.85	1.808	O	|	|	|	|	1.07
19.500	0.00	1.83	1.795	O	|	|	|	|	1.06
19.583	0.00	1.81	1.783	O	|	|	|	|	1.05
19.667	0.00	1.79	1.770	O	|	|	|	|	1.04
19.750	0.00	1.77	1.758	O	|	|	|	|	1.04
19.833	0.00	1.76	1.746	O	|	|	|	|	1.03
19.917	0.00	1.74	1.734	O	|	|	|	|	1.02
20.000	0.00	1.72	1.722	O	|	|	|	|	1.02
20.083	0.00	1.70	1.710	O	|	|	|	|	1.01
20.167	0.00	1.68	1.699	O	|	|	|	|	1.00
20.250	0.00	1.67	1.687	O	|	|	|	|	1.00
20.333	0.00	1.65	1.676	O	|	|	|	|	0.99
20.417	0.00	1.64	1.664	O	|	|	|	|	0.98
20.500	0.00	1.63	1.653	O	|	|	|	|	0.98
20.583	0.00	1.61	1.642	O	|	|	|	|	0.97
20.667	0.00	1.60	1.631	O	|	|	|	|	0.96
20.750	0.00	1.59	1.620	O	|	|	|	|	0.96
20.833	0.00	1.58	1.609	O	|	|	|	|	0.95
20.917	0.00	1.56	1.598	O	|	|	|	|	0.94
21.000	0.00	1.55	1.587	O	|	|	|	|	0.94
21.083	0.00	1.54	1.577	O	|	|	|	|	0.93
21.167	0.00	1.53	1.566	O	|	|	|	|	0.93
21.250	0.00	1.52	1.556	O	|	|	|	|	0.92
21.333	0.00	1.50	1.545	O	|	|	|	|	0.91
21.417	0.00	1.49	1.535	O	|	|	|	|	0.91
21.500	0.00	1.48	1.525	O	|	|	|	|	0.90
21.583	0.00	1.47	1.515	O	|	|	|	|	0.90
21.667	0.00	1.46	1.505	O	|	|	|	|	0.89
21.750	0.00	1.45	1.495	O	|	|	|	|	0.88
21.833	0.00	1.43	1.485	O	|	|	|	|	0.88
21.917	0.00	1.42	1.475	O	|	|	|	|	0.87
22.000	0.00	1.41	1.465	O	|	|	|	|	0.87
22.083	0.00	1.40	1.455	O	|	|	|	|	0.86
22.167	0.00	1.39	1.446	O	|	|	|	|	0.86
22.250	0.00	1.38	1.436	O	|	|	|	|	0.85
22.333	0.00	1.37	1.427	O	|	|	|	|	0.85
22.417	0.00	1.36	1.417	O	|	|	|	|	0.84
22.500	0.00	1.35	1.408	O	|	|	|	|	0.83
22.583	0.00	1.34	1.399	O	|	|	|	|	0.83
22.667	0.00	1.33	1.390	O	|	|	|	|	0.82
22.750	0.00	1.32	1.381	O	|	|	|	|	0.82
22.833	0.00	1.31	1.372	O	|	|	|	|	0.81
22.917	0.00	1.30	1.363	O	|	|	|	|	0.81
23.000	0.00	1.28	1.354	O	|	|	|	|	0.80

23.083	0.00	1.27	1.345	O	|	|	|	|	0.80
23.167	0.00	1.26	1.336	O	|	|	|	|	0.79
23.250	0.00	1.26	1.327	O	|	|	|	|	0.79
23.333	0.00	1.25	1.319	O	|	|	|	|	0.78
23.417	0.00	1.24	1.310	O	|	|	|	|	0.78
23.500	0.00	1.23	1.302	O	|	|	|	|	0.77
23.583	0.00	1.22	1.293	O	|	|	|	|	0.77
23.667	0.00	1.21	1.285	O	|	|	|	|	0.76
23.750	0.00	1.20	1.277	O	|	|	|	|	0.76
23.833	0.00	1.19	1.269	O	|	|	|	|	0.75
23.917	0.00	1.18	1.260	O	|	|	|	|	0.75
24.000	0.00	1.17	1.252	O	|	|	|	|	0.74
24.083	0.00	1.16	1.244	O	|	|	|	|	0.74
24.167	0.00	1.15	1.236	O	|	|	|	|	0.73
24.250	0.00	1.14	1.229	O	|	|	|	|	0.73
24.333	0.00	1.13	1.221	O	|	|	|	|	0.73
24.417	0.00	1.12	1.213	O	|	|	|	|	0.72
24.500	0.00	1.12	1.205	O	|	|	|	|	0.72
24.583	0.00	1.11	1.198	O	|	|	|	|	0.71
24.667	0.00	1.10	1.190	O	|	|	|	|	0.71
24.750	0.00	1.09	1.182	O	|	|	|	|	0.70
24.833	0.00	1.08	1.175	O	|	|	|	|	0.70
24.917	0.00	1.07	1.168	O	|	|	|	|	0.69
25.000	0.00	1.06	1.160	O	|	|	|	|	0.69
25.083	0.00	1.06	1.153	O	|	|	|	|	0.69
25.167	0.00	1.05	1.146	O	|	|	|	|	0.68
25.250	0.00	1.04	1.138	O	|	|	|	|	0.68
25.333	0.00	1.03	1.131	O	|	|	|	|	0.67
25.417	0.00	1.02	1.124	O	|	|	|	|	0.67
25.500	0.00	1.02	1.117	O	|	|	|	|	0.66
25.583	0.00	1.01	1.110	O	|	|	|	|	0.66
25.667	0.00	1.00	1.103	O	|	|	|	|	0.66
25.750	0.00	0.99	1.096	O	|	|	|	|	0.65
25.833	0.00	0.98	1.090	O	|	|	|	|	0.65
25.917	0.00	0.98	1.083	O	|	|	|	|	0.64
26.000	0.00	0.97	1.076	O	|	|	|	|	0.64
26.083	0.00	0.96	1.070	O	|	|	|	|	0.64
26.167	0.00	0.95	1.063	O	|	|	|	|	0.63
26.250	0.00	0.95	1.056	O	|	|	|	|	0.63
26.333	0.00	0.94	1.050	O	|	|	|	|	0.63
26.417	0.00	0.93	1.044	O	|	|	|	|	0.62
26.500	0.00	0.92	1.037	O	|	|	|	|	0.62
26.583	0.00	0.92	1.031	O	|	|	|	|	0.61
26.667	0.00	0.91	1.025	O	|	|	|	|	0.61
26.750	0.00	0.90	1.018	O	|	|	|	|	0.61
26.833	0.00	0.90	1.012	O	|	|	|	|	0.60
26.917	0.00	0.89	1.006	O	|	|	|	|	0.60
27.000	0.00	0.88	1.000	O	|	|	|	|	0.60
27.083	0.00	0.87	0.994	O	|	|	|	|	0.59
27.167	0.00	0.87	0.988	O	|	|	|	|	0.59
27.250	0.00	0.86	0.982	O	|	|	|	|	0.59
27.333	0.00	0.85	0.976	O	|	|	|	|	0.58
27.417	0.00	0.85	0.970	O	|	|	|	|	0.58
27.500	0.00	0.84	0.964	O	|	|	|	|	0.58
27.583	0.00	0.83	0.959	O	|	|	|	|	0.57
27.667	0.00	0.83	0.953	O	|	|	|	|	0.57
27.750	0.00	0.82	0.947	O	|	|	|	|	0.57
27.833	0.00	0.81	0.942	O	|	|	|	|	0.56
27.917	0.00	0.81	0.936	O	|	|	|	|	0.56
28.000	0.00	0.80	0.930	O	|	|	|	|	0.56
28.083	0.00	0.80	0.925	O	|	|	|	|	0.55
28.167	0.00	0.79	0.919	O	|	|	|	|	0.55
28.250	0.00	0.78	0.914	O	|	|	|	|	0.55
28.333	0.00	0.78	0.909	O	|	|	|	|	0.54
28.417	0.00	0.77	0.903	O	|	|	|	|	0.54
28.500	0.00	0.77	0.898	O	|	|	|	|	0.54
28.583	0.00	0.76	0.893	O	|	|	|	|	0.53
28.667	0.00	0.75	0.888	O	|	|	|	|	0.53
28.750	0.00	0.75	0.882	O	|	|	|	|	0.53
28.833	0.00	0.74	0.877	O	|	|	|	|	0.53
28.917	0.00	0.74	0.872	O	|	|	|	|	0.52

29.000	0.00	0.73	0.867	O	|	|	|	|	0.52
29.083	0.00	0.72	0.862	O	|	|	|	|	0.52
29.167	0.00	0.72	0.857	O	|	|	|	|	0.51
29.250	0.00	0.71	0.852	O	|	|	|	|	0.51
29.333	0.00	0.71	0.847	O	|	|	|	|	0.51
29.417	0.00	0.70	0.842	O	|	|	|	|	0.50
29.500	0.00	0.70	0.838	O	|	|	|	|	0.50
29.583	0.00	0.69	0.833	O	|	|	|	|	0.50
29.667	0.00	0.69	0.828	O	|	|	|	|	0.50
29.750	0.00	0.68	0.823	O	|	|	|	|	0.49
29.833	0.00	0.68	0.819	O	|	|	|	|	0.49
29.917	0.00	0.68	0.814	O	|	|	|	|	0.49
30.000	0.00	0.67	0.809	O	|	|	|	|	0.49
30.083	0.00	0.67	0.805	O	|	|	|	|	0.48
30.167	0.00	0.66	0.800	O	|	|	|	|	0.48
30.250	0.00	0.66	0.796	O	|	|	|	|	0.48
30.333	0.00	0.66	0.791	O	|	|	|	|	0.47
30.417	0.00	0.65	0.787	O	|	|	|	|	0.47
30.500	0.00	0.65	0.782	O	|	|	|	|	0.47
30.583	0.00	0.65	0.778	O	|	|	|	|	0.47
30.667	0.00	0.64	0.773	O	|	|	|	|	0.46
30.750	0.00	0.64	0.769	O	|	|	|	|	0.46
30.833	0.00	0.63	0.764	O	|	|	|	|	0.46
30.917	0.00	0.63	0.760	O	|	|	|	|	0.46
31.000	0.00	0.63	0.756	O	|	|	|	|	0.45
31.083	0.00	0.62	0.751	O	|	|	|	|	0.45
31.167	0.00	0.62	0.747	O	|	|	|	|	0.45
31.250	0.00	0.62	0.743	O	|	|	|	|	0.45
31.333	0.00	0.61	0.739	O	|	|	|	|	0.44
31.417	0.00	0.61	0.734	O	|	|	|	|	0.44
31.500	0.00	0.61	0.730	O	|	|	|	|	0.44
31.583	0.00	0.60	0.726	O	|	|	|	|	0.44
31.667	0.00	0.60	0.722	O	|	|	|	|	0.43
31.750	0.00	0.60	0.718	O	|	|	|	|	0.43
31.833	0.00	0.59	0.714	O	|	|	|	|	0.43
31.917	0.00	0.59	0.710	O	|	|	|	|	0.43
32.000	0.00	0.59	0.706	O	|	|	|	|	0.42
32.083	0.00	0.58	0.702	O	|	|	|	|	0.42
32.167	0.00	0.58	0.698	O	|	|	|	|	0.42
32.250	0.00	0.58	0.694	O	|	|	|	|	0.42
32.333	0.00	0.57	0.690	O	|	|	|	|	0.41
32.417	0.00	0.57	0.686	O	|	|	|	|	0.41
32.500	0.00	0.57	0.682	O	|	|	|	|	0.41
32.583	0.00	0.56	0.678	O	|	|	|	|	0.41
32.667	0.00	0.56	0.674	O	|	|	|	|	0.40
32.750	0.00	0.56	0.670	O	|	|	|	|	0.40
32.833	0.00	0.55	0.666	O	|	|	|	|	0.40
32.917	0.00	0.55	0.663	O	|	|	|	|	0.40
33.000	0.00	0.55	0.659	O	|	|	|	|	0.40
33.083	0.00	0.54	0.655	O	|	|	|	|	0.39
33.167	0.00	0.54	0.651	O	|	|	|	|	0.39
33.250	0.00	0.54	0.648	O	|	|	|	|	0.39
33.333	0.00	0.53	0.644	O	|	|	|	|	0.39
33.417	0.00	0.53	0.640	O	|	|	|	|	0.38
33.500	0.00	0.53	0.637	O	|	|	|	|	0.38
33.583	0.00	0.53	0.633	O	|	|	|	|	0.38
33.667	0.00	0.52	0.629	O	|	|	|	|	0.38
33.750	0.00	0.52	0.626	O	|	|	|	|	0.38
33.833	0.00	0.52	0.622	O	|	|	|	|	0.37
33.917	0.00	0.51	0.619	O	|	|	|	|	0.37
34.000	0.00	0.51	0.615	O	|	|	|	|	0.37
34.083	0.00	0.51	0.612	O	|	|	|	|	0.37
34.167	0.00	0.50	0.608	O	|	|	|	|	0.36
34.250	0.00	0.50	0.605	O	|	|	|	|	0.36
34.333	0.00	0.50	0.601	O	|	|	|	|	0.36
34.417	0.00	0.50	0.598	O	|	|	|	|	0.36
34.500	0.00	0.49	0.595	O	|	|	|	|	0.36
34.583	0.00	0.49	0.591	O	|	|	|	|	0.35
34.667	0.00	0.49	0.588	O	|	|	|	|	0.35
34.750	0.00	0.48	0.584	O	|	|	|	|	0.35
34.833	0.00	0.48	0.581	O	|	|	|	|	0.35

34.917	0.00	0.48	0.578	O	|	|	|	|	0.35
35.000	0.00	0.48	0.574	O	|	|	|	|	0.34
35.083	0.00	0.47	0.571	O	|	|	|	|	0.34
35.167	0.00	0.47	0.568	O	|	|	|	|	0.34
35.250	0.00	0.47	0.565	O	|	|	|	|	0.34
35.333	0.00	0.47	0.561	O	|	|	|	|	0.34
35.417	0.00	0.46	0.558	O	|	|	|	|	0.33
35.500	0.00	0.46	0.555	O	|	|	|	|	0.33
35.583	0.00	0.46	0.552	O	|	|	|	|	0.33
35.667	0.00	0.46	0.549	O	|	|	|	|	0.33
35.750	0.00	0.45	0.546	O	|	|	|	|	0.33
35.833	0.00	0.45	0.543	O	|	|	|	|	0.33
35.917	0.00	0.45	0.539	O	|	|	|	|	0.32
36.000	0.00	0.45	0.536	O	|	|	|	|	0.32
36.083	0.00	0.44	0.533	O	|	|	|	|	0.32
36.167	0.00	0.44	0.530	O	|	|	|	|	0.32
36.250	0.00	0.44	0.527	O	|	|	|	|	0.32
36.333	0.00	0.44	0.524	O	|	|	|	|	0.31
36.417	0.00	0.43	0.521	O	|	|	|	|	0.31
36.500	0.00	0.43	0.518	O	|	|	|	|	0.31
36.583	0.00	0.43	0.515	O	|	|	|	|	0.31
36.667	0.00	0.43	0.512	O	|	|	|	|	0.31
36.750	0.00	0.42	0.510	O	|	|	|	|	0.31
36.833	0.00	0.42	0.507	O	|	|	|	|	0.30
36.917	0.00	0.42	0.504	O	|	|	|	|	0.30
37.000	0.00	0.42	0.501	O	|	|	|	|	0.30
37.083	0.00	0.41	0.498	O	|	|	|	|	0.30
37.167	0.00	0.41	0.495	O	|	|	|	|	0.30
37.250	0.00	0.41	0.492	O	|	|	|	|	0.30
37.333	0.00	0.41	0.490	O	|	|	|	|	0.29
37.417	0.00	0.40	0.487	O	|	|	|	|	0.29
37.500	0.00	0.40	0.484	O	|	|	|	|	0.29
37.583	0.00	0.40	0.481	O	|	|	|	|	0.29
37.667	0.00	0.40	0.478	O	|	|	|	|	0.29
37.750	0.00	0.39	0.476	O	|	|	|	|	0.29
37.833	0.00	0.39	0.473	O	|	|	|	|	0.28
37.917	0.00	0.39	0.470	O	|	|	|	|	0.28
38.000	0.00	0.39	0.468	O	|	|	|	|	0.28
38.083	0.00	0.39	0.465	O	|	|	|	|	0.28
38.167	0.00	0.38	0.462	O	|	|	|	|	0.28
38.250	0.00	0.38	0.460	O	|	|	|	|	0.28
38.333	0.00	0.38	0.457	O	|	|	|	|	0.27
38.417	0.00	0.38	0.454	O	|	|	|	|	0.27
38.500	0.00	0.37	0.452	O	|	|	|	|	0.27
38.583	0.00	0.37	0.449	O	|	|	|	|	0.27
38.667	0.00	0.37	0.447	O	|	|	|	|	0.27
38.750	0.00	0.37	0.444	O	|	|	|	|	0.27
38.833	0.00	0.37	0.442	O	|	|	|	|	0.26
38.917	0.00	0.36	0.439	O	|	|	|	|	0.26
39.000	0.00	0.36	0.437	O	|	|	|	|	0.26
39.083	0.00	0.36	0.434	O	|	|	|	|	0.26
39.167	0.00	0.36	0.432	O	|	|	|	|	0.26
39.250	0.00	0.36	0.429	O	|	|	|	|	0.26
39.333	0.00	0.35	0.427	O	|	|	|	|	0.26
39.417	0.00	0.35	0.424	O	|	|	|	|	0.25
39.500	0.00	0.35	0.422	O	|	|	|	|	0.25
39.583	0.00	0.35	0.420	O	|	|	|	|	0.25
39.667	0.00	0.35	0.417	O	|	|	|	|	0.25
39.750	0.00	0.34	0.415	O	|	|	|	|	0.25
39.833	0.00	0.34	0.412	O	|	|	|	|	0.25
39.917	0.00	0.34	0.410	O	|	|	|	|	0.25
40.000	0.00	0.34	0.408	O	|	|	|	|	0.24
40.083	0.00	0.34	0.405	O	|	|	|	|	0.24
40.167	0.00	0.33	0.403	O	|	|	|	|	0.24
40.250	0.00	0.33	0.401	O	|	|	|	|	0.24
40.333	0.00	0.33	0.399	O	|	|	|	|	0.24
40.417	0.00	0.33	0.396	O	|	|	|	|	0.24
40.500	0.00	0.33	0.394	O	|	|	|	|	0.24
40.583	0.00	0.33	0.392	O	|	|	|	|	0.23
40.667	0.00	0.32	0.390	O	|	|	|	|	0.23
40.750	0.00	0.32	0.387	O	|	|	|	|	0.23

40.833	0.00	0.32	0.385	O	|	|	|	|	0.23
40.917	0.00	0.32	0.383	O	|	|	|	|	0.23
41.000	0.00	0.32	0.381	O	|	|	|	|	0.23
41.083	0.00	0.31	0.379	O	|	|	|	|	0.23
41.167	0.00	0.31	0.376	O	|	|	|	|	0.23
41.250	0.00	0.31	0.374	O	|	|	|	|	0.22
41.333	0.00	0.31	0.372	O	|	|	|	|	0.22
41.417	0.00	0.31	0.370	O	|	|	|	|	0.22
41.500	0.00	0.31	0.368	O	|	|	|	|	0.22
41.583	0.00	0.30	0.366	O	|	|	|	|	0.22
41.667	0.00	0.30	0.364	O	|	|	|	|	0.22
41.750	0.00	0.30	0.362	O	|	|	|	|	0.22
41.833	0.00	0.30	0.360	O	|	|	|	|	0.22
41.917	0.00	0.30	0.358	O	|	|	|	|	0.21
42.000	0.00	0.29	0.355	O	|	|	|	|	0.21
42.083	0.00	0.29	0.353	O	|	|	|	|	0.21
42.167	0.00	0.29	0.351	O	|	|	|	|	0.21
42.250	0.00	0.29	0.349	O	|	|	|	|	0.21
42.333	0.00	0.29	0.347	O	|	|	|	|	0.21
42.417	0.00	0.29	0.345	O	|	|	|	|	0.21
42.500	0.00	0.29	0.343	O	|	|	|	|	0.21
42.583	0.00	0.28	0.342	O	|	|	|	|	0.20
42.667	0.00	0.28	0.340	O	|	|	|	|	0.20
42.750	0.00	0.28	0.338	O	|	|	|	|	0.20
42.833	0.00	0.28	0.336	O	|	|	|	|	0.20
42.917	0.00	0.28	0.334	O	|	|	|	|	0.20
43.000	0.00	0.28	0.332	O	|	|	|	|	0.20
43.083	0.00	0.27	0.330	O	|	|	|	|	0.20
43.167	0.00	0.27	0.328	O	|	|	|	|	0.20
43.250	0.00	0.27	0.326	O	|	|	|	|	0.20
43.333	0.00	0.27	0.324	O	|	|	|	|	0.19
43.417	0.00	0.27	0.323	O	|	|	|	|	0.19
43.500	0.00	0.27	0.321	O	|	|	|	|	0.19
43.583	0.00	0.26	0.319	O	|	|	|	|	0.19
43.667	0.00	0.26	0.317	O	|	|	|	|	0.19
43.750	0.00	0.26	0.315	O	|	|	|	|	0.19
43.833	0.00	0.26	0.313	O	|	|	|	|	0.19
43.917	0.00	0.26	0.312	O	|	|	|	|	0.19
44.000	0.00	0.26	0.310	O	|	|	|	|	0.19
44.083	0.00	0.26	0.308	O	|	|	|	|	0.18
44.167	0.00	0.25	0.306	O	|	|	|	|	0.18
44.250	0.00	0.25	0.305	O	|	|	|	|	0.18
44.333	0.00	0.25	0.303	O	|	|	|	|	0.18
44.417	0.00	0.25	0.301	O	|	|	|	|	0.18
44.500	0.00	0.25	0.299	O	|	|	|	|	0.18
44.583	0.00	0.25	0.298	O	|	|	|	|	0.18
44.667	0.00	0.25	0.296	O	|	|	|	|	0.18
44.750	0.00	0.24	0.294	O	|	|	|	|	0.18
44.833	0.00	0.24	0.293	O	|	|	|	|	0.18
44.917	0.00	0.24	0.291	O	|	|	|	|	0.17
45.000	0.00	0.24	0.289	O	|	|	|	|	0.17
45.083	0.00	0.24	0.288	O	|	|	|	|	0.17
45.167	0.00	0.24	0.286	O	|	|	|	|	0.17
45.250	0.00	0.24	0.284	O	|	|	|	|	0.17
45.333	0.00	0.23	0.283	O	|	|	|	|	0.17
45.417	0.00	0.23	0.281	O	|	|	|	|	0.17
45.500	0.00	0.23	0.280	O	|	|	|	|	0.17
45.583	0.00	0.23	0.278	O	|	|	|	|	0.17
45.667	0.00	0.23	0.276	O	|	|	|	|	0.17
45.750	0.00	0.23	0.275	O	|	|	|	|	0.16
45.833	0.00	0.23	0.273	O	|	|	|	|	0.16
45.917	0.00	0.23	0.272	O	|	|	|	|	0.16
46.000	0.00	0.22	0.270	O	|	|	|	|	0.16
46.083	0.00	0.22	0.269	O	|	|	|	|	0.16
46.167	0.00	0.22	0.267	O	|	|	|	|	0.16
46.250	0.00	0.22	0.266	O	|	|	|	|	0.16
46.333	0.00	0.22	0.264	O	|	|	|	|	0.16
46.417	0.00	0.22	0.263	O	|	|	|	|	0.16
46.500	0.00	0.22	0.261	O	|	|	|	|	0.16
46.583	0.00	0.22	0.260	O	|	|	|	|	0.16
46.667	0.00	0.21	0.258	O	|	|	|	|	0.15

46.750	0.00	0.21	0.257	O	|	|	|	|	0.15
46.833	0.00	0.21	0.255	O	|	|	|	|	0.15
46.917	0.00	0.21	0.254	O	|	|	|	|	0.15
47.000	0.00	0.21	0.252	O	|	|	|	|	0.15
47.083	0.00	0.21	0.251	O	|	|	|	|	0.15
47.167	0.00	0.21	0.249	O	|	|	|	|	0.15
47.250	0.00	0.21	0.248	O	|	|	|	|	0.15
47.333	0.00	0.20	0.247	O	|	|	|	|	0.15
47.417	0.00	0.20	0.245	O	|	|	|	|	0.15
47.500	0.00	0.20	0.244	O	|	|	|	|	0.15
47.583	0.00	0.20	0.242	O	|	|	|	|	0.15
47.667	0.00	0.20	0.241	O	|	|	|	|	0.14
47.750	0.00	0.20	0.240	O	|	|	|	|	0.14
47.833	0.00	0.20	0.238	O	|	|	|	|	0.14
47.917	0.00	0.20	0.237	O	|	|	|	|	0.14
48.000	0.00	0.20	0.236	O	|	|	|	|	0.14
48.083	0.00	0.19	0.234	O	|	|	|	|	0.14
48.167	0.00	0.19	0.233	O	|	|	|	|	0.14
48.250	0.00	0.19	0.232	O	|	|	|	|	0.14
48.333	0.00	0.19	0.230	O	|	|	|	|	0.14
48.417	0.00	0.19	0.229	O	|	|	|	|	0.14
48.500	0.00	0.19	0.228	O	|	|	|	|	0.14
48.583	0.00	0.19	0.226	O	|	|	|	|	0.14
48.667	0.00	0.19	0.225	O	|	|	|	|	0.13
48.750	0.00	0.19	0.224	O	|	|	|	|	0.13
48.833	0.00	0.18	0.222	O	|	|	|	|	0.13
48.917	0.00	0.18	0.221	O	|	|	|	|	0.13
49.000	0.00	0.18	0.220	O	|	|	|	|	0.13
49.083	0.00	0.18	0.219	O	|	|	|	|	0.13
49.167	0.00	0.18	0.217	O	|	|	|	|	0.13
49.250	0.00	0.18	0.216	O	|	|	|	|	0.13
49.333	0.00	0.18	0.215	O	|	|	|	|	0.13
49.417	0.00	0.18	0.214	O	|	|	|	|	0.13
49.500	0.00	0.18	0.213	O	|	|	|	|	0.13
49.583	0.00	0.18	0.211	O	|	|	|	|	0.13
49.667	0.00	0.17	0.210	O	|	|	|	|	0.13
49.750	0.00	0.17	0.209	O	|	|	|	|	0.13
49.833	0.00	0.17	0.208	O	|	|	|	|	0.12
49.917	0.00	0.17	0.207	O	|	|	|	|	0.12
50.000	0.00	0.17	0.205	O	|	|	|	|	0.12
50.083	0.00	0.17	0.204	O	|	|	|	|	0.12
50.167	0.00	0.17	0.203	O	|	|	|	|	0.12
50.250	0.00	0.17	0.202	O	|	|	|	|	0.12
50.333	0.00	0.17	0.201	O	|	|	|	|	0.12
50.417	0.00	0.17	0.200	O	|	|	|	|	0.12
50.500	0.00	0.16	0.198	O	|	|	|	|	0.12
50.583	0.00	0.16	0.197	O	|	|	|	|	0.12
50.667	0.00	0.16	0.196	O	|	|	|	|	0.12
50.750	0.00	0.16	0.195	O	|	|	|	|	0.12
50.833	0.00	0.16	0.194	O	|	|	|	|	0.12
50.917	0.00	0.16	0.193	O	|	|	|	|	0.12
51.000	0.00	0.16	0.192	O	|	|	|	|	0.11
51.083	0.00	0.16	0.191	O	|	|	|	|	0.11
51.167	0.00	0.16	0.190	O	|	|	|	|	0.11
51.250	0.00	0.16	0.189	O	|	|	|	|	0.11
51.333	0.00	0.16	0.187	O	|	|	|	|	0.11
51.417	0.00	0.15	0.186	O	|	|	|	|	0.11
51.500	0.00	0.15	0.185	O	|	|	|	|	0.11
51.583	0.00	0.15	0.184	O	|	|	|	|	0.11
51.667	0.00	0.15	0.183	O	|	|	|	|	0.11
51.750	0.00	0.15	0.182	O	|	|	|	|	0.11
51.833	0.00	0.15	0.181	O	|	|	|	|	0.11
51.917	0.00	0.15	0.180	O	|	|	|	|	0.11
52.000	0.00	0.15	0.179	O	|	|	|	|	0.11
52.083	0.00	0.15	0.178	O	|	|	|	|	0.11
52.167	0.00	0.15	0.177	O	|	|	|	|	0.11
52.250	0.00	0.15	0.176	O	|	|	|	|	0.11
52.333	0.00	0.15	0.175	O	|	|	|	|	0.10
52.417	0.00	0.14	0.174	O	|	|	|	|	0.10
52.500	0.00	0.14	0.173	O	|	|	|	|	0.10
52.583	0.00	0.14	0.172	O	|	|	|	|	0.10

52.667	0.00	0.14	0.171	O	|	|	|	|	0.10
52.750	0.00	0.14	0.170	O	|	|	|	|	0.10
52.833	0.00	0.14	0.169	O	|	|	|	|	0.10
52.917	0.00	0.14	0.168	O	|	|	|	|	0.10
53.000	0.00	0.14	0.167	O	|	|	|	|	0.10
53.083	0.00	0.14	0.166	O	|	|	|	|	0.10
53.167	0.00	0.14	0.165	O	|	|	|	|	0.10
53.250	0.00	0.14	0.164	O	|	|	|	|	0.10
53.333	0.00	0.14	0.163	O	|	|	|	|	0.10
53.417	0.00	0.13	0.162	O	|	|	|	|	0.10
53.500	0.00	0.13	0.162	O	|	|	|	|	0.10
53.583	0.00	0.13	0.161	O	|	|	|	|	0.10
53.667	0.00	0.13	0.160	O	|	|	|	|	0.10
53.750	0.00	0.13	0.159	O	|	|	|	|	0.10
53.833	0.00	0.13	0.158	O	|	|	|	|	0.09
53.917	0.00	0.13	0.157	O	|	|	|	|	0.09
54.000	0.00	0.13	0.156	O	|	|	|	|	0.09
54.083	0.00	0.13	0.155	O	|	|	|	|	0.09
54.167	0.00	0.13	0.154	O	|	|	|	|	0.09
54.250	0.00	0.13	0.153	O	|	|	|	|	0.09
54.333	0.00	0.13	0.153	O	|	|	|	|	0.09
54.417	0.00	0.13	0.152	O	|	|	|	|	0.09
54.500	0.00	0.13	0.151	O	|	|	|	|	0.09
54.583	0.00	0.12	0.150	O	|	|	|	|	0.09
54.667	0.00	0.12	0.149	O	|	|	|	|	0.09
54.750	0.00	0.12	0.148	O	|	|	|	|	0.09
54.833	0.00	0.12	0.147	O	|	|	|	|	0.09
54.917	0.00	0.12	0.147	O	|	|	|	|	0.09
55.000	0.00	0.12	0.146	O	|	|	|	|	0.09
55.083	0.00	0.12	0.145	O	|	|	|	|	0.09
55.167	0.00	0.12	0.144	O	|	|	|	|	0.09
55.250	0.00	0.12	0.143	O	|	|	|	|	0.09
55.333	0.00	0.12	0.142	O	|	|	|	|	0.09
55.417	0.00	0.12	0.142	O	|	|	|	|	0.08
55.500	0.00	0.12	0.141	O	|	|	|	|	0.08
55.583	0.00	0.12	0.140	O	|	|	|	|	0.08
55.667	0.00	0.12	0.139	O	|	|	|	|	0.08
55.750	0.00	0.11	0.138	O	|	|	|	|	0.08
55.833	0.00	0.11	0.138	O	|	|	|	|	0.08
55.917	0.00	0.11	0.137	O	|	|	|	|	0.08
56.000	0.00	0.11	0.136	O	|	|	|	|	0.08
56.083	0.00	0.11	0.135	O	|	|	|	|	0.08
56.167	0.00	0.11	0.135	O	|	|	|	|	0.08
56.250	0.00	0.11	0.134	O	|	|	|	|	0.08
56.333	0.00	0.11	0.133	O	|	|	|	|	0.08
56.417	0.00	0.11	0.132	O	|	|	|	|	0.08
56.500	0.00	0.11	0.132	O	|	|	|	|	0.08
56.583	0.00	0.11	0.131	O	|	|	|	|	0.08
56.667	0.00	0.11	0.130	O	|	|	|	|	0.08
56.750	0.00	0.11	0.129	O	|	|	|	|	0.08
56.833	0.00	0.11	0.129	O	|	|	|	|	0.08
56.917	0.00	0.11	0.128	O	|	|	|	|	0.08
57.000	0.00	0.11	0.127	O	|	|	|	|	0.08
57.083	0.00	0.10	0.126	O	|	|	|	|	0.08
57.167	0.00	0.10	0.126	O	|	|	|	|	0.08
57.250	0.00	0.10	0.125	O	|	|	|	|	0.07
57.333	0.00	0.10	0.124	O	|	|	|	|	0.07
57.417	0.00	0.10	0.124	O	|	|	|	|	0.07
57.500	0.00	0.10	0.123	O	|	|	|	|	0.07
57.583	0.00	0.10	0.122	O	|	|	|	|	0.07
57.667	0.00	0.10	0.121	O	|	|	|	|	0.07
57.750	0.00	0.10	0.121	O	|	|	|	|	0.07
57.833	0.00	0.10	0.120	O	|	|	|	|	0.07
57.917	0.00	0.10	0.119	O	|	|	|	|	0.07
58.000	0.00	0.10	0.119	O	|	|	|	|	0.07
58.083	0.00	0.10	0.118	O	|	|	|	|	0.07
58.167	0.00	0.10	0.117	O	|	|	|	|	0.07
58.250	0.00	0.10	0.117	O	|	|	|	|	0.07
58.333	0.00	0.10	0.116	O	|	|	|	|	0.07
58.417	0.00	0.10	0.115	O	|	|	|	|	0.07
58.500	0.00	0.10	0.115	O	|	|	|	|	0.07

58.583	0.00	0.09	0.114	O	|	|	|	| 0.07
58.667	0.00	0.09	0.113	O	|	|	|	| 0.07
58.750	0.00	0.09	0.113	O	|	|	|	| 0.07
58.833	0.00	0.09	0.112	O	|	|	|	| 0.07
58.917	0.00	0.09	0.111	O	|	|	|	| 0.07
59.000	0.00	0.09	0.111	O	|	|	|	| 0.07
59.083	0.00	0.09	0.110	O	|	|	|	| 0.07
59.167	0.00	0.09	0.110	O	|	|	|	| 0.07
59.250	0.00	0.09	0.109	O	|	|	|	| 0.07
59.333	0.00	0.09	0.108	O	|	|	|	| 0.06
59.417	0.00	0.09	0.108	O	|	|	|	| 0.06
59.500	0.00	0.09	0.107	O	|	|	|	| 0.06
59.583	0.00	0.09	0.106	O	|	|	|	| 0.06
59.667	0.00	0.09	0.106	O	|	|	|	| 0.06
59.750	0.00	0.09	0.105	O	|	|	|	| 0.06
59.833	0.00	0.09	0.105	O	|	|	|	| 0.06
59.917	0.00	0.09	0.104	O	|	|	|	| 0.06
60.000	0.00	0.09	0.103	O	|	|	|	| 0.06
60.083	0.00	0.09	0.103	O	|	|	|	| 0.06
60.167	0.00	0.08	0.102	O	|	|	|	| 0.06
60.250	0.00	0.08	0.102	O	|	|	|	| 0.06
60.333	0.00	0.08	0.101	O	|	|	|	| 0.06
60.417	0.00	0.08	0.101	O	|	|	|	| 0.06
60.500	0.00	0.08	0.100	O	|	|	|	| 0.06
60.583	0.00	0.08	0.099	O	|	|	|	| 0.06
60.667	0.00	0.08	0.099	O	|	|	|	| 0.06
60.750	0.00	0.08	0.098	O	|	|	|	| 0.06
60.833	0.00	0.08	0.098	O	|	|	|	| 0.06
60.917	0.00	0.08	0.097	O	|	|	|	| 0.06
61.000	0.00	0.08	0.097	O	|	|	|	| 0.06
61.083	0.00	0.08	0.096	O	|	|	|	| 0.06
61.167	0.00	0.08	0.095	O	|	|	|	| 0.06
61.250	0.00	0.08	0.095	O	|	|	|	| 0.06
61.333	0.00	0.08	0.094	O	|	|	|	| 0.06
61.417	0.00	0.08	0.094	O	|	|	|	| 0.06
61.500	0.00	0.08	0.093	O	|	|	|	| 0.06
61.583	0.00	0.08	0.093	O	|	|	|	| 0.06
61.667	0.00	0.08	0.092	O	|	|	|	| 0.06
61.750	0.00	0.08	0.092	O	|	|	|	| 0.06
61.833	0.00	0.08	0.091	O	|	|	|	| 0.05
61.917	0.00	0.08	0.091	O	|	|	|	| 0.05
62.000	0.00	0.07	0.090	O	|	|	|	| 0.05
62.083	0.00	0.07	0.090	O	|	|	|	| 0.05
62.167	0.00	0.07	0.089	O	|	|	|	| 0.05
62.250	0.00	0.07	0.089	O	|	|	|	| 0.05
62.333	0.00	0.07	0.088	O	|	|	|	| 0.05
62.417	0.00	0.07	0.088	O	|	|	|	| 0.05
62.500	0.00	0.07	0.087	O	|	|	|	| 0.05
62.583	0.00	0.07	0.087	O	|	|	|	| 0.05
62.667	0.00	0.07	0.086	O	|	|	|	| 0.05
62.750	0.00	0.07	0.086	O	|	|	|	| 0.05
62.833	0.00	0.07	0.085	O	|	|	|	| 0.05
62.917	0.00	0.07	0.085	O	|	|	|	| 0.05
63.000	0.00	0.07	0.084	O	|	|	|	| 0.05
63.083	0.00	0.07	0.084	O	|	|	|	| 0.05
63.167	0.00	0.07	0.083	O	|	|	|	| 0.05
63.250	0.00	0.07	0.083	O	|	|	|	| 0.05
63.333	0.00	0.07	0.082	O	|	|	|	| 0.05
63.417	0.00	0.07	0.082	O	|	|	|	| 0.05
63.500	0.00	0.07	0.081	O	|	|	|	| 0.05
63.583	0.00	0.07	0.081	O	|	|	|	| 0.05
63.667	0.00	0.07	0.080	O	|	|	|	| 0.05
63.750	0.00	0.07	0.080	O	|	|	|	| 0.05
63.833	0.00	0.07	0.080	O	|	|	|	| 0.05
63.917	0.00	0.07	0.079	O	|	|	|	| 0.05
64.000	0.00	0.07	0.079	O	|	|	|	| 0.05
64.083	0.00	0.06	0.078	O	|	|	|	| 0.05
64.167	0.00	0.06	0.078	O	|	|	|	| 0.05
64.250	0.00	0.06	0.077	O	|	|	|	| 0.05
64.333	0.00	0.06	0.077	O	|	|	|	| 0.05
64.417	0.00	0.06	0.076	O	|	|	|	| 0.05

64.500	0.00	0.06	0.076	O					0.05
64.583	0.00	0.06	0.076	O					0.05
64.667	0.00	0.06	0.075	O					0.05
64.750	0.00	0.06	0.075	O					0.04
64.833	0.00	0.06	0.074	O					0.04
64.917	0.00	0.06	0.074	O					0.04
65.000	0.00	0.06	0.073	O					0.04
65.083	0.00	0.06	0.073	O					0.04
65.167	0.00	0.06	0.073	O					0.04
65.250	0.00	0.06	0.072	O					0.04
65.333	0.00	0.06	0.072	O					0.04
65.417	0.00	0.06	0.071	O					0.04
65.500	0.00	0.06	0.071	O					0.04
65.583	0.00	0.06	0.071	O					0.04
65.667	0.00	0.06	0.070	O					0.04
65.750	0.00	0.06	0.070	O					0.04
65.833	0.00	0.06	0.069	O					0.04
65.917	0.00	0.06	0.069	O					0.04
66.000	0.00	0.06	0.069	O					0.04
66.083	0.00	0.06	0.068	O					0.04
66.167	0.00	0.06	0.068	O					0.04
66.250	0.00	0.06	0.067	O					0.04
66.333	0.00	0.06	0.067	O					0.04
66.417	0.00	0.06	0.067	O					0.04
66.500	0.00	0.05	0.066	O					0.04
66.583	0.00	0.05	0.066	O					0.04
66.667	0.00	0.05	0.065	O					0.04
66.750	0.00	0.05	0.065	O					0.04
66.833	0.00	0.05	0.065	O					0.04
66.917	0.00	0.05	0.064	O					0.04
67.000	0.00	0.05	0.064	O					0.04
67.083	0.00	0.05	0.064	O					0.04
67.167	0.00	0.05	0.063	O					0.04
67.250	0.00	0.05	0.063	O					0.04
67.333	0.00	0.05	0.063	O					0.04
67.417	0.00	0.05	0.062	O					0.04
67.500	0.00	0.05	0.062	O					0.04
67.583	0.00	0.05	0.062	O					0.04
67.667	0.00	0.05	0.061	O					0.04
67.750	0.00	0.05	0.061	O					0.04
67.833	0.00	0.05	0.060	O					0.04
67.917	0.00	0.05	0.060	O					0.04
68.000	0.00	0.05	0.060	O					0.04
68.083	0.00	0.05	0.059	O					0.04
68.167	0.00	0.05	0.059	O					0.04
68.250	0.00	0.05	0.059	O					0.04
68.333	0.00	0.05	0.058	O					0.04
68.417	0.00	0.05	0.058	O					0.03
68.500	0.00	0.05	0.058	O					0.03
68.583	0.00	0.05	0.057	O					0.03
68.667	0.00	0.05	0.057	O					0.03
68.750	0.00	0.05	0.057	O					0.03
68.833	0.00	0.05	0.056	O					0.03
68.917	0.00	0.05	0.056	O					0.03
69.000	0.00	0.05	0.056	O					0.03
69.083	0.00	0.05	0.055	O					0.03
69.167	0.00	0.05	0.055	O					0.03
69.250	0.00	0.05	0.055	O					0.03
69.333	0.00	0.05	0.055	O					0.03
69.417	0.00	0.05	0.054	O					0.03
69.500	0.00	0.04	0.054	O					0.03
69.583	0.00	0.04	0.054	O					0.03
69.667	0.00	0.04	0.053	O					0.03
69.750	0.00	0.04	0.053	O					0.03
69.833	0.00	0.04	0.053	O					0.03
69.917	0.00	0.04	0.052	O					0.03
70.000	0.00	0.04	0.052	O					0.03
70.083	0.00	0.04	0.052	O					0.03
70.167	0.00	0.04	0.052	O					0.03
70.250	0.00	0.04	0.051	O					0.03
70.333	0.00	0.04	0.051	O					0.03

70.417	0.00	0.04	0.051	O	|	|	|	|	0.03
70.500	0.00	0.04	0.050	O	|	|	|	|	0.03
70.583	0.00	0.04	0.050	O	|	|	|	|	0.03
70.667	0.00	0.04	0.050	O	|	|	|	|	0.03
70.750	0.00	0.04	0.049	O	|	|	|	|	0.03
70.833	0.00	0.04	0.049	O	|	|	|	|	0.03
70.917	0.00	0.04	0.049	O	|	|	|	|	0.03
71.000	0.00	0.04	0.049	O	|	|	|	|	0.03
71.083	0.00	0.04	0.048	O	|	|	|	|	0.03
71.167	0.00	0.04	0.048	O	|	|	|	|	0.03
71.250	0.00	0.04	0.048	O	|	|	|	|	0.03
71.333	0.00	0.04	0.048	O	|	|	|	|	0.03
71.417	0.00	0.04	0.047	O	|	|	|	|	0.03
71.500	0.00	0.04	0.047	O	|	|	|	|	0.03
71.583	0.00	0.04	0.047	O	|	|	|	|	0.03
71.667	0.00	0.04	0.046	O	|	|	|	|	0.03
71.750	0.00	0.04	0.046	O	|	|	|	|	0.03
71.833	0.00	0.04	0.046	O	|	|	|	|	0.03
71.917	0.00	0.04	0.046	O	|	|	|	|	0.03
72.000	0.00	0.04	0.045	O	|	|	|	|	0.03
72.083	0.00	0.04	0.045	O	|	|	|	|	0.03
72.167	0.00	0.04	0.045	O	|	|	|	|	0.03
72.250	0.00	0.04	0.045	O	|	|	|	|	0.03
72.333	0.00	0.04	0.044	O	|	|	|	|	0.03
72.417	0.00	0.04	0.044	O	|	|	|	|	0.03
72.500	0.00	0.04	0.044	O	|	|	|	|	0.03
72.583	0.00	0.04	0.044	O	|	|	|	|	0.03
72.667	0.00	0.04	0.043	O	|	|	|	|	0.03
72.750	0.00	0.04	0.043	O	|	|	|	|	0.03
72.833	0.00	0.04	0.043	O	|	|	|	|	0.03
72.917	0.00	0.04	0.043	O	|	|	|	|	0.03
73.000	0.00	0.04	0.042	O	|	|	|	|	0.03
73.083	0.00	0.03	0.042	O	|	|	|	|	0.03
73.167	0.00	0.03	0.042	O	|	|	|	|	0.03
73.250	0.00	0.03	0.042	O	|	|	|	|	0.03
73.333	0.00	0.03	0.041	O	|	|	|	|	0.02
73.417	0.00	0.03	0.041	O	|	|	|	|	0.02
73.500	0.00	0.03	0.041	O	|	|	|	|	0.02
73.583	0.00	0.03	0.041	O	|	|	|	|	0.02
73.667	0.00	0.03	0.041	O	|	|	|	|	0.02
73.750	0.00	0.03	0.040	O	|	|	|	|	0.02
73.833	0.00	0.03	0.040	O	|	|	|	|	0.02
73.917	0.00	0.03	0.040	O	|	|	|	|	0.02
74.000	0.00	0.03	0.040	O	|	|	|	|	0.02
74.083	0.00	0.03	0.039	O	|	|	|	|	0.02
74.167	0.00	0.03	0.039	O	|	|	|	|	0.02
74.250	0.00	0.03	0.039	O	|	|	|	|	0.02
74.333	0.00	0.03	0.039	O	|	|	|	|	0.02
74.417	0.00	0.03	0.038	O	|	|	|	|	0.02
74.500	0.00	0.03	0.038	O	|	|	|	|	0.02
74.583	0.00	0.03	0.038	O	|	|	|	|	0.02
74.667	0.00	0.03	0.038	O	|	|	|	|	0.02
74.750	0.00	0.03	0.038	O	|	|	|	|	0.02
74.833	0.00	0.03	0.037	O	|	|	|	|	0.02
74.917	0.00	0.03	0.037	O	|	|	|	|	0.02
75.000	0.00	0.03	0.037	O	|	|	|	|	0.02
75.083	0.00	0.03	0.037	O	|	|	|	|	0.02
75.167	0.00	0.03	0.037	O	|	|	|	|	0.02
75.250	0.00	0.03	0.036	O	|	|	|	|	0.02
75.333	0.00	0.03	0.036	O	|	|	|	|	0.02
75.417	0.00	0.03	0.036	O	|	|	|	|	0.02
75.500	0.00	0.03	0.036	O	|	|	|	|	0.02
75.583	0.00	0.03	0.036	O	|	|	|	|	0.02
75.667	0.00	0.03	0.035	O	|	|	|	|	0.02
75.750	0.00	0.03	0.035	O	|	|	|	|	0.02
75.833	0.00	0.03	0.035	O	|	|	|	|	0.02
75.917	0.00	0.03	0.035	O	|	|	|	|	0.02
76.000	0.00	0.03	0.035	O	|	|	|	|	0.02
76.083	0.00	0.03	0.034	O	|	|	|	|	0.02
76.167	0.00	0.03	0.034	O	|	|	|	|	0.02
76.250	0.00	0.03	0.034	O	|	|	|	|	0.02

76.333	0.00	0.03	0.034	O					0.02
76.417	0.00	0.03	0.034	O					0.02
76.500	0.00	0.03	0.033	O					0.02
76.583	0.00	0.03	0.033	O					0.02
76.667	0.00	0.03	0.033	O					0.02
76.750	0.00	0.03	0.033	O					0.02
76.833	0.00	0.03	0.033	O					0.02
76.917	0.00	0.03	0.032	O					0.02
77.000	0.00	0.03	0.032	O					0.02
77.083	0.00	0.03	0.032	O					0.02
77.167	0.00	0.03	0.032	O					0.02
77.250	0.00	0.03	0.032	O					0.02
77.333	0.00	0.03	0.032	O					0.02
77.417	0.00	0.03	0.031	O					0.02
77.500	0.00	0.03	0.031	O					0.02
77.583	0.00	0.03	0.031	O					0.02
77.667	0.00	0.03	0.031	O					0.02
77.750	0.00	0.03	0.031	O					0.02
77.833	0.00	0.03	0.030	O					0.02
77.917	0.00	0.03	0.030	O					0.02
78.000	0.00	0.02	0.030	O					0.02
78.083	0.00	0.02	0.030	O					0.02
78.167	0.00	0.02	0.030	O					0.02
78.250	0.00	0.02	0.030	O					0.02
78.333	0.00	0.02	0.029	O					0.02
78.417	0.00	0.02	0.029	O					0.02
78.500	0.00	0.02	0.029	O					0.02
78.583	0.00	0.02	0.029	O					0.02
78.667	0.00	0.02	0.029	O					0.02
78.750	0.00	0.02	0.029	O					0.02
78.833	0.00	0.02	0.028	O					0.02
78.917	0.00	0.02	0.028	O					0.02
79.000	0.00	0.02	0.028	O					0.02
79.083	0.00	0.02	0.028	O					0.02
79.167	0.00	0.02	0.028	O					0.02
79.250	0.00	0.02	0.028	O					0.02
79.333	0.00	0.02	0.027	O					0.02
79.417	0.00	0.02	0.027	O					0.02
79.500	0.00	0.02	0.027	O					0.02
79.583	0.00	0.02	0.027	O					0.02
79.667	0.00	0.02	0.027	O					0.02
79.750	0.00	0.02	0.027	O					0.02
79.833	0.00	0.02	0.027	O					0.02
79.917	0.00	0.02	0.026	O					0.02
80.000	0.00	0.02	0.026	O					0.02
80.083	0.00	0.02	0.026	O					0.02
80.167	0.00	0.02	0.026	O					0.02
80.250	0.00	0.02	0.026	O					0.02
80.333	0.00	0.02	0.026	O					0.02
80.417	0.00	0.02	0.026	O					0.02
80.500	0.00	0.02	0.025	O					0.02
80.583	0.00	0.02	0.025	O					0.02
80.667	0.00	0.02	0.025	O					0.02
80.750	0.00	0.02	0.025	O					0.01
80.833	0.00	0.02	0.025	O					0.01
80.917	0.00	0.02	0.025	O					0.01
81.000	0.00	0.02	0.025	O					0.01
81.083	0.00	0.02	0.024	O					0.01
81.167	0.00	0.02	0.024	O					0.01
81.250	0.00	0.02	0.024	O					0.01
81.333	0.00	0.02	0.024	O					0.01
81.417	0.00	0.02	0.024	O					0.01
81.500	0.00	0.02	0.024	O					0.01
81.583	0.00	0.02	0.024	O					0.01
81.667	0.00	0.02	0.023	O					0.01
81.750	0.00	0.02	0.023	O					0.01
81.833	0.00	0.02	0.023	O					0.01
81.917	0.00	0.02	0.023	O					0.01
82.000	0.00	0.02	0.023	O					0.01
82.083	0.00	0.02	0.023	O					0.01
82.167	0.00	0.02	0.023	O					0.01

82.250	0.00	0.02	0.022	O					0.01
82.333	0.00	0.02	0.022	O					0.01
82.417	0.00	0.02	0.022	O					0.01
82.500	0.00	0.02	0.022	O					0.01
82.583	0.00	0.02	0.022	O					0.01
82.667	0.00	0.02	0.022	O					0.01
82.750	0.00	0.02	0.022	O					0.01
82.833	0.00	0.02	0.022	O					0.01
82.917	0.00	0.02	0.021	O					0.01
83.000	0.00	0.02	0.021	O					0.01
83.083	0.00	0.02	0.021	O					0.01
83.167	0.00	0.02	0.021	O					0.01
83.250	0.00	0.02	0.021	O					0.01
83.333	0.00	0.02	0.021	O					0.01
83.417	0.00	0.02	0.021	O					0.01
83.500	0.00	0.02	0.021	O					0.01
83.583	0.00	0.02	0.021	O					0.01
83.667	0.00	0.02	0.020	O					0.01
83.750	0.00	0.02	0.020	O					0.01
83.833	0.00	0.02	0.020	O					0.01
83.917	0.00	0.02	0.020	O					0.01
84.000	0.00	0.02	0.020	O					0.01
84.083	0.00	0.02	0.020	O					0.01
84.167	0.00	0.02	0.020	O					0.01
84.250	0.00	0.02	0.020	O					0.01
84.333	0.00	0.02	0.020	O					0.01
84.417	0.00	0.02	0.019	O					0.01
84.500	0.00	0.02	0.019	O					0.01
84.583	0.00	0.02	0.019	O					0.01
84.667	0.00	0.02	0.019	O					0.01
84.750	0.00	0.02	0.019	O					0.01
84.833	0.00	0.02	0.019	O					0.01
84.917	0.00	0.02	0.019	O					0.01
85.000	0.00	0.02	0.019	O					0.01
85.083	0.00	0.02	0.019	O					0.01
85.167	0.00	0.02	0.018	O					0.01
85.250	0.00	0.02	0.018	O					0.01
85.333	0.00	0.02	0.018	O					0.01
85.417	0.00	0.02	0.018	O					0.01
85.500	0.00	0.01	0.018	O					0.01
85.583	0.00	0.01	0.018	O					0.01
85.667	0.00	0.01	0.018	O					0.01
85.750	0.00	0.01	0.018	O					0.01
85.833	0.00	0.01	0.018	O					0.01
85.917	0.00	0.01	0.017	O					0.01
86.000	0.00	0.01	0.017	O					0.01
86.083	0.00	0.01	0.017	O					0.01
86.167	0.00	0.01	0.017	O					0.01
86.250	0.00	0.01	0.017	O					0.01
86.333	0.00	0.01	0.017	O					0.01
86.417	0.00	0.01	0.017	O					0.01
86.500	0.00	0.01	0.017	O					0.01
86.583	0.00	0.01	0.017	O					0.01
86.667	0.00	0.01	0.017	O					0.01
86.750	0.00	0.01	0.017	O					0.01
86.833	0.00	0.01	0.016	O					0.01
86.917	0.00	0.01	0.016	O					0.01
87.000	0.00	0.01	0.016	O					0.01
87.083	0.00	0.01	0.016	O					0.01
87.167	0.00	0.01	0.016	O					0.01
87.250	0.00	0.01	0.016	O					0.01
87.333	0.00	0.01	0.016	O					0.01
87.417	0.00	0.01	0.016	O					0.01
87.500	0.00	0.01	0.016	O					0.01
87.583	0.00	0.01	0.016	O					0.01
87.667	0.00	0.01	0.016	O					0.01
87.750	0.00	0.01	0.015	O					0.01
87.833	0.00	0.01	0.015	O					0.01
87.917	0.00	0.01	0.015	O					0.01
88.000	0.00	0.01	0.015	O					0.01
88.083	0.00	0.01	0.015	O					0.01

88.167	0.00	0.01	0.015	O					0.01
88.250	0.00	0.01	0.015	O					0.01
88.333	0.00	0.01	0.015	O					0.01
88.417	0.00	0.01	0.015	O					0.01
88.500	0.00	0.01	0.015	O					0.01
88.583	0.00	0.01	0.015	O					0.01
88.667	0.00	0.01	0.014	O					0.01
88.750	0.00	0.01	0.014	O					0.01
88.833	0.00	0.01	0.014	O					0.01
88.917	0.00	0.01	0.014	O					0.01
89.000	0.00	0.01	0.014	O					0.01
89.083	0.00	0.01	0.014	O					0.01
89.167	0.00	0.01	0.014	O					0.01
89.250	0.00	0.01	0.014	O					0.01
89.333	0.00	0.01	0.014	O					0.01
89.417	0.00	0.01	0.014	O					0.01
89.500	0.00	0.01	0.014	O					0.01
89.583	0.00	0.01	0.014	O					0.01
89.667	0.00	0.01	0.014	O					0.01
89.750	0.00	0.01	0.013	O					0.01
89.833	0.00	0.01	0.013	O					0.01
89.917	0.00	0.01	0.013	O					0.01
90.000	0.00	0.01	0.013	O					0.01
90.083	0.00	0.01	0.013	O					0.01
90.167	0.00	0.01	0.013	O					0.01
90.250	0.00	0.01	0.013	O					0.01
90.333	0.00	0.01	0.013	O					0.01
90.417	0.00	0.01	0.013	O					0.01
90.500	0.00	0.01	0.013	O					0.01
90.583	0.00	0.01	0.013	O					0.01
90.667	0.00	0.01	0.013	O					0.01
90.750	0.00	0.01	0.013	O					0.01
90.833	0.00	0.01	0.012	O					0.01
90.917	0.00	0.01	0.012	O					0.01
91.000	0.00	0.01	0.012	O					0.01
91.083	0.00	0.01	0.012	O					0.01
91.167	0.00	0.01	0.012	O					0.01
91.250	0.00	0.01	0.012	O					0.01
91.333	0.00	0.01	0.012	O					0.01
91.417	0.00	0.01	0.012	O					0.01
91.500	0.00	0.01	0.012	O					0.01
91.583	0.00	0.01	0.012	O					0.01
91.667	0.00	0.01	0.012	O					0.01
91.750	0.00	0.01	0.012	O					0.01
91.833	0.00	0.01	0.012	O					0.01
91.917	0.00	0.01	0.012	O					0.01
92.000	0.00	0.01	0.012	O					0.01
92.083	0.00	0.01	0.011	O					0.01
92.167	0.00	0.01	0.011	O					0.01
92.250	0.00	0.01	0.011	O					0.01
92.333	0.00	0.01	0.011	O					0.01
92.417	0.00	0.01	0.011	O					0.01
92.500	0.00	0.01	0.011	O					0.01
92.583	0.00	0.01	0.011	O					0.01
92.667	0.00	0.01	0.011	O					0.01
92.750	0.00	0.01	0.011	O					0.01
92.833	0.00	0.01	0.011	O					0.01
92.917	0.00	0.01	0.011	O					0.01
93.000	0.00	0.01	0.011	O					0.01
93.083	0.00	0.01	0.011	O					0.01
93.167	0.00	0.01	0.011	O					0.01
93.250	0.00	0.01	0.011	O					0.01
93.333	0.00	0.01	0.011	O					0.01
93.417	0.00	0.01	0.010	O					0.01
93.500	0.00	0.01	0.010	O					0.01
93.583	0.00	0.01	0.010	O					0.01
93.667	0.00	0.01	0.010	O					0.01
93.750	0.00	0.01	0.010	O					0.01
93.833	0.00	0.01	0.010	O					0.01
93.917	0.00	0.01	0.010	O					0.01
94.000	0.00	0.01	0.010	O					0.01

94.083	0.00	0.01	0.010	O	|	|	|	|	0.01
94.167	0.00	0.01	0.010	O	|	|	|	|	0.01
94.250	0.00	0.01	0.010	O	|	|	|	|	0.01
94.333	0.00	0.01	0.010	O	|	|	|	|	0.01
94.417	0.00	0.01	0.010	O	|	|	|	|	0.01
94.500	0.00	0.01	0.010	O	|	|	|	|	0.01
94.583	0.00	0.01	0.010	O	|	|	|	|	0.01
94.667	0.00	0.01	0.010	O	|	|	|	|	0.01
94.750	0.00	0.01	0.010	O	|	|	|	|	0.01
94.833	0.00	0.01	0.009	O	|	|	|	|	0.01
94.917	0.00	0.01	0.009	O	|	|	|	|	0.01
95.000	0.00	0.01	0.009	O	|	|	|	|	0.01
95.083	0.00	0.01	0.009	O	|	|	|	|	0.01
95.167	0.00	0.01	0.009	O	|	|	|	|	0.01
95.250	0.00	0.01	0.009	O	|	|	|	|	0.01
95.333	0.00	0.01	0.009	O	|	|	|	|	0.01
95.417	0.00	0.01	0.009	O	|	|	|	|	0.01
95.500	0.00	0.01	0.009	O	|	|	|	|	0.01
95.583	0.00	0.01	0.009	O	|	|	|	|	0.01
95.667	0.00	0.01	0.009	O	|	|	|	|	0.01
95.750	0.00	0.01	0.009	O	|	|	|	|	0.01
95.833	0.00	0.01	0.009	O	|	|	|	|	0.01
95.917	0.00	0.01	0.009	O	|	|	|	|	0.01
96.000	0.00	0.01	0.009	O	|	|	|	|	0.01
96.083	0.00	0.01	0.009	O	|	|	|	|	0.01
96.167	0.00	0.01	0.009	O	|	|	|	|	0.01
96.250	0.00	0.01	0.009	O	|	|	|	|	0.01
96.333	0.00	0.01	0.009	O	|	|	|	|	0.01
96.417	0.00	0.01	0.009	O	|	|	|	|	0.01
96.500	0.00	0.01	0.008	O	|	|	|	|	0.01
96.583	0.00	0.01	0.008	O	|	|	|	|	0.01
96.667	0.00	0.01	0.008	O	|	|	|	|	0.01
96.750	0.00	0.01	0.008	O	|	|	|	|	0.00
96.833	0.00	0.01	0.008	O	|	|	|	|	0.00
96.917	0.00	0.01	0.008	O	|	|	|	|	0.00
97.000	0.00	0.01	0.008	O	|	|	|	|	0.00
97.083	0.00	0.01	0.008	O	|	|	|	|	0.00
97.167	0.00	0.01	0.008	O	|	|	|	|	0.00
97.250	0.00	0.01	0.008	O	|	|	|	|	0.00
97.333	0.00	0.01	0.008	O	|	|	|	|	0.00
97.417	0.00	0.01	0.008	O	|	|	|	|	0.00
97.500	0.00	0.01	0.008	O	|	|	|	|	0.00
97.583	0.00	0.01	0.008	O	|	|	|	|	0.00
97.667	0.00	0.01	0.008	O	|	|	|	|	0.00
97.750	0.00	0.01	0.008	O	|	|	|	|	0.00
97.833	0.00	0.01	0.008	O	|	|	|	|	0.00
97.917	0.00	0.01	0.008	O	|	|	|	|	0.00
98.000	0.00	0.01	0.008	O	|	|	|	|	0.00
98.083	0.00	0.01	0.008	O	|	|	|	|	0.00
98.167	0.00	0.01	0.008	O	|	|	|	|	0.00
98.250	0.00	0.01	0.008	O	|	|	|	|	0.00
98.333	0.00	0.01	0.007	O	|	|	|	|	0.00
98.417	0.00	0.01	0.007	O	|	|	|	|	0.00
98.500	0.00	0.01	0.007	O	|	|	|	|	0.00
98.583	0.00	0.01	0.007	O	|	|	|	|	0.00
98.667	0.00	0.01	0.007	O	|	|	|	|	0.00
98.750	0.00	0.01	0.007	O	|	|	|	|	0.00
98.833	0.00	0.01	0.007	O	|	|	|	|	0.00
98.917	0.00	0.01	0.007	O	|	|	|	|	0.00
99.000	0.00	0.01	0.007	O	|	|	|	|	0.00
99.083	0.00	0.01	0.007	O	|	|	|	|	0.00
99.167	0.00	0.01	0.007	O	|	|	|	|	0.00
99.250	0.00	0.01	0.007	O	|	|	|	|	0.00
99.333	0.00	0.01	0.007	O	|	|	|	|	0.00
99.417	0.00	0.01	0.007	O	|	|	|	|	0.00
99.500	0.00	0.01	0.007	O	|	|	|	|	0.00
99.583	0.00	0.01	0.007	O	|	|	|	|	0.00
99.667	0.00	0.01	0.007	O	|	|	|	|	0.00
99.750	0.00	0.01	0.007	O	|	|	|	|	0.00
99.833	0.00	0.01	0.007	O	|	|	|	|	0.00
99.917	0.00	0.01	0.007	O	|	|	|	|	0.00

100.000	0.00	0.01	0.007	O	|	|	|	|	0.00
100.083	0.00	0.01	0.007	O	|	|	|	|	0.00
100.167	0.00	0.01	0.007	O	|	|	|	|	0.00
100.250	0.00	0.01	0.007	O	|	|	|	|	0.00
100.333	0.00	0.01	0.007	O	|	|	|	|	0.00
100.417	0.00	0.01	0.006	O	|	|	|	|	0.00
100.500	0.00	0.01	0.006	O	|	|	|	|	0.00
100.583	0.00	0.01	0.006	O	|	|	|	|	0.00
100.667	0.00	0.01	0.006	O	|	|	|	|	0.00
100.750	0.00	0.01	0.006	O	|	|	|	|	0.00
100.833	0.00	0.01	0.006	O	|	|	|	|	0.00
100.917	0.00	0.01	0.006	O	|	|	|	|	0.00
101.000	0.00	0.01	0.006	O	|	|	|	|	0.00
101.083	0.00	0.01	0.006	O	|	|	|	|	0.00
101.167	0.00	0.01	0.006	O	|	|	|	|	0.00
101.250	0.00	0.01	0.006	O	|	|	|	|	0.00
101.333	0.00	0.01	0.006	O	|	|	|	|	0.00
101.417	0.00	0.01	0.006	O	|	|	|	|	0.00
101.500	0.00	0.00	0.006	O	|	|	|	|	0.00
101.583	0.00	0.00	0.006	O	|	|	|	|	0.00
101.667	0.00	0.00	0.006	O	|	|	|	|	0.00
101.750	0.00	0.00	0.006	O	|	|	|	|	0.00
101.833	0.00	0.00	0.006	O	|	|	|	|	0.00
101.917	0.00	0.00	0.006	O	|	|	|	|	0.00
102.000	0.00	0.00	0.006	O	|	|	|	|	0.00
102.083	0.00	0.00	0.006	O	|	|	|	|	0.00
102.167	0.00	0.00	0.006	O	|	|	|	|	0.00
102.250	0.00	0.00	0.006	O	|	|	|	|	0.00
102.333	0.00	0.00	0.006	O	|	|	|	|	0.00
102.417	0.00	0.00	0.006	O	|	|	|	|	0.00
102.500	0.00	0.00	0.006	O	|	|	|	|	0.00
102.583	0.00	0.00	0.006	O	|	|	|	|	0.00
102.667	0.00	0.00	0.006	O	|	|	|	|	0.00
102.750	0.00	0.00	0.006	O	|	|	|	|	0.00
102.833	0.00	0.00	0.005	O	|	|	|	|	0.00
102.917	0.00	0.00	0.005	O	|	|	|	|	0.00
103.000	0.00	0.00	0.005	O	|	|	|	|	0.00
103.083	0.00	0.00	0.005	O	|	|	|	|	0.00
103.167	0.00	0.00	0.005	O	|	|	|	|	0.00
103.250	0.00	0.00	0.005	O	|	|	|	|	0.00
103.333	0.00	0.00	0.005	O	|	|	|	|	0.00
103.417	0.00	0.00	0.005	O	|	|	|	|	0.00
103.500	0.00	0.00	0.005	O	|	|	|	|	0.00
103.583	0.00	0.00	0.005	O	|	|	|	|	0.00
103.667	0.00	0.00	0.005	O	|	|	|	|	0.00
103.750	0.00	0.00	0.005	O	|	|	|	|	0.00
103.833	0.00	0.00	0.005	O	|	|	|	|	0.00
103.917	0.00	0.00	0.005	O	|	|	|	|	0.00
104.000	0.00	0.00	0.005	O	|	|	|	|	0.00
104.083	0.00	0.00	0.005	O	|	|	|	|	0.00
104.167	0.00	0.00	0.005	O	|	|	|	|	0.00
104.250	0.00	0.00	0.005	O	|	|	|	|	0.00
104.333	0.00	0.00	0.005	O	|	|	|	|	0.00
104.417	0.00	0.00	0.005	O	|	|	|	|	0.00
104.500	0.00	0.00	0.005	O	|	|	|	|	0.00
104.583	0.00	0.00	0.005	O	|	|	|	|	0.00
104.667	0.00	0.00	0.005	O	|	|	|	|	0.00
104.750	0.00	0.00	0.005	O	|	|	|	|	0.00
104.833	0.00	0.00	0.005	O	|	|	|	|	0.00
104.917	0.00	0.00	0.005	O	|	|	|	|	0.00
105.000	0.00	0.00	0.005	O	|	|	|	|	0.00
105.083	0.00	0.00	0.005	O	|	|	|	|	0.00
105.167	0.00	0.00	0.005	O	|	|	|	|	0.00
105.250	0.00	0.00	0.005	O	|	|	|	|	0.00
105.333	0.00	0.00	0.005	O	|	|	|	|	0.00
105.417	0.00	0.00	0.005	O	|	|	|	|	0.00
105.500	0.00	0.00	0.005	O	|	|	|	|	0.00
105.583	0.00	0.00	0.005	O	|	|	|	|	0.00
105.667	0.00	0.00	0.005	O	|	|	|	|	0.00
105.750	0.00	0.00	0.004	O	|	|	|	|	0.00
105.833	0.00	0.00	0.004	O	|	|	|	|	0.00

105.917	0.00	0.00	0.004	O	|	|	|	|	0.00
106.000	0.00	0.00	0.004	O	|	|	|	|	0.00
106.083	0.00	0.00	0.004	O	|	|	|	|	0.00
106.167	0.00	0.00	0.004	O	|	|	|	|	0.00
106.250	0.00	0.00	0.004	O	|	|	|	|	0.00
106.333	0.00	0.00	0.004	O	|	|	|	|	0.00
106.417	0.00	0.00	0.004	O	|	|	|	|	0.00
106.500	0.00	0.00	0.004	O	|	|	|	|	0.00
106.583	0.00	0.00	0.004	O	|	|	|	|	0.00
106.667	0.00	0.00	0.004	O	|	|	|	|	0.00
106.750	0.00	0.00	0.004	O	|	|	|	|	0.00
106.833	0.00	0.00	0.004	O	|	|	|	|	0.00
106.917	0.00	0.00	0.004	O	|	|	|	|	0.00
107.000	0.00	0.00	0.004	O	|	|	|	|	0.00
107.083	0.00	0.00	0.004	O	|	|	|	|	0.00
107.167	0.00	0.00	0.004	O	|	|	|	|	0.00
107.250	0.00	0.00	0.004	O	|	|	|	|	0.00
107.333	0.00	0.00	0.004	O	|	|	|	|	0.00
107.417	0.00	0.00	0.004	O	|	|	|	|	0.00
107.500	0.00	0.00	0.004	O	|	|	|	|	0.00
107.583	0.00	0.00	0.004	O	|	|	|	|	0.00
107.667	0.00	0.00	0.004	O	|	|	|	|	0.00
107.750	0.00	0.00	0.004	O	|	|	|	|	0.00
107.833	0.00	0.00	0.004	O	|	|	|	|	0.00
107.917	0.00	0.00	0.004	O	|	|	|	|	0.00
108.000	0.00	0.00	0.004	O	|	|	|	|	0.00
108.083	0.00	0.00	0.004	O	|	|	|	|	0.00
108.167	0.00	0.00	0.004	O	|	|	|	|	0.00
108.250	0.00	0.00	0.004	O	|	|	|	|	0.00
108.333	0.00	0.00	0.004	O	|	|	|	|	0.00
108.417	0.00	0.00	0.004	O	|	|	|	|	0.00
108.500	0.00	0.00	0.004	O	|	|	|	|	0.00
108.583	0.00	0.00	0.004	O	|	|	|	|	0.00
108.667	0.00	0.00	0.004	O	|	|	|	|	0.00
108.750	0.00	0.00	0.004	O	|	|	|	|	0.00
108.833	0.00	0.00	0.004	O	|	|	|	|	0.00
108.917	0.00	0.00	0.004	O	|	|	|	|	0.00
109.000	0.00	0.00	0.004	O	|	|	|	|	0.00
109.083	0.00	0.00	0.004	O	|	|	|	|	0.00
109.167	0.00	0.00	0.004	O	|	|	|	|	0.00
109.250	0.00	0.00	0.004	O	|	|	|	|	0.00
109.333	0.00	0.00	0.004	O	|	|	|	|	0.00
109.417	0.00	0.00	0.003	O	|	|	|	|	0.00
109.500	0.00	0.00	0.003	O	|	|	|	|	0.00
109.583	0.00	0.00	0.003	O	|	|	|	|	0.00
109.667	0.00	0.00	0.003	O	|	|	|	|	0.00
109.750	0.00	0.00	0.003	O	|	|	|	|	0.00
109.833	0.00	0.00	0.003	O	|	|	|	|	0.00
109.917	0.00	0.00	0.003	O	|	|	|	|	0.00
110.000	0.00	0.00	0.003	O	|	|	|	|	0.00
110.083	0.00	0.00	0.003	O	|	|	|	|	0.00
110.167	0.00	0.00	0.003	O	|	|	|	|	0.00
110.250	0.00	0.00	0.003	O	|	|	|	|	0.00
110.333	0.00	0.00	0.003	O	|	|	|	|	0.00
110.417	0.00	0.00	0.003	O	|	|	|	|	0.00
110.500	0.00	0.00	0.003	O	|	|	|	|	0.00
110.583	0.00	0.00	0.003	O	|	|	|	|	0.00
110.667	0.00	0.00	0.003	O	|	|	|	|	0.00
110.750	0.00	0.00	0.003	O	|	|	|	|	0.00
110.833	0.00	0.00	0.003	O	|	|	|	|	0.00
110.917	0.00	0.00	0.003	O	|	|	|	|	0.00
111.000	0.00	0.00	0.003	O	|	|	|	|	0.00
111.083	0.00	0.00	0.003	O	|	|	|	|	0.00
111.167	0.00	0.00	0.003	O	|	|	|	|	0.00
111.250	0.00	0.00	0.003	O	|	|	|	|	0.00
111.333	0.00	0.00	0.003	O	|	|	|	|	0.00
111.417	0.00	0.00	0.003	O	|	|	|	|	0.00
111.500	0.00	0.00	0.003	O	|	|	|	|	0.00
111.583	0.00	0.00	0.003	O	|	|	|	|	0.00
111.667	0.00	0.00	0.003	O	|	|	|	|	0.00
111.750	0.00	0.00	0.003	O	|	|	|	|	0.00

111.833	0.00	0.00	0.003	O	|	|	|	|	0.00
111.917	0.00	0.00	0.003	O	|	|	|	|	0.00
112.000	0.00	0.00	0.003	O	|	|	|	|	0.00
112.083	0.00	0.00	0.003	O	|	|	|	|	0.00
112.167	0.00	0.00	0.003	O	|	|	|	|	0.00
112.250	0.00	0.00	0.003	O	|	|	|	|	0.00
112.333	0.00	0.00	0.003	O	|	|	|	|	0.00
112.417	0.00	0.00	0.003	O	|	|	|	|	0.00
112.500	0.00	0.00	0.003	O	|	|	|	|	0.00
112.583	0.00	0.00	0.003	O	|	|	|	|	0.00
112.667	0.00	0.00	0.003	O	|	|	|	|	0.00
112.750	0.00	0.00	0.003	O	|	|	|	|	0.00
112.833	0.00	0.00	0.003	O	|	|	|	|	0.00
112.917	0.00	0.00	0.003	O	|	|	|	|	0.00
113.000	0.00	0.00	0.003	O	|	|	|	|	0.00
113.083	0.00	0.00	0.003	O	|	|	|	|	0.00
113.167	0.00	0.00	0.003	O	|	|	|	|	0.00
113.250	0.00	0.00	0.003	O	|	|	|	|	0.00
113.333	0.00	0.00	0.003	O	|	|	|	|	0.00
113.417	0.00	0.00	0.003	O	|	|	|	|	0.00
113.500	0.00	0.00	0.003	O	|	|	|	|	0.00
113.583	0.00	0.00	0.003	O	|	|	|	|	0.00
113.667	0.00	0.00	0.003	O	|	|	|	|	0.00
113.750	0.00	0.00	0.003	O	|	|	|	|	0.00
113.833	0.00	0.00	0.003	O	|	|	|	|	0.00
113.917	0.00	0.00	0.003	O	|	|	|	|	0.00
114.000	0.00	0.00	0.003	O	|	|	|	|	0.00
114.083	0.00	0.00	0.003	O	|	|	|	|	0.00
114.167	0.00	0.00	0.003	O	|	|	|	|	0.00
114.250	0.00	0.00	0.003	O	|	|	|	|	0.00
114.333	0.00	0.00	0.002	O	|	|	|	|	0.00
114.417	0.00	0.00	0.002	O	|	|	|	|	0.00
114.500	0.00	0.00	0.002	O	|	|	|	|	0.00
114.583	0.00	0.00	0.002	O	|	|	|	|	0.00
114.667	0.00	0.00	0.002	O	|	|	|	|	0.00
114.750	0.00	0.00	0.002	O	|	|	|	|	0.00
114.833	0.00	0.00	0.002	O	|	|	|	|	0.00
114.917	0.00	0.00	0.002	O	|	|	|	|	0.00
115.000	0.00	0.00	0.002	O	|	|	|	|	0.00
115.083	0.00	0.00	0.002	O	|	|	|	|	0.00
115.167	0.00	0.00	0.002	O	|	|	|	|	0.00
115.250	0.00	0.00	0.002	O	|	|	|	|	0.00
115.333	0.00	0.00	0.002	O	|	|	|	|	0.00
115.417	0.00	0.00	0.002	O	|	|	|	|	0.00
115.500	0.00	0.00	0.002	O	|	|	|	|	0.00
115.583	0.00	0.00	0.002	O	|	|	|	|	0.00
115.667	0.00	0.00	0.002	O	|	|	|	|	0.00
115.750	0.00	0.00	0.002	O	|	|	|	|	0.00
115.833	0.00	0.00	0.002	O	|	|	|	|	0.00
115.917	0.00	0.00	0.002	O	|	|	|	|	0.00
116.000	0.00	0.00	0.002	O	|	|	|	|	0.00
116.083	0.00	0.00	0.002	O	|	|	|	|	0.00
116.167	0.00	0.00	0.002	O	|	|	|	|	0.00
116.250	0.00	0.00	0.002	O	|	|	|	|	0.00
116.333	0.00	0.00	0.002	O	|	|	|	|	0.00
116.417	0.00	0.00	0.002	O	|	|	|	|	0.00
116.500	0.00	0.00	0.002	O	|	|	|	|	0.00
116.583	0.00	0.00	0.002	O	|	|	|	|	0.00
116.667	0.00	0.00	0.002	O	|	|	|	|	0.00
116.750	0.00	0.00	0.002	O	|	|	|	|	0.00
116.833	0.00	0.00	0.002	O	|	|	|	|	0.00
116.917	0.00	0.00	0.002	O	|	|	|	|	0.00
117.000	0.00	0.00	0.002	O	|	|	|	|	0.00
117.083	0.00	0.00	0.002	O	|	|	|	|	0.00
117.167	0.00	0.00	0.002	O	|	|	|	|	0.00
117.250	0.00	0.00	0.002	O	|	|	|	|	0.00
117.333	0.00	0.00	0.002	O	|	|	|	|	0.00
117.417	0.00	0.00	0.002	O	|	|	|	|	0.00
117.500	0.00	0.00	0.002	O	|	|	|	|	0.00
117.583	0.00	0.00	0.002	O	|	|	|	|	0.00
117.667	0.00	0.00	0.002	O	|	|	|	|	0.00

```
117.750    0.00    0.00      0.002  O       |       |       |       |      0.00
117.833    0.00    0.00      0.002  O       |       |       |       |      0.00
117.917    0.00    0.00      0.002  O       |       |       |       |      0.00
118.000    0.00    0.00      0.002  O       |       |       |       |      0.00
118.083    0.00    0.00      0.002  O       |       |       |       |      0.00
118.167    0.00    0.00      0.002  O       |       |       |       |      0.00
118.250    0.00    0.00      0.002  O       |       |       |       |      0.00
118.333    0.00    0.00      0.002  O       |       |       |       |      0.00
118.417    0.00    0.00      0.002  O       |       |       |       |      0.00
118.500    0.00    0.00      0.002  O       |       |       |       |      0.00
118.583    0.00    0.00      0.002  O       |       |       |       |      0.00
118.667    0.00    0.00      0.002  O       |       |       |       |      0.00
118.750    0.00    0.00      0.002  O       |       |       |       |      0.00
118.833    0.00    0.00      0.002  O       |       |       |       |      0.00
118.917    0.00    0.00      0.002  O       |       |       |       |      0.00
119.000    0.00    0.00      0.002  O       |       |       |       |      0.00
119.083    0.00    0.00      0.002  O       |       |       |       |      0.00
119.167    0.00    0.00      0.002  O       |       |       |       |      0.00
119.250    0.00    0.00      0.002  O       |       |       |       |      0.00
119.333    0.00    0.00      0.002  O       |       |       |       |      0.00
119.417    0.00    0.00      0.002  O       |       |       |       |      0.00
119.500    0.00    0.00      0.002  O       |       |       |       |      0.00
119.583    0.00    0.00      0.002  O       |       |       |       |      0.00
119.667    0.00    0.00      0.002  O       |       |       |       |      0.00
119.750    0.00    0.00      0.002  O       |       |       |       |      0.00
119.833    0.00    0.00      0.002  O       |       |       |       |      0.00
119.917    0.00    0.00      0.002  O       |       |       |       |      0.00
120.000    0.00    0.00      0.002  O       |       |       |       |      0.00
120.083    0.00    0.00      0.002  O       |       |       |       |      0.00
120.167    0.00    0.00      0.002  O       |       |       |       |      0.00
120.250    0.00    0.00      0.002  O       |       |       |       |      0.00

        Remaining water in basin =    0.00 (Ac.Ft)

        ****************************HYDROGRAPH DATA****************************
                      Number of intervals =  1443
                      Time interval =    5.0 (Min.)
                      Maximum/Peak flow rate =        6.455 (CFS)
                      Total volume =       5.955 (Ac.Ft)
               Status of hydrographs being held in storage
                         Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
               Peak (CFS)      0.000     0.000     0.000     0.000     0.000
               Vol (Ac.Ft)     0.000     0.000     0.000     0.000     0.000
        ***********************************************************************

        ---------------------------------------------------------------------
```

- Basin 'C' - 2 Year 24 Hour Storm Routing Analysis

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                  FLOOD HYDROGRAPH ROUTING PROGRAM
          Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012
                      Study date: 03/20/17

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WESTRIDGE HYDROLOGY STUDY
PROPOSED ROUTING - BASIN 'C' - 2 YEAR 24 HOUR STORM
HUNSAKER & ASSOCIATES, MARCH 20, 2017
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------


Program License Serial Number 4094

------------------------------------------------------------------------
******************** HYDROGRAPH INFORMATION **********************

               From study/file name: PRC00224.rte
*****************************HYDROGRAPH DATA*****************************
               Number of intervals =   305
               Time interval =    5.0 (Min.)
               Maximum/Peak flow rate =      104.107 (CFS)
               Total volume =       7.071 (Ac.Ft)
       Status of hydrographs being held in storage
                   Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
       Peak (CFS)      0.000     0.000     0.000     0.000     0.000
       Vol (Ac.Ft)     0.000     0.000     0.000     0.000     0.000
************************************************************************



++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      300.000 to Point/Station      301.000
**** RETARDING BASIN ROUTING ****
________________________________________________________________________

User entry of depth-outflow-storage data
------------------------------------------------------------------------
Total number of inflow hydrograph intervals = 305
Hydrograph time unit =  5.000 (Min.)
Initial depth in storage basin =   0.00(Ft.)
------------------------------------------------------------------------
------------------------------------------------------------------------
Initial basin depth =   0.00 (Ft.)
Initial basin storage =      0.00 (Ac.Ft)
Initial basin outflow =   0.00 (CFS)
------------------------------------------------------------------------
------------------------------------------------------------------------
Depth vs. Storage and Depth vs. Discharge data:
 Basin Depth  Storage    Outflow   (S-O*dt/2)   (S+O*dt/2)
     (Ft.)    (Ac.Ft)    (CFS)     (Ac.Ft)    (Ac.Ft)
------------------------------------------------------------------------
   0.000      0.000      0.000      0.000        0.000
   0.500      0.834      0.692      0.832        0.836
   1.000      1.693      1.672      1.687        1.699
   1.500      2.577      3.059      2.566        2.588
   2.000      3.488      4.757      3.472        3.504
   3.000      5.388      7.930      5.361        5.415
   4.000      7.399     20.434      7.329        7.469
   5.000      9.523     35.089      9.402        9.644
   6.000     11.764     44.538     11.611       11.917
   7.000     14.126     52.170     13.946       14.306
   8.000     16.610     58.766     16.408       16.812
   8.900     18.942     83.236     18.655       19.229
   9.000     19.207     83.236     18.920       19.494
   9.500     20.556    448.796     19.011       22.101
  10.000     21.935   1159.965     17.941       25.929
```

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0	26.0	52.05	78.08	104.11	Depth (Ft.)
0.083	0.03	0.00	0.000	O	|	|	|	|	0.00
0.167	0.13	0.00	0.001	O	|	|	|	|	0.00
0.250	0.41	0.00	0.002	O	|	|	|	|	0.00
0.333	0.62	0.00	0.006	O	|	|	|	|	0.00
0.417	0.72	0.01	0.011	O	|	|	|	|	0.01
0.500	0.78	0.01	0.016	O	|	|	|	|	0.01
0.583	0.83	0.02	0.021	O	|	|	|	|	0.01
0.667	0.87	0.02	0.027	O	|	|	|	|	0.02
0.750	0.89	0.03	0.033	O	|	|	|	|	0.02
0.833	0.91	0.03	0.039	O	|	|	|	|	0.02
0.917	0.92	0.04	0.045	O	|	|	|	|	0.03
1.000	0.93	0.04	0.051	O	|	|	|	|	0.03
1.083	0.94	0.05	0.057	O	|	|	|	|	0.03
1.167	0.94	0.05	0.063	O	|	|	|	|	0.04
1.250	0.95	0.06	0.069	O	|	|	|	|	0.04
1.333	0.95	0.06	0.075	O	|	|	|	|	0.05
1.417	0.96	0.07	0.082	O	|	|	|	|	0.05
1.500	0.96	0.07	0.088	O	|	|	|	|	0.05
1.583	0.97	0.08	0.094	O	|	|	|	|	0.06
1.667	0.97	0.08	0.100	O	|	|	|	|	0.06
1.750	0.97	0.09	0.106	O	|	|	|	|	0.06
1.833	0.98	0.09	0.112	O	|	|	|	|	0.07
1.917	0.98	0.10	0.118	O	|	|	|	|	0.07
2.000	0.98	0.10	0.124	O	|	|	|	|	0.07
2.083	0.99	0.11	0.130	O	|	|	|	|	0.08
2.167	0.99	0.11	0.136	O	|	|	|	|	0.08
2.250	1.00	0.12	0.143	O	|	|	|	|	0.09
2.333	1.00	0.12	0.149	O	|	|	|	|	0.09
2.417	1.00	0.13	0.155	O	|	|	|	|	0.09
2.500	1.01	0.13	0.161	O	|	|	|	|	0.10
2.583	1.01	0.14	0.167	O	|	|	|	|	0.10
2.667	1.01	0.14	0.173	O	|	|	|	|	0.10
2.750	1.02	0.15	0.179	O	|	|	|	|	0.11
2.833	1.02	0.15	0.185	O	|	|	|	|	0.11
2.917	1.03	0.16	0.191	O	|	|	|	|	0.11
3.000	1.03	0.16	0.197	O	|	|	|	|	0.12
3.083	1.03	0.17	0.203	O	|	|	|	|	0.12
3.167	1.04	0.17	0.208	O	|	|	|	|	0.12
3.250	1.04	0.18	0.214	O	|	|	|	|	0.13
3.333	1.05	0.18	0.220	O	|	|	|	|	0.13
3.417	1.05	0.19	0.226	O	|	|	|	|	0.14
3.500	1.06	0.19	0.232	O	|	|	|	|	0.14
3.583	1.06	0.20	0.238	O	|	|	|	|	0.14
3.667	1.06	0.20	0.244	O	|	|	|	|	0.15
3.750	1.07	0.21	0.250	O	|	|	|	|	0.15
3.833	1.07	0.21	0.256	O	|	|	|	|	0.15
3.917	1.08	0.22	0.262	O	|	|	|	|	0.16
4.000	1.08	0.22	0.268	O	|	|	|	|	0.16
4.083	1.09	0.23	0.274	O	|	|	|	|	0.16
4.167	1.09	0.23	0.280	O	|	|	|	|	0.17
4.250	1.10	0.24	0.286	O	|	|	|	|	0.17
4.333	1.10	0.24	0.292	O	|	|	|	|	0.17
4.417	1.11	0.25	0.297	O	|	|	|	|	0.18
4.500	1.11	0.25	0.303	O	|	|	|	|	0.18
4.583	1.12	0.26	0.309	O	|	|	|	|	0.19
4.667	1.12	0.26	0.315	O	|	|	|	|	0.19
4.750	1.13	0.27	0.321	O	|	|	|	|	0.19
4.833	1.13	0.27	0.327	O	|	|	|	|	0.20
4.917	1.14	0.28	0.333	O	|	|	|	|	0.20
5.000	1.14	0.28	0.339	O	|	|	|	|	0.20
5.083	1.15	0.29	0.345	O	|	|	|	|	0.21
5.167	1.15	0.29	0.351	O	|	|	|	|	0.21
5.250	1.16	0.30	0.357	O	|	|	|	|	0.21

5.333	1.16	0.30	0.363	O	|	|	|	|	0.22
5.417	1.17	0.31	0.368	O	|	|	|	|	0.22
5.500	1.17	0.31	0.374	O	|	|	|	|	0.22
5.583	1.18	0.32	0.380	O	|	|	|	|	0.23
5.667	1.18	0.32	0.386	O	|	|	|	|	0.23
5.750	1.19	0.33	0.392	O	|	|	|	|	0.24
5.833	1.20	0.33	0.398	O	|	|	|	|	0.24
5.917	1.20	0.34	0.404	O	|	|	|	|	0.24
6.000	1.21	0.34	0.410	O	|	|	|	|	0.25
6.083	1.21	0.35	0.416	O	|	|	|	|	0.25
6.167	1.22	0.35	0.422	O	|	|	|	|	0.25
6.250	1.23	0.36	0.428	O	|	|	|	|	0.26
6.333	1.23	0.36	0.434	O	|	|	|	|	0.26
6.417	1.24	0.37	0.440	O	|	|	|	|	0.26
6.500	1.25	0.37	0.446	O	|	|	|	|	0.27
6.583	1.25	0.38	0.452	O	|	|	|	|	0.27
6.667	1.26	0.38	0.458	O	|	|	|	|	0.27
6.750	1.27	0.39	0.464	O	|	|	|	|	0.28
6.833	1.27	0.39	0.470	O	|	|	|	|	0.28
6.917	1.28	0.40	0.476	O	|	|	|	|	0.29
7.000	1.29	0.40	0.483	O	|	|	|	|	0.29
7.083	1.29	0.41	0.489	O	|	|	|	|	0.29
7.167	1.30	0.41	0.495	O	|	|	|	|	0.30
7.250	1.31	0.42	0.501	O	|	|	|	|	0.30
7.333	1.32	0.42	0.507	O	|	|	|	|	0.30
7.417	1.32	0.43	0.513	O	|	|	|	|	0.31
7.500	1.33	0.43	0.520	O	|	|	|	|	0.31
7.583	1.34	0.44	0.526	O	|	|	|	|	0.32
7.667	1.35	0.44	0.532	O	|	|	|	|	0.32
7.750	1.36	0.45	0.538	O	|	|	|	|	0.32
7.833	1.36	0.45	0.545	O	|	|	|	|	0.33
7.917	1.37	0.46	0.551	O	|	|	|	|	0.33
8.000	1.38	0.46	0.557	O	|	|	|	|	0.33
8.083	1.39	0.47	0.563	O	|	|	|	|	0.34
8.167	1.40	0.47	0.570	O	|	|	|	|	0.34
8.250	1.41	0.48	0.576	O	|	|	|	|	0.35
8.333	1.42	0.48	0.583	O	|	|	|	|	0.35
8.417	1.43	0.49	0.589	O	|	|	|	|	0.35
8.500	1.44	0.49	0.596	O	|	|	|	|	0.36
8.583	1.45	0.50	0.602	O	|	|	|	|	0.36
8.667	1.46	0.50	0.609	O	|	|	|	|	0.36
8.750	1.47	0.51	0.615	O	|	|	|	|	0.37
8.833	1.48	0.52	0.622	O	|	|	|	|	0.37
8.917	1.49	0.52	0.628	O	|	|	|	|	0.38
9.000	1.50	0.53	0.635	O	|	|	|	|	0.38
9.083	1.51	0.53	0.642	O	|	|	|	|	0.38
9.167	1.52	0.54	0.649	O	|	|	|	|	0.39
9.250	1.53	0.54	0.655	O	|	|	|	|	0.39
9.333	1.54	0.55	0.662	O	|	|	|	|	0.40
9.417	1.55	0.56	0.669	O	|	|	|	|	0.40
9.500	1.56	0.56	0.676	O	|	|	|	|	0.41
9.583	1.58	0.57	0.683	O	|	|	|	|	0.41
9.667	1.59	0.57	0.690	O	|	|	|	|	0.41
9.750	1.60	0.58	0.697	O	|	|	|	|	0.42
9.833	1.61	0.58	0.704	O	|	|	|	|	0.42
9.917	1.63	0.59	0.711	O	|	|	|	|	0.43
10.000	1.64	0.60	0.718	O	|	|	|	|	0.43
10.083	1.65	0.60	0.725	O	|	|	|	|	0.43
10.167	1.67	0.61	0.733	O	|	|	|	|	0.44
10.250	1.68	0.61	0.740	O	|	|	|	|	0.44
10.333	1.70	0.62	0.747	O	|	|	|	|	0.45
10.417	1.71	0.63	0.755	O	|	|	|	|	0.45
10.500	1.73	0.63	0.762	O	|	|	|	|	0.46
10.583	1.74	0.64	0.770	O	|	|	|	|	0.46
10.667	1.76	0.65	0.777	O	|	|	|	|	0.47
10.750	1.77	0.65	0.785	O	|	|	|	|	0.47
10.833	1.79	0.66	0.793	O	|	|	|	|	0.48
10.917	1.81	0.66	0.801	O	|	|	|	|	0.48
11.000	1.83	0.67	0.809	O	|	|	|	|	0.48
11.083	1.84	0.68	0.817	O	|	|	|	|	0.49
11.167	1.86	0.68	0.825	O	|	|	|	|	0.49

11.250	1.88	0.69	0.833	O	|	|	|	|	0.50
11.333	1.90	0.70	0.841	O	|	|	|	|	0.50
11.417	1.92	0.71	0.849	O	|	|	|	|	0.51
11.500	1.94	0.72	0.858	O	|	|	|	|	0.51
11.583	1.96	0.73	0.866	O	|	|	|	|	0.52
11.667	1.98	0.74	0.875	O	|	|	|	|	0.52
11.750	2.01	0.75	0.883	O	|	|	|	|	0.53
11.833	2.03	0.76	0.892	O	|	|	|	|	0.53
11.917	2.05	0.77	0.901	O	|	|	|	|	0.54
12.000	2.08	0.78	0.910	O	|	|	|	|	0.54
12.083	2.12	0.79	0.919	O	|	|	|	|	0.55
12.167	2.20	0.80	0.928	O	|	|	|	|	0.55
12.250	2.37	0.81	0.939	O	|	|	|	|	0.56
12.333	2.51	0.82	0.950	O	|	|	|	|	0.57
12.417	2.58	0.84	0.961	O	|	|	|	|	0.57
12.500	2.65	0.85	0.974	O	|	|	|	|	0.58
12.583	2.70	0.87	0.986	O	|	|	|	|	0.59
12.667	2.75	0.88	0.999	O	|	|	|	|	0.60
12.750	2.80	0.90	1.012	O	|	|	|	|	0.60
12.833	2.84	0.91	1.025	O	|	|	|	|	0.61
12.917	2.89	0.93	1.039	O	|	|	|	|	0.62
13.000	2.93	0.94	1.052	O	|	|	|	|	0.63
13.083	2.97	0.96	1.066	O	|	|	|	|	0.64
13.167	3.01	0.97	1.080	O	|	|	|	|	0.64
13.250	3.06	0.99	1.094	O	|	|	|	|	0.65
13.333	3.11	1.01	1.108	O	|	|	|	|	0.66
13.417	3.16	1.02	1.123	O	|	|	|	|	0.67
13.500	3.21	1.04	1.138	O	|	|	|	|	0.68
13.583	3.26	1.06	1.153	OI	|	|	|	|	0.69
13.667	3.31	1.07	1.168	OI	|	|	|	|	0.69
13.750	3.37	1.09	1.184	OI	|	|	|	|	0.70
13.833	3.43	1.11	1.200	OI	|	|	|	|	0.71
13.917	3.50	1.13	1.216	OI	|	|	|	|	0.72
14.000	3.56	1.15	1.232	OI	|	|	|	|	0.73
14.083	3.64	1.17	1.249	OI	|	|	|	|	0.74
14.167	3.74	1.19	1.267	OI	|	|	|	|	0.75
14.250	3.87	1.21	1.284	OI	|	|	|	|	0.76
14.333	4.00	1.23	1.303	OI	|	|	|	|	0.77
14.417	4.11	1.25	1.323	OI	|	|	|	|	0.78
14.500	4.22	1.27	1.343	OI	|	|	|	|	0.80
14.583	4.33	1.30	1.363	OI	|	|	|	|	0.81
14.667	4.45	1.32	1.384	OI	|	|	|	|	0.82
14.750	4.58	1.34	1.406	OI	|	|	|	|	0.83
14.833	4.71	1.37	1.429	OI	|	|	|	|	0.85
14.917	4.86	1.40	1.452	OI	|	|	|	|	0.86
15.000	5.02	1.43	1.477	OI	|	|	|	|	0.87
15.083	5.20	1.45	1.502	OI	|	|	|	|	0.89
15.167	5.39	1.48	1.528	OI	|	|	|	|	0.90
15.250	5.61	1.52	1.556	OI	|	|	|	|	0.92
15.333	5.85	1.55	1.585	OI	|	|	|	|	0.94
15.417	6.11	1.58	1.615	OI	|	|	|	|	0.95
15.500	6.31	1.62	1.647	OI	|	|	|	|	0.97
15.583	6.43	1.66	1.679	OI	|	|	|	|	0.99
15.667	6.87	1.70	1.714	O I	|	|	|	|	1.01
15.750	8.24	1.77	1.754	O I	|	|	|	|	1.03
15.833	10.68	1.85	1.806	O I	|	|	|	|	1.06
15.917	15.11	1.97	1.882	O I	|	|	|	|	1.11
16.000	21.97	2.15	1.996	O I	|	|	|	|	1.17
16.083	38.59	2.45	2.188	O	| I	|	|	|	1.28
16.167	65.78	2.98	2.529	O	|	| I	|	|	1.47
16.250	104.11	4.02	3.090	|O	|	|	|	I	1.78
16.333	83.86	5.12	3.706	|O	|	|	|I	|	2.11
16.417	47.53	5.81	4.121	|O	| I	|	|	|	2.33
16.500	33.28	6.21	4.357	|O	| I	|	|	|	2.46
16.583	24.95	6.47	4.514	|O I	|	|	|	|	2.54
16.667	19.55	6.65	4.622	| O I	|	|	|	|	2.60
16.750	15.30	6.77	4.696	| O I	|	|	|	|	2.64
16.833	11.92	6.85	4.743	| OI	|	|	|	|	2.66
16.917	9.17	6.89	4.768	| O	|	|	|	|	2.67
17.000	7.20	6.91	4.777	| O	|	|	|	|	2.68
17.083	6.43	6.91	4.776	|IO	|	|	|	|	2.68

17.167	5.77	6.90	4.771	|IO	|	|	|	|	2.68
17.250	5.34	6.88	4.762	|IO	|	|	|	|	2.67
17.333	5.01	6.86	4.750	|IO	|	|	|	|	2.66
17.417	4.45	6.84	4.735	|IO	|	|	|	|	2.66
17.500	4.09	6.81	4.718	|IO	|	|	|	|	2.65
17.583	3.60	6.78	4.697	|IO	|	|	|	|	2.64
17.667	3.43	6.74	4.675	|IO	|	|	|	|	2.62
17.750	3.29	6.70	4.652	|IO	|	|	|	|	2.61
17.833	3.18	6.66	4.628	I O	|	|	|	|	2.60
17.917	3.08	6.62	4.604	I O	|	|	|	|	2.59
18.000	2.99	6.58	4.579	I O	|	|	|	|	2.57
18.083	2.89	6.54	4.554	I O	|	|	|	|	2.56
18.167	2.76	6.50	4.529	IO	|	|	|	|	2.55
18.250	2.55	6.45	4.503	IO	|	|	|	|	2.53
18.333	2.38	6.41	4.476	IO	|	|	|	|	2.52
18.417	2.27	6.36	4.448	IO	|	|	|	|	2.51
18.500	2.18	6.31	4.419	IO	|	|	|	|	2.49
18.583	2.11	6.26	4.391	IO	|	|	|	|	2.48
18.667	2.04	6.22	4.362	IO	|	|	|	|	2.46
18.750	1.99	6.17	4.333	IO	|	|	|	|	2.44
18.833	1.94	6.12	4.304	IO	|	|	|	|	2.43
18.917	1.89	6.07	4.276	IO	|	|	|	|	2.41
19.000	1.85	6.02	4.247	IO	|	|	|	|	2.40
19.083	1.81	5.98	4.218	IO	|	|	|	|	2.38
19.167	1.78	5.93	4.190	IO	|	|	|	|	2.37
19.250	1.75	5.88	4.161	IO	|	|	|	|	2.35
19.333	1.71	5.83	4.133	IO	|	|	|	|	2.34
19.417	1.68	5.79	4.104	IO	|	|	|	|	2.32
19.500	1.65	5.74	4.076	IO	|	|	|	|	2.31
19.583	1.63	5.69	4.048	IO	|	|	|	|	2.29
19.667	1.60	5.65	4.020	IO	|	|	|	|	2.28
19.750	1.58	5.60	3.992	IO	|	|	|	|	2.27
19.833	1.55	5.55	3.965	IO	|	|	|	|	2.25
19.917	1.53	5.51	3.937	IO	|	|	|	|	2.24
20.000	1.51	5.46	3.910	IO	|	|	|	|	2.22
20.083	1.49	5.42	3.883	IO	|	|	|	|	2.21
20.167	1.47	5.37	3.856	IO	|	|	|	|	2.19
20.250	1.45	5.33	3.829	IO	|	|	|	|	2.18
20.333	1.43	5.28	3.802	IO	|	|	|	|	2.17
20.417	1.41	5.24	3.776	IO	|	|	|	|	2.15
20.500	1.39	5.19	3.750	IO	|	|	|	|	2.14
20.583	1.37	5.15	3.723	IO	|	|	|	|	2.12
20.667	1.36	5.11	3.698	IO	|	|	|	|	2.11
20.750	1.34	5.06	3.672	IO	|	|	|	|	2.10
20.833	1.32	5.02	3.646	IO	|	|	|	|	2.08
20.917	1.31	4.98	3.621	IO	|	|	|	|	2.07
21.000	1.29	4.94	3.596	IO	|	|	|	|	2.06
21.083	1.28	4.90	3.571	IO	|	|	|	|	2.04
21.167	1.27	4.85	3.546	IO	|	|	|	|	2.03
21.250	1.25	4.81	3.521	IO	|	|	|	|	2.02
21.333	1.24	4.77	3.497	IO	|	|	|	|	2.00
21.417	1.23	4.73	3.473	IO	|	|	|	|	1.99
21.500	1.21	4.68	3.449	IO	|	|	|	|	1.98
21.583	1.20	4.64	3.425	IO	|	|	|	|	1.97
21.667	1.19	4.60	3.401	IO	|	|	|	|	1.95
21.750	1.18	4.55	3.378	IO	|	|	|	|	1.94
21.833	1.17	4.51	3.355	IO	|	|	|	|	1.93
21.917	1.16	4.47	3.332	IO	|	|	|	|	1.91
22.000	1.14	4.42	3.309	IO	|	|	|	|	1.90
22.083	1.13	4.38	3.287	IO	|	|	|	|	1.89
22.167	1.12	4.34	3.264	IO	|	|	|	|	1.88
22.250	1.11	4.30	3.242	IO	|	|	|	|	1.87
22.333	1.10	4.26	3.221	IO	|	|	|	|	1.85
22.417	1.10	4.22	3.199	IO	|	|	|	|	1.84
22.500	1.09	4.18	3.178	IO	|	|	|	|	1.83
22.583	1.08	4.14	3.156	IO	|	|	|	|	1.82
22.667	1.07	4.10	3.135	IO	|	|	|	|	1.81
22.750	1.06	4.06	3.115	IO	|	|	|	|	1.80
22.833	1.05	4.02	3.094	IO	|	|	|	|	1.78
22.917	1.04	3.98	3.074	IO	|	|	|	|	1.77
23.000	1.03	3.95	3.053	IO	|	|	|	|	1.76

23.083	1.03	3.91	3.034	IO					1.75
23.167	1.02	3.87	3.014	IO					1.74
23.250	1.01	3.84	2.994	IO					1.73
23.333	1.00	3.80	2.975	IO					1.72
23.417	1.00	3.76	2.956	IO					1.71
23.500	0.99	3.73	2.937	IO					1.70
23.583	0.98	3.69	2.918	IO					1.69
23.667	0.97	3.66	2.899	IO					1.68
23.750	0.97	3.63	2.881	IO					1.67
23.833	0.96	3.59	2.863	IO					1.66
23.917	0.95	3.56	2.845	IO					1.65
24.000	0.95	3.52	2.827	IO					1.64
24.083	0.91	3.49	2.809	IO					1.63
24.167	0.80	3.46	2.791	IO					1.62
24.250	0.52	3.42	2.772	IO					1.61
24.333	0.31	3.38	2.751	IO					1.60
24.417	0.21	3.34	2.730	IO					1.58
24.500	0.15	3.30	2.708	IO					1.57
24.583	0.10	3.26	2.686	IO					1.56
24.667	0.07	3.22	2.665	O					1.55
24.750	0.04	3.18	2.643	O					1.54
24.833	0.03	3.14	2.622	O					1.52
24.917	0.02	3.10	2.600	O					1.51
25.000	0.01	3.06	2.579	O					1.50
25.083	0.01	3.03	2.558	O					1.49
25.167	0.01	3.00	2.538	O					1.48
25.250	0.01	2.96	2.517	O					1.47
25.333	0.00	2.93	2.497	O					1.45
25.417	0.00	2.90	2.477	O					1.44
25.500	0.00	2.87	2.457	O					1.43
25.583	0.00	2.84	2.437	O					1.42
25.667	0.00	2.81	2.418	O					1.41
25.750	0.00	2.78	2.398	O					1.40
25.833	0.00	2.75	2.379	O					1.39
25.917	0.00	2.72	2.361	O					1.38
26.000	0.00	2.69	2.342	O					1.37
26.083	0.00	2.66	2.324	O					1.36
26.167	0.00	2.63	2.305	O					1.35
26.250	0.00	2.60	2.287	O					1.34
26.333	0.00	2.58	2.269	O					1.33
26.417	0.00	2.55	2.252	O					1.32
26.500	0.00	2.52	2.234	O					1.31
26.583	0.00	2.49	2.217	O					1.30
26.667	0.00	2.47	2.200	O					1.29
26.750	0.00	2.44	2.183	O					1.28
26.833	0.00	2.41	2.166	O					1.27
26.917	0.00	2.39	2.150	O					1.26
27.000	0.00	2.36	2.133	O					1.25
27.083	0.00	2.34	2.117	O					1.24
27.167	0.00	2.31	2.101	O					1.23
27.250	0.00	2.29	2.085	O					1.22
27.333	0.00	2.26	2.070	O					1.21
27.417	0.00	2.24	2.054	O					1.20
27.500	0.00	2.21	2.039	O					1.20
27.583	0.00	2.19	2.024	O					1.19
27.667	0.00	2.17	2.009	O					1.18
27.750	0.00	2.14	1.994	O					1.17
27.833	0.00	2.12	1.979	O					1.16
27.917	0.00	2.10	1.965	O					1.15
28.000	0.00	2.08	1.950	O					1.15
28.083	0.00	2.05	1.936	O					1.14
28.167	0.00	2.03	1.922	O					1.13
28.250	0.00	2.01	1.908	O					1.12
28.333	0.00	1.99	1.894	O					1.11
28.417	0.00	1.97	1.881	O					1.11
28.500	0.00	1.95	1.867	O					1.10
28.583	0.00	1.92	1.854	O					1.09
28.667	0.00	1.90	1.841	O					1.08
28.750	0.00	1.88	1.828	O					1.08
28.833	0.00	1.86	1.815	O					1.07
28.917	0.00	1.84	1.802	O					1.06

29.000	0.00	1.82	1.789	O	|	|	|	|	1.05
29.083	0.00	1.80	1.777	O	|	|	|	|	1.05
29.167	0.00	1.78	1.765	O	|	|	|	|	1.04
29.250	0.00	1.77	1.752	O	|	|	|	|	1.03
29.333	0.00	1.75	1.740	O	|	|	|	|	1.03
29.417	0.00	1.73	1.728	O	|	|	|	|	1.02
29.500	0.00	1.71	1.716	O	|	|	|	|	1.01
29.583	0.00	1.69	1.705	O	|	|	|	|	1.01
29.667	0.00	1.67	1.693	O	|	|	|	|	1.00
29.750	0.00	1.66	1.682	O	|	|	|	|	0.99
29.833	0.00	1.65	1.670	O	|	|	|	|	0.99
29.917	0.00	1.63	1.659	O	|	|	|	|	0.98
30.000	0.00	1.62	1.648	O	|	|	|	|	0.97
30.083	0.00	1.61	1.637	O	|	|	|	|	0.97
30.167	0.00	1.60	1.626	O	|	|	|	|	0.96
30.250	0.00	1.58	1.615	O	|	|	|	|	0.95
30.333	0.00	1.57	1.604	O	|	|	|	|	0.95
30.417	0.00	1.56	1.593	O	|	|	|	|	0.94
30.500	0.00	1.55	1.582	O	|	|	|	|	0.94
30.583	0.00	1.53	1.572	O	|	|	|	|	0.93
30.667	0.00	1.52	1.561	O	|	|	|	|	0.92
30.750	0.00	1.51	1.551	O	|	|	|	|	0.92
30.833	0.00	1.50	1.540	O	|	|	|	|	0.91
30.917	0.00	1.49	1.530	O	|	|	|	|	0.91
31.000	0.00	1.47	1.520	O	|	|	|	|	0.90
31.083	0.00	1.46	1.510	O	|	|	|	|	0.89
31.167	0.00	1.45	1.500	O	|	|	|	|	0.89
31.250	0.00	1.44	1.490	O	|	|	|	|	0.88
31.333	0.00	1.43	1.480	O	|	|	|	|	0.88
31.417	0.00	1.42	1.470	O	|	|	|	|	0.87
31.500	0.00	1.41	1.460	O	|	|	|	|	0.86
31.583	0.00	1.40	1.451	O	|	|	|	|	0.86
31.667	0.00	1.38	1.441	O	|	|	|	|	0.85
31.750	0.00	1.37	1.432	O	|	|	|	|	0.85
31.833	0.00	1.36	1.422	O	|	|	|	|	0.84
31.917	0.00	1.35	1.413	O	|	|	|	|	0.84
32.000	0.00	1.34	1.404	O	|	|	|	|	0.83
32.083	0.00	1.33	1.394	O	|	|	|	|	0.83
32.167	0.00	1.32	1.385	O	|	|	|	|	0.82
32.250	0.00	1.31	1.376	O	|	|	|	|	0.82
32.333	0.00	1.30	1.367	O	|	|	|	|	0.81
32.417	0.00	1.29	1.358	O	|	|	|	|	0.81
32.500	0.00	1.28	1.350	O	|	|	|	|	0.80
32.583	0.00	1.27	1.341	O	|	|	|	|	0.79
32.667	0.00	1.26	1.332	O	|	|	|	|	0.79
32.750	0.00	1.25	1.323	O	|	|	|	|	0.78
32.833	0.00	1.24	1.315	O	|	|	|	|	0.78
32.917	0.00	1.23	1.306	O	|	|	|	|	0.77
33.000	0.00	1.22	1.298	O	|	|	|	|	0.77
33.083	0.00	1.21	1.289	O	|	|	|	|	0.77
33.167	0.00	1.20	1.281	O	|	|	|	|	0.76
33.250	0.00	1.19	1.273	O	|	|	|	|	0.76
33.333	0.00	1.18	1.265	O	|	|	|	|	0.75
33.417	0.00	1.17	1.257	O	|	|	|	|	0.75
33.500	0.00	1.16	1.249	O	|	|	|	|	0.74
33.583	0.00	1.16	1.241	O	|	|	|	|	0.74
33.667	0.00	1.15	1.233	O	|	|	|	|	0.73
33.750	0.00	1.14	1.225	O	|	|	|	|	0.73
33.833	0.00	1.13	1.217	O	|	|	|	|	0.72
33.917	0.00	1.12	1.209	O	|	|	|	|	0.72
34.000	0.00	1.11	1.202	O	|	|	|	|	0.71
34.083	0.00	1.10	1.194	O	|	|	|	|	0.71
34.167	0.00	1.09	1.186	O	|	|	|	|	0.71
34.250	0.00	1.09	1.179	O	|	|	|	|	0.70
34.333	0.00	1.08	1.171	O	|	|	|	|	0.70
34.417	0.00	1.07	1.164	O	|	|	|	|	0.69
34.500	0.00	1.06	1.157	O	|	|	|	|	0.69
34.583	0.00	1.05	1.149	O	|	|	|	|	0.68
34.667	0.00	1.04	1.142	O	|	|	|	|	0.68
34.750	0.00	1.04	1.135	O	|	|	|	|	0.68
34.833	0.00	1.03	1.128	O	|	|	|	|	0.67

34.917	0.00	1.02	1.121	O	|	|	|	|	0.67
35.000	0.00	1.01	1.114	O	|	|	|	|	0.66
35.083	0.00	1.00	1.107	O	|	|	|	|	0.66
35.167	0.00	1.00	1.100	O	|	|	|	|	0.65
35.250	0.00	0.99	1.093	O	|	|	|	|	0.65
35.333	0.00	0.98	1.086	O	|	|	|	|	0.65
35.417	0.00	0.97	1.080	O	|	|	|	|	0.64
35.500	0.00	0.96	1.073	O	|	|	|	|	0.64
35.583	0.00	0.96	1.066	O	|	|	|	|	0.64
35.667	0.00	0.95	1.060	O	|	|	|	|	0.63
35.750	0.00	0.94	1.053	O	|	|	|	|	0.63
35.833	0.00	0.93	1.047	O	|	|	|	|	0.62
35.917	0.00	0.93	1.040	O	|	|	|	|	0.62
36.000	0.00	0.92	1.034	O	|	|	|	|	0.62
36.083	0.00	0.91	1.028	O	|	|	|	|	0.61
36.167	0.00	0.91	1.022	O	|	|	|	|	0.61
36.250	0.00	0.90	1.015	O	|	|	|	|	0.61
36.333	0.00	0.89	1.009	O	|	|	|	|	0.60
36.417	0.00	0.88	1.003	O	|	|	|	|	0.60
36.500	0.00	0.88	0.997	O	|	|	|	|	0.59
36.583	0.00	0.87	0.991	O	|	|	|	|	0.59
36.667	0.00	0.86	0.985	O	|	|	|	|	0.59
36.750	0.00	0.86	0.979	O	|	|	|	|	0.58
36.833	0.00	0.85	0.973	O	|	|	|	|	0.58
36.917	0.00	0.84	0.967	O	|	|	|	|	0.58
37.000	0.00	0.84	0.962	O	|	|	|	|	0.57
37.083	0.00	0.83	0.956	O	|	|	|	|	0.57
37.167	0.00	0.82	0.950	O	|	|	|	|	0.57
37.250	0.00	0.82	0.944	O	|	|	|	|	0.56
37.333	0.00	0.81	0.939	O	|	|	|	|	0.56
37.417	0.00	0.81	0.933	O	|	|	|	|	0.56
37.500	0.00	0.80	0.928	O	|	|	|	|	0.55
37.583	0.00	0.79	0.922	O	|	|	|	|	0.55
37.667	0.00	0.79	0.917	O	|	|	|	|	0.55
37.750	0.00	0.78	0.911	O	|	|	|	|	0.55
37.833	0.00	0.77	0.906	O	|	|	|	|	0.54
37.917	0.00	0.77	0.901	O	|	|	|	|	0.54
38.000	0.00	0.76	0.895	O	|	|	|	|	0.54
38.083	0.00	0.76	0.890	O	|	|	|	|	0.53
38.167	0.00	0.75	0.885	O	|	|	|	|	0.53
38.250	0.00	0.74	0.880	O	|	|	|	|	0.53
38.333	0.00	0.74	0.875	O	|	|	|	|	0.52
38.417	0.00	0.73	0.870	O	|	|	|	|	0.52
38.500	0.00	0.73	0.865	O	|	|	|	|	0.52
38.583	0.00	0.72	0.860	O	|	|	|	|	0.51
38.667	0.00	0.72	0.855	O	|	|	|	|	0.51
38.750	0.00	0.71	0.850	O	|	|	|	|	0.51
38.833	0.00	0.70	0.845	O	|	|	|	|	0.51
38.917	0.00	0.70	0.840	O	|	|	|	|	0.50
39.000	0.00	0.69	0.835	O	|	|	|	|	0.50
39.083	0.00	0.69	0.831	O	|	|	|	|	0.50
39.167	0.00	0.69	0.826	O	|	|	|	|	0.50
39.250	0.00	0.68	0.821	O	|	|	|	|	0.49
39.333	0.00	0.68	0.817	O	|	|	|	|	0.49
39.417	0.00	0.67	0.812	O	|	|	|	|	0.49
39.500	0.00	0.67	0.807	O	|	|	|	|	0.48
39.583	0.00	0.67	0.803	O	|	|	|	|	0.48
39.667	0.00	0.66	0.798	O	|	|	|	|	0.48
39.750	0.00	0.66	0.794	O	|	|	|	|	0.48
39.833	0.00	0.65	0.789	O	|	|	|	|	0.47
39.917	0.00	0.65	0.784	O	|	|	|	|	0.47
40.000	0.00	0.65	0.780	O	|	|	|	|	0.47
40.083	0.00	0.64	0.776	O	|	|	|	|	0.46
40.167	0.00	0.64	0.771	O	|	|	|	|	0.46
40.250	0.00	0.64	0.767	O	|	|	|	|	0.46
40.333	0.00	0.63	0.762	O	|	|	|	|	0.46
40.417	0.00	0.63	0.758	O	|	|	|	|	0.45
40.500	0.00	0.63	0.754	O	|	|	|	|	0.45
40.583	0.00	0.62	0.749	O	|	|	|	|	0.45
40.667	0.00	0.62	0.745	O	|	|	|	|	0.45
40.750	0.00	0.61	0.741	O	|	|	|	|	0.44

40.833	0.00	0.61	0.737	O	|	|	|	|	0.44
40.917	0.00	0.61	0.732	O	|	|	|	|	0.44
41.000	0.00	0.60	0.728	O	|	|	|	|	0.44
41.083	0.00	0.60	0.724	O	|	|	|	|	0.43
41.167	0.00	0.60	0.720	O	|	|	|	|	0.43
41.250	0.00	0.59	0.716	O	|	|	|	|	0.43
41.333	0.00	0.59	0.712	O	|	|	|	|	0.43
41.417	0.00	0.59	0.708	O	|	|	|	|	0.42
41.500	0.00	0.58	0.704	O	|	|	|	|	0.42
41.583	0.00	0.58	0.700	O	|	|	|	|	0.42
41.667	0.00	0.58	0.696	O	|	|	|	|	0.42
41.750	0.00	0.57	0.692	O	|	|	|	|	0.41
41.833	0.00	0.57	0.688	O	|	|	|	|	0.41
41.917	0.00	0.57	0.684	O	|	|	|	|	0.41
42.000	0.00	0.56	0.680	O	|	|	|	|	0.41
42.083	0.00	0.56	0.676	O	|	|	|	|	0.41
42.167	0.00	0.56	0.672	O	|	|	|	|	0.40
42.250	0.00	0.55	0.668	O	|	|	|	|	0.40
42.333	0.00	0.55	0.665	O	|	|	|	|	0.40
42.417	0.00	0.55	0.661	O	|	|	|	|	0.40
42.500	0.00	0.55	0.657	O	|	|	|	|	0.39
42.583	0.00	0.54	0.653	O	|	|	|	|	0.39
42.667	0.00	0.54	0.650	O	|	|	|	|	0.39
42.750	0.00	0.54	0.646	O	|	|	|	|	0.39
42.833	0.00	0.53	0.642	O	|	|	|	|	0.39
42.917	0.00	0.53	0.639	O	|	|	|	|	0.38
43.000	0.00	0.53	0.635	O	|	|	|	|	0.38
43.083	0.00	0.52	0.631	O	|	|	|	|	0.38
43.167	0.00	0.52	0.628	O	|	|	|	|	0.38
43.250	0.00	0.52	0.624	O	|	|	|	|	0.37
43.333	0.00	0.51	0.621	O	|	|	|	|	0.37
43.417	0.00	0.51	0.617	O	|	|	|	|	0.37
43.500	0.00	0.51	0.614	O	|	|	|	|	0.37
43.583	0.00	0.51	0.610	O	|	|	|	|	0.37
43.667	0.00	0.50	0.607	O	|	|	|	|	0.36
43.750	0.00	0.50	0.603	O	|	|	|	|	0.36
43.833	0.00	0.50	0.600	O	|	|	|	|	0.36
43.917	0.00	0.49	0.596	O	|	|	|	|	0.36
44.000	0.00	0.49	0.593	O	|	|	|	|	0.36
44.083	0.00	0.49	0.590	O	|	|	|	|	0.35
44.167	0.00	0.49	0.586	O	|	|	|	|	0.35
44.250	0.00	0.48	0.583	O	|	|	|	|	0.35
44.333	0.00	0.48	0.579	O	|	|	|	|	0.35
44.417	0.00	0.48	0.576	O	|	|	|	|	0.35
44.500	0.00	0.48	0.573	O	|	|	|	|	0.34
44.583	0.00	0.47	0.570	O	|	|	|	|	0.34
44.667	0.00	0.47	0.566	O	|	|	|	|	0.34
44.750	0.00	0.47	0.563	O	|	|	|	|	0.34
44.833	0.00	0.46	0.560	O	|	|	|	|	0.34
44.917	0.00	0.46	0.557	O	|	|	|	|	0.33
45.000	0.00	0.46	0.554	O	|	|	|	|	0.33
45.083	0.00	0.46	0.550	O	|	|	|	|	0.33
45.167	0.00	0.45	0.547	O	|	|	|	|	0.33
45.250	0.00	0.45	0.544	O	|	|	|	|	0.33
45.333	0.00	0.45	0.541	O	|	|	|	|	0.32
45.417	0.00	0.45	0.538	O	|	|	|	|	0.32
45.500	0.00	0.44	0.535	O	|	|	|	|	0.32
45.583	0.00	0.44	0.532	O	|	|	|	|	0.32
45.667	0.00	0.44	0.529	O	|	|	|	|	0.32
45.750	0.00	0.44	0.526	O	|	|	|	|	0.32
45.833	0.00	0.43	0.523	O	|	|	|	|	0.31
45.917	0.00	0.43	0.520	O	|	|	|	|	0.31
46.000	0.00	0.43	0.517	O	|	|	|	|	0.31
46.083	0.00	0.43	0.514	O	|	|	|	|	0.31
46.167	0.00	0.42	0.511	O	|	|	|	|	0.31
46.250	0.00	0.42	0.508	O	|	|	|	|	0.30
46.333	0.00	0.42	0.505	O	|	|	|	|	0.30
46.417	0.00	0.42	0.502	O	|	|	|	|	0.30
46.500	0.00	0.41	0.499	O	|	|	|	|	0.30
46.583	0.00	0.41	0.497	O	|	|	|	|	0.30
46.667	0.00	0.41	0.494	O	|	|	|	|	0.30

46.750	0.00	0.41	0.491	O	|	|	|	|	0.29
46.833	0.00	0.41	0.488	O	|	|	|	|	0.29
46.917	0.00	0.40	0.485	O	|	|	|	|	0.29
47.000	0.00	0.40	0.483	O	|	|	|	|	0.29
47.083	0.00	0.40	0.480	O	|	|	|	|	0.29
47.167	0.00	0.40	0.477	O	|	|	|	|	0.29
47.250	0.00	0.39	0.474	O	|	|	|	|	0.28
47.333	0.00	0.39	0.472	O	|	|	|	|	0.28
47.417	0.00	0.39	0.469	O	|	|	|	|	0.28
47.500	0.00	0.39	0.466	O	|	|	|	|	0.28
47.583	0.00	0.38	0.464	O	|	|	|	|	0.28
47.667	0.00	0.38	0.461	O	|	|	|	|	0.28
47.750	0.00	0.38	0.458	O	|	|	|	|	0.27
47.833	0.00	0.38	0.456	O	|	|	|	|	0.27
47.917	0.00	0.38	0.453	O	|	|	|	|	0.27
48.000	0.00	0.37	0.451	O	|	|	|	|	0.27
48.083	0.00	0.37	0.448	O	|	|	|	|	0.27
48.167	0.00	0.37	0.446	O	|	|	|	|	0.27
48.250	0.00	0.37	0.443	O	|	|	|	|	0.27
48.333	0.00	0.37	0.440	O	|	|	|	|	0.26
48.417	0.00	0.36	0.438	O	|	|	|	|	0.26
48.500	0.00	0.36	0.435	O	|	|	|	|	0.26
48.583	0.00	0.36	0.433	O	|	|	|	|	0.26
48.667	0.00	0.36	0.431	O	|	|	|	|	0.26
48.750	0.00	0.36	0.428	O	|	|	|	|	0.26
48.833	0.00	0.35	0.426	O	|	|	|	|	0.26
48.917	0.00	0.35	0.423	O	|	|	|	|	0.25
49.000	0.00	0.35	0.421	O	|	|	|	|	0.25
49.083	0.00	0.35	0.418	O	|	|	|	|	0.25
49.167	0.00	0.35	0.416	O	|	|	|	|	0.25
49.250	0.00	0.34	0.414	O	|	|	|	|	0.25
49.333	0.00	0.34	0.411	O	|	|	|	|	0.25
49.417	0.00	0.34	0.409	O	|	|	|	|	0.25
49.500	0.00	0.34	0.407	O	|	|	|	|	0.24
49.583	0.00	0.34	0.404	O	|	|	|	|	0.24
49.667	0.00	0.33	0.402	O	|	|	|	|	0.24
49.750	0.00	0.33	0.400	O	|	|	|	|	0.24
49.833	0.00	0.33	0.397	O	|	|	|	|	0.24
49.917	0.00	0.33	0.395	O	|	|	|	|	0.24
50.000	0.00	0.33	0.393	O	|	|	|	|	0.24
50.083	0.00	0.32	0.391	O	|	|	|	|	0.23
50.167	0.00	0.32	0.388	O	|	|	|	|	0.23
50.250	0.00	0.32	0.386	O	|	|	|	|	0.23
50.333	0.00	0.32	0.384	O	|	|	|	|	0.23
50.417	0.00	0.32	0.382	O	|	|	|	|	0.23
50.500	0.00	0.32	0.380	O	|	|	|	|	0.23
50.583	0.00	0.31	0.378	O	|	|	|	|	0.23
50.667	0.00	0.31	0.375	O	|	|	|	|	0.23
50.750	0.00	0.31	0.373	O	|	|	|	|	0.22
50.833	0.00	0.31	0.371	O	|	|	|	|	0.22
50.917	0.00	0.31	0.369	O	|	|	|	|	0.22
51.000	0.00	0.30	0.367	O	|	|	|	|	0.22
51.083	0.00	0.30	0.365	O	|	|	|	|	0.22
51.167	0.00	0.30	0.363	O	|	|	|	|	0.22
51.250	0.00	0.30	0.361	O	|	|	|	|	0.22
51.333	0.00	0.30	0.359	O	|	|	|	|	0.21
51.417	0.00	0.30	0.357	O	|	|	|	|	0.21
51.500	0.00	0.29	0.355	O	|	|	|	|	0.21
51.583	0.00	0.29	0.352	O	|	|	|	|	0.21
51.667	0.00	0.29	0.350	O	|	|	|	|	0.21
51.750	0.00	0.29	0.348	O	|	|	|	|	0.21
51.833	0.00	0.29	0.346	O	|	|	|	|	0.21
51.917	0.00	0.29	0.345	O	|	|	|	|	0.21
52.000	0.00	0.28	0.343	O	|	|	|	|	0.21
52.083	0.00	0.28	0.341	O	|	|	|	|	0.20
52.167	0.00	0.28	0.339	O	|	|	|	|	0.20
52.250	0.00	0.28	0.337	O	|	|	|	|	0.20
52.333	0.00	0.28	0.335	O	|	|	|	|	0.20
52.417	0.00	0.28	0.333	O	|	|	|	|	0.20
52.500	0.00	0.27	0.331	O	|	|	|	|	0.20
52.583	0.00	0.27	0.329	O	|	|	|	|	0.20

52.667	0.00	0.27	0.327	O	|	|	|	|	0.20
52.750	0.00	0.27	0.325	O	|	|	|	|	0.20
52.833	0.00	0.27	0.324	O	|	|	|	|	0.19
52.917	0.00	0.27	0.322	O	|	|	|	|	0.19
53.000	0.00	0.27	0.320	O	|	|	|	|	0.19
53.083	0.00	0.26	0.318	O	|	|	|	|	0.19
53.167	0.00	0.26	0.316	O	|	|	|	|	0.19
53.250	0.00	0.26	0.314	O	|	|	|	|	0.19
53.333	0.00	0.26	0.313	O	|	|	|	|	0.19
53.417	0.00	0.26	0.311	O	|	|	|	|	0.19
53.500	0.00	0.26	0.309	O	|	|	|	|	0.19
53.583	0.00	0.25	0.307	O	|	|	|	|	0.18
53.667	0.00	0.25	0.306	O	|	|	|	|	0.18
53.750	0.00	0.25	0.304	O	|	|	|	|	0.18
53.833	0.00	0.25	0.302	O	|	|	|	|	0.18
53.917	0.00	0.25	0.300	O	|	|	|	|	0.18
54.000	0.00	0.25	0.299	O	|	|	|	|	0.18
54.083	0.00	0.25	0.297	O	|	|	|	|	0.18
54.167	0.00	0.24	0.295	O	|	|	|	|	0.18
54.250	0.00	0.24	0.294	O	|	|	|	|	0.18
54.333	0.00	0.24	0.292	O	|	|	|	|	0.18
54.417	0.00	0.24	0.290	O	|	|	|	|	0.17
54.500	0.00	0.24	0.289	O	|	|	|	|	0.17
54.583	0.00	0.24	0.287	O	|	|	|	|	0.17
54.667	0.00	0.24	0.285	O	|	|	|	|	0.17
54.750	0.00	0.24	0.284	O	|	|	|	|	0.17
54.833	0.00	0.23	0.282	O	|	|	|	|	0.17
54.917	0.00	0.23	0.280	O	|	|	|	|	0.17
55.000	0.00	0.23	0.279	O	|	|	|	|	0.17
55.083	0.00	0.23	0.277	O	|	|	|	|	0.17
55.167	0.00	0.23	0.276	O	|	|	|	|	0.17
55.250	0.00	0.23	0.274	O	|	|	|	|	0.16
55.333	0.00	0.23	0.273	O	|	|	|	|	0.16
55.417	0.00	0.22	0.271	O	|	|	|	|	0.16
55.500	0.00	0.22	0.269	O	|	|	|	|	0.16
55.583	0.00	0.22	0.268	O	|	|	|	|	0.16
55.667	0.00	0.22	0.266	O	|	|	|	|	0.16
55.750	0.00	0.22	0.265	O	|	|	|	|	0.16
55.833	0.00	0.22	0.263	O	|	|	|	|	0.16
55.917	0.00	0.22	0.262	O	|	|	|	|	0.16
56.000	0.00	0.22	0.260	O	|	|	|	|	0.16
56.083	0.00	0.21	0.259	O	|	|	|	|	0.16
56.167	0.00	0.21	0.257	O	|	|	|	|	0.15
56.250	0.00	0.21	0.256	O	|	|	|	|	0.15
56.333	0.00	0.21	0.254	O	|	|	|	|	0.15
56.417	0.00	0.21	0.253	O	|	|	|	|	0.15
56.500	0.00	0.21	0.252	O	|	|	|	|	0.15
56.583	0.00	0.21	0.250	O	|	|	|	|	0.15
56.667	0.00	0.21	0.249	O	|	|	|	|	0.15
56.750	0.00	0.21	0.247	O	|	|	|	|	0.15
56.833	0.00	0.20	0.246	O	|	|	|	|	0.15
56.917	0.00	0.20	0.245	O	|	|	|	|	0.15
57.000	0.00	0.20	0.243	O	|	|	|	|	0.15
57.083	0.00	0.20	0.242	O	|	|	|	|	0.14
57.167	0.00	0.20	0.240	O	|	|	|	|	0.14
57.250	0.00	0.20	0.239	O	|	|	|	|	0.14
57.333	0.00	0.20	0.238	O	|	|	|	|	0.14
57.417	0.00	0.20	0.236	O	|	|	|	|	0.14
57.500	0.00	0.19	0.235	O	|	|	|	|	0.14
57.583	0.00	0.19	0.234	O	|	|	|	|	0.14
57.667	0.00	0.19	0.232	O	|	|	|	|	0.14
57.750	0.00	0.19	0.231	O	|	|	|	|	0.14
57.833	0.00	0.19	0.230	O	|	|	|	|	0.14
57.917	0.00	0.19	0.228	O	|	|	|	|	0.14
58.000	0.00	0.19	0.227	O	|	|	|	|	0.14
58.083	0.00	0.19	0.226	O	|	|	|	|	0.14
58.167	0.00	0.19	0.224	O	|	|	|	|	0.13
58.250	0.00	0.19	0.223	O	|	|	|	|	0.13
58.333	0.00	0.18	0.222	O	|	|	|	|	0.13
58.417	0.00	0.18	0.221	O	|	|	|	|	0.13
58.500	0.00	0.18	0.219	O	|	|	|	|	0.13

58.583	0.00	0.18	0.218	O	|	|	|	| 0.13
58.667	0.00	0.18	0.217	O	|	|	|	| 0.13
58.750	0.00	0.18	0.216	O	|	|	|	| 0.13
58.833	0.00	0.18	0.214	O	|	|	|	| 0.13
58.917	0.00	0.18	0.213	O	|	|	|	| 0.13
59.000	0.00	0.18	0.212	O	|	|	|	| 0.13
59.083	0.00	0.17	0.211	O	|	|	|	| 0.13
59.167	0.00	0.17	0.210	O	|	|	|	| 0.13
59.250	0.00	0.17	0.208	O	|	|	|	| 0.12
59.333	0.00	0.17	0.207	O	|	|	|	| 0.12
59.417	0.00	0.17	0.206	O	|	|	|	| 0.12
59.500	0.00	0.17	0.205	O	|	|	|	| 0.12
59.583	0.00	0.17	0.204	O	|	|	|	| 0.12
59.667	0.00	0.17	0.202	O	|	|	|	| 0.12
59.750	0.00	0.17	0.201	O	|	|	|	| 0.12
59.833	0.00	0.17	0.200	O	|	|	|	| 0.12
59.917	0.00	0.17	0.199	O	|	|	|	| 0.12
60.000	0.00	0.16	0.198	O	|	|	|	| 0.12
60.083	0.00	0.16	0.197	O	|	|	|	| 0.12
60.167	0.00	0.16	0.196	O	|	|	|	| 0.12
60.250	0.00	0.16	0.195	O	|	|	|	| 0.12
60.333	0.00	0.16	0.193	O	|	|	|	| 0.12
60.417	0.00	0.16	0.192	O	|	|	|	| 0.12
60.500	0.00	0.16	0.191	O	|	|	|	| 0.11
60.583	0.00	0.16	0.190	O	|	|	|	| 0.11
60.667	0.00	0.16	0.189	O	|	|	|	| 0.11
60.750	0.00	0.16	0.188	O	|	|	|	| 0.11
60.833	0.00	0.16	0.187	O	|	|	|	| 0.11
60.917	0.00	0.15	0.186	O	|	|	|	| 0.11
61.000	0.00	0.15	0.185	O	|	|	|	| 0.11
61.083	0.00	0.15	0.184	O	|	|	|	| 0.11
61.167	0.00	0.15	0.183	O	|	|	|	| 0.11
61.250	0.00	0.15	0.182	O	|	|	|	| 0.11
61.333	0.00	0.15	0.181	O	|	|	|	| 0.11
61.417	0.00	0.15	0.180	O	|	|	|	| 0.11
61.500	0.00	0.15	0.179	O	|	|	|	| 0.11
61.583	0.00	0.15	0.178	O	|	|	|	| 0.11
61.667	0.00	0.15	0.177	O	|	|	|	| 0.11
61.750	0.00	0.15	0.176	O	|	|	|	| 0.11
61.833	0.00	0.14	0.175	O	|	|	|	| 0.10
61.917	0.00	0.14	0.174	O	|	|	|	| 0.10
62.000	0.00	0.14	0.173	O	|	|	|	| 0.10
62.083	0.00	0.14	0.172	O	|	|	|	| 0.10
62.167	0.00	0.14	0.171	O	|	|	|	| 0.10
62.250	0.00	0.14	0.170	O	|	|	|	| 0.10
62.333	0.00	0.14	0.169	O	|	|	|	| 0.10
62.417	0.00	0.14	0.168	O	|	|	|	| 0.10
62.500	0.00	0.14	0.167	O	|	|	|	| 0.10
62.583	0.00	0.14	0.166	O	|	|	|	| 0.10
62.667	0.00	0.14	0.165	O	|	|	|	| 0.10
62.750	0.00	0.14	0.164	O	|	|	|	| 0.10
62.833	0.00	0.14	0.163	O	|	|	|	| 0.10
62.917	0.00	0.13	0.162	O	|	|	|	| 0.10
63.000	0.00	0.13	0.161	O	|	|	|	| 0.10
63.083	0.00	0.13	0.160	O	|	|	|	| 0.10
63.167	0.00	0.13	0.159	O	|	|	|	| 0.10
63.250	0.00	0.13	0.158	O	|	|	|	| 0.09
63.333	0.00	0.13	0.157	O	|	|	|	| 0.09
63.417	0.00	0.13	0.157	O	|	|	|	| 0.09
63.500	0.00	0.13	0.156	O	|	|	|	| 0.09
63.583	0.00	0.13	0.155	O	|	|	|	| 0.09
63.667	0.00	0.13	0.154	O	|	|	|	| 0.09
63.750	0.00	0.13	0.153	O	|	|	|	| 0.09
63.833	0.00	0.13	0.152	O	|	|	|	| 0.09
63.917	0.00	0.13	0.151	O	|	|	|	| 0.09
64.000	0.00	0.12	0.150	O	|	|	|	| 0.09
64.083	0.00	0.12	0.150	O	|	|	|	| 0.09
64.167	0.00	0.12	0.149	O	|	|	|	| 0.09
64.250	0.00	0.12	0.148	O	|	|	|	| 0.09
64.333	0.00	0.12	0.147	O	|	|	|	| 0.09
64.417	0.00	0.12	0.146	O	|	|	|	| 0.09

64.500	0.00	0.12	0.145	O	|	|	|	|	0.09
64.583	0.00	0.12	0.145	O	|	|	|	|	0.09
64.667	0.00	0.12	0.144	O	|	|	|	|	0.09
64.750	0.00	0.12	0.143	O	|	|	|	|	0.09
64.833	0.00	0.12	0.142	O	|	|	|	|	0.09
64.917	0.00	0.12	0.141	O	|	|	|	|	0.08
65.000	0.00	0.12	0.140	O	|	|	|	|	0.08
65.083	0.00	0.12	0.140	O	|	|	|	|	0.08
65.167	0.00	0.12	0.139	O	|	|	|	|	0.08
65.250	0.00	0.11	0.138	O	|	|	|	|	0.08
65.333	0.00	0.11	0.137	O	|	|	|	|	0.08
65.417	0.00	0.11	0.137	O	|	|	|	|	0.08
65.500	0.00	0.11	0.136	O	|	|	|	|	0.08
65.583	0.00	0.11	0.135	O	|	|	|	|	0.08
65.667	0.00	0.11	0.134	O	|	|	|	|	0.08
65.750	0.00	0.11	0.133	O	|	|	|	|	0.08
65.833	0.00	0.11	0.133	O	|	|	|	|	0.08
65.917	0.00	0.11	0.132	O	|	|	|	|	0.08
66.000	0.00	0.11	0.131	O	|	|	|	|	0.08
66.083	0.00	0.11	0.130	O	|	|	|	|	0.08
66.167	0.00	0.11	0.130	O	|	|	|	|	0.08
66.250	0.00	0.11	0.129	O	|	|	|	|	0.08
66.333	0.00	0.11	0.128	O	|	|	|	|	0.08
66.417	0.00	0.11	0.127	O	|	|	|	|	0.08
66.500	0.00	0.11	0.127	O	|	|	|	|	0.08
66.583	0.00	0.10	0.126	O	|	|	|	|	0.08
66.667	0.00	0.10	0.125	O	|	|	|	|	0.08
66.750	0.00	0.10	0.125	O	|	|	|	|	0.07
66.833	0.00	0.10	0.124	O	|	|	|	|	0.07
66.917	0.00	0.10	0.123	O	|	|	|	|	0.07
67.000	0.00	0.10	0.122	O	|	|	|	|	0.07
67.083	0.00	0.10	0.122	O	|	|	|	|	0.07
67.167	0.00	0.10	0.121	O	|	|	|	|	0.07
67.250	0.00	0.10	0.120	O	|	|	|	|	0.07
67.333	0.00	0.10	0.120	O	|	|	|	|	0.07
67.417	0.00	0.10	0.119	O	|	|	|	|	0.07
67.500	0.00	0.10	0.118	O	|	|	|	|	0.07
67.583	0.00	0.10	0.118	O	|	|	|	|	0.07
67.667	0.00	0.10	0.117	O	|	|	|	|	0.07
67.750	0.00	0.10	0.116	O	|	|	|	|	0.07
67.833	0.00	0.10	0.116	O	|	|	|	|	0.07
67.917	0.00	0.10	0.115	O	|	|	|	|	0.07
68.000	0.00	0.09	0.114	O	|	|	|	|	0.07
68.083	0.00	0.09	0.114	O	|	|	|	|	0.07
68.167	0.00	0.09	0.113	O	|	|	|	|	0.07
68.250	0.00	0.09	0.112	O	|	|	|	|	0.07
68.333	0.00	0.09	0.112	O	|	|	|	|	0.07
68.417	0.00	0.09	0.111	O	|	|	|	|	0.07
68.500	0.00	0.09	0.110	O	|	|	|	|	0.07
68.583	0.00	0.09	0.110	O	|	|	|	|	0.07
68.667	0.00	0.09	0.109	O	|	|	|	|	0.07
68.750	0.00	0.09	0.109	O	|	|	|	|	0.07
68.833	0.00	0.09	0.108	O	|	|	|	|	0.06
68.917	0.00	0.09	0.107	O	|	|	|	|	0.06
69.000	0.00	0.09	0.107	O	|	|	|	|	0.06
69.083	0.00	0.09	0.106	O	|	|	|	|	0.06
69.167	0.00	0.09	0.106	O	|	|	|	|	0.06
69.250	0.00	0.09	0.105	O	|	|	|	|	0.06
69.333	0.00	0.09	0.104	O	|	|	|	|	0.06
69.417	0.00	0.09	0.104	O	|	|	|	|	0.06
69.500	0.00	0.09	0.103	O	|	|	|	|	0.06
69.583	0.00	0.09	0.103	O	|	|	|	|	0.06
69.667	0.00	0.08	0.102	O	|	|	|	|	0.06
69.750	0.00	0.08	0.101	O	|	|	|	|	0.06
69.833	0.00	0.08	0.101	O	|	|	|	|	0.06
69.917	0.00	0.08	0.100	O	|	|	|	|	0.06
70.000	0.00	0.08	0.100	O	|	|	|	|	0.06
70.083	0.00	0.08	0.099	O	|	|	|	|	0.06
70.167	0.00	0.08	0.099	O	|	|	|	|	0.06
70.250	0.00	0.08	0.098	O	|	|	|	|	0.06
70.333	0.00	0.08	0.097	O	|	|	|	|	0.06

70.417	0.00	0.08	0.097	O	|	|	|	|	0.06
70.500	0.00	0.08	0.096	O	|	|	|	|	0.06
70.583	0.00	0.08	0.096	O	|	|	|	|	0.06
70.667	0.00	0.08	0.095	O	|	|	|	|	0.06
70.750	0.00	0.08	0.095	O	|	|	|	|	0.06
70.833	0.00	0.08	0.094	O	|	|	|	|	0.06
70.917	0.00	0.08	0.094	O	|	|	|	|	0.06
71.000	0.00	0.08	0.093	O	|	|	|	|	0.06
71.083	0.00	0.08	0.093	O	|	|	|	|	0.06
71.167	0.00	0.08	0.092	O	|	|	|	|	0.06
71.250	0.00	0.08	0.092	O	|	|	|	|	0.05
71.333	0.00	0.08	0.091	O	|	|	|	|	0.05
71.417	0.00	0.08	0.090	O	|	|	|	|	0.05
71.500	0.00	0.07	0.090	O	|	|	|	|	0.05
71.583	0.00	0.07	0.089	O	|	|	|	|	0.05
71.667	0.00	0.07	0.089	O	|	|	|	|	0.05
71.750	0.00	0.07	0.088	O	|	|	|	|	0.05
71.833	0.00	0.07	0.088	O	|	|	|	|	0.05
71.917	0.00	0.07	0.087	O	|	|	|	|	0.05
72.000	0.00	0.07	0.087	O	|	|	|	|	0.05
72.083	0.00	0.07	0.086	O	|	|	|	|	0.05
72.167	0.00	0.07	0.086	O	|	|	|	|	0.05
72.250	0.00	0.07	0.085	O	|	|	|	|	0.05
72.333	0.00	0.07	0.085	O	|	|	|	|	0.05
72.417	0.00	0.07	0.084	O	|	|	|	|	0.05
72.500	0.00	0.07	0.084	O	|	|	|	|	0.05
72.583	0.00	0.07	0.084	O	|	|	|	|	0.05
72.667	0.00	0.07	0.083	O	|	|	|	|	0.05
72.750	0.00	0.07	0.083	O	|	|	|	|	0.05
72.833	0.00	0.07	0.082	O	|	|	|	|	0.05
72.917	0.00	0.07	0.082	O	|	|	|	|	0.05
73.000	0.00	0.07	0.081	O	|	|	|	|	0.05
73.083	0.00	0.07	0.081	O	|	|	|	|	0.05
73.167	0.00	0.07	0.080	O	|	|	|	|	0.05
73.250	0.00	0.07	0.080	O	|	|	|	|	0.05
73.333	0.00	0.07	0.079	O	|	|	|	|	0.05
73.417	0.00	0.07	0.079	O	|	|	|	|	0.05
73.500	0.00	0.07	0.078	O	|	|	|	|	0.05
73.583	0.00	0.06	0.078	O	|	|	|	|	0.05
73.667	0.00	0.06	0.078	O	|	|	|	|	0.05
73.750	0.00	0.06	0.077	O	|	|	|	|	0.05
73.833	0.00	0.06	0.077	O	|	|	|	|	0.05
73.917	0.00	0.06	0.076	O	|	|	|	|	0.05
74.000	0.00	0.06	0.076	O	|	|	|	|	0.05
74.083	0.00	0.06	0.075	O	|	|	|	|	0.05
74.167	0.00	0.06	0.075	O	|	|	|	|	0.04
74.250	0.00	0.06	0.074	O	|	|	|	|	0.04
74.333	0.00	0.06	0.074	O	|	|	|	|	0.04
74.417	0.00	0.06	0.074	O	|	|	|	|	0.04
74.500	0.00	0.06	0.073	O	|	|	|	|	0.04
74.583	0.00	0.06	0.073	O	|	|	|	|	0.04
74.667	0.00	0.06	0.072	O	|	|	|	|	0.04
74.750	0.00	0.06	0.072	O	|	|	|	|	0.04
74.833	0.00	0.06	0.072	O	|	|	|	|	0.04
74.917	0.00	0.06	0.071	O	|	|	|	|	0.04
75.000	0.00	0.06	0.071	O	|	|	|	|	0.04
75.083	0.00	0.06	0.070	O	|	|	|	|	0.04
75.167	0.00	0.06	0.070	O	|	|	|	|	0.04
75.250	0.00	0.06	0.070	O	|	|	|	|	0.04
75.333	0.00	0.06	0.069	O	|	|	|	|	0.04
75.417	0.00	0.06	0.069	O	|	|	|	|	0.04
75.500	0.00	0.06	0.068	O	|	|	|	|	0.04
75.583	0.00	0.06	0.068	O	|	|	|	|	0.04
75.667	0.00	0.06	0.068	O	|	|	|	|	0.04
75.750	0.00	0.06	0.067	O	|	|	|	|	0.04
75.833	0.00	0.06	0.067	O	|	|	|	|	0.04
75.917	0.00	0.06	0.066	O	|	|	|	|	0.04
76.000	0.00	0.05	0.066	O	|	|	|	|	0.04
76.083	0.00	0.05	0.066	O	|	|	|	|	0.04
76.167	0.00	0.05	0.065	O	|	|	|	|	0.04
76.250	0.00	0.05	0.065	O	|	|	|	|	0.04

76.333	0.00	0.05	0.065	O					0.04
76.417	0.00	0.05	0.064	O					0.04
76.500	0.00	0.05	0.064	O					0.04
76.583	0.00	0.05	0.063	O					0.04
76.667	0.00	0.05	0.063	O					0.04
76.750	0.00	0.05	0.063	O					0.04
76.833	0.00	0.05	0.062	O					0.04
76.917	0.00	0.05	0.062	O					0.04
77.000	0.00	0.05	0.062	O					0.04
77.083	0.00	0.05	0.061	O					0.04
77.167	0.00	0.05	0.061	O					0.04
77.250	0.00	0.05	0.061	O					0.04
77.333	0.00	0.05	0.060	O					0.04
77.417	0.00	0.05	0.060	O					0.04
77.500	0.00	0.05	0.060	O					0.04
77.583	0.00	0.05	0.059	O					0.04
77.667	0.00	0.05	0.059	O					0.04
77.750	0.00	0.05	0.059	O					0.04
77.833	0.00	0.05	0.058	O					0.03
77.917	0.00	0.05	0.058	O					0.03
78.000	0.00	0.05	0.058	O					0.03
78.083	0.00	0.05	0.057	O					0.03
78.167	0.00	0.05	0.057	O					0.03
78.250	0.00	0.05	0.057	O					0.03
78.333	0.00	0.05	0.056	O					0.03
78.417	0.00	0.05	0.056	O					0.03
78.500	0.00	0.05	0.056	O					0.03
78.583	0.00	0.05	0.055	O					0.03
78.667	0.00	0.05	0.055	O					0.03
78.750	0.00	0.05	0.055	O					0.03
78.833	0.00	0.05	0.054	O					0.03
78.917	0.00	0.04	0.054	O					0.03
79.000	0.00	0.04	0.054	O					0.03
79.083	0.00	0.04	0.053	O					0.03
79.167	0.00	0.04	0.053	O					0.03
79.250	0.00	0.04	0.053	O					0.03
79.333	0.00	0.04	0.053	O					0.03
79.417	0.00	0.04	0.052	O					0.03
79.500	0.00	0.04	0.052	O					0.03
79.583	0.00	0.04	0.052	O					0.03
79.667	0.00	0.04	0.051	O					0.03
79.750	0.00	0.04	0.051	O					0.03
79.833	0.00	0.04	0.051	O					0.03
79.917	0.00	0.04	0.051	O					0.03
80.000	0.00	0.04	0.050	O					0.03
80.083	0.00	0.04	0.050	O					0.03
80.167	0.00	0.04	0.050	O					0.03
80.250	0.00	0.04	0.049	O					0.03
80.333	0.00	0.04	0.049	O					0.03
80.417	0.00	0.04	0.049	O					0.03
80.500	0.00	0.04	0.049	O					0.03
80.583	0.00	0.04	0.048	O					0.03
80.667	0.00	0.04	0.048	O					0.03
80.750	0.00	0.04	0.048	O					0.03
80.833	0.00	0.04	0.047	O					0.03
80.917	0.00	0.04	0.047	O					0.03
81.000	0.00	0.04	0.047	O					0.03
81.083	0.00	0.04	0.047	O					0.03
81.167	0.00	0.04	0.046	O					0.03
81.250	0.00	0.04	0.046	O					0.03
81.333	0.00	0.04	0.046	O					0.03
81.417	0.00	0.04	0.046	O					0.03
81.500	0.00	0.04	0.045	O					0.03
81.583	0.00	0.04	0.045	O					0.03
81.667	0.00	0.04	0.045	O					0.03
81.750	0.00	0.04	0.045	O					0.03
81.833	0.00	0.04	0.044	O					0.03
81.917	0.00	0.04	0.044	O					0.03
82.000	0.00	0.04	0.044	O					0.03
82.083	0.00	0.04	0.044	O					0.03
82.167	0.00	0.04	0.043	O					0.03

82.250	0.00	0.04	0.043	O	|	|	|	|	0.03
82.333	0.00	0.04	0.043	O	|	|	|	|	0.03
82.417	0.00	0.04	0.043	O	|	|	|	|	0.03
82.500	0.00	0.04	0.042	O	|	|	|	|	0.03
82.583	0.00	0.03	0.042	O	|	|	|	|	0.03
82.667	0.00	0.03	0.042	O	|	|	|	|	0.03
82.750	0.00	0.03	0.042	O	|	|	|	|	0.02
82.833	0.00	0.03	0.041	O	|	|	|	|	0.02
82.917	0.00	0.03	0.041	O	|	|	|	|	0.02
83.000	0.00	0.03	0.041	O	|	|	|	|	0.02
83.083	0.00	0.03	0.041	O	|	|	|	|	0.02
83.167	0.00	0.03	0.040	O	|	|	|	|	0.02
83.250	0.00	0.03	0.040	O	|	|	|	|	0.02
83.333	0.00	0.03	0.040	O	|	|	|	|	0.02
83.417	0.00	0.03	0.040	O	|	|	|	|	0.02
83.500	0.00	0.03	0.040	O	|	|	|	|	0.02
83.583	0.00	0.03	0.039	O	|	|	|	|	0.02
83.667	0.00	0.03	0.039	O	|	|	|	|	0.02
83.750	0.00	0.03	0.039	O	|	|	|	|	0.02
83.833	0.00	0.03	0.039	O	|	|	|	|	0.02
83.917	0.00	0.03	0.038	O	|	|	|	|	0.02
84.000	0.00	0.03	0.038	O	|	|	|	|	0.02
84.083	0.00	0.03	0.038	O	|	|	|	|	0.02
84.167	0.00	0.03	0.038	O	|	|	|	|	0.02
84.250	0.00	0.03	0.038	O	|	|	|	|	0.02
84.333	0.00	0.03	0.037	O	|	|	|	|	0.02
84.417	0.00	0.03	0.037	O	|	|	|	|	0.02
84.500	0.00	0.03	0.037	O	|	|	|	|	0.02
84.583	0.00	0.03	0.037	O	|	|	|	|	0.02
84.667	0.00	0.03	0.036	O	|	|	|	|	0.02
84.750	0.00	0.03	0.036	O	|	|	|	|	0.02
84.833	0.00	0.03	0.036	O	|	|	|	|	0.02
84.917	0.00	0.03	0.036	O	|	|	|	|	0.02
85.000	0.00	0.03	0.036	O	|	|	|	|	0.02
85.083	0.00	0.03	0.035	O	|	|	|	|	0.02
85.167	0.00	0.03	0.035	O	|	|	|	|	0.02
85.250	0.00	0.03	0.035	O	|	|	|	|	0.02
85.333	0.00	0.03	0.035	O	|	|	|	|	0.02
85.417	0.00	0.03	0.035	O	|	|	|	|	0.02
85.500	0.00	0.03	0.034	O	|	|	|	|	0.02
85.583	0.00	0.03	0.034	O	|	|	|	|	0.02
85.667	0.00	0.03	0.034	O	|	|	|	|	0.02
85.750	0.00	0.03	0.034	O	|	|	|	|	0.02
85.833	0.00	0.03	0.034	O	|	|	|	|	0.02
85.917	0.00	0.03	0.033	O	|	|	|	|	0.02
86.000	0.00	0.03	0.033	O	|	|	|	|	0.02
86.083	0.00	0.03	0.033	O	|	|	|	|	0.02
86.167	0.00	0.03	0.033	O	|	|	|	|	0.02
86.250	0.00	0.03	0.033	O	|	|	|	|	0.02
86.333	0.00	0.03	0.033	O	|	|	|	|	0.02
86.417	0.00	0.03	0.032	O	|	|	|	|	0.02
86.500	0.00	0.03	0.032	O	|	|	|	|	0.02
86.583	0.00	0.03	0.032	O	|	|	|	|	0.02
86.667	0.00	0.03	0.032	O	|	|	|	|	0.02
86.750	0.00	0.03	0.032	O	|	|	|	|	0.02
86.833	0.00	0.03	0.031	O	|	|	|	|	0.02
86.917	0.00	0.03	0.031	O	|	|	|	|	0.02
87.000	0.00	0.03	0.031	O	|	|	|	|	0.02
87.083	0.00	0.03	0.031	O	|	|	|	|	0.02
87.167	0.00	0.03	0.031	O	|	|	|	|	0.02
87.250	0.00	0.03	0.031	O	|	|	|	|	0.02
87.333	0.00	0.03	0.030	O	|	|	|	|	0.02
87.417	0.00	0.03	0.030	O	|	|	|	|	0.02
87.500	0.00	0.02	0.030	O	|	|	|	|	0.02
87.583	0.00	0.02	0.030	O	|	|	|	|	0.02
87.667	0.00	0.02	0.030	O	|	|	|	|	0.02
87.750	0.00	0.02	0.030	O	|	|	|	|	0.02
87.833	0.00	0.02	0.029	O	|	|	|	|	0.02
87.917	0.00	0.02	0.029	O	|	|	|	|	0.02
88.000	0.00	0.02	0.029	O	|	|	|	|	0.02
88.083	0.00	0.02	0.029	O	|	|	|	|	0.02

88.167	0.00	0.02	0.029	O					0.02
88.250	0.00	0.02	0.029	O					0.02
88.333	0.00	0.02	0.028	O					0.02
88.417	0.00	0.02	0.028	O					0.02
88.500	0.00	0.02	0.028	O					0.02
88.583	0.00	0.02	0.028	O					0.02
88.667	0.00	0.02	0.028	O					0.02
88.750	0.00	0.02	0.028	O					0.02
88.833	0.00	0.02	0.027	O					0.02
88.917	0.00	0.02	0.027	O					0.02
89.000	0.00	0.02	0.027	O					0.02
89.083	0.00	0.02	0.027	O					0.02
89.167	0.00	0.02	0.027	O					0.02
89.250	0.00	0.02	0.027	O					0.02
89.333	0.00	0.02	0.026	O					0.02
89.417	0.00	0.02	0.026	O					0.02
89.500	0.00	0.02	0.026	O					0.02
89.583	0.00	0.02	0.026	O					0.02
89.667	0.00	0.02	0.026	O					0.02
89.750	0.00	0.02	0.026	O					0.02
89.833	0.00	0.02	0.026	O					0.02
89.917	0.00	0.02	0.025	O					0.02
90.000	0.00	0.02	0.025	O					0.02
90.083	0.00	0.02	0.025	O					0.02
90.167	0.00	0.02	0.025	O					0.01
90.250	0.00	0.02	0.025	O					0.01
90.333	0.00	0.02	0.025	O					0.01
90.417	0.00	0.02	0.025	O					0.01
90.500	0.00	0.02	0.024	O					0.01
90.583	0.00	0.02	0.024	O					0.01
90.667	0.00	0.02	0.024	O					0.01
90.750	0.00	0.02	0.024	O					0.01
90.833	0.00	0.02	0.024	O					0.01
90.917	0.00	0.02	0.024	O					0.01
91.000	0.00	0.02	0.024	O					0.01
91.083	0.00	0.02	0.023	O					0.01
91.167	0.00	0.02	0.023	O					0.01
91.250	0.00	0.02	0.023	O					0.01
91.333	0.00	0.02	0.023	O					0.01
91.417	0.00	0.02	0.023	O					0.01
91.500	0.00	0.02	0.023	O					0.01
91.583	0.00	0.02	0.023	O					0.01
91.667	0.00	0.02	0.023	O					0.01
91.750	0.00	0.02	0.022	O					0.01
91.833	0.00	0.02	0.022	O					0.01
91.917	0.00	0.02	0.022	O					0.01
92.000	0.00	0.02	0.022	O					0.01
92.083	0.00	0.02	0.022	O					0.01
92.167	0.00	0.02	0.022	O					0.01
92.250	0.00	0.02	0.022	O					0.01
92.333	0.00	0.02	0.022	O					0.01
92.417	0.00	0.02	0.021	O					0.01
92.500	0.00	0.02	0.021	O					0.01
92.583	0.00	0.02	0.021	O					0.01
92.667	0.00	0.02	0.021	O					0.01
92.750	0.00	0.02	0.021	O					0.01
92.833	0.00	0.02	0.021	O					0.01
92.917	0.00	0.02	0.021	O					0.01
93.000	0.00	0.02	0.021	O					0.01
93.083	0.00	0.02	0.020	O					0.01
93.167	0.00	0.02	0.020	O					0.01
93.250	0.00	0.02	0.020	O					0.01
93.333	0.00	0.02	0.020	O					0.01
93.417	0.00	0.02	0.020	O					0.01
93.500	0.00	0.02	0.020	O					0.01
93.583	0.00	0.02	0.020	O					0.01
93.667	0.00	0.02	0.020	O					0.01
93.750	0.00	0.02	0.020	O					0.01
93.833	0.00	0.02	0.019	O					0.01
93.917	0.00	0.02	0.019	O					0.01
94.000	0.00	0.02	0.019	O					0.01

94.083	0.00	0.02	0.019	O					0.01
94.167	0.00	0.02	0.019	O					0.01
94.250	0.00	0.02	0.019	O					0.01
94.333	0.00	0.02	0.019	O					0.01
94.417	0.00	0.02	0.019	O					0.01
94.500	0.00	0.02	0.019	O					0.01
94.583	0.00	0.02	0.018	O					0.01
94.667	0.00	0.02	0.018	O					0.01
94.750	0.00	0.02	0.018	O					0.01
94.833	0.00	0.02	0.018	O					0.01
94.917	0.00	0.01	0.018	O					0.01
95.000	0.00	0.01	0.018	O					0.01
95.083	0.00	0.01	0.018	O					0.01
95.167	0.00	0.01	0.018	O					0.01
95.250	0.00	0.01	0.018	O					0.01
95.333	0.00	0.01	0.018	O					0.01
95.417	0.00	0.01	0.017	O					0.01
95.500	0.00	0.01	0.017	O					0.01
95.583	0.00	0.01	0.017	O					0.01
95.667	0.00	0.01	0.017	O					0.01
95.750	0.00	0.01	0.017	O					0.01
95.833	0.00	0.01	0.017	O					0.01
95.917	0.00	0.01	0.017	O					0.01
96.000	0.00	0.01	0.017	O					0.01
96.083	0.00	0.01	0.017	O					0.01
96.167	0.00	0.01	0.017	O					0.01
96.250	0.00	0.01	0.016	O					0.01
96.333	0.00	0.01	0.016	O					0.01
96.417	0.00	0.01	0.016	O					0.01
96.500	0.00	0.01	0.016	O					0.01
96.583	0.00	0.01	0.016	O					0.01
96.667	0.00	0.01	0.016	O					0.01
96.750	0.00	0.01	0.016	O					0.01
96.833	0.00	0.01	0.016	O					0.01
96.917	0.00	0.01	0.016	O					0.01
97.000	0.00	0.01	0.016	O					0.01
97.083	0.00	0.01	0.016	O					0.01
97.167	0.00	0.01	0.015	O					0.01
97.250	0.00	0.01	0.015	O					0.01
97.333	0.00	0.01	0.015	O					0.01
97.417	0.00	0.01	0.015	O					0.01
97.500	0.00	0.01	0.015	O					0.01
97.583	0.00	0.01	0.015	O					0.01
97.667	0.00	0.01	0.015	O					0.01
97.750	0.00	0.01	0.015	O					0.01
97.833	0.00	0.01	0.015	O					0.01
97.917	0.00	0.01	0.015	O					0.01
98.000	0.00	0.01	0.015	O					0.01
98.083	0.00	0.01	0.015	O					0.01
98.167	0.00	0.01	0.014	O					0.01
98.250	0.00	0.01	0.014	O					0.01
98.333	0.00	0.01	0.014	O					0.01
98.417	0.00	0.01	0.014	O					0.01
98.500	0.00	0.01	0.014	O					0.01
98.583	0.00	0.01	0.014	O					0.01
98.667	0.00	0.01	0.014	O					0.01
98.750	0.00	0.01	0.014	O					0.01
98.833	0.00	0.01	0.014	O					0.01
98.917	0.00	0.01	0.014	O					0.01
99.000	0.00	0.01	0.014	O					0.01
99.083	0.00	0.01	0.014	O					0.01
99.167	0.00	0.01	0.013	O					0.01
99.250	0.00	0.01	0.013	O					0.01
99.333	0.00	0.01	0.013	O					0.01
99.417	0.00	0.01	0.013	O					0.01
99.500	0.00	0.01	0.013	O					0.01
99.583	0.00	0.01	0.013	O					0.01
99.667	0.00	0.01	0.013	O					0.01
99.750	0.00	0.01	0.013	O					0.01
99.833	0.00	0.01	0.013	O					0.01
99.917	0.00	0.01	0.013	O					0.01

100.000	0.00	0.01	0.013	O	|	|	|	|	0.01
100.083	0.00	0.01	0.013	O	|	|	|	|	0.01
100.167	0.00	0.01	0.013	O	|	|	|	|	0.01
100.250	0.00	0.01	0.013	O	|	|	|	|	0.01
100.333	0.00	0.01	0.012	O	|	|	|	|	0.01
100.417	0.00	0.01	0.012	O	|	|	|	|	0.01
100.500	0.00	0.01	0.012	O	|	|	|	|	0.01
100.583	0.00	0.01	0.012	O	|	|	|	|	0.01
100.667	0.00	0.01	0.012	O	|	|	|	|	0.01
100.750	0.00	0.01	0.012	O	|	|	|	|	0.01
100.833	0.00	0.01	0.012	O	|	|	|	|	0.01
100.917	0.00	0.01	0.012	O	|	|	|	|	0.01
101.000	0.00	0.01	0.012	O	|	|	|	|	0.01
101.083	0.00	0.01	0.012	O	|	|	|	|	0.01
101.167	0.00	0.01	0.012	O	|	|	|	|	0.01
101.250	0.00	0.01	0.012	O	|	|	|	|	0.01
101.333	0.00	0.01	0.012	O	|	|	|	|	0.01
101.417	0.00	0.01	0.012	O	|	|	|	|	0.01
101.500	0.00	0.01	0.011	O	|	|	|	|	0.01
101.583	0.00	0.01	0.011	O	|	|	|	|	0.01
101.667	0.00	0.01	0.011	O	|	|	|	|	0.01
101.750	0.00	0.01	0.011	O	|	|	|	|	0.01
101.833	0.00	0.01	0.011	O	|	|	|	|	0.01
101.917	0.00	0.01	0.011	O	|	|	|	|	0.01
102.000	0.00	0.01	0.011	O	|	|	|	|	0.01
102.083	0.00	0.01	0.011	O	|	|	|	|	0.01
102.167	0.00	0.01	0.011	O	|	|	|	|	0.01
102.250	0.00	0.01	0.011	O	|	|	|	|	0.01
102.333	0.00	0.01	0.011	O	|	|	|	|	0.01
102.417	0.00	0.01	0.011	O	|	|	|	|	0.01
102.500	0.00	0.01	0.011	O	|	|	|	|	0.01
102.583	0.00	0.01	0.011	O	|	|	|	|	0.01
102.667	0.00	0.01	0.011	O	|	|	|	|	0.01
102.750	0.00	0.01	0.011	O	|	|	|	|	0.01
102.833	0.00	0.01	0.010	O	|	|	|	|	0.01
102.917	0.00	0.01	0.010	O	|	|	|	|	0.01
103.000	0.00	0.01	0.010	O	|	|	|	|	0.01
103.083	0.00	0.01	0.010	O	|	|	|	|	0.01
103.167	0.00	0.01	0.010	O	|	|	|	|	0.01
103.250	0.00	0.01	0.010	O	|	|	|	|	0.01
103.333	0.00	0.01	0.010	O	|	|	|	|	0.01
103.417	0.00	0.01	0.010	O	|	|	|	|	0.01
103.500	0.00	0.01	0.010	O	|	|	|	|	0.01
103.583	0.00	0.01	0.010	O	|	|	|	|	0.01
103.667	0.00	0.01	0.010	O	|	|	|	|	0.01
103.750	0.00	0.01	0.010	O	|	|	|	|	0.01
103.833	0.00	0.01	0.010	O	|	|	|	|	0.01
103.917	0.00	0.01	0.010	O	|	|	|	|	0.01
104.000	0.00	0.01	0.010	O	|	|	|	|	0.01
104.083	0.00	0.01	0.010	O	|	|	|	|	0.01
104.167	0.00	0.01	0.010	O	|	|	|	|	0.01
104.250	0.00	0.01	0.010	O	|	|	|	|	0.01
104.333	0.00	0.01	0.009	O	|	|	|	|	0.01
104.417	0.00	0.01	0.009	O	|	|	|	|	0.01
104.500	0.00	0.01	0.009	O	|	|	|	|	0.01
104.583	0.00	0.01	0.009	O	|	|	|	|	0.01
104.667	0.00	0.01	0.009	O	|	|	|	|	0.01
104.750	0.00	0.01	0.009	O	|	|	|	|	0.01
104.833	0.00	0.01	0.009	O	|	|	|	|	0.01
104.917	0.00	0.01	0.009	O	|	|	|	|	0.01
105.000	0.00	0.01	0.009	O	|	|	|	|	0.01
105.083	0.00	0.01	0.009	O	|	|	|	|	0.01
105.167	0.00	0.01	0.009	O	|	|	|	|	0.01
105.250	0.00	0.01	0.009	O	|	|	|	|	0.01
105.333	0.00	0.01	0.009	O	|	|	|	|	0.01
105.417	0.00	0.01	0.009	O	|	|	|	|	0.01
105.500	0.00	0.01	0.009	O	|	|	|	|	0.01
105.583	0.00	0.01	0.009	O	|	|	|	|	0.01
105.667	0.00	0.01	0.009	O	|	|	|	|	0.01
105.750	0.00	0.01	0.009	O	|	|	|	|	0.01
105.833	0.00	0.01	0.009	O	|	|	|	|	0.01

105.917	0.00	0.01	0.008	O	|	|	|	|	0.01
106.000	0.00	0.01	0.008	O	|	|	|	|	0.01
106.083	0.00	0.01	0.008	O	|	|	|	|	0.01
106.167	0.00	0.01	0.008	O	|	|	|	|	0.01
106.250	0.00	0.01	0.008	O	|	|	|	|	0.00
106.333	0.00	0.01	0.008	O	|	|	|	|	0.00
106.417	0.00	0.01	0.008	O	|	|	|	|	0.00
106.500	0.00	0.01	0.008	O	|	|	|	|	0.00
106.583	0.00	0.01	0.008	O	|	|	|	|	0.00
106.667	0.00	0.01	0.008	O	|	|	|	|	0.00
106.750	0.00	0.01	0.008	O	|	|	|	|	0.00
106.833	0.00	0.01	0.008	O	|	|	|	|	0.00
106.917	0.00	0.01	0.008	O	|	|	|	|	0.00
107.000	0.00	0.01	0.008	O	|	|	|	|	0.00
107.083	0.00	0.01	0.008	O	|	|	|	|	0.00
107.167	0.00	0.01	0.008	O	|	|	|	|	0.00
107.250	0.00	0.01	0.008	O	|	|	|	|	0.00
107.333	0.00	0.01	0.008	O	|	|	|	|	0.00
107.417	0.00	0.01	0.008	O	|	|	|	|	0.00
107.500	0.00	0.01	0.008	O	|	|	|	|	0.00
107.583	0.00	0.01	0.008	O	|	|	|	|	0.00
107.667	0.00	0.01	0.008	O	|	|	|	|	0.00
107.750	0.00	0.01	0.007	O	|	|	|	|	0.00
107.833	0.00	0.01	0.007	O	|	|	|	|	0.00
107.917	0.00	0.01	0.007	O	|	|	|	|	0.00
108.000	0.00	0.01	0.007	O	|	|	|	|	0.00
108.083	0.00	0.01	0.007	O	|	|	|	|	0.00
108.167	0.00	0.01	0.007	O	|	|	|	|	0.00
108.250	0.00	0.01	0.007	O	|	|	|	|	0.00
108.333	0.00	0.01	0.007	O	|	|	|	|	0.00
108.417	0.00	0.01	0.007	O	|	|	|	|	0.00
108.500	0.00	0.01	0.007	O	|	|	|	|	0.00
108.583	0.00	0.01	0.007	O	|	|	|	|	0.00
108.667	0.00	0.01	0.007	O	|	|	|	|	0.00
108.750	0.00	0.01	0.007	O	|	|	|	|	0.00
108.833	0.00	0.01	0.007	O	|	|	|	|	0.00
108.917	0.00	0.01	0.007	O	|	|	|	|	0.00
109.000	0.00	0.01	0.007	O	|	|	|	|	0.00
109.083	0.00	0.01	0.007	O	|	|	|	|	0.00
109.167	0.00	0.01	0.007	O	|	|	|	|	0.00
109.250	0.00	0.01	0.007	O	|	|	|	|	0.00
109.333	0.00	0.01	0.007	O	|	|	|	|	0.00
109.417	0.00	0.01	0.007	O	|	|	|	|	0.00
109.500	0.00	0.01	0.007	O	|	|	|	|	0.00
109.583	0.00	0.01	0.007	O	|	|	|	|	0.00
109.667	0.00	0.01	0.007	O	|	|	|	|	0.00
109.750	0.00	0.01	0.007	O	|	|	|	|	0.00
109.833	0.00	0.01	0.006	O	|	|	|	|	0.00
109.917	0.00	0.01	0.006	O	|	|	|	|	0.00
110.000	0.00	0.01	0.006	O	|	|	|	|	0.00
110.083	0.00	0.01	0.006	O	|	|	|	|	0.00
110.167	0.00	0.01	0.006	O	|	|	|	|	0.00
110.250	0.00	0.01	0.006	O	|	|	|	|	0.00
110.333	0.00	0.01	0.006	O	|	|	|	|	0.00
110.417	0.00	0.01	0.006	O	|	|	|	|	0.00
110.500	0.00	0.01	0.006	O	|	|	|	|	0.00
110.583	0.00	0.01	0.006	O	|	|	|	|	0.00
110.667	0.00	0.01	0.006	O	|	|	|	|	0.00
110.750	0.00	0.01	0.006	O	|	|	|	|	0.00
110.833	0.00	0.01	0.006	O	|	|	|	|	0.00
110.917	0.00	0.01	0.006	O	|	|	|	|	0.00
111.000	0.00	0.00	0.006	O	|	|	|	|	0.00
111.083	0.00	0.00	0.006	O	|	|	|	|	0.00
111.167	0.00	0.00	0.006	O	|	|	|	|	0.00
111.250	0.00	0.00	0.006	O	|	|	|	|	0.00
111.333	0.00	0.00	0.006	O	|	|	|	|	0.00
111.417	0.00	0.00	0.006	O	|	|	|	|	0.00
111.500	0.00	0.00	0.006	O	|	|	|	|	0.00
111.583	0.00	0.00	0.006	O	|	|	|	|	0.00
111.667	0.00	0.00	0.006	O	|	|	|	|	0.00
111.750	0.00	0.00	0.006	O	|	|	|	|	0.00

111.833	0.00	0.00	0.006	O	|	|	|	0.00
111.917	0.00	0.00	0.006	O	|	|	|	0.00
112.000	0.00	0.00	0.006	O	|	|	|	0.00
112.083	0.00	0.00	0.006	O	|	|	|	0.00
112.167	0.00	0.00	0.006	O	|	|	|	0.00
112.250	0.00	0.00	0.006	O	|	|	|	0.00
112.333	0.00	0.00	0.005	O	|	|	|	0.00
112.417	0.00	0.00	0.005	O	|	|	|	0.00
112.500	0.00	0.00	0.005	O	|	|	|	0.00
112.583	0.00	0.00	0.005	O	|	|	|	0.00
112.667	0.00	0.00	0.005	O	|	|	|	0.00
112.750	0.00	0.00	0.005	O	|	|	|	0.00
112.833	0.00	0.00	0.005	O	|	|	|	0.00
112.917	0.00	0.00	0.005	O	|	|	|	0.00
113.000	0.00	0.00	0.005	O	|	|	|	0.00
113.083	0.00	0.00	0.005	O	|	|	|	0.00
113.167	0.00	0.00	0.005	O	|	|	|	0.00
113.250	0.00	0.00	0.005	O	|	|	|	0.00
113.333	0.00	0.00	0.005	O	|	|	|	0.00
113.417	0.00	0.00	0.005	O	|	|	|	0.00
113.500	0.00	0.00	0.005	O	|	|	|	0.00
113.583	0.00	0.00	0.005	O	|	|	|	0.00
113.667	0.00	0.00	0.005	O	|	|	|	0.00
113.750	0.00	0.00	0.005	O	|	|	|	0.00
113.833	0.00	0.00	0.005	O	|	|	|	0.00
113.917	0.00	0.00	0.005	O	|	|	|	0.00
114.000	0.00	0.00	0.005	O	|	|	|	0.00
114.083	0.00	0.00	0.005	O	|	|	|	0.00
114.167	0.00	0.00	0.005	O	|	|	|	0.00
114.250	0.00	0.00	0.005	O	|	|	|	0.00
114.333	0.00	0.00	0.005	O	|	|	|	0.00
114.417	0.00	0.00	0.005	O	|	|	|	0.00
114.500	0.00	0.00	0.005	O	|	|	|	0.00
114.583	0.00	0.00	0.005	O	|	|	|	0.00
114.667	0.00	0.00	0.005	O	|	|	|	0.00
114.750	0.00	0.00	0.005	O	|	|	|	0.00
114.833	0.00	0.00	0.005	O	|	|	|	0.00
114.917	0.00	0.00	0.005	O	|	|	|	0.00
115.000	0.00	0.00	0.005	O	|	|	|	0.00
115.083	0.00	0.00	0.005	O	|	|	|	0.00
115.167	0.00	0.00	0.005	O	|	|	|	0.00
115.250	0.00	0.00	0.004	O	|	|	|	0.00
115.333	0.00	0.00	0.004	O	|	|	|	0.00
115.417	0.00	0.00	0.004	O	|	|	|	0.00
115.500	0.00	0.00	0.004	O	|	|	|	0.00
115.583	0.00	0.00	0.004	O	|	|	|	0.00
115.667	0.00	0.00	0.004	O	|	|	|	0.00
115.750	0.00	0.00	0.004	O	|	|	|	0.00
115.833	0.00	0.00	0.004	O	|	|	|	0.00
115.917	0.00	0.00	0.004	O	|	|	|	0.00
116.000	0.00	0.00	0.004	O	|	|	|	0.00
116.083	0.00	0.00	0.004	O	|	|	|	0.00
116.167	0.00	0.00	0.004	O	|	|	|	0.00
116.250	0.00	0.00	0.004	O	|	|	|	0.00
116.333	0.00	0.00	0.004	O	|	|	|	0.00
116.417	0.00	0.00	0.004	O	|	|	|	0.00
116.500	0.00	0.00	0.004	O	|	|	|	0.00
116.583	0.00	0.00	0.004	O	|	|	|	0.00
116.667	0.00	0.00	0.004	O	|	|	|	0.00
116.750	0.00	0.00	0.004	O	|	|	|	0.00
116.833	0.00	0.00	0.004	O	|	|	|	0.00
116.917	0.00	0.00	0.004	O	|	|	|	0.00
117.000	0.00	0.00	0.004	O	|	|	|	0.00
117.083	0.00	0.00	0.004	O	|	|	|	0.00
117.167	0.00	0.00	0.004	O	|	|	|	0.00
117.250	0.00	0.00	0.004	O	|	|	|	0.00
117.333	0.00	0.00	0.004	O	|	|	|	0.00
117.417	0.00	0.00	0.004	O	|	|	|	0.00
117.500	0.00	0.00	0.004	O	|	|	|	0.00
117.583	0.00	0.00	0.004	O	|	|	|	0.00
117.667	0.00	0.00	0.004	O	|	|	|	0.00

117.750	0.00	0.00	0.004	O	|	|	|	0.00
117.833	0.00	0.00	0.004	O	|	|	|	0.00
117.917	0.00	0.00	0.004	O	|	|	|	0.00
118.000	0.00	0.00	0.004	O	|	|	|	0.00
118.083	0.00	0.00	0.004	O	|	|	|	0.00
118.167	0.00	0.00	0.004	O	|	|	|	0.00
118.250	0.00	0.00	0.004	O	|	|	|	0.00
118.333	0.00	0.00	0.004	O	|	|	|	0.00
118.417	0.00	0.00	0.004	O	|	|	|	0.00
118.500	0.00	0.00	0.004	O	|	|	|	0.00
118.583	0.00	0.00	0.004	O	|	|	|	0.00
118.667	0.00	0.00	0.004	O	|	|	|	0.00
118.750	0.00	0.00	0.004	O	|	|	|	0.00
118.833	0.00	0.00	0.004	O	|	|	|	0.00
118.917	0.00	0.00	0.003	O	|	|	|	0.00
119.000	0.00	0.00	0.003	O	|	|	|	0.00
119.083	0.00	0.00	0.003	O	|	|	|	0.00
119.167	0.00	0.00	0.003	O	|	|	|	0.00
119.250	0.00	0.00	0.003	O	|	|	|	0.00
119.333	0.00	0.00	0.003	O	|	|	|	0.00
119.417	0.00	0.00	0.003	O	|	|	|	0.00
119.500	0.00	0.00	0.003	O	|	|	|	0.00
119.583	0.00	0.00	0.003	O	|	|	|	0.00
119.667	0.00	0.00	0.003	O	|	|	|	0.00
119.750	0.00	0.00	0.003	O	|	|	|	0.00
119.833	0.00	0.00	0.003	O	|	|	|	0.00
119.917	0.00	0.00	0.003	O	|	|	|	0.00
120.000	0.00	0.00	0.003	O	|	|	|	0.00
120.083	0.00	0.00	0.003	O	|	|	|	0.00
120.167	0.00	0.00	0.003	O	|	|	|	0.00
120.250	0.00	0.00	0.003	O	|	|	|	0.00
120.333	0.00	0.00	0.003	O	|	|	|	0.00
120.417	0.00	0.00	0.003	O	|	|	|	0.00
120.500	0.00	0.00	0.003	O	|	|	|	0.00
120.583	0.00	0.00	0.003	O	|	|	|	0.00
120.667	0.00	0.00	0.003	O	|	|	|	0.00
120.750	0.00	0.00	0.003	O	|	|	|	0.00
120.833	0.00	0.00	0.003	O	|	|	|	0.00
120.917	0.00	0.00	0.003	O	|	|	|	0.00
121.000	0.00	0.00	0.003	O	|	|	|	0.00
121.083	0.00	0.00	0.003	O	|	|	|	0.00
121.167	0.00	0.00	0.003	O	|	|	|	0.00
121.250	0.00	0.00	0.003	O	|	|	|	0.00
121.333	0.00	0.00	0.003	O	|	|	|	0.00
121.417	0.00	0.00	0.003	O	|	|	|	0.00
121.500	0.00	0.00	0.003	O	|	|	|	0.00
121.583	0.00	0.00	0.003	O	|	|	|	0.00
121.667	0.00	0.00	0.003	O	|	|	|	0.00
121.750	0.00	0.00	0.003	O	|	|	|	0.00
121.833	0.00	0.00	0.003	O	|	|	|	0.00
121.917	0.00	0.00	0.003	O	|	|	|	0.00
122.000	0.00	0.00	0.003	O	|	|	|	0.00
122.083	0.00	0.00	0.003	O	|	|	|	0.00
122.167	0.00	0.00	0.003	O	|	|	|	0.00
122.250	0.00	0.00	0.003	O	|	|	|	0.00
122.333	0.00	0.00	0.003	O	|	|	|	0.00
122.417	0.00	0.00	0.003	O	|	|	|	0.00
122.500	0.00	0.00	0.003	O	|	|	|	0.00
122.583	0.00	0.00	0.003	O	|	|	|	0.00
122.667	0.00	0.00	0.003	O	|	|	|	0.00
122.750	0.00	0.00	0.003	O	|	|	|	0.00
122.833	0.00	0.00	0.003	O	|	|	|	0.00
122.917	0.00	0.00	0.003	O	|	|	|	0.00
123.000	0.00	0.00	0.003	O	|	|	|	0.00
123.083	0.00	0.00	0.003	O	|	|	|	0.00
123.167	0.00	0.00	0.003	O	|	|	|	0.00
123.250	0.00	0.00	0.003	O	|	|	|	0.00
123.333	0.00	0.00	0.003	O	|	|	|	0.00
123.417	0.00	0.00	0.003	O	|	|	|	0.00
123.500	0.00	0.00	0.003	O	|	|	|	0.00
123.583	0.00	0.00	0.003	O	|	|	|	0.00

123.667	0.00	0.00	0.003	O	|	|	|	|	0.00
123.750	0.00	0.00	0.002	O	|	|	|	|	0.00
123.833	0.00	0.00	0.002	O	|	|	|	|	0.00
123.917	0.00	0.00	0.002	O	|	|	|	|	0.00
124.000	0.00	0.00	0.002	O	|	|	|	|	0.00
124.083	0.00	0.00	0.002	O	|	|	|	|	0.00
124.167	0.00	0.00	0.002	O	|	|	|	|	0.00
124.250	0.00	0.00	0.002	O	|	|	|	|	0.00
124.333	0.00	0.00	0.002	O	|	|	|	|	0.00
124.417	0.00	0.00	0.002	O	|	|	|	|	0.00
124.500	0.00	0.00	0.002	O	|	|	|	|	0.00
124.583	0.00	0.00	0.002	O	|	|	|	|	0.00
124.667	0.00	0.00	0.002	O	|	|	|	|	0.00
124.750	0.00	0.00	0.002	O	|	|	|	|	0.00
124.833	0.00	0.00	0.002	O	|	|	|	|	0.00
124.917	0.00	0.00	0.002	O	|	|	|	|	0.00
125.000	0.00	0.00	0.002	O	|	|	|	|	0.00
125.083	0.00	0.00	0.002	O	|	|	|	|	0.00
125.167	0.00	0.00	0.002	O	|	|	|	|	0.00
125.250	0.00	0.00	0.002	O	|	|	|	|	0.00
125.333	0.00	0.00	0.002	O	|	|	|	|	0.00
125.417	0.00	0.00	0.002	O	|	|	|	|	0.00
125.500	0.00	0.00	0.002	O	|	|	|	|	0.00
125.583	0.00	0.00	0.002	O	|	|	|	|	0.00
125.667	0.00	0.00	0.002	O	|	|	|	|	0.00
125.750	0.00	0.00	0.002	O	|	|	|	|	0.00
125.833	0.00	0.00	0.002	O	|	|	|	|	0.00
125.917	0.00	0.00	0.002	O	|	|	|	|	0.00
126.000	0.00	0.00	0.002	O	|	|	|	|	0.00
126.083	0.00	0.00	0.002	O	|	|	|	|	0.00
126.167	0.00	0.00	0.002	O	|	|	|	|	0.00
126.250	0.00	0.00	0.002	O	|	|	|	|	0.00
126.333	0.00	0.00	0.002	O	|	|	|	|	0.00
126.417	0.00	0.00	0.002	O	|	|	|	|	0.00
126.500	0.00	0.00	0.002	O	|	|	|	|	0.00
126.583	0.00	0.00	0.002	O	|	|	|	|	0.00
126.667	0.00	0.00	0.002	O	|	|	|	|	0.00
126.750	0.00	0.00	0.002	O	|	|	|	|	0.00
126.833	0.00	0.00	0.002	O	|	|	|	|	0.00
126.917	0.00	0.00	0.002	O	|	|	|	|	0.00
127.000	0.00	0.00	0.002	O	|	|	|	|	0.00
127.083	0.00	0.00	0.002	O	|	|	|	|	0.00
127.167	0.00	0.00	0.002	O	|	|	|	|	0.00
127.250	0.00	0.00	0.002	O	|	|	|	|	0.00
127.333	0.00	0.00	0.002	O	|	|	|	|	0.00
127.417	0.00	0.00	0.002	O	|	|	|	|	0.00
127.500	0.00	0.00	0.002	O	|	|	|	|	0.00
127.583	0.00	0.00	0.002	O	|	|	|	|	0.00
127.667	0.00	0.00	0.002	O	|	|	|	|	0.00
127.750	0.00	0.00	0.002	O	|	|	|	|	0.00
127.833	0.00	0.00	0.002	O	|	|	|	|	0.00
127.917	0.00	0.00	0.002	O	|	|	|	|	0.00
128.000	0.00	0.00	0.002	O	|	|	|	|	0.00
128.083	0.00	0.00	0.002	O	|	|	|	|	0.00
128.167	0.00	0.00	0.002	O	|	|	|	|	0.00
128.250	0.00	0.00	0.002	O	|	|	|	|	0.00
128.333	0.00	0.00	0.002	O	|	|	|	|	0.00
128.417	0.00	0.00	0.002	O	|	|	|	|	0.00
128.500	0.00	0.00	0.002	O	|	|	|	|	0.00
128.583	0.00	0.00	0.002	O	|	|	|	|	0.00
128.667	0.00	0.00	0.002	O	|	|	|	|	0.00
128.750	0.00	0.00	0.002	O	|	|	|	|	0.00
128.833	0.00	0.00	0.002	O	|	|	|	|	0.00
128.917	0.00	0.00	0.002	O	|	|	|	|	0.00
129.000	0.00	0.00	0.002	O	|	|	|	|	0.00
129.083	0.00	0.00	0.002	O	|	|	|	|	0.00
129.167	0.00	0.00	0.002	O	|	|	|	|	0.00
129.250	0.00	0.00	0.002	O	|	|	|	|	0.00
129.333	0.00	0.00	0.002	O	|	|	|	|	0.00
129.417	0.00	0.00	0.002	O	|	|	|	|	0.00
129.500	0.00	0.00	0.002	O	|	|	|	|	0.00

```
129.583    0.00    0.00      0.002  O       |       |       |       |     0.00
129.667    0.00    0.00      0.002  O       |       |       |       |     0.00

        Remaining water in basin =    0.00 (Ac.Ft)


        ****************************HYDROGRAPH DATA****************************
                       Number of intervals =  1556
                       Time interval =    5.0 (Min.)
                       Maximum/Peak flow rate =        6.910 (CFS)
                       Total volume =       7.069 (Ac.Ft)
               Status of hydrographs being held in storage
                            Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
               Peak (CFS)      0.000     0.000     0.000     0.000     0.000
               Vol (Ac.Ft)     0.000     0.000     0.000     0.000     0.000
        ***********************************************************************

        ---------------------------------------------------------------------
```

- Basin 'C' - 5 Year 3 Hour Storm Routing Analysis

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                    FLOOD HYDROGRAPH ROUTING PROGRAM
          Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012
                       Study date: 03/20/17

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WESTRIDGE HYDROLOGY STUDY
PROPOSED ROUTING - BASIN 'C' - 5 YEAR 3 HOUR STORM
HUNSAKER & ASSOCIATES, MARCH 20, 2017
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------


Program License Serial Number 4094

------------------------------------------------------------------------
******************** HYDROGRAPH INFORMATION **********************

               From study/file name: PRC00503.rte
*****************************HYDROGRAPH DATA*****************************
               Number of intervals =    53
               Time interval =    5.0 (Min.)
               Maximum/Peak flow rate =      165.877 (CFS)
               Total volume =       7.785 (Ac.Ft)
       Status of hydrographs being held in storage
                   Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
       Peak (CFS)      0.000     0.000     0.000     0.000     0.000
       Vol (Ac.Ft)     0.000     0.000     0.000     0.000     0.000
************************************************************************



++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      300.000 to Point/Station      301.000
**** RETARDING BASIN ROUTING ****
________________________________________________________________________

User entry of depth-outflow-storage data
------------------------------------------------------------------------
Total number of inflow hydrograph intervals = 53
Hydrograph time unit =  5.000 (Min.)
Initial depth in storage basin =   0.00(Ft.)
------------------------------------------------------------------------
------------------------------------------------------------------------
Initial basin depth =   0.00 (Ft.)
Initial basin storage =      0.00 (Ac.Ft)
Initial basin outflow =   0.00 (CFS)
------------------------------------------------------------------------
------------------------------------------------------------------------
Depth vs. Storage and Depth vs. Discharge data:
 Basin Depth  Storage    Outflow   (S-O*dt/2)   (S+O*dt/2)
     (Ft.)    (Ac.Ft)    (CFS)     (Ac.Ft)    (Ac.Ft)
------------------------------------------------------------------------
   0.000      0.000      0.000      0.000        0.000
   0.500      0.834      0.692      0.832        0.836
   1.000      1.693      1.672      1.687        1.699
   1.500      2.577      3.059      2.566        2.588
   2.000      3.488      4.757      3.472        3.504
   3.000      5.388      7.930      5.361        5.415
   4.000      7.399     20.434      7.329        7.469
   5.000      9.523     35.089      9.402        9.644
   6.000     11.764     44.538     11.611       11.917
   7.000     14.126     52.170     13.946       14.306
   8.000     16.610     58.766     16.408       16.812
   8.900     18.942     83.236     18.655       19.229
   9.000     19.207     83.236     18.920       19.494
   9.500     20.556    448.796     19.011       22.101
  10.000     21.935   1159.965     17.941       25.929
```

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0	41.5	82.94	124.41	165.88	Depth (Ft.)
0.083	0.24	0.00	0.001	O	|	|	|	|	0.00
0.167	1.16	0.00	0.006	O	|	|	|	|	0.00
0.250	3.61	0.02	0.022	O	|	|	|	|	0.01
0.333	5.29	0.04	0.052	OI	|	|	|	|	0.03
0.417	6.15	0.08	0.091	OI	|	|	|	|	0.05
0.500	6.78	0.11	0.135	OI	|	|	|	|	0.08
0.583	7.30	0.15	0.183	OI	|	|	|	|	0.11
0.667	7.74	0.19	0.233	OI	|	|	|	|	0.14
0.750	8.13	0.24	0.287	OI	|	|	|	|	0.17
0.833	8.48	0.28	0.342	OI	|	|	|	|	0.21
0.917	8.85	0.33	0.400	OI	|	|	|	|	0.24
1.000	9.37	0.38	0.460	OI	|	|	|	|	0.28
1.083	10.25	0.44	0.525	OI	|	|	|	|	0.31
1.167	11.29	0.49	0.596	O I	|	|	|	|	0.36
1.250	12.61	0.56	0.674	O I	|	|	|	|	0.40
1.333	14.06	0.63	0.762	O I	|	|	|	|	0.46
1.417	15.63	0.72	0.860	O I	|	|	|	|	0.51
1.500	16.74	0.84	0.966	O I	|	|	|	|	0.58
1.583	16.96	0.97	1.075	O I	|	|	|	|	0.64
1.667	18.26	1.10	1.190	O I	|	|	|	|	0.71
1.750	21.59	1.25	1.319	O I	|	|	|	|	0.78
1.833	26.70	1.42	1.476	O I	|	|	|	|	0.87
1.917	36.00	1.66	1.681	O I	|	|	|	|	0.99
2.000	48.04	2.09	1.958	O	I |	|	|	|	1.15
2.083	73.55	2.72	2.360	O	| I	|	|	|	1.38
2.167	113.38	3.81	2.981	O	|	I	|	|	1.72
2.250	165.88	5.46	3.911	|O	|	|	|	I	2.22
2.333	124.76	7.06	4.868	|O	|	|	I	|	2.73
2.417	77.86	8.70	5.512	|O	|	I |	|	|	3.06
2.500	57.10	11.16	5.908	| O	| I	|	|	|	3.26
2.583	45.07	12.84	6.177	| O	I |	|	|	|	3.39
2.667	35.67	13.99	6.363	| O	I |	|	|	|	3.48
2.750	27.57	14.73	6.482	| O	I |	|	|	|	3.54
2.833	21.18	15.14	6.547	| O I	|	|	|	|	3.58
2.917	15.98	15.28	6.570	| OI	|	|	|	|	3.59
3.000	13.29	15.25	6.566	| O	|	|	|	|	3.59
3.083	11.49	15.13	6.546	| O	|	|	|	|	3.58
3.167	9.37	14.94	6.515	|IO	|	|	|	|	3.56
3.250	6.32	14.64	6.467	|IO	|	|	|	|	3.54
3.333	3.89	14.24	6.403	I O	|	|	|	|	3.50
3.417	2.53	13.78	6.328	I O	|	|	|	|	3.47
3.500	1.60	13.29	6.249	I O	|	|	|	|	3.43
3.583	0.95	12.78	6.168	I O	|	|	|	|	3.39
3.667	0.61	12.28	6.087	I O	|	|	|	|	3.35
3.750	0.38	11.78	6.008	I O	|	|	|	|	3.31
3.833	0.23	11.30	5.931	I O	|	|	|	|	3.27
3.917	0.16	10.84	5.856	I O	|	|	|	|	3.23
4.000	0.11	10.39	5.783	I O	|	|	|	|	3.20
4.083	0.08	9.96	5.714	IO	|	|	|	|	3.16
4.167	0.06	9.54	5.647	IO	|	|	|	|	3.13
4.250	0.03	9.14	5.583	IO	|	|	|	|	3.10
4.333	0.01	8.76	5.522	IO	|	|	|	|	3.07
4.417	0.00	8.39	5.463	IO	|	|	|	|	3.04
4.500	0.00	8.04	5.406	IO	|	|	|	|	3.01
4.583	0.00	7.87	5.351	IO	|	|	|	|	2.98
4.667	0.00	7.78	5.298	IO	|	|	|	|	2.95
4.750	0.00	7.69	5.244	IO	|	|	|	|	2.92
4.833	0.00	7.60	5.192	IO	|	|	|	|	2.90
4.917	0.00	7.52	5.140	IO	|	|	|	|	2.87
5.000	0.00	7.43	5.088	IO	|	|	|	|	2.84
5.083	0.00	7.34	5.037	IO	|	|	|	|	2.82
5.167	0.00	7.26	4.987	IO	|	|	|	|	2.79
5.250	0.00	7.18	4.937	IO	|	|	|	|	2.76

5.333	0.00	7.10	4.888	IO				2.74
5.417	0.00	7.01	4.839	IO				2.71
5.500	0.00	6.93	4.791	IO				2.69
5.583	0.00	6.85	4.744	IO				2.66
5.667	0.00	6.78	4.697	IO				2.64
5.750	0.00	6.70	4.651	IO				2.61
5.833	0.00	6.62	4.605	IO				2.59
5.917	0.00	6.55	4.559	IO				2.56
6.000	0.00	6.47	4.515	IO				2.54
6.083	0.00	6.40	4.470	IO				2.52
6.167	0.00	6.32	4.426	IO				2.49
6.250	0.00	6.25	4.383	IO				2.47
6.333	0.00	6.18	4.340	IO				2.45
6.417	0.00	6.11	4.298	IO				2.43
6.500	0.00	6.04	4.256	IO				2.40
6.583	0.00	5.97	4.215	IO				2.38
6.667	0.00	5.90	4.174	IO				2.36
6.750	0.00	5.84	4.134	IO				2.34
6.833	0.00	5.77	4.094	IO				2.32
6.917	0.00	5.70	4.054	IO				2.30
7.000	0.00	5.64	4.015	IO				2.28
7.083	0.00	5.57	3.976	IO				2.26
7.167	0.00	5.51	3.938	IO				2.24
7.250	0.00	5.45	3.901	IO				2.22
7.333	0.00	5.38	3.863	IO				2.20
7.417	0.00	5.32	3.826	IO				2.18
7.500	0.00	5.26	3.790	IO				2.16
7.583	0.00	5.20	3.754	IO				2.14
7.667	0.00	5.14	3.718	O				2.12
7.750	0.00	5.08	3.683	O				2.10
7.833	0.00	5.02	3.648	O				2.08
7.917	0.00	4.97	3.614	O				2.07
8.000	0.00	4.91	3.580	O				2.05
8.083	0.00	4.85	3.546	O				2.03
8.167	0.00	4.80	3.513	O				2.01
8.250	0.00	4.74	3.480	O				2.00
8.333	0.00	4.68	3.448	O				1.98
8.417	0.00	4.62	3.416	O				1.96
8.500	0.00	4.56	3.384	O				1.94
8.583	0.00	4.50	3.353	O				1.93
8.667	0.00	4.45	3.322	O				1.91
8.750	0.00	4.39	3.292	O				1.89
8.833	0.00	4.33	3.261	O				1.88
8.917	0.00	4.28	3.232	O				1.86
9.000	0.00	4.22	3.203	O				1.84
9.083	0.00	4.17	3.174	O				1.83
9.167	0.00	4.12	3.145	O				1.81
9.250	0.00	4.07	3.117	O				1.80
9.333	0.00	4.01	3.089	O				1.78
9.417	0.00	3.96	3.062	O				1.77
9.500	0.00	3.91	3.034	O				1.75
9.583	0.00	3.86	3.008	O				1.74
9.667	0.00	3.81	2.981	O				1.72
9.750	0.00	3.76	2.955	O				1.71
9.833	0.00	3.72	2.929	O				1.69
9.917	0.00	3.67	2.904	O				1.68
10.000	0.00	3.62	2.879	O				1.67
10.083	0.00	3.58	2.854	O				1.65
10.167	0.00	3.53	2.830	O				1.64
10.250	0.00	3.48	2.806	O				1.63
10.333	0.00	3.44	2.782	O				1.61
10.417	0.00	3.40	2.758	O				1.60
10.500	0.00	3.35	2.735	O				1.59
10.583	0.00	3.31	2.712	O				1.57
10.667	0.00	3.27	2.689	O				1.56
10.750	0.00	3.23	2.667	O				1.55
10.833	0.00	3.19	2.645	O				1.54
10.917	0.00	3.14	2.623	O				1.53
11.000	0.00	3.10	2.602	O				1.51
11.083	0.00	3.07	2.580	O				1.50
11.167	0.00	3.03	2.559	O				1.49

11.250	0.00	3.00	2.539	O	|	|	|	|	1.48
11.333	0.00	2.97	2.518	O	|	|	|	|	1.47
11.417	0.00	2.93	2.498	O	|	|	|	|	1.46
11.500	0.00	2.90	2.478	O	|	|	|	|	1.44
11.583	0.00	2.87	2.458	O	|	|	|	|	1.43
11.667	0.00	2.84	2.438	O	|	|	|	|	1.42
11.750	0.00	2.81	2.419	O	|	|	|	|	1.41
11.833	0.00	2.78	2.399	O	|	|	|	|	1.40
11.917	0.00	2.75	2.380	O	|	|	|	|	1.39
12.000	0.00	2.72	2.361	O	|	|	|	|	1.38
12.083	0.00	2.69	2.343	O	|	|	|	|	1.37
12.167	0.00	2.66	2.324	O	|	|	|	|	1.36
12.250	0.00	2.63	2.306	O	|	|	|	|	1.35
12.333	0.00	2.61	2.288	O	|	|	|	|	1.34
12.417	0.00	2.58	2.270	O	|	|	|	|	1.33
12.500	0.00	2.55	2.253	O	|	|	|	|	1.32
12.583	0.00	2.52	2.235	O	|	|	|	|	1.31
12.667	0.00	2.50	2.218	O	|	|	|	|	1.30
12.750	0.00	2.47	2.201	O	|	|	|	|	1.29
12.833	0.00	2.44	2.184	O	|	|	|	|	1.28
12.917	0.00	2.42	2.167	O	|	|	|	|	1.27
13.000	0.00	2.39	2.151	O	|	|	|	|	1.26
13.083	0.00	2.36	2.134	O	|	|	|	|	1.25
13.167	0.00	2.34	2.118	O	|	|	|	|	1.24
13.250	0.00	2.31	2.102	O	|	|	|	|	1.23
13.333	0.00	2.29	2.086	O	|	|	|	|	1.22
13.417	0.00	2.26	2.070	O	|	|	|	|	1.21
13.500	0.00	2.24	2.055	O	|	|	|	|	1.20
13.583	0.00	2.22	2.040	O	|	|	|	|	1.20
13.667	0.00	2.19	2.024	O	|	|	|	|	1.19
13.750	0.00	2.17	2.009	O	|	|	|	|	1.18
13.833	0.00	2.15	1.994	O	|	|	|	|	1.17
13.917	0.00	2.12	1.980	O	|	|	|	|	1.16
14.000	0.00	2.10	1.965	O	|	|	|	|	1.15
14.083	0.00	2.08	1.951	O	|	|	|	|	1.15
14.167	0.00	2.05	1.937	O	|	|	|	|	1.14
14.250	0.00	2.03	1.923	O	|	|	|	|	1.13
14.333	0.00	2.01	1.909	O	|	|	|	|	1.12
14.417	0.00	1.99	1.895	O	|	|	|	|	1.11
14.500	0.00	1.97	1.881	O	|	|	|	|	1.11
14.583	0.00	1.95	1.868	O	|	|	|	|	1.10
14.667	0.00	1.93	1.854	O	|	|	|	|	1.09
14.750	0.00	1.90	1.841	O	|	|	|	|	1.08
14.833	0.00	1.88	1.828	O	|	|	|	|	1.08
14.917	0.00	1.86	1.815	O	|	|	|	|	1.07
15.000	0.00	1.84	1.803	O	|	|	|	|	1.06
15.083	0.00	1.82	1.790	O	|	|	|	|	1.05
15.167	0.00	1.80	1.777	O	|	|	|	|	1.05
15.250	0.00	1.79	1.765	O	|	|	|	|	1.04
15.333	0.00	1.77	1.753	O	|	|	|	|	1.03
15.417	0.00	1.75	1.741	O	|	|	|	|	1.03
15.500	0.00	1.73	1.729	O	|	|	|	|	1.02
15.583	0.00	1.71	1.717	O	|	|	|	|	1.01
15.667	0.00	1.69	1.705	O	|	|	|	|	1.01
15.750	0.00	1.67	1.694	O	|	|	|	|	1.00
15.833	0.00	1.66	1.682	O	|	|	|	|	0.99
15.917	0.00	1.65	1.671	O	|	|	|	|	0.99
16.000	0.00	1.63	1.659	O	|	|	|	|	0.98
16.083	0.00	1.62	1.648	O	|	|	|	|	0.97
16.167	0.00	1.61	1.637	O	|	|	|	|	0.97
16.250	0.00	1.60	1.626	O	|	|	|	|	0.96
16.333	0.00	1.58	1.615	O	|	|	|	|	0.95
16.417	0.00	1.57	1.604	O	|	|	|	|	0.95
16.500	0.00	1.56	1.594	O	|	|	|	|	0.94
16.583	0.00	1.55	1.583	O	|	|	|	|	0.94
16.667	0.00	1.53	1.572	O	|	|	|	|	0.93
16.750	0.00	1.52	1.562	O	|	|	|	|	0.92
16.833	0.00	1.51	1.551	O	|	|	|	|	0.92
16.917	0.00	1.50	1.541	O	|	|	|	|	0.91
17.000	0.00	1.49	1.531	O	|	|	|	|	0.91
17.083	0.00	1.48	1.520	O	|	|	|	|	0.90

17.167	0.00	1.46	1.510	O	|	|	|	|	0.89
17.250	0.00	1.45	1.500	O	|	|	|	|	0.89
17.333	0.00	1.44	1.490	O	|	|	|	|	0.88
17.417	0.00	1.43	1.480	O	|	|	|	|	0.88
17.500	0.00	1.42	1.471	O	|	|	|	|	0.87
17.583	0.00	1.41	1.461	O	|	|	|	|	0.86
17.667	0.00	1.40	1.451	O	|	|	|	|	0.86
17.750	0.00	1.39	1.442	O	|	|	|	|	0.85
17.833	0.00	1.37	1.432	O	|	|	|	|	0.85
17.917	0.00	1.36	1.423	O	|	|	|	|	0.84
18.000	0.00	1.35	1.413	O	|	|	|	|	0.84
18.083	0.00	1.34	1.404	O	|	|	|	|	0.83
18.167	0.00	1.33	1.395	O	|	|	|	|	0.83
18.250	0.00	1.32	1.386	O	|	|	|	|	0.82
18.333	0.00	1.31	1.377	O	|	|	|	|	0.82
18.417	0.00	1.30	1.368	O	|	|	|	|	0.81
18.500	0.00	1.29	1.359	O	|	|	|	|	0.81
18.583	0.00	1.28	1.350	O	|	|	|	|	0.80
18.667	0.00	1.27	1.341	O	|	|	|	|	0.80
18.750	0.00	1.26	1.332	O	|	|	|	|	0.79
18.833	0.00	1.25	1.324	O	|	|	|	|	0.79
18.917	0.00	1.24	1.315	O	|	|	|	|	0.78
19.000	0.00	1.23	1.307	O	|	|	|	|	0.78
19.083	0.00	1.22	1.298	O	|	|	|	|	0.77
19.167	0.00	1.21	1.290	O	|	|	|	|	0.77
19.250	0.00	1.20	1.282	O	|	|	|	|	0.76
19.333	0.00	1.19	1.273	O	|	|	|	|	0.76
19.417	0.00	1.18	1.265	O	|	|	|	|	0.75
19.500	0.00	1.17	1.257	O	|	|	|	|	0.75
19.583	0.00	1.17	1.249	O	|	|	|	|	0.74
19.667	0.00	1.16	1.241	O	|	|	|	|	0.74
19.750	0.00	1.15	1.233	O	|	|	|	|	0.73
19.833	0.00	1.14	1.225	O	|	|	|	|	0.73
19.917	0.00	1.13	1.217	O	|	|	|	|	0.72
20.000	0.00	1.12	1.210	O	|	|	|	|	0.72
20.083	0.00	1.11	1.202	O	|	|	|	|	0.71
20.167	0.00	1.10	1.194	O	|	|	|	|	0.71
20.250	0.00	1.09	1.187	O	|	|	|	|	0.71
20.333	0.00	1.09	1.179	O	|	|	|	|	0.70
20.417	0.00	1.08	1.172	O	|	|	|	|	0.70
20.500	0.00	1.07	1.164	O	|	|	|	|	0.69
20.583	0.00	1.06	1.157	O	|	|	|	|	0.69
20.667	0.00	1.05	1.150	O	|	|	|	|	0.68
20.750	0.00	1.04	1.143	O	|	|	|	|	0.68
20.833	0.00	1.04	1.135	O	|	|	|	|	0.68
20.917	0.00	1.03	1.128	O	|	|	|	|	0.67
21.000	0.00	1.02	1.121	O	|	|	|	|	0.67
21.083	0.00	1.01	1.114	O	|	|	|	|	0.66
21.167	0.00	1.00	1.107	O	|	|	|	|	0.66
21.250	0.00	1.00	1.100	O	|	|	|	|	0.66
21.333	0.00	0.99	1.094	O	|	|	|	|	0.65
21.417	0.00	0.98	1.087	O	|	|	|	|	0.65
21.500	0.00	0.97	1.080	O	|	|	|	|	0.64
21.583	0.00	0.97	1.073	O	|	|	|	|	0.64
21.667	0.00	0.96	1.067	O	|	|	|	|	0.64
21.750	0.00	0.95	1.060	O	|	|	|	|	0.63
21.833	0.00	0.94	1.054	O	|	|	|	|	0.63
21.917	0.00	0.94	1.047	O	|	|	|	|	0.62
22.000	0.00	0.93	1.041	O	|	|	|	|	0.62
22.083	0.00	0.92	1.034	O	|	|	|	|	0.62
22.167	0.00	0.91	1.028	O	|	|	|	|	0.61
22.250	0.00	0.91	1.022	O	|	|	|	|	0.61
22.333	0.00	0.90	1.016	O	|	|	|	|	0.61
22.417	0.00	0.89	1.009	O	|	|	|	|	0.60
22.500	0.00	0.89	1.003	O	|	|	|	|	0.60
22.583	0.00	0.88	0.997	O	|	|	|	|	0.60
22.667	0.00	0.87	0.991	O	|	|	|	|	0.59
22.750	0.00	0.86	0.985	O	|	|	|	|	0.59
22.833	0.00	0.86	0.979	O	|	|	|	|	0.58
22.917	0.00	0.85	0.973	O	|	|	|	|	0.58
23.000	0.00	0.84	0.968	O	|	|	|	|	0.58

23.083	0.00	0.84	0.962	O	|	|	|	|	0.57
23.167	0.00	0.83	0.956	O	|	|	|	|	0.57
23.250	0.00	0.82	0.950	O	|	|	|	|	0.57
23.333	0.00	0.82	0.945	O	|	|	|	|	0.56
23.417	0.00	0.81	0.939	O	|	|	|	|	0.56
23.500	0.00	0.81	0.934	O	|	|	|	|	0.56
23.583	0.00	0.80	0.928	O	|	|	|	|	0.55
23.667	0.00	0.79	0.923	O	|	|	|	|	0.55
23.750	0.00	0.79	0.917	O	|	|	|	|	0.55
23.833	0.00	0.78	0.912	O	|	|	|	|	0.55
23.917	0.00	0.77	0.906	O	|	|	|	|	0.54
24.000	0.00	0.77	0.901	O	|	|	|	|	0.54
24.083	0.00	0.76	0.896	O	|	|	|	|	0.54
24.167	0.00	0.76	0.890	O	|	|	|	|	0.53
24.250	0.00	0.75	0.885	O	|	|	|	|	0.53
24.333	0.00	0.74	0.880	O	|	|	|	|	0.53
24.417	0.00	0.74	0.875	O	|	|	|	|	0.52
24.500	0.00	0.73	0.870	O	|	|	|	|	0.52
24.583	0.00	0.73	0.865	O	|	|	|	|	0.52
24.667	0.00	0.72	0.860	O	|	|	|	|	0.52
24.750	0.00	0.72	0.855	O	|	|	|	|	0.51
24.833	0.00	0.71	0.850	O	|	|	|	|	0.51
24.917	0.00	0.70	0.845	O	|	|	|	|	0.51
25.000	0.00	0.70	0.840	O	|	|	|	|	0.50
25.083	0.00	0.69	0.836	O	|	|	|	|	0.50
25.167	0.00	0.69	0.831	O	|	|	|	|	0.50
25.250	0.00	0.69	0.826	O	|	|	|	|	0.50
25.333	0.00	0.68	0.821	O	|	|	|	|	0.49
25.417	0.00	0.68	0.817	O	|	|	|	|	0.49
25.500	0.00	0.67	0.812	O	|	|	|	|	0.49
25.583	0.00	0.67	0.807	O	|	|	|	|	0.48
25.667	0.00	0.67	0.803	O	|	|	|	|	0.48
25.750	0.00	0.66	0.798	O	|	|	|	|	0.48
25.833	0.00	0.66	0.794	O	|	|	|	|	0.48
25.917	0.00	0.65	0.789	O	|	|	|	|	0.47
26.000	0.00	0.65	0.785	O	|	|	|	|	0.47
26.083	0.00	0.65	0.780	O	|	|	|	|	0.47
26.167	0.00	0.64	0.776	O	|	|	|	|	0.47
26.250	0.00	0.64	0.771	O	|	|	|	|	0.46
26.333	0.00	0.64	0.767	O	|	|	|	|	0.46
26.417	0.00	0.63	0.763	O	|	|	|	|	0.46
26.500	0.00	0.63	0.758	O	|	|	|	|	0.45
26.583	0.00	0.63	0.754	O	|	|	|	|	0.45
26.667	0.00	0.62	0.750	O	|	|	|	|	0.45
26.750	0.00	0.62	0.745	O	|	|	|	|	0.45
26.833	0.00	0.61	0.741	O	|	|	|	|	0.44
26.917	0.00	0.61	0.737	O	|	|	|	|	0.44
27.000	0.00	0.61	0.733	O	|	|	|	|	0.44
27.083	0.00	0.60	0.729	O	|	|	|	|	0.44
27.167	0.00	0.60	0.724	O	|	|	|	|	0.43
27.250	0.00	0.60	0.720	O	|	|	|	|	0.43
27.333	0.00	0.59	0.716	O	|	|	|	|	0.43
27.417	0.00	0.59	0.712	O	|	|	|	|	0.43
27.500	0.00	0.59	0.708	O	|	|	|	|	0.42
27.583	0.00	0.58	0.704	O	|	|	|	|	0.42
27.667	0.00	0.58	0.700	O	|	|	|	|	0.42
27.750	0.00	0.58	0.696	O	|	|	|	|	0.42
27.833	0.00	0.57	0.692	O	|	|	|	|	0.41
27.917	0.00	0.57	0.688	O	|	|	|	|	0.41
28.000	0.00	0.57	0.684	O	|	|	|	|	0.41
28.083	0.00	0.56	0.680	O	|	|	|	|	0.41
28.167	0.00	0.56	0.676	O	|	|	|	|	0.41
28.250	0.00	0.56	0.672	O	|	|	|	|	0.40
28.333	0.00	0.55	0.669	O	|	|	|	|	0.40
28.417	0.00	0.55	0.665	O	|	|	|	|	0.40
28.500	0.00	0.55	0.661	O	|	|	|	|	0.40
28.583	0.00	0.55	0.657	O	|	|	|	|	0.39
28.667	0.00	0.54	0.654	O	|	|	|	|	0.39
28.750	0.00	0.54	0.650	O	|	|	|	|	0.39
28.833	0.00	0.54	0.646	O	|	|	|	|	0.39
28.917	0.00	0.53	0.642	O	|	|	|	|	0.39

29.000	0.00	0.53	0.639	O	|	|	|	|	0.38
29.083	0.00	0.53	0.635	O	|	|	|	|	0.38
29.167	0.00	0.52	0.632	O	|	|	|	|	0.38
29.250	0.00	0.52	0.628	O	|	|	|	|	0.38
29.333	0.00	0.52	0.624	O	|	|	|	|	0.37
29.417	0.00	0.52	0.621	O	|	|	|	|	0.37
29.500	0.00	0.51	0.617	O	|	|	|	|	0.37
29.583	0.00	0.51	0.614	O	|	|	|	|	0.37
29.667	0.00	0.51	0.610	O	|	|	|	|	0.37
29.750	0.00	0.50	0.607	O	|	|	|	|	0.36
29.833	0.00	0.50	0.603	O	|	|	|	|	0.36
29.917	0.00	0.50	0.600	O	|	|	|	|	0.36
30.000	0.00	0.49	0.596	O	|	|	|	|	0.36
30.083	0.00	0.49	0.593	O	|	|	|	|	0.36
30.167	0.00	0.49	0.590	O	|	|	|	|	0.35
30.250	0.00	0.49	0.586	O	|	|	|	|	0.35
30.333	0.00	0.48	0.583	O	|	|	|	|	0.35
30.417	0.00	0.48	0.580	O	|	|	|	|	0.35
30.500	0.00	0.48	0.576	O	|	|	|	|	0.35
30.583	0.00	0.48	0.573	O	|	|	|	|	0.34
30.667	0.00	0.47	0.570	O	|	|	|	|	0.34
30.750	0.00	0.47	0.567	O	|	|	|	|	0.34
30.833	0.00	0.47	0.563	O	|	|	|	|	0.34
30.917	0.00	0.46	0.560	O	|	|	|	|	0.34
31.000	0.00	0.46	0.557	O	|	|	|	|	0.33
31.083	0.00	0.46	0.554	O	|	|	|	|	0.33
31.167	0.00	0.46	0.551	O	|	|	|	|	0.33
31.250	0.00	0.45	0.547	O	|	|	|	|	0.33
31.333	0.00	0.45	0.544	O	|	|	|	|	0.33
31.417	0.00	0.45	0.541	O	|	|	|	|	0.32
31.500	0.00	0.45	0.538	O	|	|	|	|	0.32
31.583	0.00	0.44	0.535	O	|	|	|	|	0.32
31.667	0.00	0.44	0.532	O	|	|	|	|	0.32
31.750	0.00	0.44	0.529	O	|	|	|	|	0.32
31.833	0.00	0.44	0.526	O	|	|	|	|	0.32
31.917	0.00	0.43	0.523	O	|	|	|	|	0.31
32.000	0.00	0.43	0.520	O	|	|	|	|	0.31
32.083	0.00	0.43	0.517	O	|	|	|	|	0.31
32.167	0.00	0.43	0.514	O	|	|	|	|	0.31
32.250	0.00	0.42	0.511	O	|	|	|	|	0.31
32.333	0.00	0.42	0.508	O	|	|	|	|	0.30
32.417	0.00	0.42	0.505	O	|	|	|	|	0.30
32.500	0.00	0.42	0.502	O	|	|	|	|	0.30
32.583	0.00	0.41	0.500	O	|	|	|	|	0.30
32.667	0.00	0.41	0.497	O	|	|	|	|	0.30
32.750	0.00	0.41	0.494	O	|	|	|	|	0.30
32.833	0.00	0.41	0.491	O	|	|	|	|	0.29
32.917	0.00	0.41	0.488	O	|	|	|	|	0.29
33.000	0.00	0.40	0.486	O	|	|	|	|	0.29
33.083	0.00	0.40	0.483	O	|	|	|	|	0.29
33.167	0.00	0.40	0.480	O	|	|	|	|	0.29
33.250	0.00	0.40	0.477	O	|	|	|	|	0.29
33.333	0.00	0.39	0.475	O	|	|	|	|	0.28
33.417	0.00	0.39	0.472	O	|	|	|	|	0.28
33.500	0.00	0.39	0.469	O	|	|	|	|	0.28
33.583	0.00	0.39	0.467	O	|	|	|	|	0.28
33.667	0.00	0.38	0.464	O	|	|	|	|	0.28
33.750	0.00	0.38	0.461	O	|	|	|	|	0.28
33.833	0.00	0.38	0.459	O	|	|	|	|	0.27
33.917	0.00	0.38	0.456	O	|	|	|	|	0.27
34.000	0.00	0.38	0.453	O	|	|	|	|	0.27
34.083	0.00	0.37	0.451	O	|	|	|	|	0.27
34.167	0.00	0.37	0.448	O	|	|	|	|	0.27
34.250	0.00	0.37	0.446	O	|	|	|	|	0.27
34.333	0.00	0.37	0.443	O	|	|	|	|	0.27
34.417	0.00	0.37	0.441	O	|	|	|	|	0.26
34.500	0.00	0.36	0.438	O	|	|	|	|	0.26
34.583	0.00	0.36	0.436	O	|	|	|	|	0.26
34.667	0.00	0.36	0.433	O	|	|	|	|	0.26
34.750	0.00	0.36	0.431	O	|	|	|	|	0.26
34.833	0.00	0.36	0.428	O	|	|	|	|	0.26

34.917	0.00	0.35	0.426	O	|	|	|	|	0.26
35.000	0.00	0.35	0.423	O	|	|	|	|	0.25
35.083	0.00	0.35	0.421	O	|	|	|	|	0.25
35.167	0.00	0.35	0.419	O	|	|	|	|	0.25
35.250	0.00	0.35	0.416	O	|	|	|	|	0.25
35.333	0.00	0.34	0.414	O	|	|	|	|	0.25
35.417	0.00	0.34	0.411	O	|	|	|	|	0.25
35.500	0.00	0.34	0.409	O	|	|	|	|	0.25
35.583	0.00	0.34	0.407	O	|	|	|	|	0.24
35.667	0.00	0.34	0.404	O	|	|	|	|	0.24
35.750	0.00	0.33	0.402	O	|	|	|	|	0.24
35.833	0.00	0.33	0.400	O	|	|	|	|	0.24
35.917	0.00	0.33	0.398	O	|	|	|	|	0.24
36.000	0.00	0.33	0.395	O	|	|	|	|	0.24
36.083	0.00	0.33	0.393	O	|	|	|	|	0.24
36.167	0.00	0.32	0.391	O	|	|	|	|	0.23
36.250	0.00	0.32	0.389	O	|	|	|	|	0.23
36.333	0.00	0.32	0.386	O	|	|	|	|	0.23
36.417	0.00	0.32	0.384	O	|	|	|	|	0.23
36.500	0.00	0.32	0.382	O	|	|	|	|	0.23
36.583	0.00	0.32	0.380	O	|	|	|	|	0.23
36.667	0.00	0.31	0.378	O	|	|	|	|	0.23
36.750	0.00	0.31	0.375	O	|	|	|	|	0.23
36.833	0.00	0.31	0.373	O	|	|	|	|	0.22
36.917	0.00	0.31	0.371	O	|	|	|	|	0.22
37.000	0.00	0.31	0.369	O	|	|	|	|	0.22
37.083	0.00	0.30	0.367	O	|	|	|	|	0.22
37.167	0.00	0.30	0.365	O	|	|	|	|	0.22
37.250	0.00	0.30	0.363	O	|	|	|	|	0.22
37.333	0.00	0.30	0.361	O	|	|	|	|	0.22
37.417	0.00	0.30	0.359	O	|	|	|	|	0.22
37.500	0.00	0.30	0.357	O	|	|	|	|	0.21
37.583	0.00	0.29	0.355	O	|	|	|	|	0.21
37.667	0.00	0.29	0.353	O	|	|	|	|	0.21
37.750	0.00	0.29	0.351	O	|	|	|	|	0.21
37.833	0.00	0.29	0.349	O	|	|	|	|	0.21
37.917	0.00	0.29	0.347	O	|	|	|	|	0.21
38.000	0.00	0.29	0.345	O	|	|	|	|	0.21
38.083	0.00	0.28	0.343	O	|	|	|	|	0.21
38.167	0.00	0.28	0.341	O	|	|	|	|	0.20
38.250	0.00	0.28	0.339	O	|	|	|	|	0.20
38.333	0.00	0.28	0.337	O	|	|	|	|	0.20
38.417	0.00	0.28	0.335	O	|	|	|	|	0.20
38.500	0.00	0.28	0.333	O	|	|	|	|	0.20
38.583	0.00	0.27	0.331	O	|	|	|	|	0.20
38.667	0.00	0.27	0.329	O	|	|	|	|	0.20
38.750	0.00	0.27	0.327	O	|	|	|	|	0.20
38.833	0.00	0.27	0.325	O	|	|	|	|	0.20
38.917	0.00	0.27	0.324	O	|	|	|	|	0.19
39.000	0.00	0.27	0.322	O	|	|	|	|	0.19
39.083	0.00	0.27	0.320	O	|	|	|	|	0.19
39.167	0.00	0.26	0.318	O	|	|	|	|	0.19
39.250	0.00	0.26	0.316	O	|	|	|	|	0.19
39.333	0.00	0.26	0.314	O	|	|	|	|	0.19
39.417	0.00	0.26	0.313	O	|	|	|	|	0.19
39.500	0.00	0.26	0.311	O	|	|	|	|	0.19
39.583	0.00	0.26	0.309	O	|	|	|	|	0.19
39.667	0.00	0.26	0.307	O	|	|	|	|	0.18
39.750	0.00	0.25	0.306	O	|	|	|	|	0.18
39.833	0.00	0.25	0.304	O	|	|	|	|	0.18
39.917	0.00	0.25	0.302	O	|	|	|	|	0.18
40.000	0.00	0.25	0.300	O	|	|	|	|	0.18
40.083	0.00	0.25	0.299	O	|	|	|	|	0.18
40.167	0.00	0.25	0.297	O	|	|	|	|	0.18
40.250	0.00	0.25	0.295	O	|	|	|	|	0.18
40.333	0.00	0.24	0.294	O	|	|	|	|	0.18
40.417	0.00	0.24	0.292	O	|	|	|	|	0.18
40.500	0.00	0.24	0.290	O	|	|	|	|	0.17
40.583	0.00	0.24	0.289	O	|	|	|	|	0.17
40.667	0.00	0.24	0.287	O	|	|	|	|	0.17
40.750	0.00	0.24	0.285	O	|	|	|	|	0.17

40.833	0.00	0.24	0.284	O	|	|	|	|	0.17
40.917	0.00	0.23	0.282	O	|	|	|	|	0.17
41.000	0.00	0.23	0.281	O	|	|	|	|	0.17
41.083	0.00	0.23	0.279	O	|	|	|	|	0.17
41.167	0.00	0.23	0.277	O	|	|	|	|	0.17
41.250	0.00	0.23	0.276	O	|	|	|	|	0.17
41.333	0.00	0.23	0.274	O	|	|	|	|	0.16
41.417	0.00	0.23	0.273	O	|	|	|	|	0.16
41.500	0.00	0.22	0.271	O	|	|	|	|	0.16
41.583	0.00	0.22	0.270	O	|	|	|	|	0.16
41.667	0.00	0.22	0.268	O	|	|	|	|	0.16
41.750	0.00	0.22	0.266	O	|	|	|	|	0.16
41.833	0.00	0.22	0.265	O	|	|	|	|	0.16
41.917	0.00	0.22	0.263	O	|	|	|	|	0.16
42.000	0.00	0.22	0.262	O	|	|	|	|	0.16
42.083	0.00	0.22	0.260	O	|	|	|	|	0.16
42.167	0.00	0.21	0.259	O	|	|	|	|	0.16
42.250	0.00	0.21	0.257	O	|	|	|	|	0.15
42.333	0.00	0.21	0.256	O	|	|	|	|	0.15
42.417	0.00	0.21	0.255	O	|	|	|	|	0.15
42.500	0.00	0.21	0.253	O	|	|	|	|	0.15
42.583	0.00	0.21	0.252	O	|	|	|	|	0.15
42.667	0.00	0.21	0.250	O	|	|	|	|	0.15
42.750	0.00	0.21	0.249	O	|	|	|	|	0.15
42.833	0.00	0.21	0.247	O	|	|	|	|	0.15
42.917	0.00	0.20	0.246	O	|	|	|	|	0.15
43.000	0.00	0.20	0.245	O	|	|	|	|	0.15
43.083	0.00	0.20	0.243	O	|	|	|	|	0.15
43.167	0.00	0.20	0.242	O	|	|	|	|	0.14
43.250	0.00	0.20	0.240	O	|	|	|	|	0.14
43.333	0.00	0.20	0.239	O	|	|	|	|	0.14
43.417	0.00	0.20	0.238	O	|	|	|	|	0.14
43.500	0.00	0.20	0.236	O	|	|	|	|	0.14
43.583	0.00	0.19	0.235	O	|	|	|	|	0.14
43.667	0.00	0.19	0.234	O	|	|	|	|	0.14
43.750	0.00	0.19	0.232	O	|	|	|	|	0.14
43.833	0.00	0.19	0.231	O	|	|	|	|	0.14
43.917	0.00	0.19	0.230	O	|	|	|	|	0.14
44.000	0.00	0.19	0.228	O	|	|	|	|	0.14
44.083	0.00	0.19	0.227	O	|	|	|	|	0.14
44.167	0.00	0.19	0.226	O	|	|	|	|	0.14
44.250	0.00	0.19	0.224	O	|	|	|	|	0.13
44.333	0.00	0.19	0.223	O	|	|	|	|	0.13
44.417	0.00	0.18	0.222	O	|	|	|	|	0.13
44.500	0.00	0.18	0.221	O	|	|	|	|	0.13
44.583	0.00	0.18	0.219	O	|	|	|	|	0.13
44.667	0.00	0.18	0.218	O	|	|	|	|	0.13
44.750	0.00	0.18	0.217	O	|	|	|	|	0.13
44.833	0.00	0.18	0.216	O	|	|	|	|	0.13
44.917	0.00	0.18	0.214	O	|	|	|	|	0.13
45.000	0.00	0.18	0.213	O	|	|	|	|	0.13
45.083	0.00	0.18	0.212	O	|	|	|	|	0.13
45.167	0.00	0.17	0.211	O	|	|	|	|	0.13
45.250	0.00	0.17	0.210	O	|	|	|	|	0.13
45.333	0.00	0.17	0.208	O	|	|	|	|	0.12
45.417	0.00	0.17	0.207	O	|	|	|	|	0.12
45.500	0.00	0.17	0.206	O	|	|	|	|	0.12
45.583	0.00	0.17	0.205	O	|	|	|	|	0.12
45.667	0.00	0.17	0.204	O	|	|	|	|	0.12
45.750	0.00	0.17	0.203	O	|	|	|	|	0.12
45.833	0.00	0.17	0.201	O	|	|	|	|	0.12
45.917	0.00	0.17	0.200	O	|	|	|	|	0.12
46.000	0.00	0.17	0.199	O	|	|	|	|	0.12
46.083	0.00	0.16	0.198	O	|	|	|	|	0.12
46.167	0.00	0.16	0.197	O	|	|	|	|	0.12
46.250	0.00	0.16	0.196	O	|	|	|	|	0.12
46.333	0.00	0.16	0.195	O	|	|	|	|	0.12
46.417	0.00	0.16	0.193	O	|	|	|	|	0.12
46.500	0.00	0.16	0.192	O	|	|	|	|	0.12
46.583	0.00	0.16	0.191	O	|	|	|	|	0.11
46.667	0.00	0.16	0.190	O	|	|	|	|	0.11

46.750	0.00	0.16	0.189	O	|	|	|	|	0.11
46.833	0.00	0.16	0.188	O	|	|	|	|	0.11
46.917	0.00	0.16	0.187	O	|	|	|	|	0.11
47.000	0.00	0.15	0.186	O	|	|	|	|	0.11
47.083	0.00	0.15	0.185	O	|	|	|	|	0.11
47.167	0.00	0.15	0.184	O	|	|	|	|	0.11
47.250	0.00	0.15	0.183	O	|	|	|	|	0.11
47.333	0.00	0.15	0.182	O	|	|	|	|	0.11
47.417	0.00	0.15	0.181	O	|	|	|	|	0.11
47.500	0.00	0.15	0.180	O	|	|	|	|	0.11
47.583	0.00	0.15	0.179	O	|	|	|	|	0.11
47.667	0.00	0.15	0.178	O	|	|	|	|	0.11
47.750	0.00	0.15	0.177	O	|	|	|	|	0.11
47.833	0.00	0.15	0.176	O	|	|	|	|	0.11
47.917	0.00	0.14	0.175	O	|	|	|	|	0.10
48.000	0.00	0.14	0.174	O	|	|	|	|	0.10
48.083	0.00	0.14	0.173	O	|	|	|	|	0.10
48.167	0.00	0.14	0.172	O	|	|	|	|	0.10
48.250	0.00	0.14	0.171	O	|	|	|	|	0.10
48.333	0.00	0.14	0.170	O	|	|	|	|	0.10
48.417	0.00	0.14	0.169	O	|	|	|	|	0.10
48.500	0.00	0.14	0.168	O	|	|	|	|	0.10
48.583	0.00	0.14	0.167	O	|	|	|	|	0.10
48.667	0.00	0.14	0.166	O	|	|	|	|	0.10
48.750	0.00	0.14	0.165	O	|	|	|	|	0.10
48.833	0.00	0.14	0.164	O	|	|	|	|	0.10
48.917	0.00	0.14	0.163	O	|	|	|	|	0.10
49.000	0.00	0.13	0.162	O	|	|	|	|	0.10
49.083	0.00	0.13	0.161	O	|	|	|	|	0.10
49.167	0.00	0.13	0.160	O	|	|	|	|	0.10
49.250	0.00	0.13	0.159	O	|	|	|	|	0.10
49.333	0.00	0.13	0.158	O	|	|	|	|	0.09
49.417	0.00	0.13	0.158	O	|	|	|	|	0.09
49.500	0.00	0.13	0.157	O	|	|	|	|	0.09
49.583	0.00	0.13	0.156	O	|	|	|	|	0.09
49.667	0.00	0.13	0.155	O	|	|	|	|	0.09
49.750	0.00	0.13	0.154	O	|	|	|	|	0.09
49.833	0.00	0.13	0.153	O	|	|	|	|	0.09
49.917	0.00	0.13	0.152	O	|	|	|	|	0.09
50.000	0.00	0.13	0.151	O	|	|	|	|	0.09
50.083	0.00	0.12	0.150	O	|	|	|	|	0.09
50.167	0.00	0.12	0.150	O	|	|	|	|	0.09
50.250	0.00	0.12	0.149	O	|	|	|	|	0.09
50.333	0.00	0.12	0.148	O	|	|	|	|	0.09
50.417	0.00	0.12	0.147	O	|	|	|	|	0.09
50.500	0.00	0.12	0.146	O	|	|	|	|	0.09
50.583	0.00	0.12	0.145	O	|	|	|	|	0.09
50.667	0.00	0.12	0.145	O	|	|	|	|	0.09
50.750	0.00	0.12	0.144	O	|	|	|	|	0.09
50.833	0.00	0.12	0.143	O	|	|	|	|	0.09
50.917	0.00	0.12	0.142	O	|	|	|	|	0.09
51.000	0.00	0.12	0.141	O	|	|	|	|	0.08
51.083	0.00	0.12	0.141	O	|	|	|	|	0.08
51.167	0.00	0.12	0.140	O	|	|	|	|	0.08
51.250	0.00	0.12	0.139	O	|	|	|	|	0.08
51.333	0.00	0.11	0.138	O	|	|	|	|	0.08
51.417	0.00	0.11	0.137	O	|	|	|	|	0.08
51.500	0.00	0.11	0.137	O	|	|	|	|	0.08
51.583	0.00	0.11	0.136	O	|	|	|	|	0.08
51.667	0.00	0.11	0.135	O	|	|	|	|	0.08
51.750	0.00	0.11	0.134	O	|	|	|	|	0.08
51.833	0.00	0.11	0.133	O	|	|	|	|	0.08
51.917	0.00	0.11	0.133	O	|	|	|	|	0.08
52.000	0.00	0.11	0.132	O	|	|	|	|	0.08
52.083	0.00	0.11	0.131	O	|	|	|	|	0.08
52.167	0.00	0.11	0.130	O	|	|	|	|	0.08
52.250	0.00	0.11	0.130	O	|	|	|	|	0.08
52.333	0.00	0.11	0.129	O	|	|	|	|	0.08
52.417	0.00	0.11	0.128	O	|	|	|	|	0.08
52.500	0.00	0.11	0.127	O	|	|	|	|	0.08
52.583	0.00	0.11	0.127	O	|	|	|	|	0.08

52.667	0.00	0.10	0.126	O	|	|	|	|	0.08
52.750	0.00	0.10	0.125	O	|	|	|	|	0.08
52.833	0.00	0.10	0.125	O	|	|	|	|	0.07
52.917	0.00	0.10	0.124	O	|	|	|	|	0.07
53.000	0.00	0.10	0.123	O	|	|	|	|	0.07
53.083	0.00	0.10	0.122	O	|	|	|	|	0.07
53.167	0.00	0.10	0.122	O	|	|	|	|	0.07
53.250	0.00	0.10	0.121	O	|	|	|	|	0.07
53.333	0.00	0.10	0.120	O	|	|	|	|	0.07
53.417	0.00	0.10	0.120	O	|	|	|	|	0.07
53.500	0.00	0.10	0.119	O	|	|	|	|	0.07
53.583	0.00	0.10	0.118	O	|	|	|	|	0.07
53.667	0.00	0.10	0.118	O	|	|	|	|	0.07
53.750	0.00	0.10	0.117	O	|	|	|	|	0.07
53.833	0.00	0.10	0.116	O	|	|	|	|	0.07
53.917	0.00	0.10	0.116	O	|	|	|	|	0.07
54.000	0.00	0.10	0.115	O	|	|	|	|	0.07
54.083	0.00	0.09	0.114	O	|	|	|	|	0.07
54.167	0.00	0.09	0.114	O	|	|	|	|	0.07
54.250	0.00	0.09	0.113	O	|	|	|	|	0.07
54.333	0.00	0.09	0.112	O	|	|	|	|	0.07
54.417	0.00	0.09	0.112	O	|	|	|	|	0.07
54.500	0.00	0.09	0.111	O	|	|	|	|	0.07
54.583	0.00	0.09	0.111	O	|	|	|	|	0.07
54.667	0.00	0.09	0.110	O	|	|	|	|	0.07
54.750	0.00	0.09	0.109	O	|	|	|	|	0.07
54.833	0.00	0.09	0.109	O	|	|	|	|	0.07
54.917	0.00	0.09	0.108	O	|	|	|	|	0.06
55.000	0.00	0.09	0.107	O	|	|	|	|	0.06
55.083	0.00	0.09	0.107	O	|	|	|	|	0.06
55.167	0.00	0.09	0.106	O	|	|	|	|	0.06
55.250	0.00	0.09	0.106	O	|	|	|	|	0.06
55.333	0.00	0.09	0.105	O	|	|	|	|	0.06
55.417	0.00	0.09	0.104	O	|	|	|	|	0.06
55.500	0.00	0.09	0.104	O	|	|	|	|	0.06
55.583	0.00	0.09	0.103	O	|	|	|	|	0.06
55.667	0.00	0.09	0.103	O	|	|	|	|	0.06
55.750	0.00	0.08	0.102	O	|	|	|	|	0.06
55.833	0.00	0.08	0.101	O	|	|	|	|	0.06
55.917	0.00	0.08	0.101	O	|	|	|	|	0.06
56.000	0.00	0.08	0.100	O	|	|	|	|	0.06
56.083	0.00	0.08	0.100	O	|	|	|	|	0.06
56.167	0.00	0.08	0.099	O	|	|	|	|	0.06
56.250	0.00	0.08	0.099	O	|	|	|	|	0.06
56.333	0.00	0.08	0.098	O	|	|	|	|	0.06
56.417	0.00	0.08	0.097	O	|	|	|	|	0.06
56.500	0.00	0.08	0.097	O	|	|	|	|	0.06
56.583	0.00	0.08	0.096	O	|	|	|	|	0.06
56.667	0.00	0.08	0.096	O	|	|	|	|	0.06
56.750	0.00	0.08	0.095	O	|	|	|	|	0.06
56.833	0.00	0.08	0.095	O	|	|	|	|	0.06
56.917	0.00	0.08	0.094	O	|	|	|	|	0.06
57.000	0.00	0.08	0.094	O	|	|	|	|	0.06
57.083	0.00	0.08	0.093	O	|	|	|	|	0.06
57.167	0.00	0.08	0.093	O	|	|	|	|	0.06
57.250	0.00	0.08	0.092	O	|	|	|	|	0.06
57.333	0.00	0.08	0.092	O	|	|	|	|	0.05
57.417	0.00	0.08	0.091	O	|	|	|	|	0.05
57.500	0.00	0.08	0.090	O	|	|	|	|	0.05
57.583	0.00	0.07	0.090	O	|	|	|	|	0.05
57.667	0.00	0.07	0.089	O	|	|	|	|	0.05
57.750	0.00	0.07	0.089	O	|	|	|	|	0.05
57.833	0.00	0.07	0.088	O	|	|	|	|	0.05
57.917	0.00	0.07	0.088	O	|	|	|	|	0.05
58.000	0.00	0.07	0.087	O	|	|	|	|	0.05
58.083	0.00	0.07	0.087	O	|	|	|	|	0.05
58.167	0.00	0.07	0.086	O	|	|	|	|	0.05
58.250	0.00	0.07	0.086	O	|	|	|	|	0.05
58.333	0.00	0.07	0.085	O	|	|	|	|	0.05
58.417	0.00	0.07	0.085	O	|	|	|	|	0.05
58.500	0.00	0.07	0.084	O	|	|	|	|	0.05

58.583	0.00	0.07	0.084	O	|	|	|	|	0.05
58.667	0.00	0.07	0.084	O	|	|	|	|	0.05
58.750	0.00	0.07	0.083	O	|	|	|	|	0.05
58.833	0.00	0.07	0.083	O	|	|	|	|	0.05
58.917	0.00	0.07	0.082	O	|	|	|	|	0.05
59.000	0.00	0.07	0.082	O	|	|	|	|	0.05
59.083	0.00	0.07	0.081	O	|	|	|	|	0.05
59.167	0.00	0.07	0.081	O	|	|	|	|	0.05
59.250	0.00	0.07	0.080	O	|	|	|	|	0.05
59.333	0.00	0.07	0.080	O	|	|	|	|	0.05
59.417	0.00	0.07	0.079	O	|	|	|	|	0.05
59.500	0.00	0.07	0.079	O	|	|	|	|	0.05
59.583	0.00	0.07	0.078	O	|	|	|	|	0.05
59.667	0.00	0.06	0.078	O	|	|	|	|	0.05
59.750	0.00	0.06	0.078	O	|	|	|	|	0.05
59.833	0.00	0.06	0.077	O	|	|	|	|	0.05
59.917	0.00	0.06	0.077	O	|	|	|	|	0.05
60.000	0.00	0.06	0.076	O	|	|	|	|	0.05
60.083	0.00	0.06	0.076	O	|	|	|	|	0.05
60.167	0.00	0.06	0.075	O	|	|	|	|	0.05
60.250	0.00	0.06	0.075	O	|	|	|	|	0.04
60.333	0.00	0.06	0.075	O	|	|	|	|	0.04
60.417	0.00	0.06	0.074	O	|	|	|	|	0.04
60.500	0.00	0.06	0.074	O	|	|	|	|	0.04
60.583	0.00	0.06	0.073	O	|	|	|	|	0.04
60.667	0.00	0.06	0.073	O	|	|	|	|	0.04
60.750	0.00	0.06	0.072	O	|	|	|	|	0.04
60.833	0.00	0.06	0.072	O	|	|	|	|	0.04
60.917	0.00	0.06	0.072	O	|	|	|	|	0.04
61.000	0.00	0.06	0.071	O	|	|	|	|	0.04
61.083	0.00	0.06	0.071	O	|	|	|	|	0.04
61.167	0.00	0.06	0.070	O	|	|	|	|	0.04
61.250	0.00	0.06	0.070	O	|	|	|	|	0.04
61.333	0.00	0.06	0.070	O	|	|	|	|	0.04
61.417	0.00	0.06	0.069	O	|	|	|	|	0.04
61.500	0.00	0.06	0.069	O	|	|	|	|	0.04
61.583	0.00	0.06	0.068	O	|	|	|	|	0.04
61.667	0.00	0.06	0.068	O	|	|	|	|	0.04
61.750	0.00	0.06	0.068	O	|	|	|	|	0.04
61.833	0.00	0.06	0.067	O	|	|	|	|	0.04
61.917	0.00	0.06	0.067	O	|	|	|	|	0.04
62.000	0.00	0.06	0.066	O	|	|	|	|	0.04
62.083	0.00	0.05	0.066	O	|	|	|	|	0.04
62.167	0.00	0.05	0.066	O	|	|	|	|	0.04
62.250	0.00	0.05	0.065	O	|	|	|	|	0.04
62.333	0.00	0.05	0.065	O	|	|	|	|	0.04
62.417	0.00	0.05	0.065	O	|	|	|	|	0.04
62.500	0.00	0.05	0.064	O	|	|	|	|	0.04
62.583	0.00	0.05	0.064	O	|	|	|	|	0.04
62.667	0.00	0.05	0.063	O	|	|	|	|	0.04
62.750	0.00	0.05	0.063	O	|	|	|	|	0.04
62.833	0.00	0.05	0.063	O	|	|	|	|	0.04
62.917	0.00	0.05	0.062	O	|	|	|	|	0.04
63.000	0.00	0.05	0.062	O	|	|	|	|	0.04
63.083	0.00	0.05	0.062	O	|	|	|	|	0.04
63.167	0.00	0.05	0.061	O	|	|	|	|	0.04
63.250	0.00	0.05	0.061	O	|	|	|	|	0.04
63.333	0.00	0.05	0.061	O	|	|	|	|	0.04
63.417	0.00	0.05	0.060	O	|	|	|	|	0.04
63.500	0.00	0.05	0.060	O	|	|	|	|	0.04
63.583	0.00	0.05	0.060	O	|	|	|	|	0.04
63.667	0.00	0.05	0.059	O	|	|	|	|	0.04
63.750	0.00	0.05	0.059	O	|	|	|	|	0.04
63.833	0.00	0.05	0.059	O	|	|	|	|	0.04
63.917	0.00	0.05	0.058	O	|	|	|	|	0.03
64.000	0.00	0.05	0.058	O	|	|	|	|	0.03
64.083	0.00	0.05	0.058	O	|	|	|	|	0.03
64.167	0.00	0.05	0.057	O	|	|	|	|	0.03
64.250	0.00	0.05	0.057	O	|	|	|	|	0.03
64.333	0.00	0.05	0.057	O	|	|	|	|	0.03
64.417	0.00	0.05	0.056	O	|	|	|	|	0.03

64.500	0.00	0.05	0.056	O					0.03
64.583	0.00	0.05	0.056	O					0.03
64.667	0.00	0.05	0.055	O					0.03
64.750	0.00	0.05	0.055	O					0.03
64.833	0.00	0.05	0.055	O					0.03
64.917	0.00	0.05	0.054	O					0.03
65.000	0.00	0.04	0.054	O					0.03
65.083	0.00	0.04	0.054	O					0.03
65.167	0.00	0.04	0.053	O					0.03
65.250	0.00	0.04	0.053	O					0.03
65.333	0.00	0.04	0.053	O					0.03
65.417	0.00	0.04	0.053	O					0.03
65.500	0.00	0.04	0.052	O					0.03
65.583	0.00	0.04	0.052	O					0.03
65.667	0.00	0.04	0.052	O					0.03
65.750	0.00	0.04	0.051	O					0.03
65.833	0.00	0.04	0.051	O					0.03
65.917	0.00	0.04	0.051	O					0.03
66.000	0.00	0.04	0.051	O					0.03
66.083	0.00	0.04	0.050	O					0.03
66.167	0.00	0.04	0.050	O					0.03
66.250	0.00	0.04	0.050	O					0.03
66.333	0.00	0.04	0.049	O					0.03
66.417	0.00	0.04	0.049	O					0.03
66.500	0.00	0.04	0.049	O					0.03
66.583	0.00	0.04	0.049	O					0.03
66.667	0.00	0.04	0.048	O					0.03
66.750	0.00	0.04	0.048	O					0.03
66.833	0.00	0.04	0.048	O					0.03
66.917	0.00	0.04	0.047	O					0.03
67.000	0.00	0.04	0.047	O					0.03
67.083	0.00	0.04	0.047	O					0.03
67.167	0.00	0.04	0.047	O					0.03
67.250	0.00	0.04	0.046	O					0.03
67.333	0.00	0.04	0.046	O					0.03
67.417	0.00	0.04	0.046	O					0.03
67.500	0.00	0.04	0.046	O					0.03
67.583	0.00	0.04	0.045	O					0.03
67.667	0.00	0.04	0.045	O					0.03
67.750	0.00	0.04	0.045	O					0.03
67.833	0.00	0.04	0.045	O					0.03
67.917	0.00	0.04	0.044	O					0.03
68.000	0.00	0.04	0.044	O					0.03
68.083	0.00	0.04	0.044	O					0.03
68.167	0.00	0.04	0.044	O					0.03
68.250	0.00	0.04	0.043	O					0.03
68.333	0.00	0.04	0.043	O					0.03
68.417	0.00	0.04	0.043	O					0.03
68.500	0.00	0.04	0.043	O					0.03
68.583	0.00	0.04	0.042	O					0.03
68.667	0.00	0.03	0.042	O					0.03
68.750	0.00	0.03	0.042	O					0.03
68.833	0.00	0.03	0.042	O					0.02
68.917	0.00	0.03	0.041	O					0.02
69.000	0.00	0.03	0.041	O					0.02
69.083	0.00	0.03	0.041	O					0.02
69.167	0.00	0.03	0.041	O					0.02
69.250	0.00	0.03	0.040	O					0.02
69.333	0.00	0.03	0.040	O					0.02
69.417	0.00	0.03	0.040	O					0.02
69.500	0.00	0.03	0.040	O					0.02
69.583	0.00	0.03	0.040	O					0.02
69.667	0.00	0.03	0.039	O					0.02
69.750	0.00	0.03	0.039	O					0.02
69.833	0.00	0.03	0.039	O					0.02
69.917	0.00	0.03	0.039	O					0.02
70.000	0.00	0.03	0.038	O					0.02
70.083	0.00	0.03	0.038	O					0.02
70.167	0.00	0.03	0.038	O					0.02
70.250	0.00	0.03	0.038	O					0.02
70.333	0.00	0.03	0.038	O					0.02

70.417	0.00	0.03	0.037	O					0.02
70.500	0.00	0.03	0.037	O					0.02
70.583	0.00	0.03	0.037	O					0.02
70.667	0.00	0.03	0.037	O					0.02
70.750	0.00	0.03	0.036	O					0.02
70.833	0.00	0.03	0.036	O					0.02
70.917	0.00	0.03	0.036	O					0.02
71.000	0.00	0.03	0.036	O					0.02
71.083	0.00	0.03	0.036	O					0.02
71.167	0.00	0.03	0.035	O					0.02
71.250	0.00	0.03	0.035	O					0.02
71.333	0.00	0.03	0.035	O					0.02
71.417	0.00	0.03	0.035	O					0.02
71.500	0.00	0.03	0.035	O					0.02
71.583	0.00	0.03	0.034	O					0.02
71.667	0.00	0.03	0.034	O					0.02
71.750	0.00	0.03	0.034	O					0.02
71.833	0.00	0.03	0.034	O					0.02
71.917	0.00	0.03	0.034	O					0.02
72.000	0.00	0.03	0.033	O					0.02
72.083	0.00	0.03	0.033	O					0.02
72.167	0.00	0.03	0.033	O					0.02
72.250	0.00	0.03	0.033	O					0.02
72.333	0.00	0.03	0.033	O					0.02
72.417	0.00	0.03	0.033	O					0.02
72.500	0.00	0.03	0.032	O					0.02
72.583	0.00	0.03	0.032	O					0.02
72.667	0.00	0.03	0.032	O					0.02
72.750	0.00	0.03	0.032	O					0.02
72.833	0.00	0.03	0.032	O					0.02
72.917	0.00	0.03	0.031	O					0.02
73.000	0.00	0.03	0.031	O					0.02
73.083	0.00	0.03	0.031	O					0.02
73.167	0.00	0.03	0.031	O					0.02
73.250	0.00	0.03	0.031	O					0.02
73.333	0.00	0.03	0.031	O					0.02
73.417	0.00	0.03	0.030	O					0.02
73.500	0.00	0.03	0.030	O					0.02
73.583	0.00	0.02	0.030	O					0.02
73.667	0.00	0.02	0.030	O					0.02
73.750	0.00	0.02	0.030	O					0.02
73.833	0.00	0.02	0.030	O					0.02
73.917	0.00	0.02	0.029	O					0.02
74.000	0.00	0.02	0.029	O					0.02
74.083	0.00	0.02	0.029	O					0.02
74.167	0.00	0.02	0.029	O					0.02
74.250	0.00	0.02	0.029	O					0.02
74.333	0.00	0.02	0.029	O					0.02
74.417	0.00	0.02	0.028	O					0.02
74.500	0.00	0.02	0.028	O					0.02
74.583	0.00	0.02	0.028	O					0.02
74.667	0.00	0.02	0.028	O					0.02
74.750	0.00	0.02	0.028	O					0.02
74.833	0.00	0.02	0.028	O					0.02
74.917	0.00	0.02	0.027	O					0.02
75.000	0.00	0.02	0.027	O					0.02
75.083	0.00	0.02	0.027	O					0.02
75.167	0.00	0.02	0.027	O					0.02
75.250	0.00	0.02	0.027	O					0.02
75.333	0.00	0.02	0.027	O					0.02
75.417	0.00	0.02	0.026	O					0.02
75.500	0.00	0.02	0.026	O					0.02
75.583	0.00	0.02	0.026	O					0.02
75.667	0.00	0.02	0.026	O					0.02
75.750	0.00	0.02	0.026	O					0.02
75.833	0.00	0.02	0.026	O					0.02
75.917	0.00	0.02	0.026	O					0.02
76.000	0.00	0.02	0.025	O					0.02
76.083	0.00	0.02	0.025	O					0.02
76.167	0.00	0.02	0.025	O					0.02
76.250	0.00	0.02	0.025	O					0.01

76.333	0.00	0.02	0.025	O					0.01
76.417	0.00	0.02	0.025	O					0.01
76.500	0.00	0.02	0.025	O					0.01
76.583	0.00	0.02	0.024	O					0.01
76.667	0.00	0.02	0.024	O					0.01
76.750	0.00	0.02	0.024	O					0.01
76.833	0.00	0.02	0.024	O					0.01
76.917	0.00	0.02	0.024	O					0.01
77.000	0.00	0.02	0.024	O					0.01
77.083	0.00	0.02	0.024	O					0.01
77.167	0.00	0.02	0.023	O					0.01
77.250	0.00	0.02	0.023	O					0.01
77.333	0.00	0.02	0.023	O					0.01
77.417	0.00	0.02	0.023	O					0.01
77.500	0.00	0.02	0.023	O					0.01
77.583	0.00	0.02	0.023	O					0.01
77.667	0.00	0.02	0.023	O					0.01
77.750	0.00	0.02	0.023	O					0.01
77.833	0.00	0.02	0.022	O					0.01
77.917	0.00	0.02	0.022	O					0.01
78.000	0.00	0.02	0.022	O					0.01
78.083	0.00	0.02	0.022	O					0.01
78.167	0.00	0.02	0.022	O					0.01
78.250	0.00	0.02	0.022	O					0.01
78.333	0.00	0.02	0.022	O					0.01
78.417	0.00	0.02	0.022	O					0.01
78.500	0.00	0.02	0.021	O					0.01
78.583	0.00	0.02	0.021	O					0.01
78.667	0.00	0.02	0.021	O					0.01
78.750	0.00	0.02	0.021	O					0.01
78.833	0.00	0.02	0.021	O					0.01
78.917	0.00	0.02	0.021	O					0.01
79.000	0.00	0.02	0.021	O					0.01
79.083	0.00	0.02	0.021	O					0.01
79.167	0.00	0.02	0.020	O					0.01
79.250	0.00	0.02	0.020	O					0.01
79.333	0.00	0.02	0.020	O					0.01
79.417	0.00	0.02	0.020	O					0.01
79.500	0.00	0.02	0.020	O					0.01
79.583	0.00	0.02	0.020	O					0.01
79.667	0.00	0.02	0.020	O					0.01
79.750	0.00	0.02	0.020	O					0.01
79.833	0.00	0.02	0.020	O					0.01
79.917	0.00	0.02	0.019	O					0.01
80.000	0.00	0.02	0.019	O					0.01
80.083	0.00	0.02	0.019	O					0.01
80.167	0.00	0.02	0.019	O					0.01
80.250	0.00	0.02	0.019	O					0.01
80.333	0.00	0.02	0.019	O					0.01
80.417	0.00	0.02	0.019	O					0.01
80.500	0.00	0.02	0.019	O					0.01
80.583	0.00	0.02	0.019	O					0.01
80.667	0.00	0.02	0.018	O					0.01
80.750	0.00	0.02	0.018	O					0.01
80.833	0.00	0.02	0.018	O					0.01
80.917	0.00	0.02	0.018	O					0.01
81.000	0.00	0.01	0.018	O					0.01
81.083	0.00	0.01	0.018	O					0.01
81.167	0.00	0.01	0.018	O					0.01
81.250	0.00	0.01	0.018	O					0.01
81.333	0.00	0.01	0.018	O					0.01
81.417	0.00	0.01	0.018	O					0.01
81.500	0.00	0.01	0.017	O					0.01
81.583	0.00	0.01	0.017	O					0.01
81.667	0.00	0.01	0.017	O					0.01
81.750	0.00	0.01	0.017	O					0.01
81.833	0.00	0.01	0.017	O					0.01
81.917	0.00	0.01	0.017	O					0.01
82.000	0.00	0.01	0.017	O					0.01
82.083	0.00	0.01	0.017	O					0.01
82.167	0.00	0.01	0.017	O					0.01

82.250	0.00	0.01	0.017	O	|	|	|	|	0.01
82.333	0.00	0.01	0.016	O	|	|	|	|	0.01
82.417	0.00	0.01	0.016	O	|	|	|	|	0.01
82.500	0.00	0.01	0.016	O	|	|	|	|	0.01
82.583	0.00	0.01	0.016	O	|	|	|	|	0.01
82.667	0.00	0.01	0.016	O	|	|	|	|	0.01
82.750	0.00	0.01	0.016	O	|	|	|	|	0.01
82.833	0.00	0.01	0.016	O	|	|	|	|	0.01
82.917	0.00	0.01	0.016	O	|	|	|	|	0.01
83.000	0.00	0.01	0.016	O	|	|	|	|	0.01
83.083	0.00	0.01	0.016	O	|	|	|	|	0.01
83.167	0.00	0.01	0.016	O	|	|	|	|	0.01
83.250	0.00	0.01	0.015	O	|	|	|	|	0.01
83.333	0.00	0.01	0.015	O	|	|	|	|	0.01
83.417	0.00	0.01	0.015	O	|	|	|	|	0.01
83.500	0.00	0.01	0.015	O	|	|	|	|	0.01
83.583	0.00	0.01	0.015	O	|	|	|	|	0.01
83.667	0.00	0.01	0.015	O	|	|	|	|	0.01
83.750	0.00	0.01	0.015	O	|	|	|	|	0.01
83.833	0.00	0.01	0.015	O	|	|	|	|	0.01
83.917	0.00	0.01	0.015	O	|	|	|	|	0.01
84.000	0.00	0.01	0.015	O	|	|	|	|	0.01
84.083	0.00	0.01	0.015	O	|	|	|	|	0.01
84.167	0.00	0.01	0.015	O	|	|	|	|	0.01
84.250	0.00	0.01	0.014	O	|	|	|	|	0.01
84.333	0.00	0.01	0.014	O	|	|	|	|	0.01
84.417	0.00	0.01	0.014	O	|	|	|	|	0.01
84.500	0.00	0.01	0.014	O	|	|	|	|	0.01
84.583	0.00	0.01	0.014	O	|	|	|	|	0.01
84.667	0.00	0.01	0.014	O	|	|	|	|	0.01
84.750	0.00	0.01	0.014	O	|	|	|	|	0.01
84.833	0.00	0.01	0.014	O	|	|	|	|	0.01
84.917	0.00	0.01	0.014	O	|	|	|	|	0.01
85.000	0.00	0.01	0.014	O	|	|	|	|	0.01
85.083	0.00	0.01	0.014	O	|	|	|	|	0.01
85.167	0.00	0.01	0.014	O	|	|	|	|	0.01
85.250	0.00	0.01	0.013	O	|	|	|	|	0.01
85.333	0.00	0.01	0.013	O	|	|	|	|	0.01
85.417	0.00	0.01	0.013	O	|	|	|	|	0.01
85.500	0.00	0.01	0.013	O	|	|	|	|	0.01
85.583	0.00	0.01	0.013	O	|	|	|	|	0.01
85.667	0.00	0.01	0.013	O	|	|	|	|	0.01
85.750	0.00	0.01	0.013	O	|	|	|	|	0.01
85.833	0.00	0.01	0.013	O	|	|	|	|	0.01
85.917	0.00	0.01	0.013	O	|	|	|	|	0.01
86.000	0.00	0.01	0.013	O	|	|	|	|	0.01
86.083	0.00	0.01	0.013	O	|	|	|	|	0.01
86.167	0.00	0.01	0.013	O	|	|	|	|	0.01
86.250	0.00	0.01	0.013	O	|	|	|	|	0.01
86.333	0.00	0.01	0.013	O	|	|	|	|	0.01
86.417	0.00	0.01	0.012	O	|	|	|	|	0.01
86.500	0.00	0.01	0.012	O	|	|	|	|	0.01
86.583	0.00	0.01	0.012	O	|	|	|	|	0.01
86.667	0.00	0.01	0.012	O	|	|	|	|	0.01
86.750	0.00	0.01	0.012	O	|	|	|	|	0.01
86.833	0.00	0.01	0.012	O	|	|	|	|	0.01
86.917	0.00	0.01	0.012	O	|	|	|	|	0.01
87.000	0.00	0.01	0.012	O	|	|	|	|	0.01
87.083	0.00	0.01	0.012	O	|	|	|	|	0.01
87.167	0.00	0.01	0.012	O	|	|	|	|	0.01
87.250	0.00	0.01	0.012	O	|	|	|	|	0.01
87.333	0.00	0.01	0.012	O	|	|	|	|	0.01
87.417	0.00	0.01	0.012	O	|	|	|	|	0.01
87.500	0.00	0.01	0.012	O	|	|	|	|	0.01
87.583	0.00	0.01	0.011	O	|	|	|	|	0.01
87.667	0.00	0.01	0.011	O	|	|	|	|	0.01
87.750	0.00	0.01	0.011	O	|	|	|	|	0.01
87.833	0.00	0.01	0.011	O	|	|	|	|	0.01
87.917	0.00	0.01	0.011	O	|	|	|	|	0.01
88.000	0.00	0.01	0.011	O	|	|	|	|	0.01
88.083	0.00	0.01	0.011	O	|	|	|	|	0.01

88.167	0.00	0.01	0.011	O	|	|	|	|	0.01
88.250	0.00	0.01	0.011	O	|	|	|	|	0.01
88.333	0.00	0.01	0.011	O	|	|	|	|	0.01
88.417	0.00	0.01	0.011	O	|	|	|	|	0.01
88.500	0.00	0.01	0.011	O	|	|	|	|	0.01
88.583	0.00	0.01	0.011	O	|	|	|	|	0.01
88.667	0.00	0.01	0.011	O	|	|	|	|	0.01
88.750	0.00	0.01	0.011	O	|	|	|	|	0.01
88.833	0.00	0.01	0.011	O	|	|	|	|	0.01
88.917	0.00	0.01	0.010	O	|	|	|	|	0.01
89.000	0.00	0.01	0.010	O	|	|	|	|	0.01
89.083	0.00	0.01	0.010	O	|	|	|	|	0.01
89.167	0.00	0.01	0.010	O	|	|	|	|	0.01
89.250	0.00	0.01	0.010	O	|	|	|	|	0.01
89.333	0.00	0.01	0.010	O	|	|	|	|	0.01
89.417	0.00	0.01	0.010	O	|	|	|	|	0.01
89.500	0.00	0.01	0.010	O	|	|	|	|	0.01
89.583	0.00	0.01	0.010	O	|	|	|	|	0.01
89.667	0.00	0.01	0.010	O	|	|	|	|	0.01
89.750	0.00	0.01	0.010	O	|	|	|	|	0.01
89.833	0.00	0.01	0.010	O	|	|	|	|	0.01
89.917	0.00	0.01	0.010	O	|	|	|	|	0.01
90.000	0.00	0.01	0.010	O	|	|	|	|	0.01
90.083	0.00	0.01	0.010	O	|	|	|	|	0.01
90.167	0.00	0.01	0.010	O	|	|	|	|	0.01
90.250	0.00	0.01	0.010	O	|	|	|	|	0.01
90.333	0.00	0.01	0.010	O	|	|	|	|	0.01
90.417	0.00	0.01	0.009	O	|	|	|	|	0.01
90.500	0.00	0.01	0.009	O	|	|	|	|	0.01
90.583	0.00	0.01	0.009	O	|	|	|	|	0.01
90.667	0.00	0.01	0.009	O	|	|	|	|	0.01
90.750	0.00	0.01	0.009	O	|	|	|	|	0.01
90.833	0.00	0.01	0.009	O	|	|	|	|	0.01
90.917	0.00	0.01	0.009	O	|	|	|	|	0.01
91.000	0.00	0.01	0.009	O	|	|	|	|	0.01
91.083	0.00	0.01	0.009	O	|	|	|	|	0.01
91.167	0.00	0.01	0.009	O	|	|	|	|	0.01
91.250	0.00	0.01	0.009	O	|	|	|	|	0.01
91.333	0.00	0.01	0.009	O	|	|	|	|	0.01
91.417	0.00	0.01	0.009	O	|	|	|	|	0.01
91.500	0.00	0.01	0.009	O	|	|	|	|	0.01
91.583	0.00	0.01	0.009	O	|	|	|	|	0.01
91.667	0.00	0.01	0.009	O	|	|	|	|	0.01
91.750	0.00	0.01	0.009	O	|	|	|	|	0.01
91.833	0.00	0.01	0.009	O	|	|	|	|	0.01
91.917	0.00	0.01	0.009	O	|	|	|	|	0.01
92.000	0.00	0.01	0.008	O	|	|	|	|	0.01
92.083	0.00	0.01	0.008	O	|	|	|	|	0.01
92.167	0.00	0.01	0.008	O	|	|	|	|	0.01
92.250	0.00	0.01	0.008	O	|	|	|	|	0.01
92.333	0.00	0.01	0.008	O	|	|	|	|	0.00
92.417	0.00	0.01	0.008	O	|	|	|	|	0.00
92.500	0.00	0.01	0.008	O	|	|	|	|	0.00
92.583	0.00	0.01	0.008	O	|	|	|	|	0.00
92.667	0.00	0.01	0.008	O	|	|	|	|	0.00
92.750	0.00	0.01	0.008	O	|	|	|	|	0.00
92.833	0.00	0.01	0.008	O	|	|	|	|	0.00
92.917	0.00	0.01	0.008	O	|	|	|	|	0.00
93.000	0.00	0.01	0.008	O	|	|	|	|	0.00
93.083	0.00	0.01	0.008	O	|	|	|	|	0.00
93.167	0.00	0.01	0.008	O	|	|	|	|	0.00
93.250	0.00	0.01	0.008	O	|	|	|	|	0.00
93.333	0.00	0.01	0.008	O	|	|	|	|	0.00
93.417	0.00	0.01	0.008	O	|	|	|	|	0.00
93.500	0.00	0.01	0.008	O	|	|	|	|	0.00
93.583	0.00	0.01	0.008	O	|	|	|	|	0.00
93.667	0.00	0.01	0.008	O	|	|	|	|	0.00
93.750	0.00	0.01	0.008	O	|	|	|	|	0.00
93.833	0.00	0.01	0.007	O	|	|	|	|	0.00
93.917	0.00	0.01	0.007	O	|	|	|	|	0.00
94.000	0.00	0.01	0.007	O	|	|	|	|	0.00

94.083	0.00	0.01	0.007	O	|	|	|	|	0.00
94.167	0.00	0.01	0.007	O	|	|	|	|	0.00
94.250	0.00	0.01	0.007	O	|	|	|	|	0.00
94.333	0.00	0.01	0.007	O	|	|	|	|	0.00
94.417	0.00	0.01	0.007	O	|	|	|	|	0.00
94.500	0.00	0.01	0.007	O	|	|	|	|	0.00
94.583	0.00	0.01	0.007	O	|	|	|	|	0.00
94.667	0.00	0.01	0.007	O	|	|	|	|	0.00
94.750	0.00	0.01	0.007	O	|	|	|	|	0.00
94.833	0.00	0.01	0.007	O	|	|	|	|	0.00
94.917	0.00	0.01	0.007	O	|	|	|	|	0.00
95.000	0.00	0.01	0.007	O	|	|	|	|	0.00
95.083	0.00	0.01	0.007	O	|	|	|	|	0.00
95.167	0.00	0.01	0.007	O	|	|	|	|	0.00
95.250	0.00	0.01	0.007	O	|	|	|	|	0.00
95.333	0.00	0.01	0.007	O	|	|	|	|	0.00
95.417	0.00	0.01	0.007	O	|	|	|	|	0.00
95.500	0.00	0.01	0.007	O	|	|	|	|	0.00
95.583	0.00	0.01	0.007	O	|	|	|	|	0.00
95.667	0.00	0.01	0.007	O	|	|	|	|	0.00
95.750	0.00	0.01	0.007	O	|	|	|	|	0.00
95.833	0.00	0.01	0.007	O	|	|	|	|	0.00
95.917	0.00	0.01	0.006	O	|	|	|	|	0.00
96.000	0.00	0.01	0.006	O	|	|	|	|	0.00
96.083	0.00	0.01	0.006	O	|	|	|	|	0.00
96.167	0.00	0.01	0.006	O	|	|	|	|	0.00
96.250	0.00	0.01	0.006	O	|	|	|	|	0.00
96.333	0.00	0.01	0.006	O	|	|	|	|	0.00
96.417	0.00	0.01	0.006	O	|	|	|	|	0.00
96.500	0.00	0.01	0.006	O	|	|	|	|	0.00
96.583	0.00	0.01	0.006	O	|	|	|	|	0.00
96.667	0.00	0.01	0.006	O	|	|	|	|	0.00
96.750	0.00	0.01	0.006	O	|	|	|	|	0.00
96.833	0.00	0.01	0.006	O	|	|	|	|	0.00
96.917	0.00	0.01	0.006	O	|	|	|	|	0.00
97.000	0.00	0.01	0.006	O	|	|	|	|	0.00
97.083	0.00	0.00	0.006	O	|	|	|	|	0.00
97.167	0.00	0.00	0.006	O	|	|	|	|	0.00
97.250	0.00	0.00	0.006	O	|	|	|	|	0.00
97.333	0.00	0.00	0.006	O	|	|	|	|	0.00
97.417	0.00	0.00	0.006	O	|	|	|	|	0.00
97.500	0.00	0.00	0.006	O	|	|	|	|	0.00
97.583	0.00	0.00	0.006	O	|	|	|	|	0.00
97.667	0.00	0.00	0.006	O	|	|	|	|	0.00
97.750	0.00	0.00	0.006	O	|	|	|	|	0.00
97.833	0.00	0.00	0.006	O	|	|	|	|	0.00
97.917	0.00	0.00	0.006	O	|	|	|	|	0.00
98.000	0.00	0.00	0.006	O	|	|	|	|	0.00
98.083	0.00	0.00	0.006	O	|	|	|	|	0.00
98.167	0.00	0.00	0.006	O	|	|	|	|	0.00
98.250	0.00	0.00	0.006	O	|	|	|	|	0.00
98.333	0.00	0.00	0.006	O	|	|	|	|	0.00
98.417	0.00	0.00	0.005	O	|	|	|	|	0.00
98.500	0.00	0.00	0.005	O	|	|	|	|	0.00
98.583	0.00	0.00	0.005	O	|	|	|	|	0.00
98.667	0.00	0.00	0.005	O	|	|	|	|	0.00
98.750	0.00	0.00	0.005	O	|	|	|	|	0.00
98.833	0.00	0.00	0.005	O	|	|	|	|	0.00
98.917	0.00	0.00	0.005	O	|	|	|	|	0.00
99.000	0.00	0.00	0.005	O	|	|	|	|	0.00
99.083	0.00	0.00	0.005	O	|	|	|	|	0.00
99.167	0.00	0.00	0.005	O	|	|	|	|	0.00
99.250	0.00	0.00	0.005	O	|	|	|	|	0.00
99.333	0.00	0.00	0.005	O	|	|	|	|	0.00
99.417	0.00	0.00	0.005	O	|	|	|	|	0.00
99.500	0.00	0.00	0.005	O	|	|	|	|	0.00
99.583	0.00	0.00	0.005	O	|	|	|	|	0.00
99.667	0.00	0.00	0.005	O	|	|	|	|	0.00
99.750	0.00	0.00	0.005	O	|	|	|	|	0.00
99.833	0.00	0.00	0.005	O	|	|	|	|	0.00
99.917	0.00	0.00	0.005	O	|	|	|	|	0.00

100.000	0.00	0.00	0.005	O	|	|	|	|	0.00
100.083	0.00	0.00	0.005	O	|	|	|	|	0.00
100.167	0.00	0.00	0.005	O	|	|	|	|	0.00
100.250	0.00	0.00	0.005	O	|	|	|	|	0.00
100.333	0.00	0.00	0.005	O	|	|	|	|	0.00
100.417	0.00	0.00	0.005	O	|	|	|	|	0.00
100.500	0.00	0.00	0.005	O	|	|	|	|	0.00
100.583	0.00	0.00	0.005	O	|	|	|	|	0.00
100.667	0.00	0.00	0.005	O	|	|	|	|	0.00
100.750	0.00	0.00	0.005	O	|	|	|	|	0.00
100.833	0.00	0.00	0.005	O	|	|	|	|	0.00
100.917	0.00	0.00	0.005	O	|	|	|	|	0.00
101.000	0.00	0.00	0.005	O	|	|	|	|	0.00
101.083	0.00	0.00	0.005	O	|	|	|	|	0.00
101.167	0.00	0.00	0.005	O	|	|	|	|	0.00
101.250	0.00	0.00	0.005	O	|	|	|	|	0.00
101.333	0.00	0.00	0.004	O	|	|	|	|	0.00
101.417	0.00	0.00	0.004	O	|	|	|	|	0.00
101.500	0.00	0.00	0.004	O	|	|	|	|	0.00
101.583	0.00	0.00	0.004	O	|	|	|	|	0.00
101.667	0.00	0.00	0.004	O	|	|	|	|	0.00
101.750	0.00	0.00	0.004	O	|	|	|	|	0.00
101.833	0.00	0.00	0.004	O	|	|	|	|	0.00
101.917	0.00	0.00	0.004	O	|	|	|	|	0.00
102.000	0.00	0.00	0.004	O	|	|	|	|	0.00
102.083	0.00	0.00	0.004	O	|	|	|	|	0.00
102.167	0.00	0.00	0.004	O	|	|	|	|	0.00
102.250	0.00	0.00	0.004	O	|	|	|	|	0.00
102.333	0.00	0.00	0.004	O	|	|	|	|	0.00
102.417	0.00	0.00	0.004	O	|	|	|	|	0.00
102.500	0.00	0.00	0.004	O	|	|	|	|	0.00
102.583	0.00	0.00	0.004	O	|	|	|	|	0.00
102.667	0.00	0.00	0.004	O	|	|	|	|	0.00
102.750	0.00	0.00	0.004	O	|	|	|	|	0.00
102.833	0.00	0.00	0.004	O	|	|	|	|	0.00
102.917	0.00	0.00	0.004	O	|	|	|	|	0.00
103.000	0.00	0.00	0.004	O	|	|	|	|	0.00
103.083	0.00	0.00	0.004	O	|	|	|	|	0.00
103.167	0.00	0.00	0.004	O	|	|	|	|	0.00
103.250	0.00	0.00	0.004	O	|	|	|	|	0.00
103.333	0.00	0.00	0.004	O	|	|	|	|	0.00
103.417	0.00	0.00	0.004	O	|	|	|	|	0.00
103.500	0.00	0.00	0.004	O	|	|	|	|	0.00
103.583	0.00	0.00	0.004	O	|	|	|	|	0.00
103.667	0.00	0.00	0.004	O	|	|	|	|	0.00
103.750	0.00	0.00	0.004	O	|	|	|	|	0.00
103.833	0.00	0.00	0.004	O	|	|	|	|	0.00
103.917	0.00	0.00	0.004	O	|	|	|	|	0.00
104.000	0.00	0.00	0.004	O	|	|	|	|	0.00
104.083	0.00	0.00	0.004	O	|	|	|	|	0.00
104.167	0.00	0.00	0.004	O	|	|	|	|	0.00
104.250	0.00	0.00	0.004	O	|	|	|	|	0.00
104.333	0.00	0.00	0.004	O	|	|	|	|	0.00
104.417	0.00	0.00	0.004	O	|	|	|	|	0.00
104.500	0.00	0.00	0.004	O	|	|	|	|	0.00
104.583	0.00	0.00	0.004	O	|	|	|	|	0.00
104.667	0.00	0.00	0.004	O	|	|	|	|	0.00
104.750	0.00	0.00	0.004	O	|	|	|	|	0.00
104.833	0.00	0.00	0.004	O	|	|	|	|	0.00
104.917	0.00	0.00	0.004	O	|	|	|	|	0.00
105.000	0.00	0.00	0.003	O	|	|	|	|	0.00
105.083	0.00	0.00	0.003	O	|	|	|	|	0.00
105.167	0.00	0.00	0.003	O	|	|	|	|	0.00
105.250	0.00	0.00	0.003	O	|	|	|	|	0.00
105.333	0.00	0.00	0.003	O	|	|	|	|	0.00
105.417	0.00	0.00	0.003	O	|	|	|	|	0.00
105.500	0.00	0.00	0.003	O	|	|	|	|	0.00
105.583	0.00	0.00	0.003	O	|	|	|	|	0.00
105.667	0.00	0.00	0.003	O	|	|	|	|	0.00
105.750	0.00	0.00	0.003	O	|	|	|	|	0.00
105.833	0.00	0.00	0.003	O	|	|	|	|	0.00

105.917	0.00	0.00	0.003	O	|	|	|	|	0.00
106.000	0.00	0.00	0.003	O	|	|	|	|	0.00
106.083	0.00	0.00	0.003	O	|	|	|	|	0.00
106.167	0.00	0.00	0.003	O	|	|	|	|	0.00
106.250	0.00	0.00	0.003	O	|	|	|	|	0.00
106.333	0.00	0.00	0.003	O	|	|	|	|	0.00
106.417	0.00	0.00	0.003	O	|	|	|	|	0.00
106.500	0.00	0.00	0.003	O	|	|	|	|	0.00
106.583	0.00	0.00	0.003	O	|	|	|	|	0.00
106.667	0.00	0.00	0.003	O	|	|	|	|	0.00
106.750	0.00	0.00	0.003	O	|	|	|	|	0.00
106.833	0.00	0.00	0.003	O	|	|	|	|	0.00
106.917	0.00	0.00	0.003	O	|	|	|	|	0.00
107.000	0.00	0.00	0.003	O	|	|	|	|	0.00
107.083	0.00	0.00	0.003	O	|	|	|	|	0.00
107.167	0.00	0.00	0.003	O	|	|	|	|	0.00
107.250	0.00	0.00	0.003	O	|	|	|	|	0.00
107.333	0.00	0.00	0.003	O	|	|	|	|	0.00
107.417	0.00	0.00	0.003	O	|	|	|	|	0.00
107.500	0.00	0.00	0.003	O	|	|	|	|	0.00
107.583	0.00	0.00	0.003	O	|	|	|	|	0.00
107.667	0.00	0.00	0.003	O	|	|	|	|	0.00
107.750	0.00	0.00	0.003	O	|	|	|	|	0.00
107.833	0.00	0.00	0.003	O	|	|	|	|	0.00
107.917	0.00	0.00	0.003	O	|	|	|	|	0.00
108.000	0.00	0.00	0.003	O	|	|	|	|	0.00
108.083	0.00	0.00	0.003	O	|	|	|	|	0.00
108.167	0.00	0.00	0.003	O	|	|	|	|	0.00
108.250	0.00	0.00	0.003	O	|	|	|	|	0.00
108.333	0.00	0.00	0.003	O	|	|	|	|	0.00
108.417	0.00	0.00	0.003	O	|	|	|	|	0.00
108.500	0.00	0.00	0.003	O	|	|	|	|	0.00
108.583	0.00	0.00	0.003	O	|	|	|	|	0.00
108.667	0.00	0.00	0.003	O	|	|	|	|	0.00
108.750	0.00	0.00	0.003	O	|	|	|	|	0.00
108.833	0.00	0.00	0.003	O	|	|	|	|	0.00
108.917	0.00	0.00	0.003	O	|	|	|	|	0.00
109.000	0.00	0.00	0.003	O	|	|	|	|	0.00
109.083	0.00	0.00	0.003	O	|	|	|	|	0.00
109.167	0.00	0.00	0.003	O	|	|	|	|	0.00
109.250	0.00	0.00	0.003	O	|	|	|	|	0.00
109.333	0.00	0.00	0.003	O	|	|	|	|	0.00
109.417	0.00	0.00	0.003	O	|	|	|	|	0.00
109.500	0.00	0.00	0.003	O	|	|	|	|	0.00
109.583	0.00	0.00	0.003	O	|	|	|	|	0.00
109.667	0.00	0.00	0.003	O	|	|	|	|	0.00
109.750	0.00	0.00	0.003	O	|	|	|	|	0.00
109.833	0.00	0.00	0.003	O	|	|	|	|	0.00
109.917	0.00	0.00	0.002	O	|	|	|	|	0.00
110.000	0.00	0.00	0.002	O	|	|	|	|	0.00
110.083	0.00	0.00	0.002	O	|	|	|	|	0.00
110.167	0.00	0.00	0.002	O	|	|	|	|	0.00
110.250	0.00	0.00	0.002	O	|	|	|	|	0.00
110.333	0.00	0.00	0.002	O	|	|	|	|	0.00
110.417	0.00	0.00	0.002	O	|	|	|	|	0.00
110.500	0.00	0.00	0.002	O	|	|	|	|	0.00
110.583	0.00	0.00	0.002	O	|	|	|	|	0.00
110.667	0.00	0.00	0.002	O	|	|	|	|	0.00
110.750	0.00	0.00	0.002	O	|	|	|	|	0.00
110.833	0.00	0.00	0.002	O	|	|	|	|	0.00
110.917	0.00	0.00	0.002	O	|	|	|	|	0.00
111.000	0.00	0.00	0.002	O	|	|	|	|	0.00
111.083	0.00	0.00	0.002	O	|	|	|	|	0.00
111.167	0.00	0.00	0.002	O	|	|	|	|	0.00
111.250	0.00	0.00	0.002	O	|	|	|	|	0.00
111.333	0.00	0.00	0.002	O	|	|	|	|	0.00
111.417	0.00	0.00	0.002	O	|	|	|	|	0.00
111.500	0.00	0.00	0.002	O	|	|	|	|	0.00
111.583	0.00	0.00	0.002	O	|	|	|	|	0.00
111.667	0.00	0.00	0.002	O	|	|	|	|	0.00
111.750	0.00	0.00	0.002	O	|	|	|	|	0.00

111.833	0.00	0.00	0.002	O	|	|	|	|	0.00
111.917	0.00	0.00	0.002	O	|	|	|	|	0.00
112.000	0.00	0.00	0.002	O	|	|	|	|	0.00
112.083	0.00	0.00	0.002	O	|	|	|	|	0.00
112.167	0.00	0.00	0.002	O	|	|	|	|	0.00
112.250	0.00	0.00	0.002	O	|	|	|	|	0.00
112.333	0.00	0.00	0.002	O	|	|	|	|	0.00
112.417	0.00	0.00	0.002	O	|	|	|	|	0.00
112.500	0.00	0.00	0.002	O	|	|	|	|	0.00
112.583	0.00	0.00	0.002	O	|	|	|	|	0.00
112.667	0.00	0.00	0.002	O	|	|	|	|	0.00
112.750	0.00	0.00	0.002	O	|	|	|	|	0.00
112.833	0.00	0.00	0.002	O	|	|	|	|	0.00
112.917	0.00	0.00	0.002	O	|	|	|	|	0.00
113.000	0.00	0.00	0.002	O	|	|	|	|	0.00
113.083	0.00	0.00	0.002	O	|	|	|	|	0.00
113.167	0.00	0.00	0.002	O	|	|	|	|	0.00
113.250	0.00	0.00	0.002	O	|	|	|	|	0.00
113.333	0.00	0.00	0.002	O	|	|	|	|	0.00
113.417	0.00	0.00	0.002	O	|	|	|	|	0.00
113.500	0.00	0.00	0.002	O	|	|	|	|	0.00
113.583	0.00	0.00	0.002	O	|	|	|	|	0.00
113.667	0.00	0.00	0.002	O	|	|	|	|	0.00
113.750	0.00	0.00	0.002	O	|	|	|	|	0.00
113.833	0.00	0.00	0.002	O	|	|	|	|	0.00
113.917	0.00	0.00	0.002	O	|	|	|	|	0.00
114.000	0.00	0.00	0.002	O	|	|	|	|	0.00
114.083	0.00	0.00	0.002	O	|	|	|	|	0.00
114.167	0.00	0.00	0.002	O	|	|	|	|	0.00
114.250	0.00	0.00	0.002	O	|	|	|	|	0.00
114.333	0.00	0.00	0.002	O	|	|	|	|	0.00
114.417	0.00	0.00	0.002	O	|	|	|	|	0.00
114.500	0.00	0.00	0.002	O	|	|	|	|	0.00
114.583	0.00	0.00	0.002	O	|	|	|	|	0.00
114.667	0.00	0.00	0.002	O	|	|	|	|	0.00
114.750	0.00	0.00	0.002	O	|	|	|	|	0.00
114.833	0.00	0.00	0.002	O	|	|	|	|	0.00
114.917	0.00	0.00	0.002	O	|	|	|	|	0.00
115.000	0.00	0.00	0.002	O	|	|	|	|	0.00
115.083	0.00	0.00	0.002	O	|	|	|	|	0.00
115.167	0.00	0.00	0.002	O	|	|	|	|	0.00
115.250	0.00	0.00	0.002	O	|	|	|	|	0.00
115.333	0.00	0.00	0.002	O	|	|	|	|	0.00
115.417	0.00	0.00	0.002	O	|	|	|	|	0.00
115.500	0.00	0.00	0.002	O	|	|	|	|	0.00
115.583	0.00	0.00	0.002	O	|	|	|	|	0.00
115.667	0.00	0.00	0.002	O	|	|	|	|	0.00
115.750	0.00	0.00	0.002	O	|	|	|	|	0.00

Remaining water in basin = 0.00 (Ac.Ft)

**********HYDROGRAPH DATA**********

Number of intervals = 1389
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 15.280 (CFS)
Total volume = 7.783 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

- Basin 'C' - 5 Year 6 Hour Storm Routing Analysis

```
                    FLOOD HYDROGRAPH ROUTING PROGRAM
          Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012
                       Study date: 03/20/17

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WESTRIDGE HYDROLOGY STUDY
PROPOSED ROUTING - BASIN 'C' - 5 YEAR 6 HOUR STORM
HUNSAKER & ASSOCIATES, MARCH 20, 2017
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------


Program License Serial Number 4094

------------------------------------------------------------------------
******************** HYDROGRAPH INFORMATION **********************

               From study/file name: PRC00506.rte
*****************************HYDROGRAPH DATA*****************************
               Number of intervals =    89
               Time interval =    5.0 (Min.)
               Maximum/Peak flow rate =      165.877 (CFS)
               Total volume =       9.260 (Ac.Ft)
       Status of hydrographs being held in storage
                   Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
       Peak (CFS)      0.000     0.000     0.000     0.000     0.000
       Vol (Ac.Ft)     0.000     0.000     0.000     0.000     0.000
************************************************************************



++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      300.000 to Point/Station      301.000
**** RETARDING BASIN ROUTING ****
________________________________________________________________________

User entry of depth-outflow-storage data
------------------------------------------------------------------------
Total number of inflow hydrograph intervals = 89
Hydrograph time unit =  5.000 (Min.)
Initial depth in storage basin =   0.00(Ft.)
------------------------------------------------------------------------
------------------------------------------------------------------------
Initial basin depth =   0.00 (Ft.)
Initial basin storage =      0.00 (Ac.Ft)
Initial basin outflow =   0.00 (CFS)
------------------------------------------------------------------------
------------------------------------------------------------------------
Depth vs. Storage and Depth vs. Discharge data:
 Basin Depth  Storage    Outflow   (S-O*dt/2)   (S+O*dt/2)
     (Ft.)    (Ac.Ft)    (CFS)     (Ac.Ft)    (Ac.Ft)
------------------------------------------------------------------------
   0.000      0.000      0.000      0.000        0.000
   0.500      0.834      0.692      0.832        0.836
   1.000      1.693      1.672      1.687        1.699
   1.500      2.577      3.059      2.566        2.588
   2.000      3.488      4.757      3.472        3.504
   3.000      5.388      7.930      5.361        5.415
   4.000      7.399     20.434      7.329        7.469
   5.000      9.523     35.089      9.402        9.644
   6.000     11.764     44.538     11.611       11.917
   7.000     14.126     52.170     13.946       14.306
   8.000     16.610     58.766     16.408       16.812
   8.900     18.942     83.236     18.655       19.229
   9.000     19.207     83.236     18.920       19.494
   9.500     20.556    448.796     19.011       22.101
  10.000     21.935   1159.965     17.941       25.929
```

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0	41.5	82.94	124.41	165.88	Depth (Ft.)
0.083	0.16	0.00	0.001	O	|	|	|	|	0.00
0.167	0.78	0.00	0.004	O	|	|	|	|	0.00
0.250	2.43	0.01	0.015	O	|	|	|	|	0.01
0.333	3.54	0.03	0.035	O	|	|	|	|	0.02
0.417	4.07	0.05	0.061	O	|	|	|	|	0.04
0.500	4.45	0.07	0.090	O	|	|	|	|	0.05
0.583	4.73	0.10	0.121	O	|	|	|	|	0.07
0.667	4.96	0.13	0.154	O	|	|	|	|	0.09
0.750	5.13	0.16	0.187	O	|	|	|	|	0.11
0.833	5.27	0.18	0.222	OI	|	|	|	|	0.13
0.917	5.38	0.21	0.257	OI	|	|	|	|	0.15
1.000	5.47	0.24	0.293	OI	|	|	|	|	0.18
1.083	5.57	0.27	0.329	OI	|	|	|	|	0.20
1.167	5.66	0.30	0.366	OI	|	|	|	|	0.22
1.250	5.75	0.33	0.403	OI	|	|	|	|	0.24
1.333	5.85	0.37	0.441	OI	|	|	|	|	0.26
1.417	5.94	0.40	0.479	OI	|	|	|	|	0.29
1.500	6.04	0.43	0.517	OI	|	|	|	|	0.31
1.583	6.14	0.46	0.556	OI	|	|	|	|	0.33
1.667	6.24	0.49	0.595	OI	|	|	|	|	0.36
1.750	6.35	0.53	0.635	OI	|	|	|	|	0.38
1.833	6.46	0.56	0.675	OI	|	|	|	|	0.40
1.917	6.58	0.59	0.716	OI	|	|	|	|	0.43
2.000	6.70	0.63	0.758	OI	|	|	|	|	0.45
2.083	6.84	0.66	0.800	OI	|	|	|	|	0.48
2.167	6.99	0.70	0.843	OI	|	|	|	|	0.51
2.250	7.19	0.75	0.887	OI	|	|	|	|	0.53
2.333	7.38	0.80	0.932	OI	|	|	|	|	0.56
2.417	7.57	0.86	0.977	OI	|	|	|	|	0.58
2.500	7.75	0.91	1.024	OI	|	|	|	|	0.61
2.583	7.96	0.96	1.072	OI	|	|	|	|	0.64
2.667	8.17	1.02	1.120	OI	|	|	|	|	0.67
2.750	8.40	1.08	1.170	OI	|	|	|	|	0.70
2.833	8.65	1.13	1.221	OI	|	|	|	|	0.73
2.917	8.97	1.19	1.274	OI	|	|	|	|	0.76
3.000	9.46	1.26	1.329	OI	|	|	|	|	0.79
3.083	10.32	1.32	1.388	OI	|	|	|	|	0.82
3.167	11.34	1.40	1.453	O I	|	|	|	|	0.86
3.250	12.64	1.48	1.526	O I	|	|	|	|	0.90
3.333	14.07	1.57	1.608	O I	|	|	|	|	0.95
3.417	15.63	1.68	1.699	O I	|	|	|	|	1.00
3.500	16.74	1.84	1.798	O I	|	|	|	|	1.06
3.583	16.96	2.00	1.901	O I	|	|	|	|	1.12
3.667	18.26	2.17	2.008	O I	|	|	|	|	1.18
3.750	21.59	2.36	2.129	O I	|	|	|	|	1.25
3.833	26.70	2.59	2.279	O I	|	|	|	|	1.33
3.917	36.00	2.90	2.476	O I	|	|	|	|	1.44
4.000	48.04	3.37	2.743	O	I |	|	|	|	1.59
4.083	73.55	4.10	3.136	O	| I	|	|	|	1.81
4.167	113.38	5.19	3.748	O	|	| I	|	|	2.14
4.250	165.88	6.73	4.669	O	|	|	|	I	2.62
4.333	124.76	9.34	5.614	O	|	|	I	|	3.11
4.417	77.86	13.19	6.234	O	|	I |	|	|	3.42
4.500	57.10	15.47	6.600	O	I |	|	|	|	3.60
4.583	45.07	16.96	6.841	O	I |	|	|	|	3.72
4.667	35.67	17.94	6.998	O I	|	|	|	|	3.80
4.750	27.57	18.52	7.091	O I	|	|	|	|	3.85
4.833	21.18	18.76	7.130	OI	|	|	|	|	3.87
4.917	15.98	18.75	7.129	O	|	|	|	|	3.87
5.000	13.29	18.58	7.101	IO	|	|	|	|	3.85
5.083	11.72	18.33	7.060	IO	|	|	|	|	3.83
5.167	10.47	18.02	7.011	IO	|	|	|	|	3.81
5.250	9.73	17.69	6.958	I O	|	|	|	|	3.78

5.333	8.71	17.34	6.901	|I O	|	|	|	|	3.75
5.417	7.87	16.96	6.840	|I O	|	|	|	|	3.72
5.500	7.22	16.56	6.776	|I O	|	|	|	|	3.69
5.583	6.71	16.16	6.712	|I O	|	|	|	|	3.66
5.667	6.41	15.76	6.647	|I O	|	|	|	|	3.63
5.750	6.17	15.36	6.583	|IO	|	|	|	|	3.59
5.833	5.95	14.97	6.520	|IO	|	|	|	|	3.56
5.917	5.77	14.59	6.459	|IO	|	|	|	|	3.53
6.000	5.60	14.22	6.399	|IO	|	|	|	|	3.50
6.083	5.28	13.85	6.340	|IO	|	|	|	|	3.47
6.167	4.54	13.47	6.279	I O	|	|	|	|	3.44
6.250	2.80	13.06	6.213	I O	|	|	|	|	3.41
6.333	1.65	12.61	6.140	I O	|	|	|	|	3.37
6.417	1.12	12.14	6.065	I O	|	|	|	|	3.34
6.500	0.77	11.67	5.989	I O	|	|	|	|	3.30
6.583	0.51	11.21	5.915	I O	|	|	|	|	3.26
6.667	0.34	10.75	5.842	I O	|	|	|	|	3.23
6.750	0.21	10.31	5.771	IO	|	|	|	|	3.19
6.833	0.13	9.89	5.703	IO	|	|	|	|	3.16
6.917	0.09	9.48	5.637	IO	|	|	|	|	3.12
7.000	0.07	9.09	5.574	IO	|	|	|	|	3.09
7.083	0.05	8.71	5.513	IO	|	|	|	|	3.06
7.167	0.04	8.34	5.454	IO	|	|	|	|	3.03
7.250	0.02	7.99	5.398	IO	|	|	|	|	3.01
7.333	0.01	7.86	5.344	IO	|	|	|	|	2.98
7.417	0.00	7.77	5.290	IO	|	|	|	|	2.95
7.500	0.00	7.68	5.237	IO	|	|	|	|	2.92
7.583	0.00	7.59	5.184	IO	|	|	|	|	2.89
7.667	0.00	7.50	5.132	IO	|	|	|	|	2.87
7.750	0.00	7.42	5.081	IO	|	|	|	|	2.84
7.833	0.00	7.33	5.030	IO	|	|	|	|	2.81
7.917	0.00	7.25	4.980	IO	|	|	|	|	2.79
8.000	0.00	7.17	4.930	IO	|	|	|	|	2.76
8.083	0.00	7.08	4.881	IO	|	|	|	|	2.73
8.167	0.00	7.00	4.833	IO	|	|	|	|	2.71
8.250	0.00	6.92	4.785	IO	|	|	|	|	2.68
8.333	0.00	6.84	4.737	IO	|	|	|	|	2.66
8.417	0.00	6.77	4.691	IO	|	|	|	|	2.63
8.500	0.00	6.69	4.644	IO	|	|	|	|	2.61
8.583	0.00	6.61	4.599	IO	|	|	|	|	2.58
8.667	0.00	6.54	4.553	IO	|	|	|	|	2.56
8.750	0.00	6.46	4.508	IO	|	|	|	|	2.54
8.833	0.00	6.39	4.464	IO	|	|	|	|	2.51
8.917	0.00	6.31	4.420	IO	|	|	|	|	2.49
9.000	0.00	6.24	4.377	IO	|	|	|	|	2.47
9.083	0.00	6.17	4.335	IO	|	|	|	|	2.45
9.167	0.00	6.10	4.292	IO	|	|	|	|	2.42
9.250	0.00	6.03	4.250	IO	|	|	|	|	2.40
9.333	0.00	5.96	4.209	IO	|	|	|	|	2.38
9.417	0.00	5.89	4.168	IO	|	|	|	|	2.36
9.500	0.00	5.83	4.128	IO	|	|	|	|	2.34
9.583	0.00	5.76	4.088	IO	|	|	|	|	2.32
9.667	0.00	5.69	4.049	IO	|	|	|	|	2.30
9.750	0.00	5.63	4.010	IO	|	|	|	|	2.27
9.833	0.00	5.56	3.971	IO	|	|	|	|	2.25
9.917	0.00	5.50	3.933	IO	|	|	|	|	2.23
10.000	0.00	5.44	3.895	IO	|	|	|	|	2.21
10.083	0.00	5.38	3.858	IO	|	|	|	|	2.19
10.167	0.00	5.31	3.821	IO	|	|	|	|	2.18
10.250	0.00	5.25	3.785	IO	|	|	|	|	2.16
10.333	0.00	5.19	3.749	IO	|	|	|	|	2.14
10.417	0.00	5.13	3.713	O	|	|	|	|	2.12
10.500	0.00	5.07	3.678	O	|	|	|	|	2.10
10.583	0.00	5.02	3.644	O	|	|	|	|	2.08
10.667	0.00	4.96	3.609	O	|	|	|	|	2.06
10.750	0.00	4.90	3.575	O	|	|	|	|	2.05
10.833	0.00	4.85	3.542	O	|	|	|	|	2.03
10.917	0.00	4.79	3.508	O	|	|	|	|	2.01
11.000	0.00	4.73	3.476	O	|	|	|	|	1.99
11.083	0.00	4.67	3.443	O	|	|	|	|	1.98
11.167	0.00	4.61	3.411	O	|	|	|	|	1.96

11.250	0.00	4.56	3.380	O	|	|	|	|	1.94
11.333	0.00	4.50	3.349	O	|	|	|	|	1.92
11.417	0.00	4.44	3.318	O	|	|	|	|	1.91
11.500	0.00	4.38	3.287	O	|	|	|	|	1.89
11.583	0.00	4.33	3.257	O	|	|	|	|	1.87
11.667	0.00	4.27	3.228	O	|	|	|	|	1.86
11.750	0.00	4.22	3.199	O	|	|	|	|	1.84
11.833	0.00	4.16	3.170	O	|	|	|	|	1.83
11.917	0.00	4.11	3.141	O	|	|	|	|	1.81
12.000	0.00	4.06	3.113	O	|	|	|	|	1.79
12.083	0.00	4.01	3.085	O	|	|	|	|	1.78
12.167	0.00	3.96	3.058	O	|	|	|	|	1.76
12.250	0.00	3.90	3.031	O	|	|	|	|	1.75
12.333	0.00	3.86	3.004	O	|	|	|	|	1.73
12.417	0.00	3.81	2.978	O	|	|	|	|	1.72
12.500	0.00	3.76	2.952	O	|	|	|	|	1.71
12.583	0.00	3.71	2.926	O	|	|	|	|	1.69
12.667	0.00	3.66	2.901	O	|	|	|	|	1.68
12.750	0.00	3.62	2.876	O	|	|	|	|	1.66
12.833	0.00	3.57	2.851	O	|	|	|	|	1.65
12.917	0.00	3.52	2.826	O	|	|	|	|	1.64
13.000	0.00	3.48	2.802	O	|	|	|	|	1.62
13.083	0.00	3.43	2.778	O	|	|	|	|	1.61
13.167	0.00	3.39	2.755	O	|	|	|	|	1.60
13.250	0.00	3.35	2.732	O	|	|	|	|	1.58
13.333	0.00	3.30	2.709	O	|	|	|	|	1.57
13.417	0.00	3.26	2.686	O	|	|	|	|	1.56
13.500	0.00	3.22	2.664	O	|	|	|	|	1.55
13.583	0.00	3.18	2.642	O	|	|	|	|	1.54
13.667	0.00	3.14	2.620	O	|	|	|	|	1.52
13.750	0.00	3.10	2.599	O	|	|	|	|	1.51
13.833	0.00	3.06	2.577	O	|	|	|	|	1.50
13.917	0.00	3.03	2.556	O	|	|	|	|	1.49
14.000	0.00	2.99	2.536	O	|	|	|	|	1.48
14.083	0.00	2.96	2.515	O	|	|	|	|	1.47
14.167	0.00	2.93	2.495	O	|	|	|	|	1.45
14.250	0.00	2.90	2.475	O	|	|	|	|	1.44
14.333	0.00	2.87	2.455	O	|	|	|	|	1.43
14.417	0.00	2.84	2.435	O	|	|	|	|	1.42
14.500	0.00	2.81	2.416	O	|	|	|	|	1.41
14.583	0.00	2.78	2.397	O	|	|	|	|	1.40
14.667	0.00	2.75	2.378	O	|	|	|	|	1.39
14.750	0.00	2.72	2.359	O	|	|	|	|	1.38
14.833	0.00	2.69	2.340	O	|	|	|	|	1.37
14.917	0.00	2.66	2.322	O	|	|	|	|	1.36
15.000	0.00	2.63	2.304	O	|	|	|	|	1.35
15.083	0.00	2.60	2.286	O	|	|	|	|	1.34
15.167	0.00	2.57	2.268	O	|	|	|	|	1.33
15.250	0.00	2.55	2.250	O	|	|	|	|	1.32
15.333	0.00	2.52	2.233	O	|	|	|	|	1.31
15.417	0.00	2.49	2.215	O	|	|	|	|	1.30
15.500	0.00	2.46	2.198	O	|	|	|	|	1.29
15.583	0.00	2.44	2.181	O	|	|	|	|	1.28
15.667	0.00	2.41	2.165	O	|	|	|	|	1.27
15.750	0.00	2.39	2.148	O	|	|	|	|	1.26
15.833	0.00	2.36	2.132	O	|	|	|	|	1.25
15.917	0.00	2.34	2.116	O	|	|	|	|	1.24
16.000	0.00	2.31	2.100	O	|	|	|	|	1.23
16.083	0.00	2.29	2.084	O	|	|	|	|	1.22
16.167	0.00	2.26	2.068	O	|	|	|	|	1.21
16.250	0.00	2.24	2.053	O	|	|	|	|	1.20
16.333	0.00	2.21	2.037	O	|	|	|	|	1.19
16.417	0.00	2.19	2.022	O	|	|	|	|	1.19
16.500	0.00	2.17	2.007	O	|	|	|	|	1.18
16.583	0.00	2.14	1.992	O	|	|	|	|	1.17
16.667	0.00	2.12	1.978	O	|	|	|	|	1.16
16.750	0.00	2.10	1.963	O	|	|	|	|	1.15
16.833	0.00	2.07	1.949	O	|	|	|	|	1.14
16.917	0.00	2.05	1.935	O	|	|	|	|	1.14
17.000	0.00	2.03	1.921	O	|	|	|	|	1.13
17.083	0.00	2.01	1.907	O	|	|	|	|	1.12

17.167	0.00	1.99	1.893	O	|	|	|	|	1.11
17.250	0.00	1.96	1.879	O	|	|	|	|	1.11
17.333	0.00	1.94	1.866	O	|	|	|	|	1.10
17.417	0.00	1.92	1.853	O	|	|	|	|	1.09
17.500	0.00	1.90	1.839	O	|	|	|	|	1.08
17.583	0.00	1.88	1.826	O	|	|	|	|	1.08
17.667	0.00	1.86	1.814	O	|	|	|	|	1.07
17.750	0.00	1.84	1.801	O	|	|	|	|	1.06
17.833	0.00	1.82	1.788	O	|	|	|	|	1.05
17.917	0.00	1.80	1.776	O	|	|	|	|	1.05
18.000	0.00	1.78	1.763	O	|	|	|	|	1.04
18.083	0.00	1.76	1.751	O	|	|	|	|	1.03
18.167	0.00	1.74	1.739	O	|	|	|	|	1.03
18.250	0.00	1.73	1.727	O	|	|	|	|	1.02
18.333	0.00	1.71	1.715	O	|	|	|	|	1.01
18.417	0.00	1.69	1.704	O	|	|	|	|	1.01
18.500	0.00	1.67	1.692	O	|	|	|	|	1.00
18.583	0.00	1.66	1.681	O	|	|	|	|	0.99
18.667	0.00	1.64	1.669	O	|	|	|	|	0.99
18.750	0.00	1.63	1.658	O	|	|	|	|	0.98
18.833	0.00	1.62	1.647	O	|	|	|	|	0.97
18.917	0.00	1.61	1.636	O	|	|	|	|	0.97
19.000	0.00	1.59	1.625	O	|	|	|	|	0.96
19.083	0.00	1.58	1.614	O	|	|	|	|	0.95
19.167	0.00	1.57	1.603	O	|	|	|	|	0.95
19.250	0.00	1.56	1.592	O	|	|	|	|	0.94
19.333	0.00	1.54	1.581	O	|	|	|	|	0.94
19.417	0.00	1.53	1.571	O	|	|	|	|	0.93
19.500	0.00	1.52	1.560	O	|	|	|	|	0.92
19.583	0.00	1.51	1.550	O	|	|	|	|	0.92
19.667	0.00	1.50	1.540	O	|	|	|	|	0.91
19.750	0.00	1.49	1.529	O	|	|	|	|	0.90
19.833	0.00	1.47	1.519	O	|	|	|	|	0.90
19.917	0.00	1.46	1.509	O	|	|	|	|	0.89
20.000	0.00	1.45	1.499	O	|	|	|	|	0.89
20.083	0.00	1.44	1.489	O	|	|	|	|	0.88
20.167	0.00	1.43	1.479	O	|	|	|	|	0.88
20.250	0.00	1.42	1.469	O	|	|	|	|	0.87
20.333	0.00	1.41	1.460	O	|	|	|	|	0.86
20.417	0.00	1.39	1.450	O	|	|	|	|	0.86
20.500	0.00	1.38	1.440	O	|	|	|	|	0.85
20.583	0.00	1.37	1.431	O	|	|	|	|	0.85
20.667	0.00	1.36	1.421	O	|	|	|	|	0.84
20.750	0.00	1.35	1.412	O	|	|	|	|	0.84
20.833	0.00	1.34	1.403	O	|	|	|	|	0.83
20.917	0.00	1.33	1.394	O	|	|	|	|	0.83
21.000	0.00	1.32	1.385	O	|	|	|	|	0.82
21.083	0.00	1.31	1.375	O	|	|	|	|	0.82
21.167	0.00	1.30	1.366	O	|	|	|	|	0.81
21.250	0.00	1.29	1.358	O	|	|	|	|	0.80
21.333	0.00	1.28	1.349	O	|	|	|	|	0.80
21.417	0.00	1.27	1.340	O	|	|	|	|	0.79
21.500	0.00	1.26	1.331	O	|	|	|	|	0.79
21.583	0.00	1.25	1.323	O	|	|	|	|	0.78
21.667	0.00	1.24	1.314	O	|	|	|	|	0.78
21.750	0.00	1.23	1.306	O	|	|	|	|	0.77
21.833	0.00	1.22	1.297	O	|	|	|	|	0.77
21.917	0.00	1.21	1.289	O	|	|	|	|	0.76
22.000	0.00	1.20	1.280	O	|	|	|	|	0.76
22.083	0.00	1.19	1.272	O	|	|	|	|	0.76
22.167	0.00	1.18	1.264	O	|	|	|	|	0.75
22.250	0.00	1.17	1.256	O	|	|	|	|	0.75
22.333	0.00	1.16	1.248	O	|	|	|	|	0.74
22.417	0.00	1.15	1.240	O	|	|	|	|	0.74
22.500	0.00	1.15	1.232	O	|	|	|	|	0.73
22.583	0.00	1.14	1.224	O	|	|	|	|	0.73
22.667	0.00	1.13	1.216	O	|	|	|	|	0.72
22.750	0.00	1.12	1.209	O	|	|	|	|	0.72
22.833	0.00	1.11	1.201	O	|	|	|	|	0.71
22.917	0.00	1.10	1.193	O	|	|	|	|	0.71
23.000	0.00	1.09	1.186	O	|	|	|	|	0.70

23.083	0.00	1.08	1.178	O	|	|	|	|	0.70
23.167	0.00	1.08	1.171	O	|	|	|	|	0.70
23.250	0.00	1.07	1.163	O	|	|	|	|	0.69
23.333	0.00	1.06	1.156	O	|	|	|	|	0.69
23.417	0.00	1.05	1.149	O	|	|	|	|	0.68
23.500	0.00	1.04	1.142	O	|	|	|	|	0.68
23.583	0.00	1.03	1.134	O	|	|	|	|	0.67
23.667	0.00	1.03	1.127	O	|	|	|	|	0.67
23.750	0.00	1.02	1.120	O	|	|	|	|	0.67
23.833	0.00	1.01	1.113	O	|	|	|	|	0.66
23.917	0.00	1.00	1.106	O	|	|	|	|	0.66
24.000	0.00	0.99	1.099	O	|	|	|	|	0.65
24.083	0.00	0.99	1.093	O	|	|	|	|	0.65
24.167	0.00	0.98	1.086	O	|	|	|	|	0.65
24.250	0.00	0.97	1.079	O	|	|	|	|	0.64
24.333	0.00	0.96	1.072	O	|	|	|	|	0.64
24.417	0.00	0.96	1.066	O	|	|	|	|	0.63
24.500	0.00	0.95	1.059	O	|	|	|	|	0.63
24.583	0.00	0.94	1.053	O	|	|	|	|	0.63
24.667	0.00	0.93	1.046	O	|	|	|	|	0.62
24.750	0.00	0.93	1.040	O	|	|	|	|	0.62
24.833	0.00	0.92	1.034	O	|	|	|	|	0.62
24.917	0.00	0.91	1.027	O	|	|	|	|	0.61
25.000	0.00	0.91	1.021	O	|	|	|	|	0.61
25.083	0.00	0.90	1.015	O	|	|	|	|	0.61
25.167	0.00	0.89	1.009	O	|	|	|	|	0.60
25.250	0.00	0.88	1.002	O	|	|	|	|	0.60
25.333	0.00	0.88	0.996	O	|	|	|	|	0.59
25.417	0.00	0.87	0.990	O	|	|	|	|	0.59
25.500	0.00	0.86	0.984	O	|	|	|	|	0.59
25.583	0.00	0.86	0.979	O	|	|	|	|	0.58
25.667	0.00	0.85	0.973	O	|	|	|	|	0.58
25.750	0.00	0.84	0.967	O	|	|	|	|	0.58
25.833	0.00	0.84	0.961	O	|	|	|	|	0.57
25.917	0.00	0.83	0.955	O	|	|	|	|	0.57
26.000	0.00	0.82	0.950	O	|	|	|	|	0.57
26.083	0.00	0.82	0.944	O	|	|	|	|	0.56
26.167	0.00	0.81	0.938	O	|	|	|	|	0.56
26.250	0.00	0.80	0.933	O	|	|	|	|	0.56
26.333	0.00	0.80	0.927	O	|	|	|	|	0.55
26.417	0.00	0.79	0.922	O	|	|	|	|	0.55
26.500	0.00	0.79	0.916	O	|	|	|	|	0.55
26.583	0.00	0.78	0.911	O	|	|	|	|	0.54
26.667	0.00	0.77	0.906	O	|	|	|	|	0.54
26.750	0.00	0.77	0.900	O	|	|	|	|	0.54
26.833	0.00	0.76	0.895	O	|	|	|	|	0.54
26.917	0.00	0.76	0.890	O	|	|	|	|	0.53
27.000	0.00	0.75	0.885	O	|	|	|	|	0.53
27.083	0.00	0.74	0.879	O	|	|	|	|	0.53
27.167	0.00	0.74	0.874	O	|	|	|	|	0.52
27.250	0.00	0.73	0.869	O	|	|	|	|	0.52
27.333	0.00	0.73	0.864	O	|	|	|	|	0.52
27.417	0.00	0.72	0.859	O	|	|	|	|	0.51
27.500	0.00	0.72	0.854	O	|	|	|	|	0.51
27.583	0.00	0.71	0.849	O	|	|	|	|	0.51
27.667	0.00	0.70	0.845	O	|	|	|	|	0.51
27.750	0.00	0.70	0.840	O	|	|	|	|	0.50
27.833	0.00	0.69	0.835	O	|	|	|	|	0.50
27.917	0.00	0.69	0.830	O	|	|	|	|	0.50
28.000	0.00	0.68	0.825	O	|	|	|	|	0.49
28.083	0.00	0.68	0.821	O	|	|	|	|	0.49
28.167	0.00	0.68	0.816	O	|	|	|	|	0.49
28.250	0.00	0.67	0.811	O	|	|	|	|	0.49
28.333	0.00	0.67	0.807	O	|	|	|	|	0.48
28.417	0.00	0.67	0.802	O	|	|	|	|	0.48
28.500	0.00	0.66	0.798	O	|	|	|	|	0.48
28.583	0.00	0.66	0.793	O	|	|	|	|	0.48
28.667	0.00	0.65	0.789	O	|	|	|	|	0.47
28.750	0.00	0.65	0.784	O	|	|	|	|	0.47
28.833	0.00	0.65	0.780	O	|	|	|	|	0.47
28.917	0.00	0.64	0.775	O	|	|	|	|	0.46

29.000	0.00	0.64	0.771	O	|	|	|	|	0.46
29.083	0.00	0.64	0.766	O	|	|	|	|	0.46
29.167	0.00	0.63	0.762	O	|	|	|	|	0.46
29.250	0.00	0.63	0.758	O	|	|	|	|	0.45
29.333	0.00	0.63	0.753	O	|	|	|	|	0.45
29.417	0.00	0.62	0.749	O	|	|	|	|	0.45
29.500	0.00	0.62	0.745	O	|	|	|	|	0.45
29.583	0.00	0.61	0.741	O	|	|	|	|	0.44
29.667	0.00	0.61	0.736	O	|	|	|	|	0.44
29.750	0.00	0.61	0.732	O	|	|	|	|	0.44
29.833	0.00	0.60	0.728	O	|	|	|	|	0.44
29.917	0.00	0.60	0.724	O	|	|	|	|	0.43
30.000	0.00	0.60	0.720	O	|	|	|	|	0.43
30.083	0.00	0.59	0.716	O	|	|	|	|	0.43
30.167	0.00	0.59	0.711	O	|	|	|	|	0.43
30.250	0.00	0.59	0.707	O	|	|	|	|	0.42
30.333	0.00	0.58	0.703	O	|	|	|	|	0.42
30.417	0.00	0.58	0.699	O	|	|	|	|	0.42
30.500	0.00	0.58	0.695	O	|	|	|	|	0.42
30.583	0.00	0.57	0.691	O	|	|	|	|	0.41
30.667	0.00	0.57	0.688	O	|	|	|	|	0.41
30.750	0.00	0.57	0.684	O	|	|	|	|	0.41
30.833	0.00	0.56	0.680	O	|	|	|	|	0.41
30.917	0.00	0.56	0.676	O	|	|	|	|	0.41
31.000	0.00	0.56	0.672	O	|	|	|	|	0.40
31.083	0.00	0.55	0.668	O	|	|	|	|	0.40
31.167	0.00	0.55	0.664	O	|	|	|	|	0.40
31.250	0.00	0.55	0.661	O	|	|	|	|	0.40
31.333	0.00	0.54	0.657	O	|	|	|	|	0.39
31.417	0.00	0.54	0.653	O	|	|	|	|	0.39
31.500	0.00	0.54	0.649	O	|	|	|	|	0.39
31.583	0.00	0.54	0.646	O	|	|	|	|	0.39
31.667	0.00	0.53	0.642	O	|	|	|	|	0.38
31.750	0.00	0.53	0.638	O	|	|	|	|	0.38
31.833	0.00	0.53	0.635	O	|	|	|	|	0.38
31.917	0.00	0.52	0.631	O	|	|	|	|	0.38
32.000	0.00	0.52	0.627	O	|	|	|	|	0.38
32.083	0.00	0.52	0.624	O	|	|	|	|	0.37
32.167	0.00	0.51	0.620	O	|	|	|	|	0.37
32.250	0.00	0.51	0.617	O	|	|	|	|	0.37
32.333	0.00	0.51	0.613	O	|	|	|	|	0.37
32.417	0.00	0.51	0.610	O	|	|	|	|	0.37
32.500	0.00	0.50	0.606	O	|	|	|	|	0.36
32.583	0.00	0.50	0.603	O	|	|	|	|	0.36
32.667	0.00	0.50	0.599	O	|	|	|	|	0.36
32.750	0.00	0.49	0.596	O	|	|	|	|	0.36
32.833	0.00	0.49	0.593	O	|	|	|	|	0.36
32.917	0.00	0.49	0.589	O	|	|	|	|	0.35
33.000	0.00	0.49	0.586	O	|	|	|	|	0.35
33.083	0.00	0.48	0.583	O	|	|	|	|	0.35
33.167	0.00	0.48	0.579	O	|	|	|	|	0.35
33.250	0.00	0.48	0.576	O	|	|	|	|	0.35
33.333	0.00	0.48	0.573	O	|	|	|	|	0.34
33.417	0.00	0.47	0.569	O	|	|	|	|	0.34
33.500	0.00	0.47	0.566	O	|	|	|	|	0.34
33.583	0.00	0.47	0.563	O	|	|	|	|	0.34
33.667	0.00	0.46	0.560	O	|	|	|	|	0.34
33.750	0.00	0.46	0.556	O	|	|	|	|	0.33
33.833	0.00	0.46	0.553	O	|	|	|	|	0.33
33.917	0.00	0.46	0.550	O	|	|	|	|	0.33
34.000	0.00	0.45	0.547	O	|	|	|	|	0.33
34.083	0.00	0.45	0.544	O	|	|	|	|	0.33
34.167	0.00	0.45	0.541	O	|	|	|	|	0.32
34.250	0.00	0.45	0.538	O	|	|	|	|	0.32
34.333	0.00	0.44	0.535	O	|	|	|	|	0.32
34.417	0.00	0.44	0.532	O	|	|	|	|	0.32
34.500	0.00	0.44	0.529	O	|	|	|	|	0.32
34.583	0.00	0.44	0.526	O	|	|	|	|	0.32
34.667	0.00	0.43	0.523	O	|	|	|	|	0.31
34.750	0.00	0.43	0.520	O	|	|	|	|	0.31
34.833	0.00	0.43	0.517	O	|	|	|	|	0.31

34.917	0.00	0.43	0.514	O	|	|	|	|	0.31
35.000	0.00	0.42	0.511	O	|	|	|	|	0.31
35.083	0.00	0.42	0.508	O	|	|	|	|	0.30
35.167	0.00	0.42	0.505	O	|	|	|	|	0.30
35.250	0.00	0.42	0.502	O	|	|	|	|	0.30
35.333	0.00	0.41	0.499	O	|	|	|	|	0.30
35.417	0.00	0.41	0.496	O	|	|	|	|	0.30
35.500	0.00	0.41	0.494	O	|	|	|	|	0.30
35.583	0.00	0.41	0.491	O	|	|	|	|	0.29
35.667	0.00	0.40	0.488	O	|	|	|	|	0.29
35.750	0.00	0.40	0.485	O	|	|	|	|	0.29
35.833	0.00	0.40	0.482	O	|	|	|	|	0.29
35.917	0.00	0.40	0.480	O	|	|	|	|	0.29
36.000	0.00	0.40	0.477	O	|	|	|	|	0.29
36.083	0.00	0.39	0.474	O	|	|	|	|	0.28
36.167	0.00	0.39	0.471	O	|	|	|	|	0.28
36.250	0.00	0.39	0.469	O	|	|	|	|	0.28
36.333	0.00	0.39	0.466	O	|	|	|	|	0.28
36.417	0.00	0.38	0.463	O	|	|	|	|	0.28
36.500	0.00	0.38	0.461	O	|	|	|	|	0.28
36.583	0.00	0.38	0.458	O	|	|	|	|	0.27
36.667	0.00	0.38	0.456	O	|	|	|	|	0.27
36.750	0.00	0.38	0.453	O	|	|	|	|	0.27
36.833	0.00	0.37	0.450	O	|	|	|	|	0.27
36.917	0.00	0.37	0.448	O	|	|	|	|	0.27
37.000	0.00	0.37	0.445	O	|	|	|	|	0.27
37.083	0.00	0.37	0.443	O	|	|	|	|	0.27
37.167	0.00	0.37	0.440	O	|	|	|	|	0.26
37.250	0.00	0.36	0.438	O	|	|	|	|	0.26
37.333	0.00	0.36	0.435	O	|	|	|	|	0.26
37.417	0.00	0.36	0.433	O	|	|	|	|	0.26
37.500	0.00	0.36	0.430	O	|	|	|	|	0.26
37.583	0.00	0.36	0.428	O	|	|	|	|	0.26
37.667	0.00	0.35	0.425	O	|	|	|	|	0.26
37.750	0.00	0.35	0.423	O	|	|	|	|	0.25
37.833	0.00	0.35	0.421	O	|	|	|	|	0.25
37.917	0.00	0.35	0.418	O	|	|	|	|	0.25
38.000	0.00	0.35	0.416	O	|	|	|	|	0.25
38.083	0.00	0.34	0.413	O	|	|	|	|	0.25
38.167	0.00	0.34	0.411	O	|	|	|	|	0.25
38.250	0.00	0.34	0.409	O	|	|	|	|	0.25
38.333	0.00	0.34	0.406	O	|	|	|	|	0.24
38.417	0.00	0.34	0.404	O	|	|	|	|	0.24
38.500	0.00	0.33	0.402	O	|	|	|	|	0.24
38.583	0.00	0.33	0.399	O	|	|	|	|	0.24
38.667	0.00	0.33	0.397	O	|	|	|	|	0.24
38.750	0.00	0.33	0.395	O	|	|	|	|	0.24
38.833	0.00	0.33	0.393	O	|	|	|	|	0.24
38.917	0.00	0.32	0.390	O	|	|	|	|	0.23
39.000	0.00	0.32	0.388	O	|	|	|	|	0.23
39.083	0.00	0.32	0.386	O	|	|	|	|	0.23
39.167	0.00	0.32	0.384	O	|	|	|	|	0.23
39.250	0.00	0.32	0.382	O	|	|	|	|	0.23
39.333	0.00	0.31	0.379	O	|	|	|	|	0.23
39.417	0.00	0.31	0.377	O	|	|	|	|	0.23
39.500	0.00	0.31	0.375	O	|	|	|	|	0.22
39.583	0.00	0.31	0.373	O	|	|	|	|	0.22
39.667	0.00	0.31	0.371	O	|	|	|	|	0.22
39.750	0.00	0.31	0.369	O	|	|	|	|	0.22
39.833	0.00	0.30	0.367	O	|	|	|	|	0.22
39.917	0.00	0.30	0.365	O	|	|	|	|	0.22
40.000	0.00	0.30	0.363	O	|	|	|	|	0.22
40.083	0.00	0.30	0.360	O	|	|	|	|	0.22
40.167	0.00	0.30	0.358	O	|	|	|	|	0.21
40.250	0.00	0.30	0.356	O	|	|	|	|	0.21
40.333	0.00	0.29	0.354	O	|	|	|	|	0.21
40.417	0.00	0.29	0.352	O	|	|	|	|	0.21
40.500	0.00	0.29	0.350	O	|	|	|	|	0.21
40.583	0.00	0.29	0.348	O	|	|	|	|	0.21
40.667	0.00	0.29	0.346	O	|	|	|	|	0.21
40.750	0.00	0.29	0.344	O	|	|	|	|	0.21

40.833	0.00	0.28	0.342	O	|	|	|	|	0.21
40.917	0.00	0.28	0.340	O	|	|	|	|	0.20
41.000	0.00	0.28	0.338	O	|	|	|	|	0.20
41.083	0.00	0.28	0.337	O	|	|	|	|	0.20
41.167	0.00	0.28	0.335	O	|	|	|	|	0.20
41.250	0.00	0.28	0.333	O	|	|	|	|	0.20
41.333	0.00	0.27	0.331	O	|	|	|	|	0.20
41.417	0.00	0.27	0.329	O	|	|	|	|	0.20
41.500	0.00	0.27	0.327	O	|	|	|	|	0.20
41.583	0.00	0.27	0.325	O	|	|	|	|	0.19
41.667	0.00	0.27	0.323	O	|	|	|	|	0.19
41.750	0.00	0.27	0.322	O	|	|	|	|	0.19
41.833	0.00	0.27	0.320	O	|	|	|	|	0.19
41.917	0.00	0.26	0.318	O	|	|	|	|	0.19
42.000	0.00	0.26	0.316	O	|	|	|	|	0.19
42.083	0.00	0.26	0.314	O	|	|	|	|	0.19
42.167	0.00	0.26	0.312	O	|	|	|	|	0.19
42.250	0.00	0.26	0.311	O	|	|	|	|	0.19
42.333	0.00	0.26	0.309	O	|	|	|	|	0.19
42.417	0.00	0.25	0.307	O	|	|	|	|	0.18
42.500	0.00	0.25	0.305	O	|	|	|	|	0.18
42.583	0.00	0.25	0.304	O	|	|	|	|	0.18
42.667	0.00	0.25	0.302	O	|	|	|	|	0.18
42.750	0.00	0.25	0.300	O	|	|	|	|	0.18
42.833	0.00	0.25	0.298	O	|	|	|	|	0.18
42.917	0.00	0.25	0.297	O	|	|	|	|	0.18
43.000	0.00	0.24	0.295	O	|	|	|	|	0.18
43.083	0.00	0.24	0.293	O	|	|	|	|	0.18
43.167	0.00	0.24	0.292	O	|	|	|	|	0.17
43.250	0.00	0.24	0.290	O	|	|	|	|	0.17
43.333	0.00	0.24	0.288	O	|	|	|	|	0.17
43.417	0.00	0.24	0.287	O	|	|	|	|	0.17
43.500	0.00	0.24	0.285	O	|	|	|	|	0.17
43.583	0.00	0.24	0.284	O	|	|	|	|	0.17
43.667	0.00	0.23	0.282	O	|	|	|	|	0.17
43.750	0.00	0.23	0.280	O	|	|	|	|	0.17
43.833	0.00	0.23	0.279	O	|	|	|	|	0.17
43.917	0.00	0.23	0.277	O	|	|	|	|	0.17
44.000	0.00	0.23	0.276	O	|	|	|	|	0.17
44.083	0.00	0.23	0.274	O	|	|	|	|	0.16
44.167	0.00	0.23	0.272	O	|	|	|	|	0.16
44.250	0.00	0.22	0.271	O	|	|	|	|	0.16
44.333	0.00	0.22	0.269	O	|	|	|	|	0.16
44.417	0.00	0.22	0.268	O	|	|	|	|	0.16
44.500	0.00	0.22	0.266	O	|	|	|	|	0.16
44.583	0.00	0.22	0.265	O	|	|	|	|	0.16
44.667	0.00	0.22	0.263	O	|	|	|	|	0.16
44.750	0.00	0.22	0.262	O	|	|	|	|	0.16
44.833	0.00	0.22	0.260	O	|	|	|	|	0.16
44.917	0.00	0.21	0.259	O	|	|	|	|	0.16
45.000	0.00	0.21	0.257	O	|	|	|	|	0.15
45.083	0.00	0.21	0.256	O	|	|	|	|	0.15
45.167	0.00	0.21	0.254	O	|	|	|	|	0.15
45.250	0.00	0.21	0.253	O	|	|	|	|	0.15
45.333	0.00	0.21	0.251	O	|	|	|	|	0.15
45.417	0.00	0.21	0.250	O	|	|	|	|	0.15
45.500	0.00	0.21	0.249	O	|	|	|	|	0.15
45.583	0.00	0.21	0.247	O	|	|	|	|	0.15
45.667	0.00	0.20	0.246	O	|	|	|	|	0.15
45.750	0.00	0.20	0.244	O	|	|	|	|	0.15
45.833	0.00	0.20	0.243	O	|	|	|	|	0.15
45.917	0.00	0.20	0.242	O	|	|	|	|	0.14
46.000	0.00	0.20	0.240	O	|	|	|	|	0.14
46.083	0.00	0.20	0.239	O	|	|	|	|	0.14
46.167	0.00	0.20	0.238	O	|	|	|	|	0.14
46.250	0.00	0.20	0.236	O	|	|	|	|	0.14
46.333	0.00	0.19	0.235	O	|	|	|	|	0.14
46.417	0.00	0.19	0.233	O	|	|	|	|	0.14
46.500	0.00	0.19	0.232	O	|	|	|	|	0.14
46.583	0.00	0.19	0.231	O	|	|	|	|	0.14
46.667	0.00	0.19	0.229	O	|	|	|	|	0.14

46.750	0.00	0.19	0.228	O	|	|	|	|	0.14
46.833	0.00	0.19	0.227	O	|	|	|	|	0.14
46.917	0.00	0.19	0.226	O	|	|	|	|	0.14
47.000	0.00	0.19	0.224	O	|	|	|	|	0.13
47.083	0.00	0.19	0.223	O	|	|	|	|	0.13
47.167	0.00	0.18	0.222	O	|	|	|	|	0.13
47.250	0.00	0.18	0.220	O	|	|	|	|	0.13
47.333	0.00	0.18	0.219	O	|	|	|	|	0.13
47.417	0.00	0.18	0.218	O	|	|	|	|	0.13
47.500	0.00	0.18	0.217	O	|	|	|	|	0.13
47.583	0.00	0.18	0.216	O	|	|	|	|	0.13
47.667	0.00	0.18	0.214	O	|	|	|	|	0.13
47.750	0.00	0.18	0.213	O	|	|	|	|	0.13
47.833	0.00	0.18	0.212	O	|	|	|	|	0.13
47.917	0.00	0.17	0.211	O	|	|	|	|	0.13
48.000	0.00	0.17	0.209	O	|	|	|	|	0.13
48.083	0.00	0.17	0.208	O	|	|	|	|	0.12
48.167	0.00	0.17	0.207	O	|	|	|	|	0.12
48.250	0.00	0.17	0.206	O	|	|	|	|	0.12
48.333	0.00	0.17	0.205	O	|	|	|	|	0.12
48.417	0.00	0.17	0.204	O	|	|	|	|	0.12
48.500	0.00	0.17	0.202	O	|	|	|	|	0.12
48.583	0.00	0.17	0.201	O	|	|	|	|	0.12
48.667	0.00	0.17	0.200	O	|	|	|	|	0.12
48.750	0.00	0.17	0.199	O	|	|	|	|	0.12
48.833	0.00	0.16	0.198	O	|	|	|	|	0.12
48.917	0.00	0.16	0.197	O	|	|	|	|	0.12
49.000	0.00	0.16	0.196	O	|	|	|	|	0.12
49.083	0.00	0.16	0.194	O	|	|	|	|	0.12
49.167	0.00	0.16	0.193	O	|	|	|	|	0.12
49.250	0.00	0.16	0.192	O	|	|	|	|	0.12
49.333	0.00	0.16	0.191	O	|	|	|	|	0.11
49.417	0.00	0.16	0.190	O	|	|	|	|	0.11
49.500	0.00	0.16	0.189	O	|	|	|	|	0.11
49.583	0.00	0.16	0.188	O	|	|	|	|	0.11
49.667	0.00	0.16	0.187	O	|	|	|	|	0.11
49.750	0.00	0.15	0.186	O	|	|	|	|	0.11
49.833	0.00	0.15	0.185	O	|	|	|	|	0.11
49.917	0.00	0.15	0.184	O	|	|	|	|	0.11
50.000	0.00	0.15	0.183	O	|	|	|	|	0.11
50.083	0.00	0.15	0.182	O	|	|	|	|	0.11
50.167	0.00	0.15	0.181	O	|	|	|	|	0.11
50.250	0.00	0.15	0.179	O	|	|	|	|	0.11
50.333	0.00	0.15	0.178	O	|	|	|	|	0.11
50.417	0.00	0.15	0.177	O	|	|	|	|	0.11
50.500	0.00	0.15	0.176	O	|	|	|	|	0.11
50.583	0.00	0.15	0.175	O	|	|	|	|	0.11
50.667	0.00	0.14	0.174	O	|	|	|	|	0.10
50.750	0.00	0.14	0.173	O	|	|	|	|	0.10
50.833	0.00	0.14	0.172	O	|	|	|	|	0.10
50.917	0.00	0.14	0.171	O	|	|	|	|	0.10
51.000	0.00	0.14	0.171	O	|	|	|	|	0.10
51.083	0.00	0.14	0.170	O	|	|	|	|	0.10
51.167	0.00	0.14	0.169	O	|	|	|	|	0.10
51.250	0.00	0.14	0.168	O	|	|	|	|	0.10
51.333	0.00	0.14	0.167	O	|	|	|	|	0.10
51.417	0.00	0.14	0.166	O	|	|	|	|	0.10
51.500	0.00	0.14	0.165	O	|	|	|	|	0.10
51.583	0.00	0.14	0.164	O	|	|	|	|	0.10
51.667	0.00	0.14	0.163	O	|	|	|	|	0.10
51.750	0.00	0.13	0.162	O	|	|	|	|	0.10
51.833	0.00	0.13	0.161	O	|	|	|	|	0.10
51.917	0.00	0.13	0.160	O	|	|	|	|	0.10
52.000	0.00	0.13	0.159	O	|	|	|	|	0.10
52.083	0.00	0.13	0.158	O	|	|	|	|	0.09
52.167	0.00	0.13	0.157	O	|	|	|	|	0.09
52.250	0.00	0.13	0.156	O	|	|	|	|	0.09
52.333	0.00	0.13	0.156	O	|	|	|	|	0.09
52.417	0.00	0.13	0.155	O	|	|	|	|	0.09
52.500	0.00	0.13	0.154	O	|	|	|	|	0.09
52.583	0.00	0.13	0.153	O	|	|	|	|	0.09

52.667	0.00	0.13	0.152	O	|	|	|	|	0.09
52.750	0.00	0.13	0.151	O	|	|	|	|	0.09
52.833	0.00	0.12	0.150	O	|	|	|	|	0.09
52.917	0.00	0.12	0.150	O	|	|	|	|	0.09
53.000	0.00	0.12	0.149	O	|	|	|	|	0.09
53.083	0.00	0.12	0.148	O	|	|	|	|	0.09
53.167	0.00	0.12	0.147	O	|	|	|	|	0.09
53.250	0.00	0.12	0.146	O	|	|	|	|	0.09
53.333	0.00	0.12	0.145	O	|	|	|	|	0.09
53.417	0.00	0.12	0.144	O	|	|	|	|	0.09
53.500	0.00	0.12	0.144	O	|	|	|	|	0.09
53.583	0.00	0.12	0.143	O	|	|	|	|	0.09
53.667	0.00	0.12	0.142	O	|	|	|	|	0.09
53.750	0.00	0.12	0.141	O	|	|	|	|	0.08
53.833	0.00	0.12	0.140	O	|	|	|	|	0.08
53.917	0.00	0.12	0.140	O	|	|	|	|	0.08
54.000	0.00	0.12	0.139	O	|	|	|	|	0.08
54.083	0.00	0.11	0.138	O	|	|	|	|	0.08
54.167	0.00	0.11	0.137	O	|	|	|	|	0.08
54.250	0.00	0.11	0.136	O	|	|	|	|	0.08
54.333	0.00	0.11	0.136	O	|	|	|	|	0.08
54.417	0.00	0.11	0.135	O	|	|	|	|	0.08
54.500	0.00	0.11	0.134	O	|	|	|	|	0.08
54.583	0.00	0.11	0.133	O	|	|	|	|	0.08
54.667	0.00	0.11	0.133	O	|	|	|	|	0.08
54.750	0.00	0.11	0.132	O	|	|	|	|	0.08
54.833	0.00	0.11	0.131	O	|	|	|	|	0.08
54.917	0.00	0.11	0.130	O	|	|	|	|	0.08
55.000	0.00	0.11	0.130	O	|	|	|	|	0.08
55.083	0.00	0.11	0.129	O	|	|	|	|	0.08
55.167	0.00	0.11	0.128	O	|	|	|	|	0.08
55.250	0.00	0.11	0.127	O	|	|	|	|	0.08
55.333	0.00	0.11	0.127	O	|	|	|	|	0.08
55.417	0.00	0.10	0.126	O	|	|	|	|	0.08
55.500	0.00	0.10	0.125	O	|	|	|	|	0.08
55.583	0.00	0.10	0.125	O	|	|	|	|	0.07
55.667	0.00	0.10	0.124	O	|	|	|	|	0.07
55.750	0.00	0.10	0.123	O	|	|	|	|	0.07
55.833	0.00	0.10	0.122	O	|	|	|	|	0.07
55.917	0.00	0.10	0.122	O	|	|	|	|	0.07
56.000	0.00	0.10	0.121	O	|	|	|	|	0.07
56.083	0.00	0.10	0.120	O	|	|	|	|	0.07
56.167	0.00	0.10	0.120	O	|	|	|	|	0.07
56.250	0.00	0.10	0.119	O	|	|	|	|	0.07
56.333	0.00	0.10	0.118	O	|	|	|	|	0.07
56.417	0.00	0.10	0.118	O	|	|	|	|	0.07
56.500	0.00	0.10	0.117	O	|	|	|	|	0.07
56.583	0.00	0.10	0.116	O	|	|	|	|	0.07
56.667	0.00	0.10	0.116	O	|	|	|	|	0.07
56.750	0.00	0.10	0.115	O	|	|	|	|	0.07
56.833	0.00	0.09	0.114	O	|	|	|	|	0.07
56.917	0.00	0.09	0.114	O	|	|	|	|	0.07
57.000	0.00	0.09	0.113	O	|	|	|	|	0.07
57.083	0.00	0.09	0.112	O	|	|	|	|	0.07
57.167	0.00	0.09	0.112	O	|	|	|	|	0.07
57.250	0.00	0.09	0.111	O	|	|	|	|	0.07
57.333	0.00	0.09	0.110	O	|	|	|	|	0.07
57.417	0.00	0.09	0.110	O	|	|	|	|	0.07
57.500	0.00	0.09	0.109	O	|	|	|	|	0.07
57.583	0.00	0.09	0.109	O	|	|	|	|	0.07
57.667	0.00	0.09	0.108	O	|	|	|	|	0.06
57.750	0.00	0.09	0.107	O	|	|	|	|	0.06
57.833	0.00	0.09	0.107	O	|	|	|	|	0.06
57.917	0.00	0.09	0.106	O	|	|	|	|	0.06
58.000	0.00	0.09	0.106	O	|	|	|	|	0.06
58.083	0.00	0.09	0.105	O	|	|	|	|	0.06
58.167	0.00	0.09	0.104	O	|	|	|	|	0.06
58.250	0.00	0.09	0.104	O	|	|	|	|	0.06
58.333	0.00	0.09	0.103	O	|	|	|	|	0.06
58.417	0.00	0.09	0.103	O	|	|	|	|	0.06
58.500	0.00	0.08	0.102	O	|	|	|	|	0.06

58.583	0.00	0.08	0.101	O	|	|	|	|	0.06
58.667	0.00	0.08	0.101	O	|	|	|	|	0.06
58.750	0.00	0.08	0.100	O	|	|	|	|	0.06
58.833	0.00	0.08	0.100	O	|	|	|	|	0.06
58.917	0.00	0.08	0.099	O	|	|	|	|	0.06
59.000	0.00	0.08	0.099	O	|	|	|	|	0.06
59.083	0.00	0.08	0.098	O	|	|	|	|	0.06
59.167	0.00	0.08	0.097	O	|	|	|	|	0.06
59.250	0.00	0.08	0.097	O	|	|	|	|	0.06
59.333	0.00	0.08	0.096	O	|	|	|	|	0.06
59.417	0.00	0.08	0.096	O	|	|	|	|	0.06
59.500	0.00	0.08	0.095	O	|	|	|	|	0.06
59.583	0.00	0.08	0.095	O	|	|	|	|	0.06
59.667	0.00	0.08	0.094	O	|	|	|	|	0.06
59.750	0.00	0.08	0.094	O	|	|	|	|	0.06
59.833	0.00	0.08	0.093	O	|	|	|	|	0.06
59.917	0.00	0.08	0.093	O	|	|	|	|	0.06
60.000	0.00	0.08	0.092	O	|	|	|	|	0.06
60.083	0.00	0.08	0.091	O	|	|	|	|	0.05
60.167	0.00	0.08	0.091	O	|	|	|	|	0.05
60.250	0.00	0.08	0.090	O	|	|	|	|	0.05
60.333	0.00	0.07	0.090	O	|	|	|	|	0.05
60.417	0.00	0.07	0.089	O	|	|	|	|	0.05
60.500	0.00	0.07	0.089	O	|	|	|	|	0.05
60.583	0.00	0.07	0.088	O	|	|	|	|	0.05
60.667	0.00	0.07	0.088	O	|	|	|	|	0.05
60.750	0.00	0.07	0.087	O	|	|	|	|	0.05
60.833	0.00	0.07	0.087	O	|	|	|	|	0.05
60.917	0.00	0.07	0.086	O	|	|	|	|	0.05
61.000	0.00	0.07	0.086	O	|	|	|	|	0.05
61.083	0.00	0.07	0.085	O	|	|	|	|	0.05
61.167	0.00	0.07	0.085	O	|	|	|	|	0.05
61.250	0.00	0.07	0.084	O	|	|	|	|	0.05
61.333	0.00	0.07	0.084	O	|	|	|	|	0.05
61.417	0.00	0.07	0.083	O	|	|	|	|	0.05
61.500	0.00	0.07	0.083	O	|	|	|	|	0.05
61.583	0.00	0.07	0.083	O	|	|	|	|	0.05
61.667	0.00	0.07	0.082	O	|	|	|	|	0.05
61.750	0.00	0.07	0.082	O	|	|	|	|	0.05
61.833	0.00	0.07	0.081	O	|	|	|	|	0.05
61.917	0.00	0.07	0.081	O	|	|	|	|	0.05
62.000	0.00	0.07	0.080	O	|	|	|	|	0.05
62.083	0.00	0.07	0.080	O	|	|	|	|	0.05
62.167	0.00	0.07	0.079	O	|	|	|	|	0.05
62.250	0.00	0.07	0.079	O	|	|	|	|	0.05
62.333	0.00	0.07	0.078	O	|	|	|	|	0.05
62.417	0.00	0.06	0.078	O	|	|	|	|	0.05
62.500	0.00	0.06	0.077	O	|	|	|	|	0.05
62.583	0.00	0.06	0.077	O	|	|	|	|	0.05
62.667	0.00	0.06	0.077	O	|	|	|	|	0.05
62.750	0.00	0.06	0.076	O	|	|	|	|	0.05
62.833	0.00	0.06	0.076	O	|	|	|	|	0.05
62.917	0.00	0.06	0.075	O	|	|	|	|	0.05
63.000	0.00	0.06	0.075	O	|	|	|	|	0.04
63.083	0.00	0.06	0.074	O	|	|	|	|	0.04
63.167	0.00	0.06	0.074	O	|	|	|	|	0.04
63.250	0.00	0.06	0.074	O	|	|	|	|	0.04
63.333	0.00	0.06	0.073	O	|	|	|	|	0.04
63.417	0.00	0.06	0.073	O	|	|	|	|	0.04
63.500	0.00	0.06	0.072	O	|	|	|	|	0.04
63.583	0.00	0.06	0.072	O	|	|	|	|	0.04
63.667	0.00	0.06	0.072	O	|	|	|	|	0.04
63.750	0.00	0.06	0.071	O	|	|	|	|	0.04
63.833	0.00	0.06	0.071	O	|	|	|	|	0.04
63.917	0.00	0.06	0.070	O	|	|	|	|	0.04
64.000	0.00	0.06	0.070	O	|	|	|	|	0.04
64.083	0.00	0.06	0.070	O	|	|	|	|	0.04
64.167	0.00	0.06	0.069	O	|	|	|	|	0.04
64.250	0.00	0.06	0.069	O	|	|	|	|	0.04
64.333	0.00	0.06	0.068	O	|	|	|	|	0.04
64.417	0.00	0.06	0.068	O	|	|	|	|	0.04

64.500	0.00	0.06	0.068	O	|	|	|	|	0.04
64.583	0.00	0.06	0.067	O	|	|	|	|	0.04
64.667	0.00	0.06	0.067	O	|	|	|	|	0.04
64.750	0.00	0.06	0.066	O	|	|	|	|	0.04
64.833	0.00	0.05	0.066	O	|	|	|	|	0.04
64.917	0.00	0.05	0.066	O	|	|	|	|	0.04
65.000	0.00	0.05	0.065	O	|	|	|	|	0.04
65.083	0.00	0.05	0.065	O	|	|	|	|	0.04
65.167	0.00	0.05	0.065	O	|	|	|	|	0.04
65.250	0.00	0.05	0.064	O	|	|	|	|	0.04
65.333	0.00	0.05	0.064	O	|	|	|	|	0.04
65.417	0.00	0.05	0.063	O	|	|	|	|	0.04
65.500	0.00	0.05	0.063	O	|	|	|	|	0.04
65.583	0.00	0.05	0.063	O	|	|	|	|	0.04
65.667	0.00	0.05	0.062	O	|	|	|	|	0.04
65.750	0.00	0.05	0.062	O	|	|	|	|	0.04
65.833	0.00	0.05	0.062	O	|	|	|	|	0.04
65.917	0.00	0.05	0.061	O	|	|	|	|	0.04
66.000	0.00	0.05	0.061	O	|	|	|	|	0.04
66.083	0.00	0.05	0.061	O	|	|	|	|	0.04
66.167	0.00	0.05	0.060	O	|	|	|	|	0.04
66.250	0.00	0.05	0.060	O	|	|	|	|	0.04
66.333	0.00	0.05	0.060	O	|	|	|	|	0.04
66.417	0.00	0.05	0.059	O	|	|	|	|	0.04
66.500	0.00	0.05	0.059	O	|	|	|	|	0.04
66.583	0.00	0.05	0.059	O	|	|	|	|	0.04
66.667	0.00	0.05	0.058	O	|	|	|	|	0.03
66.750	0.00	0.05	0.058	O	|	|	|	|	0.03
66.833	0.00	0.05	0.058	O	|	|	|	|	0.03
66.917	0.00	0.05	0.057	O	|	|	|	|	0.03
67.000	0.00	0.05	0.057	O	|	|	|	|	0.03
67.083	0.00	0.05	0.057	O	|	|	|	|	0.03
67.167	0.00	0.05	0.056	O	|	|	|	|	0.03
67.250	0.00	0.05	0.056	O	|	|	|	|	0.03
67.333	0.00	0.05	0.056	O	|	|	|	|	0.03
67.417	0.00	0.05	0.055	O	|	|	|	|	0.03
67.500	0.00	0.05	0.055	O	|	|	|	|	0.03
67.583	0.00	0.05	0.055	O	|	|	|	|	0.03
67.667	0.00	0.05	0.054	O	|	|	|	|	0.03
67.750	0.00	0.04	0.054	O	|	|	|	|	0.03
67.833	0.00	0.04	0.054	O	|	|	|	|	0.03
67.917	0.00	0.04	0.053	O	|	|	|	|	0.03
68.000	0.00	0.04	0.053	O	|	|	|	|	0.03
68.083	0.00	0.04	0.053	O	|	|	|	|	0.03
68.167	0.00	0.04	0.053	O	|	|	|	|	0.03
68.250	0.00	0.04	0.052	O	|	|	|	|	0.03
68.333	0.00	0.04	0.052	O	|	|	|	|	0.03
68.417	0.00	0.04	0.052	O	|	|	|	|	0.03
68.500	0.00	0.04	0.051	O	|	|	|	|	0.03
68.583	0.00	0.04	0.051	O	|	|	|	|	0.03
68.667	0.00	0.04	0.051	O	|	|	|	|	0.03
68.750	0.00	0.04	0.050	O	|	|	|	|	0.03
68.833	0.00	0.04	0.050	O	|	|	|	|	0.03
68.917	0.00	0.04	0.050	O	|	|	|	|	0.03
69.000	0.00	0.04	0.050	O	|	|	|	|	0.03
69.083	0.00	0.04	0.049	O	|	|	|	|	0.03
69.167	0.00	0.04	0.049	O	|	|	|	|	0.03
69.250	0.00	0.04	0.049	O	|	|	|	|	0.03
69.333	0.00	0.04	0.048	O	|	|	|	|	0.03
69.417	0.00	0.04	0.048	O	|	|	|	|	0.03
69.500	0.00	0.04	0.048	O	|	|	|	|	0.03
69.583	0.00	0.04	0.048	O	|	|	|	|	0.03
69.667	0.00	0.04	0.047	O	|	|	|	|	0.03
69.750	0.00	0.04	0.047	O	|	|	|	|	0.03
69.833	0.00	0.04	0.047	O	|	|	|	|	0.03
69.917	0.00	0.04	0.047	O	|	|	|	|	0.03
70.000	0.00	0.04	0.046	O	|	|	|	|	0.03
70.083	0.00	0.04	0.046	O	|	|	|	|	0.03
70.167	0.00	0.04	0.046	O	|	|	|	|	0.03
70.250	0.00	0.04	0.046	O	|	|	|	|	0.03
70.333	0.00	0.04	0.045	O	|	|	|	|	0.03

70.417	0.00	0.04	0.045	O	|	|	|	|	0.03
70.500	0.00	0.04	0.045	O	|	|	|	|	0.03
70.583	0.00	0.04	0.045	O	|	|	|	|	0.03
70.667	0.00	0.04	0.044	O	|	|	|	|	0.03
70.750	0.00	0.04	0.044	O	|	|	|	|	0.03
70.833	0.00	0.04	0.044	O	|	|	|	|	0.03
70.917	0.00	0.04	0.044	O	|	|	|	|	0.03
71.000	0.00	0.04	0.043	O	|	|	|	|	0.03
71.083	0.00	0.04	0.043	O	|	|	|	|	0.03
71.167	0.00	0.04	0.043	O	|	|	|	|	0.03
71.250	0.00	0.04	0.043	O	|	|	|	|	0.03
71.333	0.00	0.04	0.042	O	|	|	|	|	0.03
71.417	0.00	0.03	0.042	O	|	|	|	|	0.03
71.500	0.00	0.03	0.042	O	|	|	|	|	0.03
71.583	0.00	0.03	0.042	O	|	|	|	|	0.02
71.667	0.00	0.03	0.041	O	|	|	|	|	0.02
71.750	0.00	0.03	0.041	O	|	|	|	|	0.02
71.833	0.00	0.03	0.041	O	|	|	|	|	0.02
71.917	0.00	0.03	0.041	O	|	|	|	|	0.02
72.000	0.00	0.03	0.040	O	|	|	|	|	0.02
72.083	0.00	0.03	0.040	O	|	|	|	|	0.02
72.167	0.00	0.03	0.040	O	|	|	|	|	0.02
72.250	0.00	0.03	0.040	O	|	|	|	|	0.02
72.333	0.00	0.03	0.039	O	|	|	|	|	0.02
72.417	0.00	0.03	0.039	O	|	|	|	|	0.02
72.500	0.00	0.03	0.039	O	|	|	|	|	0.02
72.583	0.00	0.03	0.039	O	|	|	|	|	0.02
72.667	0.00	0.03	0.039	O	|	|	|	|	0.02
72.750	0.00	0.03	0.038	O	|	|	|	|	0.02
72.833	0.00	0.03	0.038	O	|	|	|	|	0.02
72.917	0.00	0.03	0.038	O	|	|	|	|	0.02
73.000	0.00	0.03	0.038	O	|	|	|	|	0.02
73.083	0.00	0.03	0.038	O	|	|	|	|	0.02
73.167	0.00	0.03	0.037	O	|	|	|	|	0.02
73.250	0.00	0.03	0.037	O	|	|	|	|	0.02
73.333	0.00	0.03	0.037	O	|	|	|	|	0.02
73.417	0.00	0.03	0.037	O	|	|	|	|	0.02
73.500	0.00	0.03	0.036	O	|	|	|	|	0.02
73.583	0.00	0.03	0.036	O	|	|	|	|	0.02
73.667	0.00	0.03	0.036	O	|	|	|	|	0.02
73.750	0.00	0.03	0.036	O	|	|	|	|	0.02
73.833	0.00	0.03	0.036	O	|	|	|	|	0.02
73.917	0.00	0.03	0.035	O	|	|	|	|	0.02
74.000	0.00	0.03	0.035	O	|	|	|	|	0.02
74.083	0.00	0.03	0.035	O	|	|	|	|	0.02
74.167	0.00	0.03	0.035	O	|	|	|	|	0.02
74.250	0.00	0.03	0.035	O	|	|	|	|	0.02
74.333	0.00	0.03	0.034	O	|	|	|	|	0.02
74.417	0.00	0.03	0.034	O	|	|	|	|	0.02
74.500	0.00	0.03	0.034	O	|	|	|	|	0.02
74.583	0.00	0.03	0.034	O	|	|	|	|	0.02
74.667	0.00	0.03	0.034	O	|	|	|	|	0.02
74.750	0.00	0.03	0.033	O	|	|	|	|	0.02
74.833	0.00	0.03	0.033	O	|	|	|	|	0.02
74.917	0.00	0.03	0.033	O	|	|	|	|	0.02
75.000	0.00	0.03	0.033	O	|	|	|	|	0.02
75.083	0.00	0.03	0.033	O	|	|	|	|	0.02
75.167	0.00	0.03	0.033	O	|	|	|	|	0.02
75.250	0.00	0.03	0.032	O	|	|	|	|	0.02
75.333	0.00	0.03	0.032	O	|	|	|	|	0.02
75.417	0.00	0.03	0.032	O	|	|	|	|	0.02
75.500	0.00	0.03	0.032	O	|	|	|	|	0.02
75.583	0.00	0.03	0.032	O	|	|	|	|	0.02
75.667	0.00	0.03	0.031	O	|	|	|	|	0.02
75.750	0.00	0.03	0.031	O	|	|	|	|	0.02
75.833	0.00	0.03	0.031	O	|	|	|	|	0.02
75.917	0.00	0.03	0.031	O	|	|	|	|	0.02
76.000	0.00	0.03	0.031	O	|	|	|	|	0.02
76.083	0.00	0.03	0.031	O	|	|	|	|	0.02
76.167	0.00	0.03	0.030	O	|	|	|	|	0.02
76.250	0.00	0.03	0.030	O	|	|	|	|	0.02

76.333	0.00	0.02	0.030	O					0.02
76.417	0.00	0.02	0.030	O					0.02
76.500	0.00	0.02	0.030	O					0.02
76.583	0.00	0.02	0.030	O					0.02
76.667	0.00	0.02	0.029	O					0.02
76.750	0.00	0.02	0.029	O					0.02
76.833	0.00	0.02	0.029	O					0.02
76.917	0.00	0.02	0.029	O					0.02
77.000	0.00	0.02	0.029	O					0.02
77.083	0.00	0.02	0.029	O					0.02
77.167	0.00	0.02	0.028	O					0.02
77.250	0.00	0.02	0.028	O					0.02
77.333	0.00	0.02	0.028	O					0.02
77.417	0.00	0.02	0.028	O					0.02
77.500	0.00	0.02	0.028	O					0.02
77.583	0.00	0.02	0.028	O					0.02
77.667	0.00	0.02	0.027	O					0.02
77.750	0.00	0.02	0.027	O					0.02
77.833	0.00	0.02	0.027	O					0.02
77.917	0.00	0.02	0.027	O					0.02
78.000	0.00	0.02	0.027	O					0.02
78.083	0.00	0.02	0.027	O					0.02
78.167	0.00	0.02	0.026	O					0.02
78.250	0.00	0.02	0.026	O					0.02
78.333	0.00	0.02	0.026	O					0.02
78.417	0.00	0.02	0.026	O					0.02
78.500	0.00	0.02	0.026	O					0.02
78.583	0.00	0.02	0.026	O					0.02
78.667	0.00	0.02	0.026	O					0.02
78.750	0.00	0.02	0.025	O					0.02
78.833	0.00	0.02	0.025	O					0.02
78.917	0.00	0.02	0.025	O					0.02
79.000	0.00	0.02	0.025	O					0.01
79.083	0.00	0.02	0.025	O					0.01
79.167	0.00	0.02	0.025	O					0.01
79.250	0.00	0.02	0.025	O					0.01
79.333	0.00	0.02	0.024	O					0.01
79.417	0.00	0.02	0.024	O					0.01
79.500	0.00	0.02	0.024	O					0.01
79.583	0.00	0.02	0.024	O					0.01
79.667	0.00	0.02	0.024	O					0.01
79.750	0.00	0.02	0.024	O					0.01
79.833	0.00	0.02	0.024	O					0.01
79.917	0.00	0.02	0.023	O					0.01
80.000	0.00	0.02	0.023	O					0.01
80.083	0.00	0.02	0.023	O					0.01
80.167	0.00	0.02	0.023	O					0.01
80.250	0.00	0.02	0.023	O					0.01
80.333	0.00	0.02	0.023	O					0.01
80.417	0.00	0.02	0.023	O					0.01
80.500	0.00	0.02	0.023	O					0.01
80.583	0.00	0.02	0.022	O					0.01
80.667	0.00	0.02	0.022	O					0.01
80.750	0.00	0.02	0.022	O					0.01
80.833	0.00	0.02	0.022	O					0.01
80.917	0.00	0.02	0.022	O					0.01
81.000	0.00	0.02	0.022	O					0.01
81.083	0.00	0.02	0.022	O					0.01
81.167	0.00	0.02	0.022	O					0.01
81.250	0.00	0.02	0.021	O					0.01
81.333	0.00	0.02	0.021	O					0.01
81.417	0.00	0.02	0.021	O					0.01
81.500	0.00	0.02	0.021	O					0.01
81.583	0.00	0.02	0.021	O					0.01
81.667	0.00	0.02	0.021	O					0.01
81.750	0.00	0.02	0.021	O					0.01
81.833	0.00	0.02	0.021	O					0.01
81.917	0.00	0.02	0.020	O					0.01
82.000	0.00	0.02	0.020	O					0.01
82.083	0.00	0.02	0.020	O					0.01
82.167	0.00	0.02	0.020	O					0.01

82.250	0.00	0.02	0.020	O					0.01
82.333	0.00	0.02	0.020	O					0.01
82.417	0.00	0.02	0.020	O					0.01
82.500	0.00	0.02	0.020	O					0.01
82.583	0.00	0.02	0.020	O					0.01
82.667	0.00	0.02	0.019	O					0.01
82.750	0.00	0.02	0.019	O					0.01
82.833	0.00	0.02	0.019	O					0.01
82.917	0.00	0.02	0.019	O					0.01
83.000	0.00	0.02	0.019	O					0.01
83.083	0.00	0.02	0.019	O					0.01
83.167	0.00	0.02	0.019	O					0.01
83.250	0.00	0.02	0.019	O					0.01
83.333	0.00	0.02	0.019	O					0.01
83.417	0.00	0.02	0.018	O					0.01
83.500	0.00	0.02	0.018	O					0.01
83.583	0.00	0.02	0.018	O					0.01
83.667	0.00	0.02	0.018	O					0.01
83.750	0.00	0.01	0.018	O					0.01
83.833	0.00	0.01	0.018	O					0.01
83.917	0.00	0.01	0.018	O					0.01
84.000	0.00	0.01	0.018	O					0.01
84.083	0.00	0.01	0.018	O					0.01
84.167	0.00	0.01	0.018	O					0.01
84.250	0.00	0.01	0.017	O					0.01
84.333	0.00	0.01	0.017	O					0.01
84.417	0.00	0.01	0.017	O					0.01
84.500	0.00	0.01	0.017	O					0.01
84.583	0.00	0.01	0.017	O					0.01
84.667	0.00	0.01	0.017	O					0.01
84.750	0.00	0.01	0.017	O					0.01
84.833	0.00	0.01	0.017	O					0.01
84.917	0.00	0.01	0.017	O					0.01
85.000	0.00	0.01	0.017	O					0.01
85.083	0.00	0.01	0.016	O					0.01
85.167	0.00	0.01	0.016	O					0.01
85.250	0.00	0.01	0.016	O					0.01
85.333	0.00	0.01	0.016	O					0.01
85.417	0.00	0.01	0.016	O					0.01
85.500	0.00	0.01	0.016	O					0.01
85.583	0.00	0.01	0.016	O					0.01
85.667	0.00	0.01	0.016	O					0.01
85.750	0.00	0.01	0.016	O					0.01
85.833	0.00	0.01	0.016	O					0.01
85.917	0.00	0.01	0.016	O					0.01
86.000	0.00	0.01	0.015	O					0.01
86.083	0.00	0.01	0.015	O					0.01
86.167	0.00	0.01	0.015	O					0.01
86.250	0.00	0.01	0.015	O					0.01
86.333	0.00	0.01	0.015	O					0.01
86.417	0.00	0.01	0.015	O					0.01
86.500	0.00	0.01	0.015	O					0.01
86.583	0.00	0.01	0.015	O					0.01
86.667	0.00	0.01	0.015	O					0.01
86.750	0.00	0.01	0.015	O					0.01
86.833	0.00	0.01	0.015	O					0.01
86.917	0.00	0.01	0.015	O					0.01
87.000	0.00	0.01	0.014	O					0.01
87.083	0.00	0.01	0.014	O					0.01
87.167	0.00	0.01	0.014	O					0.01
87.250	0.00	0.01	0.014	O					0.01
87.333	0.00	0.01	0.014	O					0.01
87.417	0.00	0.01	0.014	O					0.01
87.500	0.00	0.01	0.014	O					0.01
87.583	0.00	0.01	0.014	O					0.01
87.667	0.00	0.01	0.014	O					0.01
87.750	0.00	0.01	0.014	O					0.01
87.833	0.00	0.01	0.014	O					0.01
87.917	0.00	0.01	0.014	O					0.01
88.000	0.00	0.01	0.013	O					0.01
88.083	0.00	0.01	0.013	O					0.01

88.167	0.00	0.01	0.013	O					0.01
88.250	0.00	0.01	0.013	O					0.01
88.333	0.00	0.01	0.013	O					0.01
88.417	0.00	0.01	0.013	O					0.01
88.500	0.00	0.01	0.013	O					0.01
88.583	0.00	0.01	0.013	O					0.01
88.667	0.00	0.01	0.013	O					0.01
88.750	0.00	0.01	0.013	O					0.01
88.833	0.00	0.01	0.013	O					0.01
88.917	0.00	0.01	0.013	O					0.01
89.000	0.00	0.01	0.013	O					0.01
89.083	0.00	0.01	0.013	O					0.01
89.167	0.00	0.01	0.012	O					0.01
89.250	0.00	0.01	0.012	O					0.01
89.333	0.00	0.01	0.012	O					0.01
89.417	0.00	0.01	0.012	O					0.01
89.500	0.00	0.01	0.012	O					0.01
89.583	0.00	0.01	0.012	O					0.01
89.667	0.00	0.01	0.012	O					0.01
89.750	0.00	0.01	0.012	O					0.01
89.833	0.00	0.01	0.012	O					0.01
89.917	0.00	0.01	0.012	O					0.01
90.000	0.00	0.01	0.012	O					0.01
90.083	0.00	0.01	0.012	O					0.01
90.167	0.00	0.01	0.012	O					0.01
90.250	0.00	0.01	0.012	O					0.01
90.333	0.00	0.01	0.011	O					0.01
90.417	0.00	0.01	0.011	O					0.01
90.500	0.00	0.01	0.011	O					0.01
90.583	0.00	0.01	0.011	O					0.01
90.667	0.00	0.01	0.011	O					0.01
90.750	0.00	0.01	0.011	O					0.01
90.833	0.00	0.01	0.011	O					0.01
90.917	0.00	0.01	0.011	O					0.01
91.000	0.00	0.01	0.011	O					0.01
91.083	0.00	0.01	0.011	O					0.01
91.167	0.00	0.01	0.011	O					0.01
91.250	0.00	0.01	0.011	O					0.01
91.333	0.00	0.01	0.011	O					0.01
91.417	0.00	0.01	0.011	O					0.01
91.500	0.00	0.01	0.011	O					0.01
91.583	0.00	0.01	0.011	O					0.01
91.667	0.00	0.01	0.010	O					0.01
91.750	0.00	0.01	0.010	O					0.01
91.833	0.00	0.01	0.010	O					0.01
91.917	0.00	0.01	0.010	O					0.01
92.000	0.00	0.01	0.010	O					0.01
92.083	0.00	0.01	0.010	O					0.01
92.167	0.00	0.01	0.010	O					0.01
92.250	0.00	0.01	0.010	O					0.01
92.333	0.00	0.01	0.010	O					0.01
92.417	0.00	0.01	0.010	O					0.01
92.500	0.00	0.01	0.010	O					0.01
92.583	0.00	0.01	0.010	O					0.01
92.667	0.00	0.01	0.010	O					0.01
92.750	0.00	0.01	0.010	O					0.01
92.833	0.00	0.01	0.010	O					0.01
92.917	0.00	0.01	0.010	O					0.01
93.000	0.00	0.01	0.010	O					0.01
93.083	0.00	0.01	0.010	O					0.01
93.167	0.00	0.01	0.009	O					0.01
93.250	0.00	0.01	0.009	O					0.01
93.333	0.00	0.01	0.009	O					0.01
93.417	0.00	0.01	0.009	O					0.01
93.500	0.00	0.01	0.009	O					0.01
93.583	0.00	0.01	0.009	O					0.01
93.667	0.00	0.01	0.009	O					0.01
93.750	0.00	0.01	0.009	O					0.01
93.833	0.00	0.01	0.009	O					0.01
93.917	0.00	0.01	0.009	O					0.01
94.000	0.00	0.01	0.009	O					0.01

94.083	0.00	0.01	0.009	O	|	|	|	|	0.01
94.167	0.00	0.01	0.009	O	|	|	|	|	0.01
94.250	0.00	0.01	0.009	O	|	|	|	|	0.01
94.333	0.00	0.01	0.009	O	|	|	|	|	0.01
94.417	0.00	0.01	0.009	O	|	|	|	|	0.01
94.500	0.00	0.01	0.009	O	|	|	|	|	0.01
94.583	0.00	0.01	0.009	O	|	|	|	|	0.01
94.667	0.00	0.01	0.009	O	|	|	|	|	0.01
94.750	0.00	0.01	0.008	O	|	|	|	|	0.01
94.833	0.00	0.01	0.008	O	|	|	|	|	0.01
94.917	0.00	0.01	0.008	O	|	|	|	|	0.01
95.000	0.00	0.01	0.008	O	|	|	|	|	0.01
95.083	0.00	0.01	0.008	O	|	|	|	|	0.00
95.167	0.00	0.01	0.008	O	|	|	|	|	0.00
95.250	0.00	0.01	0.008	O	|	|	|	|	0.00
95.333	0.00	0.01	0.008	O	|	|	|	|	0.00
95.417	0.00	0.01	0.008	O	|	|	|	|	0.00
95.500	0.00	0.01	0.008	O	|	|	|	|	0.00
95.583	0.00	0.01	0.008	O	|	|	|	|	0.00
95.667	0.00	0.01	0.008	O	|	|	|	|	0.00
95.750	0.00	0.01	0.008	O	|	|	|	|	0.00
95.833	0.00	0.01	0.008	O	|	|	|	|	0.00
95.917	0.00	0.01	0.008	O	|	|	|	|	0.00
96.000	0.00	0.01	0.008	O	|	|	|	|	0.00
96.083	0.00	0.01	0.008	O	|	|	|	|	0.00
96.167	0.00	0.01	0.008	O	|	|	|	|	0.00
96.250	0.00	0.01	0.008	O	|	|	|	|	0.00
96.333	0.00	0.01	0.008	O	|	|	|	|	0.00
96.417	0.00	0.01	0.008	O	|	|	|	|	0.00
96.500	0.00	0.01	0.008	O	|	|	|	|	0.00
96.583	0.00	0.01	0.007	O	|	|	|	|	0.00
96.667	0.00	0.01	0.007	O	|	|	|	|	0.00
96.750	0.00	0.01	0.007	O	|	|	|	|	0.00
96.833	0.00	0.01	0.007	O	|	|	|	|	0.00
96.917	0.00	0.01	0.007	O	|	|	|	|	0.00
97.000	0.00	0.01	0.007	O	|	|	|	|	0.00
97.083	0.00	0.01	0.007	O	|	|	|	|	0.00
97.167	0.00	0.01	0.007	O	|	|	|	|	0.00
97.250	0.00	0.01	0.007	O	|	|	|	|	0.00
97.333	0.00	0.01	0.007	O	|	|	|	|	0.00
97.417	0.00	0.01	0.007	O	|	|	|	|	0.00
97.500	0.00	0.01	0.007	O	|	|	|	|	0.00
97.583	0.00	0.01	0.007	O	|	|	|	|	0.00
97.667	0.00	0.01	0.007	O	|	|	|	|	0.00
97.750	0.00	0.01	0.007	O	|	|	|	|	0.00
97.833	0.00	0.01	0.007	O	|	|	|	|	0.00
97.917	0.00	0.01	0.007	O	|	|	|	|	0.00
98.000	0.00	0.01	0.007	O	|	|	|	|	0.00
98.083	0.00	0.01	0.007	O	|	|	|	|	0.00
98.167	0.00	0.01	0.007	O	|	|	|	|	0.00
98.250	0.00	0.01	0.007	O	|	|	|	|	0.00
98.333	0.00	0.01	0.007	O	|	|	|	|	0.00
98.417	0.00	0.01	0.007	O	|	|	|	|	0.00
98.500	0.00	0.01	0.007	O	|	|	|	|	0.00
98.583	0.00	0.01	0.007	O	|	|	|	|	0.00
98.667	0.00	0.01	0.006	O	|	|	|	|	0.00
98.750	0.00	0.01	0.006	O	|	|	|	|	0.00
98.833	0.00	0.01	0.006	O	|	|	|	|	0.00
98.917	0.00	0.01	0.006	O	|	|	|	|	0.00
99.000	0.00	0.01	0.006	O	|	|	|	|	0.00
99.083	0.00	0.01	0.006	O	|	|	|	|	0.00
99.167	0.00	0.01	0.006	O	|	|	|	|	0.00
99.250	0.00	0.01	0.006	O	|	|	|	|	0.00
99.333	0.00	0.01	0.006	O	|	|	|	|	0.00
99.417	0.00	0.01	0.006	O	|	|	|	|	0.00
99.500	0.00	0.01	0.006	O	|	|	|	|	0.00
99.583	0.00	0.01	0.006	O	|	|	|	|	0.00
99.667	0.00	0.01	0.006	O	|	|	|	|	0.00
99.750	0.00	0.00	0.006	O	|	|	|	|	0.00
99.833	0.00	0.00	0.006	O	|	|	|	|	0.00
99.917	0.00	0.00	0.006	O	|	|	|	|	0.00

100.000	0.00	0.00	0.006	O	|	|	|	|	0.00
100.083	0.00	0.00	0.006	O	|	|	|	|	0.00
100.167	0.00	0.00	0.006	O	|	|	|	|	0.00
100.250	0.00	0.00	0.006	O	|	|	|	|	0.00
100.333	0.00	0.00	0.006	O	|	|	|	|	0.00
100.417	0.00	0.00	0.006	O	|	|	|	|	0.00
100.500	0.00	0.00	0.006	O	|	|	|	|	0.00
100.583	0.00	0.00	0.006	O	|	|	|	|	0.00
100.667	0.00	0.00	0.006	O	|	|	|	|	0.00
100.750	0.00	0.00	0.006	O	|	|	|	|	0.00
100.833	0.00	0.00	0.006	O	|	|	|	|	0.00
100.917	0.00	0.00	0.006	O	|	|	|	|	0.00
101.000	0.00	0.00	0.006	O	|	|	|	|	0.00
101.083	0.00	0.00	0.005	O	|	|	|	|	0.00
101.167	0.00	0.00	0.005	O	|	|	|	|	0.00
101.250	0.00	0.00	0.005	O	|	|	|	|	0.00
101.333	0.00	0.00	0.005	O	|	|	|	|	0.00
101.417	0.00	0.00	0.005	O	|	|	|	|	0.00
101.500	0.00	0.00	0.005	O	|	|	|	|	0.00
101.583	0.00	0.00	0.005	O	|	|	|	|	0.00
101.667	0.00	0.00	0.005	O	|	|	|	|	0.00
101.750	0.00	0.00	0.005	O	|	|	|	|	0.00
101.833	0.00	0.00	0.005	O	|	|	|	|	0.00
101.917	0.00	0.00	0.005	O	|	|	|	|	0.00
102.000	0.00	0.00	0.005	O	|	|	|	|	0.00
102.083	0.00	0.00	0.005	O	|	|	|	|	0.00
102.167	0.00	0.00	0.005	O	|	|	|	|	0.00
102.250	0.00	0.00	0.005	O	|	|	|	|	0.00
102.333	0.00	0.00	0.005	O	|	|	|	|	0.00
102.417	0.00	0.00	0.005	O	|	|	|	|	0.00
102.500	0.00	0.00	0.005	O	|	|	|	|	0.00
102.583	0.00	0.00	0.005	O	|	|	|	|	0.00
102.667	0.00	0.00	0.005	O	|	|	|	|	0.00
102.750	0.00	0.00	0.005	O	|	|	|	|	0.00
102.833	0.00	0.00	0.005	O	|	|	|	|	0.00
102.917	0.00	0.00	0.005	O	|	|	|	|	0.00
103.000	0.00	0.00	0.005	O	|	|	|	|	0.00
103.083	0.00	0.00	0.005	O	|	|	|	|	0.00
103.167	0.00	0.00	0.005	O	|	|	|	|	0.00
103.250	0.00	0.00	0.005	O	|	|	|	|	0.00
103.333	0.00	0.00	0.005	O	|	|	|	|	0.00
103.417	0.00	0.00	0.005	O	|	|	|	|	0.00
103.500	0.00	0.00	0.005	O	|	|	|	|	0.00
103.583	0.00	0.00	0.005	O	|	|	|	|	0.00
103.667	0.00	0.00	0.005	O	|	|	|	|	0.00
103.750	0.00	0.00	0.005	O	|	|	|	|	0.00
103.833	0.00	0.00	0.005	O	|	|	|	|	0.00
103.917	0.00	0.00	0.005	O	|	|	|	|	0.00
104.000	0.00	0.00	0.005	O	|	|	|	|	0.00
104.083	0.00	0.00	0.004	O	|	|	|	|	0.00
104.167	0.00	0.00	0.004	O	|	|	|	|	0.00
104.250	0.00	0.00	0.004	O	|	|	|	|	0.00
104.333	0.00	0.00	0.004	O	|	|	|	|	0.00
104.417	0.00	0.00	0.004	O	|	|	|	|	0.00
104.500	0.00	0.00	0.004	O	|	|	|	|	0.00
104.583	0.00	0.00	0.004	O	|	|	|	|	0.00
104.667	0.00	0.00	0.004	O	|	|	|	|	0.00
104.750	0.00	0.00	0.004	O	|	|	|	|	0.00
104.833	0.00	0.00	0.004	O	|	|	|	|	0.00
104.917	0.00	0.00	0.004	O	|	|	|	|	0.00
105.000	0.00	0.00	0.004	O	|	|	|	|	0.00
105.083	0.00	0.00	0.004	O	|	|	|	|	0.00
105.167	0.00	0.00	0.004	O	|	|	|	|	0.00
105.250	0.00	0.00	0.004	O	|	|	|	|	0.00
105.333	0.00	0.00	0.004	O	|	|	|	|	0.00
105.417	0.00	0.00	0.004	O	|	|	|	|	0.00
105.500	0.00	0.00	0.004	O	|	|	|	|	0.00
105.583	0.00	0.00	0.004	O	|	|	|	|	0.00
105.667	0.00	0.00	0.004	O	|	|	|	|	0.00
105.750	0.00	0.00	0.004	O	|	|	|	|	0.00
105.833	0.00	0.00	0.004	O	|	|	|	|	0.00

105.917	0.00	0.00	0.004	O	|	|	|	|	0.00
106.000	0.00	0.00	0.004	O	|	|	|	|	0.00
106.083	0.00	0.00	0.004	O	|	|	|	|	0.00
106.167	0.00	0.00	0.004	O	|	|	|	|	0.00
106.250	0.00	0.00	0.004	O	|	|	|	|	0.00
106.333	0.00	0.00	0.004	O	|	|	|	|	0.00
106.417	0.00	0.00	0.004	O	|	|	|	|	0.00
106.500	0.00	0.00	0.004	O	|	|	|	|	0.00
106.583	0.00	0.00	0.004	O	|	|	|	|	0.00
106.667	0.00	0.00	0.004	O	|	|	|	|	0.00
106.750	0.00	0.00	0.004	O	|	|	|	|	0.00
106.833	0.00	0.00	0.004	O	|	|	|	|	0.00
106.917	0.00	0.00	0.004	O	|	|	|	|	0.00
107.000	0.00	0.00	0.004	O	|	|	|	|	0.00
107.083	0.00	0.00	0.004	O	|	|	|	|	0.00
107.167	0.00	0.00	0.004	O	|	|	|	|	0.00
107.250	0.00	0.00	0.004	O	|	|	|	|	0.00
107.333	0.00	0.00	0.004	O	|	|	|	|	0.00
107.417	0.00	0.00	0.004	O	|	|	|	|	0.00
107.500	0.00	0.00	0.004	O	|	|	|	|	0.00
107.583	0.00	0.00	0.004	O	|	|	|	|	0.00
107.667	0.00	0.00	0.004	O	|	|	|	|	0.00
107.750	0.00	0.00	0.003	O	|	|	|	|	0.00
107.833	0.00	0.00	0.003	O	|	|	|	|	0.00
107.917	0.00	0.00	0.003	O	|	|	|	|	0.00
108.000	0.00	0.00	0.003	O	|	|	|	|	0.00
108.083	0.00	0.00	0.003	O	|	|	|	|	0.00
108.167	0.00	0.00	0.003	O	|	|	|	|	0.00
108.250	0.00	0.00	0.003	O	|	|	|	|	0.00
108.333	0.00	0.00	0.003	O	|	|	|	|	0.00
108.417	0.00	0.00	0.003	O	|	|	|	|	0.00
108.500	0.00	0.00	0.003	O	|	|	|	|	0.00
108.583	0.00	0.00	0.003	O	|	|	|	|	0.00
108.667	0.00	0.00	0.003	O	|	|	|	|	0.00
108.750	0.00	0.00	0.003	O	|	|	|	|	0.00
108.833	0.00	0.00	0.003	O	|	|	|	|	0.00
108.917	0.00	0.00	0.003	O	|	|	|	|	0.00
109.000	0.00	0.00	0.003	O	|	|	|	|	0.00
109.083	0.00	0.00	0.003	O	|	|	|	|	0.00
109.167	0.00	0.00	0.003	O	|	|	|	|	0.00
109.250	0.00	0.00	0.003	O	|	|	|	|	0.00
109.333	0.00	0.00	0.003	O	|	|	|	|	0.00
109.417	0.00	0.00	0.003	O	|	|	|	|	0.00
109.500	0.00	0.00	0.003	O	|	|	|	|	0.00
109.583	0.00	0.00	0.003	O	|	|	|	|	0.00
109.667	0.00	0.00	0.003	O	|	|	|	|	0.00
109.750	0.00	0.00	0.003	O	|	|	|	|	0.00
109.833	0.00	0.00	0.003	O	|	|	|	|	0.00
109.917	0.00	0.00	0.003	O	|	|	|	|	0.00
110.000	0.00	0.00	0.003	O	|	|	|	|	0.00
110.083	0.00	0.00	0.003	O	|	|	|	|	0.00
110.167	0.00	0.00	0.003	O	|	|	|	|	0.00
110.250	0.00	0.00	0.003	O	|	|	|	|	0.00
110.333	0.00	0.00	0.003	O	|	|	|	|	0.00
110.417	0.00	0.00	0.003	O	|	|	|	|	0.00
110.500	0.00	0.00	0.003	O	|	|	|	|	0.00
110.583	0.00	0.00	0.003	O	|	|	|	|	0.00
110.667	0.00	0.00	0.003	O	|	|	|	|	0.00
110.750	0.00	0.00	0.003	O	|	|	|	|	0.00
110.833	0.00	0.00	0.003	O	|	|	|	|	0.00
110.917	0.00	0.00	0.003	O	|	|	|	|	0.00
111.000	0.00	0.00	0.003	O	|	|	|	|	0.00
111.083	0.00	0.00	0.003	O	|	|	|	|	0.00
111.167	0.00	0.00	0.003	O	|	|	|	|	0.00
111.250	0.00	0.00	0.003	O	|	|	|	|	0.00
111.333	0.00	0.00	0.003	O	|	|	|	|	0.00
111.417	0.00	0.00	0.003	O	|	|	|	|	0.00
111.500	0.00	0.00	0.003	O	|	|	|	|	0.00
111.583	0.00	0.00	0.003	O	|	|	|	|	0.00
111.667	0.00	0.00	0.003	O	|	|	|	|	0.00
111.750	0.00	0.00	0.003	O	|	|	|	|	0.00

111.833	0.00	0.00	0.003	O	|	|	|	|	0.00
111.917	0.00	0.00	0.003	O	|	|	|	|	0.00
112.000	0.00	0.00	0.003	O	|	|	|	|	0.00
112.083	0.00	0.00	0.003	O	|	|	|	|	0.00
112.167	0.00	0.00	0.003	O	|	|	|	|	0.00
112.250	0.00	0.00	0.003	O	|	|	|	|	0.00
112.333	0.00	0.00	0.003	O	|	|	|	|	0.00
112.417	0.00	0.00	0.003	O	|	|	|	|	0.00
112.500	0.00	0.00	0.003	O	|	|	|	|	0.00
112.583	0.00	0.00	0.002	O	|	|	|	|	0.00
112.667	0.00	0.00	0.002	O	|	|	|	|	0.00
112.750	0.00	0.00	0.002	O	|	|	|	|	0.00
112.833	0.00	0.00	0.002	O	|	|	|	|	0.00
112.917	0.00	0.00	0.002	O	|	|	|	|	0.00
113.000	0.00	0.00	0.002	O	|	|	|	|	0.00
113.083	0.00	0.00	0.002	O	|	|	|	|	0.00
113.167	0.00	0.00	0.002	O	|	|	|	|	0.00
113.250	0.00	0.00	0.002	O	|	|	|	|	0.00
113.333	0.00	0.00	0.002	O	|	|	|	|	0.00
113.417	0.00	0.00	0.002	O	|	|	|	|	0.00
113.500	0.00	0.00	0.002	O	|	|	|	|	0.00
113.583	0.00	0.00	0.002	O	|	|	|	|	0.00
113.667	0.00	0.00	0.002	O	|	|	|	|	0.00
113.750	0.00	0.00	0.002	O	|	|	|	|	0.00
113.833	0.00	0.00	0.002	O	|	|	|	|	0.00
113.917	0.00	0.00	0.002	O	|	|	|	|	0.00
114.000	0.00	0.00	0.002	O	|	|	|	|	0.00
114.083	0.00	0.00	0.002	O	|	|	|	|	0.00
114.167	0.00	0.00	0.002	O	|	|	|	|	0.00
114.250	0.00	0.00	0.002	O	|	|	|	|	0.00
114.333	0.00	0.00	0.002	O	|	|	|	|	0.00
114.417	0.00	0.00	0.002	O	|	|	|	|	0.00
114.500	0.00	0.00	0.002	O	|	|	|	|	0.00
114.583	0.00	0.00	0.002	O	|	|	|	|	0.00
114.667	0.00	0.00	0.002	O	|	|	|	|	0.00
114.750	0.00	0.00	0.002	O	|	|	|	|	0.00
114.833	0.00	0.00	0.002	O	|	|	|	|	0.00
114.917	0.00	0.00	0.002	O	|	|	|	|	0.00
115.000	0.00	0.00	0.002	O	|	|	|	|	0.00
115.083	0.00	0.00	0.002	O	|	|	|	|	0.00
115.167	0.00	0.00	0.002	O	|	|	|	|	0.00
115.250	0.00	0.00	0.002	O	|	|	|	|	0.00
115.333	0.00	0.00	0.002	O	|	|	|	|	0.00
115.417	0.00	0.00	0.002	O	|	|	|	|	0.00
115.500	0.00	0.00	0.002	O	|	|	|	|	0.00
115.583	0.00	0.00	0.002	O	|	|	|	|	0.00
115.667	0.00	0.00	0.002	O	|	|	|	|	0.00
115.750	0.00	0.00	0.002	O	|	|	|	|	0.00
115.833	0.00	0.00	0.002	O	|	|	|	|	0.00
115.917	0.00	0.00	0.002	O	|	|	|	|	0.00
116.000	0.00	0.00	0.002	O	|	|	|	|	0.00
116.083	0.00	0.00	0.002	O	|	|	|	|	0.00
116.167	0.00	0.00	0.002	O	|	|	|	|	0.00
116.250	0.00	0.00	0.002	O	|	|	|	|	0.00
116.333	0.00	0.00	0.002	O	|	|	|	|	0.00
116.417	0.00	0.00	0.002	O	|	|	|	|	0.00
116.500	0.00	0.00	0.002	O	|	|	|	|	0.00
116.583	0.00	0.00	0.002	O	|	|	|	|	0.00
116.667	0.00	0.00	0.002	O	|	|	|	|	0.00
116.750	0.00	0.00	0.002	O	|	|	|	|	0.00
116.833	0.00	0.00	0.002	O	|	|	|	|	0.00
116.917	0.00	0.00	0.002	O	|	|	|	|	0.00
117.000	0.00	0.00	0.002	O	|	|	|	|	0.00
117.083	0.00	0.00	0.002	O	|	|	|	|	0.00
117.167	0.00	0.00	0.002	O	|	|	|	|	0.00
117.250	0.00	0.00	0.002	O	|	|	|	|	0.00
117.333	0.00	0.00	0.002	O	|	|	|	|	0.00
117.417	0.00	0.00	0.002	O	|	|	|	|	0.00
117.500	0.00	0.00	0.002	O	|	|	|	|	0.00
117.583	0.00	0.00	0.002	O	|	|	|	|	0.00
117.667	0.00	0.00	0.002	O	|	|	|	|	0.00

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117.750    0.00    0.00      0.002  O       |       |       |       |      0.00
117.833    0.00    0.00      0.002  O       |       |       |       |      0.00
117.917    0.00    0.00      0.002  O       |       |       |       |      0.00
118.000    0.00    0.00      0.002  O       |       |       |       |      0.00
118.083    0.00    0.00      0.002  O       |       |       |       |      0.00
118.167    0.00    0.00      0.002  O       |       |       |       |      0.00
118.250    0.00    0.00      0.002  O       |       |       |       |      0.00
118.333    0.00    0.00      0.002  O       |       |       |       |      0.00
118.417    0.00    0.00      0.002  O       |       |       |       |      0.00
118.500    0.00    0.00      0.002  O       |       |       |       |      0.00

        Remaining water in basin =    0.00 (Ac.Ft)

        ****************************HYDROGRAPH DATA****************************
                      Number of intervals =  1422
                      Time interval =    5.0 (Min.)
                      Maximum/Peak flow rate =       18.762 (CFS)
                      Total volume =       9.258 (Ac.Ft)
               Status of hydrographs being held in storage
                           Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
               Peak (CFS)      0.000     0.000     0.000     0.000     0.000
               Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
        ************************************************************************

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- Basin 'C' – 5 Year 12 Hour Storm Routing Analysis

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                  FLOOD HYDROGRAPH ROUTING PROGRAM
          Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012
                      Study date: 03/20/17

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WESTRIDGE HYDROLOGY STUDY
PROPOSED ROUTING - BASIN 'C' - 5 YEAR 12 HOUR STORM
HUNSAKER & ASSOCIATES, MARCH 20, 2017
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------


Program License Serial Number 4094

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******************** HYDROGRAPH INFORMATION **********************

               From study/file name: PRC00512.rte
*****************************HYDROGRAPH DATA*****************************
               Number of intervals =   161
               Time interval =    5.0 (Min.)
               Maximum/Peak flow rate =      165.877 (CFS)
               Total volume =      10.828 (Ac.Ft)
       Status of hydrographs being held in storage
                   Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
       Peak (CFS)      0.000     0.000     0.000     0.000     0.000
       Vol (Ac.Ft)     0.000     0.000     0.000     0.000     0.000
************************************************************************



++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      300.000 to Point/Station      301.000
**** RETARDING BASIN ROUTING ****
________________________________________________________________________

User entry of depth-outflow-storage data
------------------------------------------------------------------------
Total number of inflow hydrograph intervals = 161
Hydrograph time unit =  5.000 (Min.)
Initial depth in storage basin =   0.00(Ft.)
------------------------------------------------------------------------
------------------------------------------------------------------------
Initial basin depth =   0.00 (Ft.)
Initial basin storage =      0.00 (Ac.Ft)
Initial basin outflow =   0.00 (CFS)
------------------------------------------------------------------------
------------------------------------------------------------------------
Depth vs. Storage and Depth vs. Discharge data:
 Basin Depth  Storage    Outflow   (S-O*dt/2)   (S+O*dt/2)
     (Ft.)    (Ac.Ft)    (CFS)     (Ac.Ft)    (Ac.Ft)
------------------------------------------------------------------------
   0.000      0.000      0.000      0.000        0.000
   0.500      0.834      0.692      0.832        0.836
   1.000      1.693      1.672      1.687        1.699
   1.500      2.577      3.059      2.566        2.588
   2.000      3.488      4.757      3.472        3.504
   3.000      5.388      7.930      5.361        5.415
   4.000      7.399     20.434      7.329        7.469
   5.000      9.523     35.089      9.402        9.644
   6.000     11.764     44.538     11.611       11.917
   7.000     14.126     52.170     13.946       14.306
   8.000     16.610     58.766     16.408       16.812
   8.900     18.942     83.236     18.655       19.229
   9.000     19.207     83.236     18.920       19.494
   9.500     20.556    448.796     19.011       22.101
  10.000     21.935   1159.965     17.941       25.929
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Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0	41.5	82.94	124.41	165.88	Depth (Ft.)
0.083	0.08	0.00	0.000	O	|	|	|	|	0.00
0.167	0.40	0.00	0.002	O	|	|	|	|	0.00
0.250	1.25	0.01	0.008	O	|	|	|	|	0.00
0.333	1.81	0.01	0.018	O	|	|	|	|	0.01
0.417	2.08	0.03	0.031	O	|	|	|	|	0.02
0.500	2.26	0.04	0.046	O	|	|	|	|	0.03
0.583	2.40	0.05	0.062	O	|	|	|	|	0.04
0.667	2.50	0.06	0.078	O	|	|	|	|	0.05
0.750	2.57	0.08	0.095	O	|	|	|	|	0.06
0.833	2.63	0.09	0.113	O	|	|	|	|	0.07
0.917	2.67	0.11	0.130	O	|	|	|	|	0.08
1.000	2.70	0.12	0.148	O	|	|	|	|	0.09
1.083	2.73	0.14	0.166	O	|	|	|	|	0.10
1.167	2.75	0.15	0.183	O	|	|	|	|	0.11
1.250	2.78	0.17	0.201	O	|	|	|	|	0.12
1.333	2.81	0.18	0.219	O	|	|	|	|	0.13
1.417	2.83	0.20	0.238	O	|	|	|	|	0.14
1.500	2.86	0.21	0.256	O	|	|	|	|	0.15
1.583	2.88	0.23	0.274	O	|	|	|	|	0.16
1.667	2.90	0.24	0.292	O	|	|	|	|	0.18
1.750	2.92	0.26	0.311	O	|	|	|	|	0.19
1.833	2.95	0.27	0.329	O	|	|	|	|	0.20
1.917	2.97	0.29	0.347	O	|	|	|	|	0.21
2.000	3.00	0.30	0.366	O	|	|	|	|	0.22
2.083	3.02	0.32	0.385	O	|	|	|	|	0.23
2.167	3.05	0.33	0.403	O	|	|	|	|	0.24
2.250	3.07	0.35	0.422	O	|	|	|	|	0.25
2.333	3.10	0.37	0.441	O	|	|	|	|	0.26
2.417	3.13	0.38	0.460	O	|	|	|	|	0.28
2.500	3.15	0.40	0.479	O	|	|	|	|	0.29
2.583	3.18	0.41	0.498	O	|	|	|	|	0.30
2.667	3.21	0.43	0.517	O	|	|	|	|	0.31
2.750	3.24	0.44	0.536	O	|	|	|	|	0.32
2.833	3.27	0.46	0.555	O	|	|	|	|	0.33
2.917	3.31	0.48	0.575	O	|	|	|	|	0.34
3.000	3.34	0.49	0.594	O	|	|	|	|	0.36
3.083	3.37	0.51	0.614	O	|	|	|	|	0.37
3.167	3.40	0.53	0.634	O	|	|	|	|	0.38
3.250	3.44	0.54	0.654	O	|	|	|	|	0.39
3.333	3.48	0.56	0.674	O	|	|	|	|	0.40
3.417	3.51	0.58	0.694	O	|	|	|	|	0.42
3.500	3.55	0.59	0.714	O	|	|	|	|	0.43
3.583	3.59	0.61	0.734	O	|	|	|	|	0.44
3.667	3.63	0.63	0.755	O	|	|	|	|	0.45
3.750	3.67	0.64	0.776	O	|	|	|	|	0.47
3.833	3.71	0.66	0.797	O	|	|	|	|	0.48
3.917	3.76	0.68	0.818	O	|	|	|	|	0.49
4.000	3.80	0.70	0.839	O	|	|	|	|	0.50
4.083	3.88	0.72	0.861	O	|	|	|	|	0.52
4.167	4.06	0.75	0.883	O	|	|	|	|	0.53
4.250	4.44	0.78	0.907	O	|	|	|	|	0.54
4.333	4.71	0.81	0.933	O	|	|	|	|	0.56
4.417	4.87	0.84	0.961	O	|	|	|	|	0.57
4.500	4.99	0.87	0.989	O	|	|	|	|	0.59
4.583	5.10	0.90	1.017	O	|	|	|	|	0.61
4.667	5.20	0.93	1.046	OI	|	|	|	|	0.62
4.750	5.29	0.97	1.076	OI	|	|	|	|	0.64
4.833	5.37	1.00	1.106	OI	|	|	|	|	0.66
4.917	5.45	1.04	1.136	OI	|	|	|	|	0.68
5.000	5.52	1.07	1.167	OI	|	|	|	|	0.69
5.083	5.60	1.11	1.197	OI	|	|	|	|	0.71
5.167	5.68	1.14	1.229	OI	|	|	|	|	0.73
5.250	5.77	1.18	1.260	OI	|	|	|	|	0.75

5.333	5.85	1.21	1.292	OI	|	|	|	|	0.77
5.417	5.95	1.25	1.324	OI	|	|	|	|	0.79
5.500	6.04	1.29	1.356	OI	|	|	|	|	0.80
5.583	6.14	1.33	1.389	OI	|	|	|	|	0.82
5.667	6.24	1.36	1.423	OI	|	|	|	|	0.84
5.750	6.35	1.40	1.457	OI	|	|	|	|	0.86
5.833	6.46	1.44	1.491	OI	|	|	|	|	0.88
5.917	6.58	1.48	1.526	OI	|	|	|	|	0.90
6.000	6.70	1.52	1.561	OI	|	|	|	|	0.92
6.083	6.84	1.56	1.597	OI	|	|	|	|	0.94
6.167	6.99	1.60	1.634	OI	|	|	|	|	0.97
6.250	7.19	1.65	1.671	OI	|	|	|	|	0.99
6.333	7.38	1.70	1.710	OI	|	|	|	|	1.01
6.417	7.57	1.76	1.750	OI	|	|	|	|	1.03
6.500	7.75	1.82	1.790	OI	|	|	|	|	1.05
6.583	7.96	1.89	1.831	OI	|	|	|	|	1.08
6.667	8.17	1.96	1.874	OI	|	|	|	|	1.10
6.750	8.40	2.02	1.917	OI	|	|	|	|	1.13
6.833	8.65	2.09	1.962	OI	|	|	|	|	1.15
6.917	8.97	2.17	2.008	OI	|	|	|	|	1.18
7.000	9.46	2.24	2.056	OI	|	|	|	|	1.21
7.083	10.32	2.32	2.108	OI	|	|	|	|	1.23
7.167	11.34	2.41	2.167	O I	|	|	|	|	1.27
7.250	12.64	2.52	2.232	O I	|	|	|	|	1.30
7.333	14.07	2.63	2.306	O I	|	|	|	|	1.35
7.417	15.63	2.77	2.390	O I	|	|	|	|	1.39
7.500	16.74	2.91	2.482	O I	|	|	|	|	1.45
7.583	16.96	3.06	2.577	O I	|	|	|	|	1.50
7.667	18.26	3.25	2.677	O I	|	|	|	|	1.55
7.750	21.59	3.46	2.791	O I	|	|	|	|	1.62
7.833	26.70	3.72	2.933	O I	|	|	|	|	1.70
7.917	36.00	4.07	3.122	O I	|	|	|	|	1.80
8.000	48.04	4.56	3.381	O	I |	|	|	|	1.94
8.083	73.55	5.22	3.766	O	| I	|	|	|	2.15
8.167	113.38	6.23	4.371	O	|	| I	|	|	2.46
8.250	165.88	7.76	5.284	O	|	|	|	I	2.95
8.333	124.76	13.06	6.213	O	|	|	I	|	3.41
8.417	77.86	16.76	6.808	O	|	I |	|	|	3.71
8.500	57.10	18.89	7.150	O	I |	|	|	|	3.88
8.583	45.07	20.24	7.367	O	I |	|	|	|	3.98
8.667	35.67	21.15	7.503	O I	|	|	|	|	4.05
8.750	27.57	21.64	7.573	OI	|	|	|	|	4.08
8.833	21.18	21.76	7.592	O	|	|	|	|	4.09
8.917	15.98	21.62	7.570	IO	|	|	|	|	4.08
9.000	13.29	21.29	7.523	I O	|	|	|	|	4.06
9.083	11.72	20.88	7.464	I O	|	|	|	|	4.03
9.167	10.47	20.43	7.398	IO	|	|	|	|	4.00
9.250	9.73	20.00	7.329	I O	|	|	|	|	3.97
9.333	8.71	19.55	7.256	I O	|	|	|	|	3.93
9.417	7.87	19.07	7.180	I O	|	|	|	|	3.89
9.500	7.22	18.59	7.102	I O	|	|	|	|	3.85
9.583	6.71	18.10	7.024	I O	|	|	|	|	3.81
9.667	6.41	17.62	6.946	I O	|	|	|	|	3.77
9.750	6.17	17.14	6.870	I O	|	|	|	|	3.74
9.833	5.95	16.68	6.795	I O	|	|	|	|	3.70
9.917	5.77	16.23	6.722	I O	|	|	|	|	3.66
10.000	5.60	15.78	6.651	I O	|	|	|	|	3.63
10.083	5.41	15.35	6.582	IO	|	|	|	|	3.59
10.167	5.15	14.93	6.514	I O	|	|	|	|	3.56
10.250	4.69	14.51	6.446	I O	|	|	|	|	3.53
10.333	4.35	14.09	6.379	I O	|	|	|	|	3.49
10.417	4.15	13.68	6.313	I O	|	|	|	|	3.46
10.500	3.98	13.28	6.248	I O	|	|	|	|	3.43
10.583	3.84	12.88	6.185	I O	|	|	|	|	3.40
10.667	3.72	12.50	6.123	I O	|	|	|	|	3.37
10.750	3.62	12.13	6.064	I O	|	|	|	|	3.34
10.833	3.52	11.77	6.006	I O	|	|	|	|	3.31
10.917	3.44	11.42	5.950	I O	|	|	|	|	3.28
11.000	3.37	11.09	5.896	I O	|	|	|	|	3.25
11.083	3.30	10.76	5.844	I O	|	|	|	|	3.23
11.167	3.24	10.45	5.793	I O	|	|	|	|	3.20

11.250	3.17	10.15	5.744	IO	|	|	|	|	3.18
11.333	3.12	9.85	5.697	IO	|	|	|	|	3.15
11.417	3.06	9.57	5.652	IO	|	|	|	|	3.13
11.500	3.01	9.29	5.607	IO	|	|	|	|	3.11
11.583	2.96	9.03	5.565	IO	|	|	|	|	3.09
11.667	2.91	8.77	5.524	IO	|	|	|	|	3.07
11.750	2.87	8.53	5.484	IO	|	|	|	|	3.05
11.833	2.82	8.29	5.446	IO	|	|	|	|	3.03
11.917	2.78	8.06	5.409	IO	|	|	|	|	3.01
12.000	2.74	7.90	5.373	IO	|	|	|	|	2.99
12.083	2.62	7.85	5.337	IO	|	|	|	|	2.97
12.167	2.27	7.78	5.300	IO	|	|	|	|	2.95
12.250	1.40	7.72	5.259	IO	|	|	|	|	2.93
12.333	0.82	7.64	5.214	IO	|	|	|	|	2.91
12.417	0.56	7.56	5.167	IO	|	|	|	|	2.88
12.500	0.38	7.48	5.118	IO	|	|	|	|	2.86
12.583	0.26	7.40	5.069	IO	|	|	|	|	2.83
12.667	0.17	7.32	5.020	IO	|	|	|	|	2.81
12.750	0.11	7.23	4.971	IO	|	|	|	|	2.78
12.833	0.07	7.15	4.922	IO	|	|	|	|	2.75
12.917	0.05	7.07	4.873	IO	|	|	|	|	2.73
13.000	0.03	6.99	4.825	IO	|	|	|	|	2.70
13.083	0.03	6.91	4.777	IO	|	|	|	|	2.68
13.167	0.02	6.83	4.730	IO	|	|	|	|	2.65
13.250	0.01	6.75	4.683	IO	|	|	|	|	2.63
13.333	0.00	6.68	4.637	IO	|	|	|	|	2.60
13.417	0.00	6.60	4.592	IO	|	|	|	|	2.58
13.500	0.00	6.52	4.546	IO	|	|	|	|	2.56
13.583	0.00	6.45	4.502	IO	|	|	|	|	2.53
13.667	0.00	6.38	4.458	IO	|	|	|	|	2.51
13.750	0.00	6.30	4.414	IO	|	|	|	|	2.49
13.833	0.00	6.23	4.371	IO	|	|	|	|	2.46
13.917	0.00	6.16	4.328	IO	|	|	|	|	2.44
14.000	0.00	6.09	4.286	IO	|	|	|	|	2.42
14.083	0.00	6.02	4.244	IO	|	|	|	|	2.40
14.167	0.00	5.95	4.203	IO	|	|	|	|	2.38
14.250	0.00	5.88	4.162	IO	|	|	|	|	2.35
14.333	0.00	5.82	4.122	IO	|	|	|	|	2.33
14.417	0.00	5.75	4.082	IO	|	|	|	|	2.31
14.500	0.00	5.68	4.043	IO	|	|	|	|	2.29
14.583	0.00	5.62	4.004	IO	|	|	|	|	2.27
14.667	0.00	5.55	3.965	IO	|	|	|	|	2.25
14.750	0.00	5.49	3.927	IO	|	|	|	|	2.23
14.833	0.00	5.43	3.890	IO	|	|	|	|	2.21
14.917	0.00	5.37	3.853	IO	|	|	|	|	2.19
15.000	0.00	5.30	3.816	IO	|	|	|	|	2.17
15.083	0.00	5.24	3.779	IO	|	|	|	|	2.15
15.167	0.00	5.18	3.744	IO	|	|	|	|	2.13
15.250	0.00	5.12	3.708	O	|	|	|	|	2.12
15.333	0.00	5.07	3.673	O	|	|	|	|	2.10
15.417	0.00	5.01	3.638	O	|	|	|	|	2.08
15.500	0.00	4.95	3.604	O	|	|	|	|	2.06
15.583	0.00	4.89	3.570	O	|	|	|	|	2.04
15.667	0.00	4.84	3.537	O	|	|	|	|	2.03
15.750	0.00	4.78	3.503	O	|	|	|	|	2.01
15.833	0.00	4.72	3.471	O	|	|	|	|	1.99
15.917	0.00	4.66	3.438	O	|	|	|	|	1.97
16.000	0.00	4.61	3.406	O	|	|	|	|	1.96
16.083	0.00	4.55	3.375	O	|	|	|	|	1.94
16.167	0.00	4.49	3.344	O	|	|	|	|	1.92
16.250	0.00	4.43	3.313	O	|	|	|	|	1.90
16.333	0.00	4.37	3.283	O	|	|	|	|	1.89
16.417	0.00	4.32	3.253	O	|	|	|	|	1.87
16.500	0.00	4.26	3.223	O	|	|	|	|	1.85
16.583	0.00	4.21	3.194	O	|	|	|	|	1.84
16.667	0.00	4.16	3.165	O	|	|	|	|	1.82
16.750	0.00	4.10	3.137	O	|	|	|	|	1.81
16.833	0.00	4.05	3.109	O	|	|	|	|	1.79
16.917	0.00	4.00	3.081	O	|	|	|	|	1.78
17.000	0.00	3.95	3.054	O	|	|	|	|	1.76
17.083	0.00	3.90	3.027	O	|	|	|	|	1.75

17.167	0.00	3.85	3.000	O					1.73
17.250	0.00	3.80	2.974	O					1.72
17.333	0.00	3.75	2.948	O					1.70
17.417	0.00	3.70	2.922	O					1.69
17.500	0.00	3.65	2.897	O					1.68
17.583	0.00	3.61	2.872	O					1.66
17.667	0.00	3.56	2.847	O					1.65
17.750	0.00	3.52	2.823	O					1.63
17.833	0.00	3.47	2.799	O					1.62
17.917	0.00	3.43	2.775	O					1.61
18.000	0.00	3.38	2.751	O					1.60
18.083	0.00	3.34	2.728	O					1.58
18.167	0.00	3.30	2.705	O					1.57
18.250	0.00	3.26	2.683	O					1.56
18.333	0.00	3.21	2.660	O					1.55
18.417	0.00	3.17	2.638	O					1.53
18.500	0.00	3.13	2.617	O					1.52
18.583	0.00	3.09	2.595	O					1.51
18.667	0.00	3.05	2.574	O					1.50
18.750	0.00	3.02	2.553	O					1.49
18.833	0.00	2.99	2.533	O					1.47
18.917	0.00	2.96	2.512	O					1.46
19.000	0.00	2.93	2.492	O					1.45
19.083	0.00	2.89	2.472	O					1.44
19.167	0.00	2.86	2.452	O					1.43
19.250	0.00	2.83	2.432	O					1.42
19.333	0.00	2.80	2.413	O					1.41
19.417	0.00	2.77	2.394	O					1.40
19.500	0.00	2.74	2.375	O					1.39
19.583	0.00	2.71	2.356	O					1.37
19.667	0.00	2.68	2.337	O					1.36
19.750	0.00	2.65	2.319	O					1.35
19.833	0.00	2.63	2.301	O					1.34
19.917	0.00	2.60	2.283	O					1.33
20.000	0.00	2.57	2.265	O					1.32
20.083	0.00	2.54	2.247	O					1.31
20.167	0.00	2.51	2.230	O					1.30
20.250	0.00	2.49	2.213	O					1.29
20.333	0.00	2.46	2.196	O					1.28
20.417	0.00	2.43	2.179	O					1.27
20.500	0.00	2.41	2.162	O					1.27
20.583	0.00	2.38	2.146	O					1.26
20.667	0.00	2.36	2.129	O					1.25
20.750	0.00	2.33	2.113	O					1.24
20.833	0.00	2.31	2.097	O					1.23
20.917	0.00	2.28	2.082	O					1.22
21.000	0.00	2.26	2.066	O					1.21
21.083	0.00	2.23	2.050	O					1.20
21.167	0.00	2.21	2.035	O					1.19
21.250	0.00	2.19	2.020	O					1.18
21.333	0.00	2.16	2.005	O					1.18
21.417	0.00	2.14	1.990	O					1.17
21.500	0.00	2.12	1.976	O					1.16
21.583	0.00	2.09	1.961	O					1.15
21.667	0.00	2.07	1.947	O					1.14
21.750	0.00	2.05	1.933	O					1.14
21.833	0.00	2.03	1.919	O					1.13
21.917	0.00	2.00	1.905	O					1.12
22.000	0.00	1.98	1.891	O					1.11
22.083	0.00	1.96	1.877	O					1.10
22.167	0.00	1.94	1.864	O					1.10
22.250	0.00	1.92	1.851	O					1.09
22.333	0.00	1.90	1.837	O					1.08
22.417	0.00	1.88	1.824	O					1.07
22.500	0.00	1.86	1.812	O					1.07
22.583	0.00	1.84	1.799	O					1.06
22.667	0.00	1.82	1.786	O					1.05
22.750	0.00	1.80	1.774	O					1.05
22.833	0.00	1.78	1.762	O					1.04
22.917	0.00	1.76	1.749	O					1.03
23.000	0.00	1.74	1.737	O					1.03

23.083	0.00	1.72	1.725	O	|	|	|	|	1.02
23.167	0.00	1.70	1.714	O	|	|	|	|	1.01
23.250	0.00	1.69	1.702	O	|	|	|	|	1.01
23.333	0.00	1.67	1.690	O	|	|	|	|	1.00
23.417	0.00	1.66	1.679	O	|	|	|	|	0.99
23.500	0.00	1.64	1.668	O	|	|	|	|	0.99
23.583	0.00	1.63	1.656	O	|	|	|	|	0.98
23.667	0.00	1.62	1.645	O	|	|	|	|	0.97
23.750	0.00	1.60	1.634	O	|	|	|	|	0.97
23.833	0.00	1.59	1.623	O	|	|	|	|	0.96
23.917	0.00	1.58	1.612	O	|	|	|	|	0.95
24.000	0.00	1.57	1.601	O	|	|	|	|	0.95
24.083	0.00	1.55	1.590	O	|	|	|	|	0.94
24.167	0.00	1.54	1.580	O	|	|	|	|	0.93
24.250	0.00	1.53	1.569	O	|	|	|	|	0.93
24.333	0.00	1.52	1.559	O	|	|	|	|	0.92
24.417	0.00	1.51	1.548	O	|	|	|	|	0.92
24.500	0.00	1.50	1.538	O	|	|	|	|	0.91
24.583	0.00	1.48	1.528	O	|	|	|	|	0.90
24.667	0.00	1.47	1.518	O	|	|	|	|	0.90
24.750	0.00	1.46	1.507	O	|	|	|	|	0.89
24.833	0.00	1.45	1.497	O	|	|	|	|	0.89
24.917	0.00	1.44	1.487	O	|	|	|	|	0.88
25.000	0.00	1.43	1.478	O	|	|	|	|	0.87
25.083	0.00	1.42	1.468	O	|	|	|	|	0.87
25.167	0.00	1.40	1.458	O	|	|	|	|	0.86
25.250	0.00	1.39	1.448	O	|	|	|	|	0.86
25.333	0.00	1.38	1.439	O	|	|	|	|	0.85
25.417	0.00	1.37	1.429	O	|	|	|	|	0.85
25.500	0.00	1.36	1.420	O	|	|	|	|	0.84
25.583	0.00	1.35	1.411	O	|	|	|	|	0.84
25.667	0.00	1.34	1.401	O	|	|	|	|	0.83
25.750	0.00	1.33	1.392	O	|	|	|	|	0.82
25.833	0.00	1.32	1.383	O	|	|	|	|	0.82
25.917	0.00	1.31	1.374	O	|	|	|	|	0.81
26.000	0.00	1.30	1.365	O	|	|	|	|	0.81
26.083	0.00	1.29	1.356	O	|	|	|	|	0.80
26.167	0.00	1.28	1.347	O	|	|	|	|	0.80
26.250	0.00	1.27	1.339	O	|	|	|	|	0.79
26.333	0.00	1.26	1.330	O	|	|	|	|	0.79
26.417	0.00	1.25	1.321	O	|	|	|	|	0.78
26.500	0.00	1.24	1.313	O	|	|	|	|	0.78
26.583	0.00	1.23	1.304	O	|	|	|	|	0.77
26.667	0.00	1.22	1.296	O	|	|	|	|	0.77
26.750	0.00	1.21	1.287	O	|	|	|	|	0.76
26.833	0.00	1.20	1.279	O	|	|	|	|	0.76
26.917	0.00	1.19	1.271	O	|	|	|	|	0.75
27.000	0.00	1.18	1.263	O	|	|	|	|	0.75
27.083	0.00	1.17	1.255	O	|	|	|	|	0.74
27.167	0.00	1.16	1.247	O	|	|	|	|	0.74
27.250	0.00	1.15	1.239	O	|	|	|	|	0.74
27.333	0.00	1.14	1.231	O	|	|	|	|	0.73
27.417	0.00	1.14	1.223	O	|	|	|	|	0.73
27.500	0.00	1.13	1.215	O	|	|	|	|	0.72
27.583	0.00	1.12	1.207	O	|	|	|	|	0.72
27.667	0.00	1.11	1.200	O	|	|	|	|	0.71
27.750	0.00	1.10	1.192	O	|	|	|	|	0.71
27.833	0.00	1.09	1.185	O	|	|	|	|	0.70
27.917	0.00	1.08	1.177	O	|	|	|	|	0.70
28.000	0.00	1.07	1.170	O	|	|	|	|	0.70
28.083	0.00	1.07	1.162	O	|	|	|	|	0.69
28.167	0.00	1.06	1.155	O	|	|	|	|	0.69
28.250	0.00	1.05	1.148	O	|	|	|	|	0.68
28.333	0.00	1.04	1.140	O	|	|	|	|	0.68
28.417	0.00	1.03	1.133	O	|	|	|	|	0.67
28.500	0.00	1.03	1.126	O	|	|	|	|	0.67
28.583	0.00	1.02	1.119	O	|	|	|	|	0.67
28.667	0.00	1.01	1.112	O	|	|	|	|	0.66
28.750	0.00	1.00	1.105	O	|	|	|	|	0.66
28.833	0.00	0.99	1.098	O	|	|	|	|	0.65
28.917	0.00	0.99	1.092	O	|	|	|	|	0.65

29.000	0.00	0.98	1.085	O					0.65
29.083	0.00	0.97	1.078	O					0.64
29.167	0.00	0.96	1.071	O					0.64
29.250	0.00	0.96	1.065	O					0.63
29.333	0.00	0.95	1.058	O					0.63
29.417	0.00	0.94	1.052	O					0.63
29.500	0.00	0.93	1.045	O					0.62
29.583	0.00	0.93	1.039	O					0.62
29.667	0.00	0.92	1.033	O					0.62
29.750	0.00	0.91	1.026	O					0.61
29.833	0.00	0.90	1.020	O					0.61
29.917	0.00	0.90	1.014	O					0.60
30.000	0.00	0.89	1.008	O					0.60
30.083	0.00	0.88	1.002	O					0.60
30.167	0.00	0.88	0.996	O					0.59
30.250	0.00	0.87	0.989	O					0.59
30.333	0.00	0.86	0.984	O					0.59
30.417	0.00	0.86	0.978	O					0.58
30.500	0.00	0.85	0.972	O					0.58
30.583	0.00	0.84	0.966	O					0.58
30.667	0.00	0.84	0.960	O					0.57
30.750	0.00	0.83	0.954	O					0.57
30.833	0.00	0.82	0.949	O					0.57
30.917	0.00	0.82	0.943	O					0.56
31.000	0.00	0.81	0.937	O					0.56
31.083	0.00	0.80	0.932	O					0.56
31.167	0.00	0.80	0.926	O					0.55
31.250	0.00	0.79	0.921	O					0.55
31.333	0.00	0.78	0.915	O					0.55
31.417	0.00	0.78	0.910	O					0.54
31.500	0.00	0.77	0.905	O					0.54
31.583	0.00	0.77	0.899	O					0.54
31.667	0.00	0.76	0.894	O					0.54
31.750	0.00	0.75	0.889	O					0.53
31.833	0.00	0.75	0.884	O					0.53
31.917	0.00	0.74	0.879	O					0.53
32.000	0.00	0.74	0.874	O					0.52
32.083	0.00	0.73	0.869	O					0.52
32.167	0.00	0.73	0.864	O					0.52
32.250	0.00	0.72	0.859	O					0.51
32.333	0.00	0.71	0.854	O					0.51
32.417	0.00	0.71	0.849	O					0.51
32.500	0.00	0.70	0.844	O					0.51
32.583	0.00	0.70	0.839	O					0.50
32.667	0.00	0.69	0.834	O					0.50
32.750	0.00	0.69	0.829	O					0.50
32.833	0.00	0.68	0.825	O					0.49
32.917	0.00	0.68	0.820	O					0.49
33.000	0.00	0.68	0.815	O					0.49
33.083	0.00	0.67	0.811	O					0.49
33.167	0.00	0.67	0.806	O					0.48
33.250	0.00	0.67	0.802	O					0.48
33.333	0.00	0.66	0.797	O					0.48
33.417	0.00	0.66	0.792	O					0.48
33.500	0.00	0.65	0.788	O					0.47
33.583	0.00	0.65	0.783	O					0.47
33.667	0.00	0.65	0.779	O					0.47
33.750	0.00	0.64	0.774	O					0.46
33.833	0.00	0.64	0.770	O					0.46
33.917	0.00	0.64	0.766	O					0.46
34.000	0.00	0.63	0.761	O					0.46
34.083	0.00	0.63	0.757	O					0.45
34.167	0.00	0.62	0.753	O					0.45
34.250	0.00	0.62	0.748	O					0.45
34.333	0.00	0.62	0.744	O					0.45
34.417	0.00	0.61	0.740	O					0.44
34.500	0.00	0.61	0.736	O					0.44
34.583	0.00	0.61	0.731	O					0.44
34.667	0.00	0.60	0.727	O					0.44
34.750	0.00	0.60	0.723	O					0.43
34.833	0.00	0.60	0.719	O					0.43

34.917	0.00	0.59	0.715	O	|	|	|	|	0.43
35.000	0.00	0.59	0.711	O	|	|	|	|	0.43
35.083	0.00	0.59	0.707	O	|	|	|	|	0.42
35.167	0.00	0.58	0.703	O	|	|	|	|	0.42
35.250	0.00	0.58	0.699	O	|	|	|	|	0.42
35.333	0.00	0.58	0.695	O	|	|	|	|	0.42
35.417	0.00	0.57	0.691	O	|	|	|	|	0.41
35.500	0.00	0.57	0.687	O	|	|	|	|	0.41
35.583	0.00	0.57	0.683	O	|	|	|	|	0.41
35.667	0.00	0.56	0.679	O	|	|	|	|	0.41
35.750	0.00	0.56	0.675	O	|	|	|	|	0.40
35.833	0.00	0.56	0.671	O	|	|	|	|	0.40
35.917	0.00	0.55	0.668	O	|	|	|	|	0.40
36.000	0.00	0.55	0.664	O	|	|	|	|	0.40
36.083	0.00	0.55	0.660	O	|	|	|	|	0.40
36.167	0.00	0.54	0.656	O	|	|	|	|	0.39
36.250	0.00	0.54	0.652	O	|	|	|	|	0.39
36.333	0.00	0.54	0.649	O	|	|	|	|	0.39
36.417	0.00	0.54	0.645	O	|	|	|	|	0.39
36.500	0.00	0.53	0.641	O	|	|	|	|	0.38
36.583	0.00	0.53	0.638	O	|	|	|	|	0.38
36.667	0.00	0.53	0.634	O	|	|	|	|	0.38
36.750	0.00	0.52	0.630	O	|	|	|	|	0.38
36.833	0.00	0.52	0.627	O	|	|	|	|	0.38
36.917	0.00	0.52	0.623	O	|	|	|	|	0.37
37.000	0.00	0.51	0.620	O	|	|	|	|	0.37
37.083	0.00	0.51	0.616	O	|	|	|	|	0.37
37.167	0.00	0.51	0.613	O	|	|	|	|	0.37
37.250	0.00	0.51	0.609	O	|	|	|	|	0.37
37.333	0.00	0.50	0.606	O	|	|	|	|	0.36
37.417	0.00	0.50	0.602	O	|	|	|	|	0.36
37.500	0.00	0.50	0.599	O	|	|	|	|	0.36
37.583	0.00	0.49	0.595	O	|	|	|	|	0.36
37.667	0.00	0.49	0.592	O	|	|	|	|	0.35
37.750	0.00	0.49	0.589	O	|	|	|	|	0.35
37.833	0.00	0.49	0.585	O	|	|	|	|	0.35
37.917	0.00	0.48	0.582	O	|	|	|	|	0.35
38.000	0.00	0.48	0.579	O	|	|	|	|	0.35
38.083	0.00	0.48	0.575	O	|	|	|	|	0.34
38.167	0.00	0.47	0.572	O	|	|	|	|	0.34
38.250	0.00	0.47	0.569	O	|	|	|	|	0.34
38.333	0.00	0.47	0.566	O	|	|	|	|	0.34
38.417	0.00	0.47	0.562	O	|	|	|	|	0.34
38.500	0.00	0.46	0.559	O	|	|	|	|	0.34
38.583	0.00	0.46	0.556	O	|	|	|	|	0.33
38.667	0.00	0.46	0.553	O	|	|	|	|	0.33
38.750	0.00	0.46	0.550	O	|	|	|	|	0.33
38.833	0.00	0.45	0.547	O	|	|	|	|	0.33
38.917	0.00	0.45	0.543	O	|	|	|	|	0.33
39.000	0.00	0.45	0.540	O	|	|	|	|	0.32
39.083	0.00	0.45	0.537	O	|	|	|	|	0.32
39.167	0.00	0.44	0.534	O	|	|	|	|	0.32
39.250	0.00	0.44	0.531	O	|	|	|	|	0.32
39.333	0.00	0.44	0.528	O	|	|	|	|	0.32
39.417	0.00	0.44	0.525	O	|	|	|	|	0.31
39.500	0.00	0.43	0.522	O	|	|	|	|	0.31
39.583	0.00	0.43	0.519	O	|	|	|	|	0.31
39.667	0.00	0.43	0.516	O	|	|	|	|	0.31
39.750	0.00	0.43	0.513	O	|	|	|	|	0.31
39.833	0.00	0.42	0.510	O	|	|	|	|	0.31
39.917	0.00	0.42	0.507	O	|	|	|	|	0.30
40.000	0.00	0.42	0.505	O	|	|	|	|	0.30
40.083	0.00	0.42	0.502	O	|	|	|	|	0.30
40.167	0.00	0.41	0.499	O	|	|	|	|	0.30
40.250	0.00	0.41	0.496	O	|	|	|	|	0.30
40.333	0.00	0.41	0.493	O	|	|	|	|	0.30
40.417	0.00	0.41	0.490	O	|	|	|	|	0.29
40.500	0.00	0.40	0.488	O	|	|	|	|	0.29
40.583	0.00	0.40	0.485	O	|	|	|	|	0.29
40.667	0.00	0.40	0.482	O	|	|	|	|	0.29
40.750	0.00	0.40	0.479	O	|	|	|	|	0.29

40.833	0.00	0.40	0.477	O	|	|	|	|	0.29
40.917	0.00	0.39	0.474	O	|	|	|	|	0.28
41.000	0.00	0.39	0.471	O	|	|	|	|	0.28
41.083	0.00	0.39	0.468	O	|	|	|	|	0.28
41.167	0.00	0.39	0.466	O	|	|	|	|	0.28
41.250	0.00	0.38	0.463	O	|	|	|	|	0.28
41.333	0.00	0.38	0.460	O	|	|	|	|	0.28
41.417	0.00	0.38	0.458	O	|	|	|	|	0.27
41.500	0.00	0.38	0.455	O	|	|	|	|	0.27
41.583	0.00	0.38	0.453	O	|	|	|	|	0.27
41.667	0.00	0.37	0.450	O	|	|	|	|	0.27
41.750	0.00	0.37	0.447	O	|	|	|	|	0.27
41.833	0.00	0.37	0.445	O	|	|	|	|	0.27
41.917	0.00	0.37	0.442	O	|	|	|	|	0.27
42.000	0.00	0.36	0.440	O	|	|	|	|	0.26
42.083	0.00	0.36	0.437	O	|	|	|	|	0.26
42.167	0.00	0.36	0.435	O	|	|	|	|	0.26
42.250	0.00	0.36	0.432	O	|	|	|	|	0.26
42.333	0.00	0.36	0.430	O	|	|	|	|	0.26
42.417	0.00	0.35	0.427	O	|	|	|	|	0.26
42.500	0.00	0.35	0.425	O	|	|	|	|	0.25
42.583	0.00	0.35	0.423	O	|	|	|	|	0.25
42.667	0.00	0.35	0.420	O	|	|	|	|	0.25
42.750	0.00	0.35	0.418	O	|	|	|	|	0.25
42.833	0.00	0.34	0.415	O	|	|	|	|	0.25
42.917	0.00	0.34	0.413	O	|	|	|	|	0.25
43.000	0.00	0.34	0.411	O	|	|	|	|	0.25
43.083	0.00	0.34	0.408	O	|	|	|	|	0.24
43.167	0.00	0.34	0.406	O	|	|	|	|	0.24
43.250	0.00	0.33	0.404	O	|	|	|	|	0.24
43.333	0.00	0.33	0.401	O	|	|	|	|	0.24
43.417	0.00	0.33	0.399	O	|	|	|	|	0.24
43.500	0.00	0.33	0.397	O	|	|	|	|	0.24
43.583	0.00	0.33	0.395	O	|	|	|	|	0.24
43.667	0.00	0.33	0.392	O	|	|	|	|	0.24
43.750	0.00	0.32	0.390	O	|	|	|	|	0.23
43.833	0.00	0.32	0.388	O	|	|	|	|	0.23
43.917	0.00	0.32	0.386	O	|	|	|	|	0.23
44.000	0.00	0.32	0.383	O	|	|	|	|	0.23
44.083	0.00	0.32	0.381	O	|	|	|	|	0.23
44.167	0.00	0.31	0.379	O	|	|	|	|	0.23
44.250	0.00	0.31	0.377	O	|	|	|	|	0.23
44.333	0.00	0.31	0.375	O	|	|	|	|	0.22
44.417	0.00	0.31	0.373	O	|	|	|	|	0.22
44.500	0.00	0.31	0.371	O	|	|	|	|	0.22
44.583	0.00	0.31	0.368	O	|	|	|	|	0.22
44.667	0.00	0.30	0.366	O	|	|	|	|	0.22
44.750	0.00	0.30	0.364	O	|	|	|	|	0.22
44.833	0.00	0.30	0.362	O	|	|	|	|	0.22
44.917	0.00	0.30	0.360	O	|	|	|	|	0.22
45.000	0.00	0.30	0.358	O	|	|	|	|	0.21
45.083	0.00	0.30	0.356	O	|	|	|	|	0.21
45.167	0.00	0.29	0.354	O	|	|	|	|	0.21
45.250	0.00	0.29	0.352	O	|	|	|	|	0.21
45.333	0.00	0.29	0.350	O	|	|	|	|	0.21
45.417	0.00	0.29	0.348	O	|	|	|	|	0.21
45.500	0.00	0.29	0.346	O	|	|	|	|	0.21
45.583	0.00	0.29	0.344	O	|	|	|	|	0.21
45.667	0.00	0.28	0.342	O	|	|	|	|	0.21
45.750	0.00	0.28	0.340	O	|	|	|	|	0.20
45.833	0.00	0.28	0.338	O	|	|	|	|	0.20
45.917	0.00	0.28	0.336	O	|	|	|	|	0.20
46.000	0.00	0.28	0.334	O	|	|	|	|	0.20
46.083	0.00	0.28	0.332	O	|	|	|	|	0.20
46.167	0.00	0.27	0.331	O	|	|	|	|	0.20
46.250	0.00	0.27	0.329	O	|	|	|	|	0.20
46.333	0.00	0.27	0.327	O	|	|	|	|	0.20
46.417	0.00	0.27	0.325	O	|	|	|	|	0.19
46.500	0.00	0.27	0.323	O	|	|	|	|	0.19
46.583	0.00	0.27	0.321	O	|	|	|	|	0.19
46.667	0.00	0.27	0.319	O	|	|	|	|	0.19

46.750	0.00	0.26	0.318	O	|	|	|	|	0.19
46.833	0.00	0.26	0.316	O	|	|	|	|	0.19
46.917	0.00	0.26	0.314	O	|	|	|	|	0.19
47.000	0.00	0.26	0.312	O	|	|	|	|	0.19
47.083	0.00	0.26	0.310	O	|	|	|	|	0.19
47.167	0.00	0.26	0.309	O	|	|	|	|	0.19
47.250	0.00	0.25	0.307	O	|	|	|	|	0.18
47.333	0.00	0.25	0.305	O	|	|	|	|	0.18
47.417	0.00	0.25	0.303	O	|	|	|	|	0.18
47.500	0.00	0.25	0.302	O	|	|	|	|	0.18
47.583	0.00	0.25	0.300	O	|	|	|	|	0.18
47.667	0.00	0.25	0.298	O	|	|	|	|	0.18
47.750	0.00	0.25	0.297	O	|	|	|	|	0.18
47.833	0.00	0.24	0.295	O	|	|	|	|	0.18
47.917	0.00	0.24	0.293	O	|	|	|	|	0.18
48.000	0.00	0.24	0.291	O	|	|	|	|	0.17
48.083	0.00	0.24	0.290	O	|	|	|	|	0.17
48.167	0.00	0.24	0.288	O	|	|	|	|	0.17
48.250	0.00	0.24	0.287	O	|	|	|	|	0.17
48.333	0.00	0.24	0.285	O	|	|	|	|	0.17
48.417	0.00	0.24	0.283	O	|	|	|	|	0.17
48.500	0.00	0.23	0.282	O	|	|	|	|	0.17
48.583	0.00	0.23	0.280	O	|	|	|	|	0.17
48.667	0.00	0.23	0.278	O	|	|	|	|	0.17
48.750	0.00	0.23	0.277	O	|	|	|	|	0.17
48.833	0.00	0.23	0.275	O	|	|	|	|	0.17
48.917	0.00	0.23	0.274	O	|	|	|	|	0.16
49.000	0.00	0.23	0.272	O	|	|	|	|	0.16
49.083	0.00	0.22	0.271	O	|	|	|	|	0.16
49.167	0.00	0.22	0.269	O	|	|	|	|	0.16
49.250	0.00	0.22	0.268	O	|	|	|	|	0.16
49.333	0.00	0.22	0.266	O	|	|	|	|	0.16
49.417	0.00	0.22	0.265	O	|	|	|	|	0.16
49.500	0.00	0.22	0.263	O	|	|	|	|	0.16
49.583	0.00	0.22	0.262	O	|	|	|	|	0.16
49.667	0.00	0.22	0.260	O	|	|	|	|	0.16
49.750	0.00	0.21	0.259	O	|	|	|	|	0.15
49.833	0.00	0.21	0.257	O	|	|	|	|	0.15
49.917	0.00	0.21	0.256	O	|	|	|	|	0.15
50.000	0.00	0.21	0.254	O	|	|	|	|	0.15
50.083	0.00	0.21	0.253	O	|	|	|	|	0.15
50.167	0.00	0.21	0.251	O	|	|	|	|	0.15
50.250	0.00	0.21	0.250	O	|	|	|	|	0.15
50.333	0.00	0.21	0.248	O	|	|	|	|	0.15
50.417	0.00	0.20	0.247	O	|	|	|	|	0.15
50.500	0.00	0.20	0.246	O	|	|	|	|	0.15
50.583	0.00	0.20	0.244	O	|	|	|	|	0.15
50.667	0.00	0.20	0.243	O	|	|	|	|	0.15
50.750	0.00	0.20	0.241	O	|	|	|	|	0.14
50.833	0.00	0.20	0.240	O	|	|	|	|	0.14
50.917	0.00	0.20	0.239	O	|	|	|	|	0.14
51.000	0.00	0.20	0.237	O	|	|	|	|	0.14
51.083	0.00	0.20	0.236	O	|	|	|	|	0.14
51.167	0.00	0.19	0.235	O	|	|	|	|	0.14
51.250	0.00	0.19	0.233	O	|	|	|	|	0.14
51.333	0.00	0.19	0.232	O	|	|	|	|	0.14
51.417	0.00	0.19	0.231	O	|	|	|	|	0.14
51.500	0.00	0.19	0.229	O	|	|	|	|	0.14
51.583	0.00	0.19	0.228	O	|	|	|	|	0.14
51.667	0.00	0.19	0.227	O	|	|	|	|	0.14
51.750	0.00	0.19	0.225	O	|	|	|	|	0.14
51.833	0.00	0.19	0.224	O	|	|	|	|	0.13
51.917	0.00	0.18	0.223	O	|	|	|	|	0.13
52.000	0.00	0.18	0.222	O	|	|	|	|	0.13
52.083	0.00	0.18	0.220	O	|	|	|	|	0.13
52.167	0.00	0.18	0.219	O	|	|	|	|	0.13
52.250	0.00	0.18	0.218	O	|	|	|	|	0.13
52.333	0.00	0.18	0.217	O	|	|	|	|	0.13
52.417	0.00	0.18	0.215	O	|	|	|	|	0.13
52.500	0.00	0.18	0.214	O	|	|	|	|	0.13
52.583	0.00	0.18	0.213	O	|	|	|	|	0.13

52.667	0.00	0.18	0.212	O	|	|	|	|	0.13
52.750	0.00	0.17	0.210	O	|	|	|	|	0.13
52.833	0.00	0.17	0.209	O	|	|	|	|	0.13
52.917	0.00	0.17	0.208	O	|	|	|	|	0.12
53.000	0.00	0.17	0.207	O	|	|	|	|	0.12
53.083	0.00	0.17	0.206	O	|	|	|	|	0.12
53.167	0.00	0.17	0.205	O	|	|	|	|	0.12
53.250	0.00	0.17	0.203	O	|	|	|	|	0.12
53.333	0.00	0.17	0.202	O	|	|	|	|	0.12
53.417	0.00	0.17	0.201	O	|	|	|	|	0.12
53.500	0.00	0.17	0.200	O	|	|	|	|	0.12
53.583	0.00	0.16	0.199	O	|	|	|	|	0.12
53.667	0.00	0.16	0.198	O	|	|	|	|	0.12
53.750	0.00	0.16	0.197	O	|	|	|	|	0.12
53.833	0.00	0.16	0.195	O	|	|	|	|	0.12
53.917	0.00	0.16	0.194	O	|	|	|	|	0.12
54.000	0.00	0.16	0.193	O	|	|	|	|	0.12
54.083	0.00	0.16	0.192	O	|	|	|	|	0.12
54.167	0.00	0.16	0.191	O	|	|	|	|	0.11
54.250	0.00	0.16	0.190	O	|	|	|	|	0.11
54.333	0.00	0.16	0.189	O	|	|	|	|	0.11
54.417	0.00	0.16	0.188	O	|	|	|	|	0.11
54.500	0.00	0.15	0.187	O	|	|	|	|	0.11
54.583	0.00	0.15	0.186	O	|	|	|	|	0.11
54.667	0.00	0.15	0.185	O	|	|	|	|	0.11
54.750	0.00	0.15	0.183	O	|	|	|	|	0.11
54.833	0.00	0.15	0.182	O	|	|	|	|	0.11
54.917	0.00	0.15	0.181	O	|	|	|	|	0.11
55.000	0.00	0.15	0.180	O	|	|	|	|	0.11
55.083	0.00	0.15	0.179	O	|	|	|	|	0.11
55.167	0.00	0.15	0.178	O	|	|	|	|	0.11
55.250	0.00	0.15	0.177	O	|	|	|	|	0.11
55.333	0.00	0.15	0.176	O	|	|	|	|	0.11
55.417	0.00	0.15	0.175	O	|	|	|	|	0.11
55.500	0.00	0.14	0.174	O	|	|	|	|	0.10
55.583	0.00	0.14	0.173	O	|	|	|	|	0.10
55.667	0.00	0.14	0.172	O	|	|	|	|	0.10
55.750	0.00	0.14	0.171	O	|	|	|	|	0.10
55.833	0.00	0.14	0.170	O	|	|	|	|	0.10
55.917	0.00	0.14	0.169	O	|	|	|	|	0.10
56.000	0.00	0.14	0.168	O	|	|	|	|	0.10
56.083	0.00	0.14	0.167	O	|	|	|	|	0.10
56.167	0.00	0.14	0.167	O	|	|	|	|	0.10
56.250	0.00	0.14	0.166	O	|	|	|	|	0.10
56.333	0.00	0.14	0.165	O	|	|	|	|	0.10
56.417	0.00	0.14	0.164	O	|	|	|	|	0.10
56.500	0.00	0.14	0.163	O	|	|	|	|	0.10
56.583	0.00	0.13	0.162	O	|	|	|	|	0.10
56.667	0.00	0.13	0.161	O	|	|	|	|	0.10
56.750	0.00	0.13	0.160	O	|	|	|	|	0.10
56.833	0.00	0.13	0.159	O	|	|	|	|	0.10
56.917	0.00	0.13	0.158	O	|	|	|	|	0.09
57.000	0.00	0.13	0.157	O	|	|	|	|	0.09
57.083	0.00	0.13	0.156	O	|	|	|	|	0.09
57.167	0.00	0.13	0.155	O	|	|	|	|	0.09
57.250	0.00	0.13	0.155	O	|	|	|	|	0.09
57.333	0.00	0.13	0.154	O	|	|	|	|	0.09
57.417	0.00	0.13	0.153	O	|	|	|	|	0.09
57.500	0.00	0.13	0.152	O	|	|	|	|	0.09
57.583	0.00	0.13	0.151	O	|	|	|	|	0.09
57.667	0.00	0.12	0.150	O	|	|	|	|	0.09
57.750	0.00	0.12	0.149	O	|	|	|	|	0.09
57.833	0.00	0.12	0.149	O	|	|	|	|	0.09
57.917	0.00	0.12	0.148	O	|	|	|	|	0.09
58.000	0.00	0.12	0.147	O	|	|	|	|	0.09
58.083	0.00	0.12	0.146	O	|	|	|	|	0.09
58.167	0.00	0.12	0.145	O	|	|	|	|	0.09
58.250	0.00	0.12	0.144	O	|	|	|	|	0.09
58.333	0.00	0.12	0.144	O	|	|	|	|	0.09
58.417	0.00	0.12	0.143	O	|	|	|	|	0.09
58.500	0.00	0.12	0.142	O	|	|	|	|	0.09

58.583	0.00	0.12	0.141	O	|	|	|	|	0.08
58.667	0.00	0.12	0.140	O	|	|	|	|	0.08
58.750	0.00	0.12	0.139	O	|	|	|	|	0.08
58.833	0.00	0.12	0.139	O	|	|	|	|	0.08
58.917	0.00	0.11	0.138	O	|	|	|	|	0.08
59.000	0.00	0.11	0.137	O	|	|	|	|	0.08
59.083	0.00	0.11	0.136	O	|	|	|	|	0.08
59.167	0.00	0.11	0.136	O	|	|	|	|	0.08
59.250	0.00	0.11	0.135	O	|	|	|	|	0.08
59.333	0.00	0.11	0.134	O	|	|	|	|	0.08
59.417	0.00	0.11	0.133	O	|	|	|	|	0.08
59.500	0.00	0.11	0.132	O	|	|	|	|	0.08
59.583	0.00	0.11	0.132	O	|	|	|	|	0.08
59.667	0.00	0.11	0.131	O	|	|	|	|	0.08
59.750	0.00	0.11	0.130	O	|	|	|	|	0.08
59.833	0.00	0.11	0.129	O	|	|	|	|	0.08
59.917	0.00	0.11	0.129	O	|	|	|	|	0.08
60.000	0.00	0.11	0.128	O	|	|	|	|	0.08
60.083	0.00	0.11	0.127	O	|	|	|	|	0.08
60.167	0.00	0.11	0.127	O	|	|	|	|	0.08
60.250	0.00	0.10	0.126	O	|	|	|	|	0.08
60.333	0.00	0.10	0.125	O	|	|	|	|	0.08
60.417	0.00	0.10	0.124	O	|	|	|	|	0.07
60.500	0.00	0.10	0.124	O	|	|	|	|	0.07
60.583	0.00	0.10	0.123	O	|	|	|	|	0.07
60.667	0.00	0.10	0.122	O	|	|	|	|	0.07
60.750	0.00	0.10	0.122	O	|	|	|	|	0.07
60.833	0.00	0.10	0.121	O	|	|	|	|	0.07
60.917	0.00	0.10	0.120	O	|	|	|	|	0.07
61.000	0.00	0.10	0.120	O	|	|	|	|	0.07
61.083	0.00	0.10	0.119	O	|	|	|	|	0.07
61.167	0.00	0.10	0.118	O	|	|	|	|	0.07
61.250	0.00	0.10	0.117	O	|	|	|	|	0.07
61.333	0.00	0.10	0.117	O	|	|	|	|	0.07
61.417	0.00	0.10	0.116	O	|	|	|	|	0.07
61.500	0.00	0.10	0.116	O	|	|	|	|	0.07
61.583	0.00	0.10	0.115	O	|	|	|	|	0.07
61.667	0.00	0.09	0.114	O	|	|	|	|	0.07
61.750	0.00	0.09	0.114	O	|	|	|	|	0.07
61.833	0.00	0.09	0.113	O	|	|	|	|	0.07
61.917	0.00	0.09	0.112	O	|	|	|	|	0.07
62.000	0.00	0.09	0.112	O	|	|	|	|	0.07
62.083	0.00	0.09	0.111	O	|	|	|	|	0.07
62.167	0.00	0.09	0.110	O	|	|	|	|	0.07
62.250	0.00	0.09	0.110	O	|	|	|	|	0.07
62.333	0.00	0.09	0.109	O	|	|	|	|	0.07
62.417	0.00	0.09	0.108	O	|	|	|	|	0.07
62.500	0.00	0.09	0.108	O	|	|	|	|	0.06
62.583	0.00	0.09	0.107	O	|	|	|	|	0.06
62.667	0.00	0.09	0.107	O	|	|	|	|	0.06
62.750	0.00	0.09	0.106	O	|	|	|	|	0.06
62.833	0.00	0.09	0.105	O	|	|	|	|	0.06
62.917	0.00	0.09	0.105	O	|	|	|	|	0.06
63.000	0.00	0.09	0.104	O	|	|	|	|	0.06
63.083	0.00	0.09	0.104	O	|	|	|	|	0.06
63.167	0.00	0.09	0.103	O	|	|	|	|	0.06
63.250	0.00	0.08	0.102	O	|	|	|	|	0.06
63.333	0.00	0.08	0.102	O	|	|	|	|	0.06
63.417	0.00	0.08	0.101	O	|	|	|	|	0.06
63.500	0.00	0.08	0.101	O	|	|	|	|	0.06
63.583	0.00	0.08	0.100	O	|	|	|	|	0.06
63.667	0.00	0.08	0.100	O	|	|	|	|	0.06
63.750	0.00	0.08	0.099	O	|	|	|	|	0.06
63.833	0.00	0.08	0.098	O	|	|	|	|	0.06
63.917	0.00	0.08	0.098	O	|	|	|	|	0.06
64.000	0.00	0.08	0.097	O	|	|	|	|	0.06
64.083	0.00	0.08	0.097	O	|	|	|	|	0.06
64.167	0.00	0.08	0.096	O	|	|	|	|	0.06
64.250	0.00	0.08	0.096	O	|	|	|	|	0.06
64.333	0.00	0.08	0.095	O	|	|	|	|	0.06
64.417	0.00	0.08	0.095	O	|	|	|	|	0.06

64.500	0.00	0.08	0.094	O	|	|	|	|	0.06
64.583	0.00	0.08	0.093	O	|	|	|	|	0.06
64.667	0.00	0.08	0.093	O	|	|	|	|	0.06
64.750	0.00	0.08	0.092	O	|	|	|	|	0.06
64.833	0.00	0.08	0.092	O	|	|	|	|	0.06
64.917	0.00	0.08	0.091	O	|	|	|	|	0.05
65.000	0.00	0.08	0.091	O	|	|	|	|	0.05
65.083	0.00	0.07	0.090	O	|	|	|	|	0.05
65.167	0.00	0.07	0.090	O	|	|	|	|	0.05
65.250	0.00	0.07	0.089	O	|	|	|	|	0.05
65.333	0.00	0.07	0.089	O	|	|	|	|	0.05
65.417	0.00	0.07	0.088	O	|	|	|	|	0.05
65.500	0.00	0.07	0.088	O	|	|	|	|	0.05
65.583	0.00	0.07	0.087	O	|	|	|	|	0.05
65.667	0.00	0.07	0.087	O	|	|	|	|	0.05
65.750	0.00	0.07	0.086	O	|	|	|	|	0.05
65.833	0.00	0.07	0.086	O	|	|	|	|	0.05
65.917	0.00	0.07	0.085	O	|	|	|	|	0.05
66.000	0.00	0.07	0.085	O	|	|	|	|	0.05
66.083	0.00	0.07	0.084	O	|	|	|	|	0.05
66.167	0.00	0.07	0.084	O	|	|	|	|	0.05
66.250	0.00	0.07	0.083	O	|	|	|	|	0.05
66.333	0.00	0.07	0.083	O	|	|	|	|	0.05
66.417	0.00	0.07	0.082	O	|	|	|	|	0.05
66.500	0.00	0.07	0.082	O	|	|	|	|	0.05
66.583	0.00	0.07	0.082	O	|	|	|	|	0.05
66.667	0.00	0.07	0.081	O	|	|	|	|	0.05
66.750	0.00	0.07	0.081	O	|	|	|	|	0.05
66.833	0.00	0.07	0.080	O	|	|	|	|	0.05
66.917	0.00	0.07	0.080	O	|	|	|	|	0.05
67.000	0.00	0.07	0.079	O	|	|	|	|	0.05
67.083	0.00	0.07	0.079	O	|	|	|	|	0.05
67.167	0.00	0.06	0.078	O	|	|	|	|	0.05
67.250	0.00	0.06	0.078	O	|	|	|	|	0.05
67.333	0.00	0.06	0.077	O	|	|	|	|	0.05
67.417	0.00	0.06	0.077	O	|	|	|	|	0.05
67.500	0.00	0.06	0.077	O	|	|	|	|	0.05
67.583	0.00	0.06	0.076	O	|	|	|	|	0.05
67.667	0.00	0.06	0.076	O	|	|	|	|	0.05
67.750	0.00	0.06	0.075	O	|	|	|	|	0.05
67.833	0.00	0.06	0.075	O	|	|	|	|	0.04
67.917	0.00	0.06	0.074	O	|	|	|	|	0.04
68.000	0.00	0.06	0.074	O	|	|	|	|	0.04
68.083	0.00	0.06	0.074	O	|	|	|	|	0.04
68.167	0.00	0.06	0.073	O	|	|	|	|	0.04
68.250	0.00	0.06	0.073	O	|	|	|	|	0.04
68.333	0.00	0.06	0.072	O	|	|	|	|	0.04
68.417	0.00	0.06	0.072	O	|	|	|	|	0.04
68.500	0.00	0.06	0.071	O	|	|	|	|	0.04
68.583	0.00	0.06	0.071	O	|	|	|	|	0.04
68.667	0.00	0.06	0.071	O	|	|	|	|	0.04
68.750	0.00	0.06	0.070	O	|	|	|	|	0.04
68.833	0.00	0.06	0.070	O	|	|	|	|	0.04
68.917	0.00	0.06	0.069	O	|	|	|	|	0.04
69.000	0.00	0.06	0.069	O	|	|	|	|	0.04
69.083	0.00	0.06	0.069	O	|	|	|	|	0.04
69.167	0.00	0.06	0.068	O	|	|	|	|	0.04
69.250	0.00	0.06	0.068	O	|	|	|	|	0.04
69.333	0.00	0.06	0.068	O	|	|	|	|	0.04
69.417	0.00	0.06	0.067	O	|	|	|	|	0.04
69.500	0.00	0.06	0.067	O	|	|	|	|	0.04
69.583	0.00	0.06	0.066	O	|	|	|	|	0.04
69.667	0.00	0.05	0.066	O	|	|	|	|	0.04
69.750	0.00	0.05	0.066	O	|	|	|	|	0.04
69.833	0.00	0.05	0.065	O	|	|	|	|	0.04
69.917	0.00	0.05	0.065	O	|	|	|	|	0.04
70.000	0.00	0.05	0.064	O	|	|	|	|	0.04
70.083	0.00	0.05	0.064	O	|	|	|	|	0.04
70.167	0.00	0.05	0.064	O	|	|	|	|	0.04
70.250	0.00	0.05	0.063	O	|	|	|	|	0.04
70.333	0.00	0.05	0.063	O	|	|	|	|	0.04

70.417	0.00	0.05	0.063	O	|	|	|	|	0.04
70.500	0.00	0.05	0.062	O	|	|	|	|	0.04
70.583	0.00	0.05	0.062	O	|	|	|	|	0.04
70.667	0.00	0.05	0.062	O	|	|	|	|	0.04
70.750	0.00	0.05	0.061	O	|	|	|	|	0.04
70.833	0.00	0.05	0.061	O	|	|	|	|	0.04
70.917	0.00	0.05	0.061	O	|	|	|	|	0.04
71.000	0.00	0.05	0.060	O	|	|	|	|	0.04
71.083	0.00	0.05	0.060	O	|	|	|	|	0.04
71.167	0.00	0.05	0.060	O	|	|	|	|	0.04
71.250	0.00	0.05	0.059	O	|	|	|	|	0.04
71.333	0.00	0.05	0.059	O	|	|	|	|	0.04
71.417	0.00	0.05	0.059	O	|	|	|	|	0.04
71.500	0.00	0.05	0.058	O	|	|	|	|	0.03
71.583	0.00	0.05	0.058	O	|	|	|	|	0.03
71.667	0.00	0.05	0.058	O	|	|	|	|	0.03
71.750	0.00	0.05	0.057	O	|	|	|	|	0.03
71.833	0.00	0.05	0.057	O	|	|	|	|	0.03
71.917	0.00	0.05	0.057	O	|	|	|	|	0.03
72.000	0.00	0.05	0.056	O	|	|	|	|	0.03
72.083	0.00	0.05	0.056	O	|	|	|	|	0.03
72.167	0.00	0.05	0.056	O	|	|	|	|	0.03
72.250	0.00	0.05	0.055	O	|	|	|	|	0.03
72.333	0.00	0.05	0.055	O	|	|	|	|	0.03
72.417	0.00	0.05	0.055	O	|	|	|	|	0.03
72.500	0.00	0.05	0.054	O	|	|	|	|	0.03
72.583	0.00	0.04	0.054	O	|	|	|	|	0.03
72.667	0.00	0.04	0.054	O	|	|	|	|	0.03
72.750	0.00	0.04	0.053	O	|	|	|	|	0.03
72.833	0.00	0.04	0.053	O	|	|	|	|	0.03
72.917	0.00	0.04	0.053	O	|	|	|	|	0.03
73.000	0.00	0.04	0.052	O	|	|	|	|	0.03
73.083	0.00	0.04	0.052	O	|	|	|	|	0.03
73.167	0.00	0.04	0.052	O	|	|	|	|	0.03
73.250	0.00	0.04	0.052	O	|	|	|	|	0.03
73.333	0.00	0.04	0.051	O	|	|	|	|	0.03
73.417	0.00	0.04	0.051	O	|	|	|	|	0.03
73.500	0.00	0.04	0.051	O	|	|	|	|	0.03
73.583	0.00	0.04	0.050	O	|	|	|	|	0.03
73.667	0.00	0.04	0.050	O	|	|	|	|	0.03
73.750	0.00	0.04	0.050	O	|	|	|	|	0.03
73.833	0.00	0.04	0.050	O	|	|	|	|	0.03
73.917	0.00	0.04	0.049	O	|	|	|	|	0.03
74.000	0.00	0.04	0.049	O	|	|	|	|	0.03
74.083	0.00	0.04	0.049	O	|	|	|	|	0.03
74.167	0.00	0.04	0.048	O	|	|	|	|	0.03
74.250	0.00	0.04	0.048	O	|	|	|	|	0.03
74.333	0.00	0.04	0.048	O	|	|	|	|	0.03
74.417	0.00	0.04	0.048	O	|	|	|	|	0.03
74.500	0.00	0.04	0.047	O	|	|	|	|	0.03
74.583	0.00	0.04	0.047	O	|	|	|	|	0.03
74.667	0.00	0.04	0.047	O	|	|	|	|	0.03
74.750	0.00	0.04	0.047	O	|	|	|	|	0.03
74.833	0.00	0.04	0.046	O	|	|	|	|	0.03
74.917	0.00	0.04	0.046	O	|	|	|	|	0.03
75.000	0.00	0.04	0.046	O	|	|	|	|	0.03
75.083	0.00	0.04	0.046	O	|	|	|	|	0.03
75.167	0.00	0.04	0.045	O	|	|	|	|	0.03
75.250	0.00	0.04	0.045	O	|	|	|	|	0.03
75.333	0.00	0.04	0.045	O	|	|	|	|	0.03
75.417	0.00	0.04	0.044	O	|	|	|	|	0.03
75.500	0.00	0.04	0.044	O	|	|	|	|	0.03
75.583	0.00	0.04	0.044	O	|	|	|	|	0.03
75.667	0.00	0.04	0.044	O	|	|	|	|	0.03
75.750	0.00	0.04	0.043	O	|	|	|	|	0.03
75.833	0.00	0.04	0.043	O	|	|	|	|	0.03
75.917	0.00	0.04	0.043	O	|	|	|	|	0.03
76.000	0.00	0.04	0.043	O	|	|	|	|	0.03
76.083	0.00	0.04	0.042	O	|	|	|	|	0.03
76.167	0.00	0.04	0.042	O	|	|	|	|	0.03
76.250	0.00	0.03	0.042	O	|	|	|	|	0.03

76.333	0.00	0.03	0.042	O	|	|	|	|	0.03
76.417	0.00	0.03	0.042	O	|	|	|	|	0.02
76.500	0.00	0.03	0.041	O	|	|	|	|	0.02
76.583	0.00	0.03	0.041	O	|	|	|	|	0.02
76.667	0.00	0.03	0.041	O	|	|	|	|	0.02
76.750	0.00	0.03	0.041	O	|	|	|	|	0.02
76.833	0.00	0.03	0.040	O	|	|	|	|	0.02
76.917	0.00	0.03	0.040	O	|	|	|	|	0.02
77.000	0.00	0.03	0.040	O	|	|	|	|	0.02
77.083	0.00	0.03	0.040	O	|	|	|	|	0.02
77.167	0.00	0.03	0.039	O	|	|	|	|	0.02
77.250	0.00	0.03	0.039	O	|	|	|	|	0.02
77.333	0.00	0.03	0.039	O	|	|	|	|	0.02
77.417	0.00	0.03	0.039	O	|	|	|	|	0.02
77.500	0.00	0.03	0.039	O	|	|	|	|	0.02
77.583	0.00	0.03	0.038	O	|	|	|	|	0.02
77.667	0.00	0.03	0.038	O	|	|	|	|	0.02
77.750	0.00	0.03	0.038	O	|	|	|	|	0.02
77.833	0.00	0.03	0.038	O	|	|	|	|	0.02
77.917	0.00	0.03	0.037	O	|	|	|	|	0.02
78.000	0.00	0.03	0.037	O	|	|	|	|	0.02
78.083	0.00	0.03	0.037	O	|	|	|	|	0.02
78.167	0.00	0.03	0.037	O	|	|	|	|	0.02
78.250	0.00	0.03	0.037	O	|	|	|	|	0.02
78.333	0.00	0.03	0.036	O	|	|	|	|	0.02
78.417	0.00	0.03	0.036	O	|	|	|	|	0.02
78.500	0.00	0.03	0.036	O	|	|	|	|	0.02
78.583	0.00	0.03	0.036	O	|	|	|	|	0.02
78.667	0.00	0.03	0.036	O	|	|	|	|	0.02
78.750	0.00	0.03	0.035	O	|	|	|	|	0.02
78.833	0.00	0.03	0.035	O	|	|	|	|	0.02
78.917	0.00	0.03	0.035	O	|	|	|	|	0.02
79.000	0.00	0.03	0.035	O	|	|	|	|	0.02
79.083	0.00	0.03	0.035	O	|	|	|	|	0.02
79.167	0.00	0.03	0.034	O	|	|	|	|	0.02
79.250	0.00	0.03	0.034	O	|	|	|	|	0.02
79.333	0.00	0.03	0.034	O	|	|	|	|	0.02
79.417	0.00	0.03	0.034	O	|	|	|	|	0.02
79.500	0.00	0.03	0.034	O	|	|	|	|	0.02
79.583	0.00	0.03	0.033	O	|	|	|	|	0.02
79.667	0.00	0.03	0.033	O	|	|	|	|	0.02
79.750	0.00	0.03	0.033	O	|	|	|	|	0.02
79.833	0.00	0.03	0.033	O	|	|	|	|	0.02
79.917	0.00	0.03	0.033	O	|	|	|	|	0.02
80.000	0.00	0.03	0.032	O	|	|	|	|	0.02
80.083	0.00	0.03	0.032	O	|	|	|	|	0.02
80.167	0.00	0.03	0.032	O	|	|	|	|	0.02
80.250	0.00	0.03	0.032	O	|	|	|	|	0.02
80.333	0.00	0.03	0.032	O	|	|	|	|	0.02
80.417	0.00	0.03	0.032	O	|	|	|	|	0.02
80.500	0.00	0.03	0.031	O	|	|	|	|	0.02
80.583	0.00	0.03	0.031	O	|	|	|	|	0.02
80.667	0.00	0.03	0.031	O	|	|	|	|	0.02
80.750	0.00	0.03	0.031	O	|	|	|	|	0.02
80.833	0.00	0.03	0.031	O	|	|	|	|	0.02
80.917	0.00	0.03	0.031	O	|	|	|	|	0.02
81.000	0.00	0.03	0.030	O	|	|	|	|	0.02
81.083	0.00	0.03	0.030	O	|	|	|	|	0.02
81.167	0.00	0.02	0.030	O	|	|	|	|	0.02
81.250	0.00	0.02	0.030	O	|	|	|	|	0.02
81.333	0.00	0.02	0.030	O	|	|	|	|	0.02
81.417	0.00	0.02	0.029	O	|	|	|	|	0.02
81.500	0.00	0.02	0.029	O	|	|	|	|	0.02
81.583	0.00	0.02	0.029	O	|	|	|	|	0.02
81.667	0.00	0.02	0.029	O	|	|	|	|	0.02
81.750	0.00	0.02	0.029	O	|	|	|	|	0.02
81.833	0.00	0.02	0.029	O	|	|	|	|	0.02
81.917	0.00	0.02	0.028	O	|	|	|	|	0.02
82.000	0.00	0.02	0.028	O	|	|	|	|	0.02
82.083	0.00	0.02	0.028	O	|	|	|	|	0.02
82.167	0.00	0.02	0.028	O	|	|	|	|	0.02

82.250	0.00	0.02	0.028	O	|	|	|	|	0.02
82.333	0.00	0.02	0.028	O	|	|	|	|	0.02
82.417	0.00	0.02	0.028	O	|	|	|	|	0.02
82.500	0.00	0.02	0.027	O	|	|	|	|	0.02
82.583	0.00	0.02	0.027	O	|	|	|	|	0.02
82.667	0.00	0.02	0.027	O	|	|	|	|	0.02
82.750	0.00	0.02	0.027	O	|	|	|	|	0.02
82.833	0.00	0.02	0.027	O	|	|	|	|	0.02
82.917	0.00	0.02	0.027	O	|	|	|	|	0.02
83.000	0.00	0.02	0.026	O	|	|	|	|	0.02
83.083	0.00	0.02	0.026	O	|	|	|	|	0.02
83.167	0.00	0.02	0.026	O	|	|	|	|	0.02
83.250	0.00	0.02	0.026	O	|	|	|	|	0.02
83.333	0.00	0.02	0.026	O	|	|	|	|	0.02
83.417	0.00	0.02	0.026	O	|	|	|	|	0.02
83.500	0.00	0.02	0.026	O	|	|	|	|	0.02
83.583	0.00	0.02	0.025	O	|	|	|	|	0.02
83.667	0.00	0.02	0.025	O	|	|	|	|	0.02
83.750	0.00	0.02	0.025	O	|	|	|	|	0.02
83.833	0.00	0.02	0.025	O	|	|	|	|	0.01
83.917	0.00	0.02	0.025	O	|	|	|	|	0.01
84.000	0.00	0.02	0.025	O	|	|	|	|	0.01
84.083	0.00	0.02	0.025	O	|	|	|	|	0.01
84.167	0.00	0.02	0.024	O	|	|	|	|	0.01
84.250	0.00	0.02	0.024	O	|	|	|	|	0.01
84.333	0.00	0.02	0.024	O	|	|	|	|	0.01
84.417	0.00	0.02	0.024	O	|	|	|	|	0.01
84.500	0.00	0.02	0.024	O	|	|	|	|	0.01
84.583	0.00	0.02	0.024	O	|	|	|	|	0.01
84.667	0.00	0.02	0.024	O	|	|	|	|	0.01
84.750	0.00	0.02	0.023	O	|	|	|	|	0.01
84.833	0.00	0.02	0.023	O	|	|	|	|	0.01
84.917	0.00	0.02	0.023	O	|	|	|	|	0.01
85.000	0.00	0.02	0.023	O	|	|	|	|	0.01
85.083	0.00	0.02	0.023	O	|	|	|	|	0.01
85.167	0.00	0.02	0.023	O	|	|	|	|	0.01
85.250	0.00	0.02	0.023	O	|	|	|	|	0.01
85.333	0.00	0.02	0.023	O	|	|	|	|	0.01
85.417	0.00	0.02	0.022	O	|	|	|	|	0.01
85.500	0.00	0.02	0.022	O	|	|	|	|	0.01
85.583	0.00	0.02	0.022	O	|	|	|	|	0.01
85.667	0.00	0.02	0.022	O	|	|	|	|	0.01
85.750	0.00	0.02	0.022	O	|	|	|	|	0.01
85.833	0.00	0.02	0.022	O	|	|	|	|	0.01
85.917	0.00	0.02	0.022	O	|	|	|	|	0.01
86.000	0.00	0.02	0.022	O	|	|	|	|	0.01
86.083	0.00	0.02	0.021	O	|	|	|	|	0.01
86.167	0.00	0.02	0.021	O	|	|	|	|	0.01
86.250	0.00	0.02	0.021	O	|	|	|	|	0.01
86.333	0.00	0.02	0.021	O	|	|	|	|	0.01
86.417	0.00	0.02	0.021	O	|	|	|	|	0.01
86.500	0.00	0.02	0.021	O	|	|	|	|	0.01
86.583	0.00	0.02	0.021	O	|	|	|	|	0.01
86.667	0.00	0.02	0.021	O	|	|	|	|	0.01
86.750	0.00	0.02	0.020	O	|	|	|	|	0.01
86.833	0.00	0.02	0.020	O	|	|	|	|	0.01
86.917	0.00	0.02	0.020	O	|	|	|	|	0.01
87.000	0.00	0.02	0.020	O	|	|	|	|	0.01
87.083	0.00	0.02	0.020	O	|	|	|	|	0.01
87.167	0.00	0.02	0.020	O	|	|	|	|	0.01
87.250	0.00	0.02	0.020	O	|	|	|	|	0.01
87.333	0.00	0.02	0.020	O	|	|	|	|	0.01
87.417	0.00	0.02	0.020	O	|	|	|	|	0.01
87.500	0.00	0.02	0.019	O	|	|	|	|	0.01
87.583	0.00	0.02	0.019	O	|	|	|	|	0.01
87.667	0.00	0.02	0.019	O	|	|	|	|	0.01
87.750	0.00	0.02	0.019	O	|	|	|	|	0.01
87.833	0.00	0.02	0.019	O	|	|	|	|	0.01
87.917	0.00	0.02	0.019	O	|	|	|	|	0.01
88.000	0.00	0.02	0.019	O	|	|	|	|	0.01
88.083	0.00	0.02	0.019	O	|	|	|	|	0.01

88.167	0.00	0.02	0.019	O	|	|	|	|	0.01
88.250	0.00	0.02	0.018	O	|	|	|	|	0.01
88.333	0.00	0.02	0.018	O	|	|	|	|	0.01
88.417	0.00	0.02	0.018	O	|	|	|	|	0.01
88.500	0.00	0.02	0.018	O	|	|	|	|	0.01
88.583	0.00	0.01	0.018	O	|	|	|	|	0.01
88.667	0.00	0.01	0.018	O	|	|	|	|	0.01
88.750	0.00	0.01	0.018	O	|	|	|	|	0.01
88.833	0.00	0.01	0.018	O	|	|	|	|	0.01
88.917	0.00	0.01	0.018	O	|	|	|	|	0.01
89.000	0.00	0.01	0.018	O	|	|	|	|	0.01
89.083	0.00	0.01	0.017	O	|	|	|	|	0.01
89.167	0.00	0.01	0.017	O	|	|	|	|	0.01
89.250	0.00	0.01	0.017	O	|	|	|	|	0.01
89.333	0.00	0.01	0.017	O	|	|	|	|	0.01
89.417	0.00	0.01	0.017	O	|	|	|	|	0.01
89.500	0.00	0.01	0.017	O	|	|	|	|	0.01
89.583	0.00	0.01	0.017	O	|	|	|	|	0.01
89.667	0.00	0.01	0.017	O	|	|	|	|	0.01
89.750	0.00	0.01	0.017	O	|	|	|	|	0.01
89.833	0.00	0.01	0.017	O	|	|	|	|	0.01
89.917	0.00	0.01	0.016	O	|	|	|	|	0.01
90.000	0.00	0.01	0.016	O	|	|	|	|	0.01
90.083	0.00	0.01	0.016	O	|	|	|	|	0.01
90.167	0.00	0.01	0.016	O	|	|	|	|	0.01
90.250	0.00	0.01	0.016	O	|	|	|	|	0.01
90.333	0.00	0.01	0.016	O	|	|	|	|	0.01
90.417	0.00	0.01	0.016	O	|	|	|	|	0.01
90.500	0.00	0.01	0.016	O	|	|	|	|	0.01
90.583	0.00	0.01	0.016	O	|	|	|	|	0.01
90.667	0.00	0.01	0.016	O	|	|	|	|	0.01
90.750	0.00	0.01	0.016	O	|	|	|	|	0.01
90.833	0.00	0.01	0.015	O	|	|	|	|	0.01
90.917	0.00	0.01	0.015	O	|	|	|	|	0.01
91.000	0.00	0.01	0.015	O	|	|	|	|	0.01
91.083	0.00	0.01	0.015	O	|	|	|	|	0.01
91.167	0.00	0.01	0.015	O	|	|	|	|	0.01
91.250	0.00	0.01	0.015	O	|	|	|	|	0.01
91.333	0.00	0.01	0.015	O	|	|	|	|	0.01
91.417	0.00	0.01	0.015	O	|	|	|	|	0.01
91.500	0.00	0.01	0.015	O	|	|	|	|	0.01
91.583	0.00	0.01	0.015	O	|	|	|	|	0.01
91.667	0.00	0.01	0.015	O	|	|	|	|	0.01
91.750	0.00	0.01	0.015	O	|	|	|	|	0.01
91.833	0.00	0.01	0.014	O	|	|	|	|	0.01
91.917	0.00	0.01	0.014	O	|	|	|	|	0.01
92.000	0.00	0.01	0.014	O	|	|	|	|	0.01
92.083	0.00	0.01	0.014	O	|	|	|	|	0.01
92.167	0.00	0.01	0.014	O	|	|	|	|	0.01
92.250	0.00	0.01	0.014	O	|	|	|	|	0.01
92.333	0.00	0.01	0.014	O	|	|	|	|	0.01
92.417	0.00	0.01	0.014	O	|	|	|	|	0.01
92.500	0.00	0.01	0.014	O	|	|	|	|	0.01
92.583	0.00	0.01	0.014	O	|	|	|	|	0.01
92.667	0.00	0.01	0.014	O	|	|	|	|	0.01
92.750	0.00	0.01	0.014	O	|	|	|	|	0.01
92.833	0.00	0.01	0.013	O	|	|	|	|	0.01
92.917	0.00	0.01	0.013	O	|	|	|	|	0.01
93.000	0.00	0.01	0.013	O	|	|	|	|	0.01
93.083	0.00	0.01	0.013	O	|	|	|	|	0.01
93.167	0.00	0.01	0.013	O	|	|	|	|	0.01
93.250	0.00	0.01	0.013	O	|	|	|	|	0.01
93.333	0.00	0.01	0.013	O	|	|	|	|	0.01
93.417	0.00	0.01	0.013	O	|	|	|	|	0.01
93.500	0.00	0.01	0.013	O	|	|	|	|	0.01
93.583	0.00	0.01	0.013	O	|	|	|	|	0.01
93.667	0.00	0.01	0.013	O	|	|	|	|	0.01
93.750	0.00	0.01	0.013	O	|	|	|	|	0.01
93.833	0.00	0.01	0.013	O	|	|	|	|	0.01
93.917	0.00	0.01	0.013	O	|	|	|	|	0.01
94.000	0.00	0.01	0.012	O	|	|	|	|	0.01

94.083	0.00	0.01	0.012	O	|	|	|	|	0.01
94.167	0.00	0.01	0.012	O	|	|	|	|	0.01
94.250	0.00	0.01	0.012	O	|	|	|	|	0.01
94.333	0.00	0.01	0.012	O	|	|	|	|	0.01
94.417	0.00	0.01	0.012	O	|	|	|	|	0.01
94.500	0.00	0.01	0.012	O	|	|	|	|	0.01
94.583	0.00	0.01	0.012	O	|	|	|	|	0.01
94.667	0.00	0.01	0.012	O	|	|	|	|	0.01
94.750	0.00	0.01	0.012	O	|	|	|	|	0.01
94.833	0.00	0.01	0.012	O	|	|	|	|	0.01
94.917	0.00	0.01	0.012	O	|	|	|	|	0.01
95.000	0.00	0.01	0.012	O	|	|	|	|	0.01
95.083	0.00	0.01	0.012	O	|	|	|	|	0.01
95.167	0.00	0.01	0.011	O	|	|	|	|	0.01
95.250	0.00	0.01	0.011	O	|	|	|	|	0.01
95.333	0.00	0.01	0.011	O	|	|	|	|	0.01
95.417	0.00	0.01	0.011	O	|	|	|	|	0.01
95.500	0.00	0.01	0.011	O	|	|	|	|	0.01
95.583	0.00	0.01	0.011	O	|	|	|	|	0.01
95.667	0.00	0.01	0.011	O	|	|	|	|	0.01
95.750	0.00	0.01	0.011	O	|	|	|	|	0.01
95.833	0.00	0.01	0.011	O	|	|	|	|	0.01
95.917	0.00	0.01	0.011	O	|	|	|	|	0.01
96.000	0.00	0.01	0.011	O	|	|	|	|	0.01
96.083	0.00	0.01	0.011	O	|	|	|	|	0.01
96.167	0.00	0.01	0.011	O	|	|	|	|	0.01
96.250	0.00	0.01	0.011	O	|	|	|	|	0.01
96.333	0.00	0.01	0.011	O	|	|	|	|	0.01
96.417	0.00	0.01	0.011	O	|	|	|	|	0.01
96.500	0.00	0.01	0.010	O	|	|	|	|	0.01
96.583	0.00	0.01	0.010	O	|	|	|	|	0.01
96.667	0.00	0.01	0.010	O	|	|	|	|	0.01
96.750	0.00	0.01	0.010	O	|	|	|	|	0.01
96.833	0.00	0.01	0.010	O	|	|	|	|	0.01
96.917	0.00	0.01	0.010	O	|	|	|	|	0.01
97.000	0.00	0.01	0.010	O	|	|	|	|	0.01
97.083	0.00	0.01	0.010	O	|	|	|	|	0.01
97.167	0.00	0.01	0.010	O	|	|	|	|	0.01
97.250	0.00	0.01	0.010	O	|	|	|	|	0.01
97.333	0.00	0.01	0.010	O	|	|	|	|	0.01
97.417	0.00	0.01	0.010	O	|	|	|	|	0.01
97.500	0.00	0.01	0.010	O	|	|	|	|	0.01
97.583	0.00	0.01	0.010	O	|	|	|	|	0.01
97.667	0.00	0.01	0.010	O	|	|	|	|	0.01
97.750	0.00	0.01	0.010	O	|	|	|	|	0.01
97.833	0.00	0.01	0.010	O	|	|	|	|	0.01
97.917	0.00	0.01	0.010	O	|	|	|	|	0.01
98.000	0.00	0.01	0.009	O	|	|	|	|	0.01
98.083	0.00	0.01	0.009	O	|	|	|	|	0.01
98.167	0.00	0.01	0.009	O	|	|	|	|	0.01
98.250	0.00	0.01	0.009	O	|	|	|	|	0.01
98.333	0.00	0.01	0.009	O	|	|	|	|	0.01
98.417	0.00	0.01	0.009	O	|	|	|	|	0.01
98.500	0.00	0.01	0.009	O	|	|	|	|	0.01
98.583	0.00	0.01	0.009	O	|	|	|	|	0.01
98.667	0.00	0.01	0.009	O	|	|	|	|	0.01
98.750	0.00	0.01	0.009	O	|	|	|	|	0.01
98.833	0.00	0.01	0.009	O	|	|	|	|	0.01
98.917	0.00	0.01	0.009	O	|	|	|	|	0.01
99.000	0.00	0.01	0.009	O	|	|	|	|	0.01
99.083	0.00	0.01	0.009	O	|	|	|	|	0.01
99.167	0.00	0.01	0.009	O	|	|	|	|	0.01
99.250	0.00	0.01	0.009	O	|	|	|	|	0.01
99.333	0.00	0.01	0.009	O	|	|	|	|	0.01
99.417	0.00	0.01	0.009	O	|	|	|	|	0.01
99.500	0.00	0.01	0.009	O	|	|	|	|	0.01
99.583	0.00	0.01	0.008	O	|	|	|	|	0.01
99.667	0.00	0.01	0.008	O	|	|	|	|	0.01
99.750	0.00	0.01	0.008	O	|	|	|	|	0.01
99.833	0.00	0.01	0.008	O	|	|	|	|	0.00
99.917	0.00	0.01	0.008	O	|	|	|	|	0.00

100.000	0.00	0.01	0.008	O	|	|	|	|	0.00
100.083	0.00	0.01	0.008	O	|	|	|	|	0.00
100.167	0.00	0.01	0.008	O	|	|	|	|	0.00
100.250	0.00	0.01	0.008	O	|	|	|	|	0.00
100.333	0.00	0.01	0.008	O	|	|	|	|	0.00
100.417	0.00	0.01	0.008	O	|	|	|	|	0.00
100.500	0.00	0.01	0.008	O	|	|	|	|	0.00
100.583	0.00	0.01	0.008	O	|	|	|	|	0.00
100.667	0.00	0.01	0.008	O	|	|	|	|	0.00
100.750	0.00	0.01	0.008	O	|	|	|	|	0.00
100.833	0.00	0.01	0.008	O	|	|	|	|	0.00
100.917	0.00	0.01	0.008	O	|	|	|	|	0.00
101.000	0.00	0.01	0.008	O	|	|	|	|	0.00
101.083	0.00	0.01	0.008	O	|	|	|	|	0.00
101.167	0.00	0.01	0.008	O	|	|	|	|	0.00
101.250	0.00	0.01	0.008	O	|	|	|	|	0.00
101.333	0.00	0.01	0.008	O	|	|	|	|	0.00
101.417	0.00	0.01	0.007	O	|	|	|	|	0.00
101.500	0.00	0.01	0.007	O	|	|	|	|	0.00
101.583	0.00	0.01	0.007	O	|	|	|	|	0.00
101.667	0.00	0.01	0.007	O	|	|	|	|	0.00
101.750	0.00	0.01	0.007	O	|	|	|	|	0.00
101.833	0.00	0.01	0.007	O	|	|	|	|	0.00
101.917	0.00	0.01	0.007	O	|	|	|	|	0.00
102.000	0.00	0.01	0.007	O	|	|	|	|	0.00
102.083	0.00	0.01	0.007	O	|	|	|	|	0.00
102.167	0.00	0.01	0.007	O	|	|	|	|	0.00
102.250	0.00	0.01	0.007	O	|	|	|	|	0.00
102.333	0.00	0.01	0.007	O	|	|	|	|	0.00
102.417	0.00	0.01	0.007	O	|	|	|	|	0.00
102.500	0.00	0.01	0.007	O	|	|	|	|	0.00
102.583	0.00	0.01	0.007	O	|	|	|	|	0.00
102.667	0.00	0.01	0.007	O	|	|	|	|	0.00
102.750	0.00	0.01	0.007	O	|	|	|	|	0.00
102.833	0.00	0.01	0.007	O	|	|	|	|	0.00
102.917	0.00	0.01	0.007	O	|	|	|	|	0.00
103.000	0.00	0.01	0.007	O	|	|	|	|	0.00
103.083	0.00	0.01	0.007	O	|	|	|	|	0.00
103.167	0.00	0.01	0.007	O	|	|	|	|	0.00
103.250	0.00	0.01	0.007	O	|	|	|	|	0.00
103.333	0.00	0.01	0.007	O	|	|	|	|	0.00
103.417	0.00	0.01	0.007	O	|	|	|	|	0.00
103.500	0.00	0.01	0.006	O	|	|	|	|	0.00
103.583	0.00	0.01	0.006	O	|	|	|	|	0.00
103.667	0.00	0.01	0.006	O	|	|	|	|	0.00
103.750	0.00	0.01	0.006	O	|	|	|	|	0.00
103.833	0.00	0.01	0.006	O	|	|	|	|	0.00
103.917	0.00	0.01	0.006	O	|	|	|	|	0.00
104.000	0.00	0.01	0.006	O	|	|	|	|	0.00
104.083	0.00	0.01	0.006	O	|	|	|	|	0.00
104.167	0.00	0.01	0.006	O	|	|	|	|	0.00
104.250	0.00	0.01	0.006	O	|	|	|	|	0.00
104.333	0.00	0.01	0.006	O	|	|	|	|	0.00
104.417	0.00	0.01	0.006	O	|	|	|	|	0.00
104.500	0.00	0.01	0.006	O	|	|	|	|	0.00
104.583	0.00	0.00	0.006	O	|	|	|	|	0.00
104.667	0.00	0.00	0.006	O	|	|	|	|	0.00
104.750	0.00	0.00	0.006	O	|	|	|	|	0.00
104.833	0.00	0.00	0.006	O	|	|	|	|	0.00
104.917	0.00	0.00	0.006	O	|	|	|	|	0.00
105.000	0.00	0.00	0.006	O	|	|	|	|	0.00
105.083	0.00	0.00	0.006	O	|	|	|	|	0.00
105.167	0.00	0.00	0.006	O	|	|	|	|	0.00
105.250	0.00	0.00	0.006	O	|	|	|	|	0.00
105.333	0.00	0.00	0.006	O	|	|	|	|	0.00
105.417	0.00	0.00	0.006	O	|	|	|	|	0.00
105.500	0.00	0.00	0.006	O	|	|	|	|	0.00
105.583	0.00	0.00	0.006	O	|	|	|	|	0.00
105.667	0.00	0.00	0.006	O	|	|	|	|	0.00
105.750	0.00	0.00	0.006	O	|	|	|	|	0.00
105.833	0.00	0.00	0.006	O	|	|	|	|	0.00

105.917	0.00	0.00	0.005	O	|	|	|	|	0.00
106.000	0.00	0.00	0.005	O	|	|	|	|	0.00
106.083	0.00	0.00	0.005	O	|	|	|	|	0.00
106.167	0.00	0.00	0.005	O	|	|	|	|	0.00
106.250	0.00	0.00	0.005	O	|	|	|	|	0.00
106.333	0.00	0.00	0.005	O	|	|	|	|	0.00
106.417	0.00	0.00	0.005	O	|	|	|	|	0.00
106.500	0.00	0.00	0.005	O	|	|	|	|	0.00
106.583	0.00	0.00	0.005	O	|	|	|	|	0.00
106.667	0.00	0.00	0.005	O	|	|	|	|	0.00
106.750	0.00	0.00	0.005	O	|	|	|	|	0.00
106.833	0.00	0.00	0.005	O	|	|	|	|	0.00
106.917	0.00	0.00	0.005	O	|	|	|	|	0.00
107.000	0.00	0.00	0.005	O	|	|	|	|	0.00
107.083	0.00	0.00	0.005	O	|	|	|	|	0.00
107.167	0.00	0.00	0.005	O	|	|	|	|	0.00
107.250	0.00	0.00	0.005	O	|	|	|	|	0.00
107.333	0.00	0.00	0.005	O	|	|	|	|	0.00
107.417	0.00	0.00	0.005	O	|	|	|	|	0.00
107.500	0.00	0.00	0.005	O	|	|	|	|	0.00
107.583	0.00	0.00	0.005	O	|	|	|	|	0.00
107.667	0.00	0.00	0.005	O	|	|	|	|	0.00
107.750	0.00	0.00	0.005	O	|	|	|	|	0.00
107.833	0.00	0.00	0.005	O	|	|	|	|	0.00
107.917	0.00	0.00	0.005	O	|	|	|	|	0.00
108.000	0.00	0.00	0.005	O	|	|	|	|	0.00
108.083	0.00	0.00	0.005	O	|	|	|	|	0.00
108.167	0.00	0.00	0.005	O	|	|	|	|	0.00
108.250	0.00	0.00	0.005	O	|	|	|	|	0.00
108.333	0.00	0.00	0.005	O	|	|	|	|	0.00
108.417	0.00	0.00	0.005	O	|	|	|	|	0.00
108.500	0.00	0.00	0.005	O	|	|	|	|	0.00
108.583	0.00	0.00	0.005	O	|	|	|	|	0.00
108.667	0.00	0.00	0.005	O	|	|	|	|	0.00
108.750	0.00	0.00	0.005	O	|	|	|	|	0.00
108.833	0.00	0.00	0.004	O	|	|	|	|	0.00
108.917	0.00	0.00	0.004	O	|	|	|	|	0.00
109.000	0.00	0.00	0.004	O	|	|	|	|	0.00
109.083	0.00	0.00	0.004	O	|	|	|	|	0.00
109.167	0.00	0.00	0.004	O	|	|	|	|	0.00
109.250	0.00	0.00	0.004	O	|	|	|	|	0.00
109.333	0.00	0.00	0.004	O	|	|	|	|	0.00
109.417	0.00	0.00	0.004	O	|	|	|	|	0.00
109.500	0.00	0.00	0.004	O	|	|	|	|	0.00
109.583	0.00	0.00	0.004	O	|	|	|	|	0.00
109.667	0.00	0.00	0.004	O	|	|	|	|	0.00
109.750	0.00	0.00	0.004	O	|	|	|	|	0.00
109.833	0.00	0.00	0.004	O	|	|	|	|	0.00
109.917	0.00	0.00	0.004	O	|	|	|	|	0.00
110.000	0.00	0.00	0.004	O	|	|	|	|	0.00
110.083	0.00	0.00	0.004	O	|	|	|	|	0.00
110.167	0.00	0.00	0.004	O	|	|	|	|	0.00
110.250	0.00	0.00	0.004	O	|	|	|	|	0.00
110.333	0.00	0.00	0.004	O	|	|	|	|	0.00
110.417	0.00	0.00	0.004	O	|	|	|	|	0.00
110.500	0.00	0.00	0.004	O	|	|	|	|	0.00
110.583	0.00	0.00	0.004	O	|	|	|	|	0.00
110.667	0.00	0.00	0.004	O	|	|	|	|	0.00
110.750	0.00	0.00	0.004	O	|	|	|	|	0.00
110.833	0.00	0.00	0.004	O	|	|	|	|	0.00
110.917	0.00	0.00	0.004	O	|	|	|	|	0.00
111.000	0.00	0.00	0.004	O	|	|	|	|	0.00
111.083	0.00	0.00	0.004	O	|	|	|	|	0.00
111.167	0.00	0.00	0.004	O	|	|	|	|	0.00
111.250	0.00	0.00	0.004	O	|	|	|	|	0.00
111.333	0.00	0.00	0.004	O	|	|	|	|	0.00
111.417	0.00	0.00	0.004	O	|	|	|	|	0.00
111.500	0.00	0.00	0.004	O	|	|	|	|	0.00
111.583	0.00	0.00	0.004	O	|	|	|	|	0.00
111.667	0.00	0.00	0.004	O	|	|	|	|	0.00
111.750	0.00	0.00	0.004	O	|	|	|	|	0.00

111.833	0.00	0.00	0.004	O	|	|	|	|	0.00
111.917	0.00	0.00	0.004	O	|	|	|	|	0.00
112.000	0.00	0.00	0.004	O	|	|	|	|	0.00
112.083	0.00	0.00	0.004	O	|	|	|	|	0.00
112.167	0.00	0.00	0.004	O	|	|	|	|	0.00
112.250	0.00	0.00	0.004	O	|	|	|	|	0.00
112.333	0.00	0.00	0.004	O	|	|	|	|	0.00
112.417	0.00	0.00	0.004	O	|	|	|	|	0.00
112.500	0.00	0.00	0.003	O	|	|	|	|	0.00
112.583	0.00	0.00	0.003	O	|	|	|	|	0.00
112.667	0.00	0.00	0.003	O	|	|	|	|	0.00
112.750	0.00	0.00	0.003	O	|	|	|	|	0.00
112.833	0.00	0.00	0.003	O	|	|	|	|	0.00
112.917	0.00	0.00	0.003	O	|	|	|	|	0.00
113.000	0.00	0.00	0.003	O	|	|	|	|	0.00
113.083	0.00	0.00	0.003	O	|	|	|	|	0.00
113.167	0.00	0.00	0.003	O	|	|	|	|	0.00
113.250	0.00	0.00	0.003	O	|	|	|	|	0.00
113.333	0.00	0.00	0.003	O	|	|	|	|	0.00
113.417	0.00	0.00	0.003	O	|	|	|	|	0.00
113.500	0.00	0.00	0.003	O	|	|	|	|	0.00
113.583	0.00	0.00	0.003	O	|	|	|	|	0.00
113.667	0.00	0.00	0.003	O	|	|	|	|	0.00
113.750	0.00	0.00	0.003	O	|	|	|	|	0.00
113.833	0.00	0.00	0.003	O	|	|	|	|	0.00
113.917	0.00	0.00	0.003	O	|	|	|	|	0.00
114.000	0.00	0.00	0.003	O	|	|	|	|	0.00
114.083	0.00	0.00	0.003	O	|	|	|	|	0.00
114.167	0.00	0.00	0.003	O	|	|	|	|	0.00
114.250	0.00	0.00	0.003	O	|	|	|	|	0.00
114.333	0.00	0.00	0.003	O	|	|	|	|	0.00
114.417	0.00	0.00	0.003	O	|	|	|	|	0.00
114.500	0.00	0.00	0.003	O	|	|	|	|	0.00
114.583	0.00	0.00	0.003	O	|	|	|	|	0.00
114.667	0.00	0.00	0.003	O	|	|	|	|	0.00
114.750	0.00	0.00	0.003	O	|	|	|	|	0.00
114.833	0.00	0.00	0.003	O	|	|	|	|	0.00
114.917	0.00	0.00	0.003	O	|	|	|	|	0.00
115.000	0.00	0.00	0.003	O	|	|	|	|	0.00
115.083	0.00	0.00	0.003	O	|	|	|	|	0.00
115.167	0.00	0.00	0.003	O	|	|	|	|	0.00
115.250	0.00	0.00	0.003	O	|	|	|	|	0.00
115.333	0.00	0.00	0.003	O	|	|	|	|	0.00
115.417	0.00	0.00	0.003	O	|	|	|	|	0.00
115.500	0.00	0.00	0.003	O	|	|	|	|	0.00
115.583	0.00	0.00	0.003	O	|	|	|	|	0.00
115.667	0.00	0.00	0.003	O	|	|	|	|	0.00
115.750	0.00	0.00	0.003	O	|	|	|	|	0.00
115.833	0.00	0.00	0.003	O	|	|	|	|	0.00
115.917	0.00	0.00	0.003	O	|	|	|	|	0.00
116.000	0.00	0.00	0.003	O	|	|	|	|	0.00
116.083	0.00	0.00	0.003	O	|	|	|	|	0.00
116.167	0.00	0.00	0.003	O	|	|	|	|	0.00
116.250	0.00	0.00	0.003	O	|	|	|	|	0.00
116.333	0.00	0.00	0.003	O	|	|	|	|	0.00
116.417	0.00	0.00	0.003	O	|	|	|	|	0.00
116.500	0.00	0.00	0.003	O	|	|	|	|	0.00
116.583	0.00	0.00	0.003	O	|	|	|	|	0.00
116.667	0.00	0.00	0.003	O	|	|	|	|	0.00
116.750	0.00	0.00	0.003	O	|	|	|	|	0.00
116.833	0.00	0.00	0.003	O	|	|	|	|	0.00
116.917	0.00	0.00	0.003	O	|	|	|	|	0.00
117.000	0.00	0.00	0.003	O	|	|	|	|	0.00
117.083	0.00	0.00	0.003	O	|	|	|	|	0.00
117.167	0.00	0.00	0.003	O	|	|	|	|	0.00
117.250	0.00	0.00	0.003	O	|	|	|	|	0.00
117.333	0.00	0.00	0.003	O	|	|	|	|	0.00
117.417	0.00	0.00	0.002	O	|	|	|	|	0.00
117.500	0.00	0.00	0.002	O	|	|	|	|	0.00
117.583	0.00	0.00	0.002	O	|	|	|	|	0.00
117.667	0.00	0.00	0.002	O	|	|	|	|	0.00

117.750	0.00	0.00	0.002	O	|	|	|	|	0.00
117.833	0.00	0.00	0.002	O	|	|	|	|	0.00
117.917	0.00	0.00	0.002	O	|	|	|	|	0.00
118.000	0.00	0.00	0.002	O	|	|	|	|	0.00
118.083	0.00	0.00	0.002	O	|	|	|	|	0.00
118.167	0.00	0.00	0.002	O	|	|	|	|	0.00
118.250	0.00	0.00	0.002	O	|	|	|	|	0.00
118.333	0.00	0.00	0.002	O	|	|	|	|	0.00
118.417	0.00	0.00	0.002	O	|	|	|	|	0.00
118.500	0.00	0.00	0.002	O	|	|	|	|	0.00
118.583	0.00	0.00	0.002	O	|	|	|	|	0.00
118.667	0.00	0.00	0.002	O	|	|	|	|	0.00
118.750	0.00	0.00	0.002	O	|	|	|	|	0.00
118.833	0.00	0.00	0.002	O	|	|	|	|	0.00
118.917	0.00	0.00	0.002	O	|	|	|	|	0.00
119.000	0.00	0.00	0.002	O	|	|	|	|	0.00
119.083	0.00	0.00	0.002	O	|	|	|	|	0.00
119.167	0.00	0.00	0.002	O	|	|	|	|	0.00
119.250	0.00	0.00	0.002	O	|	|	|	|	0.00
119.333	0.00	0.00	0.002	O	|	|	|	|	0.00
119.417	0.00	0.00	0.002	O	|	|	|	|	0.00
119.500	0.00	0.00	0.002	O	|	|	|	|	0.00
119.583	0.00	0.00	0.002	O	|	|	|	|	0.00
119.667	0.00	0.00	0.002	O	|	|	|	|	0.00
119.750	0.00	0.00	0.002	O	|	|	|	|	0.00
119.833	0.00	0.00	0.002	O	|	|	|	|	0.00
119.917	0.00	0.00	0.002	O	|	|	|	|	0.00
120.000	0.00	0.00	0.002	O	|	|	|	|	0.00
120.083	0.00	0.00	0.002	O	|	|	|	|	0.00
120.167	0.00	0.00	0.002	O	|	|	|	|	0.00
120.250	0.00	0.00	0.002	O	|	|	|	|	0.00
120.333	0.00	0.00	0.002	O	|	|	|	|	0.00
120.417	0.00	0.00	0.002	O	|	|	|	|	0.00
120.500	0.00	0.00	0.002	O	|	|	|	|	0.00
120.583	0.00	0.00	0.002	O	|	|	|	|	0.00
120.667	0.00	0.00	0.002	O	|	|	|	|	0.00
120.750	0.00	0.00	0.002	O	|	|	|	|	0.00
120.833	0.00	0.00	0.002	O	|	|	|	|	0.00
120.917	0.00	0.00	0.002	O	|	|	|	|	0.00
121.000	0.00	0.00	0.002	O	|	|	|	|	0.00
121.083	0.00	0.00	0.002	O	|	|	|	|	0.00
121.167	0.00	0.00	0.002	O	|	|	|	|	0.00
121.250	0.00	0.00	0.002	O	|	|	|	|	0.00
121.333	0.00	0.00	0.002	O	|	|	|	|	0.00
121.417	0.00	0.00	0.002	O	|	|	|	|	0.00
121.500	0.00	0.00	0.002	O	|	|	|	|	0.00
121.583	0.00	0.00	0.002	O	|	|	|	|	0.00
121.667	0.00	0.00	0.002	O	|	|	|	|	0.00
121.750	0.00	0.00	0.002	O	|	|	|	|	0.00
121.833	0.00	0.00	0.002	O	|	|	|	|	0.00
121.917	0.00	0.00	0.002	O	|	|	|	|	0.00
122.000	0.00	0.00	0.002	O	|	|	|	|	0.00
122.083	0.00	0.00	0.002	O	|	|	|	|	0.00
122.167	0.00	0.00	0.002	O	|	|	|	|	0.00
122.250	0.00	0.00	0.002	O	|	|	|	|	0.00
122.333	0.00	0.00	0.002	O	|	|	|	|	0.00
122.417	0.00	0.00	0.002	O	|	|	|	|	0.00
122.500	0.00	0.00	0.002	O	|	|	|	|	0.00
122.583	0.00	0.00	0.002	O	|	|	|	|	0.00
122.667	0.00	0.00	0.002	O	|	|	|	|	0.00
122.750	0.00	0.00	0.002	O	|	|	|	|	0.00
122.833	0.00	0.00	0.002	O	|	|	|	|	0.00
122.917	0.00	0.00	0.002	O	|	|	|	|	0.00
123.000	0.00	0.00	0.002	O	|	|	|	|	0.00
123.083	0.00	0.00	0.002	O	|	|	|	|	0.00
123.167	0.00	0.00	0.002	O	|	|	|	|	0.00
123.250	0.00	0.00	0.002	O	|	|	|	|	0.00
123.333	0.00	0.00	0.002	O	|	|	|	|	0.00

Remaining water in basin = 0.00 (Ac.Ft)

```
**************************HYDROGRAPH DATA**************************
               Number of intervals =  1480
               Time interval =    5.0 (Min.)
               Maximum/Peak flow rate =       21.764 (CFS)
               Total volume =      10.826 (Ac.Ft)
       Status of hydrographs being held in storage
                  Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
       Peak (CFS)      0.000     0.000     0.000     0.000     0.000
       Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
*******************************************************************

-------------------------------------------------------------------
```

- Basin 'C' - 5 Year 24 Hour Storm Routing Analysis

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                  FLOOD HYDROGRAPH ROUTING PROGRAM
          Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012
                      Study date: 03/20/17

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WESTRIDGE HYDROLOGY STUDY
PROPOSED ROUTING - BASIN 'C' - 5 YEAR 24 HOUR STORM
HUNSAKER & ASSOCIATES, MARCH 20, 2017
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------


Program License Serial Number 4094

------------------------------------------------------------------------
******************** HYDROGRAPH INFORMATION **********************

               From study/file name: PRC00524.rte
*****************************HYDROGRAPH DATA*****************************
               Number of intervals =   305
               Time interval =    5.0 (Min.)
               Maximum/Peak flow rate =      165.877 (CFS)
               Total volume =      12.857 (Ac.Ft)
       Status of hydrographs being held in storage
                   Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
       Peak (CFS)      0.000     0.000     0.000     0.000     0.000
       Vol (Ac.Ft)     0.000     0.000     0.000     0.000     0.000
************************************************************************



++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      300.000 to Point/Station      301.000
**** RETARDING BASIN ROUTING ****
________________________________________________________________________

User entry of depth-outflow-storage data
------------------------------------------------------------------------
Total number of inflow hydrograph intervals = 305
Hydrograph time unit =  5.000 (Min.)
Initial depth in storage basin =   0.00(Ft.)
------------------------------------------------------------------------
------------------------------------------------------------------------
Initial basin depth =   0.00 (Ft.)
Initial basin storage =      0.00 (Ac.Ft)
Initial basin outflow =   0.00 (CFS)
------------------------------------------------------------------------
------------------------------------------------------------------------
Depth vs. Storage and Depth vs. Discharge data:
 Basin Depth  Storage    Outflow   (S-O*dt/2)   (S+O*dt/2)
     (Ft.)    (Ac.Ft)    (CFS)     (Ac.Ft)    (Ac.Ft)
------------------------------------------------------------------------
   0.000      0.000      0.000      0.000        0.000
   0.500      0.834      0.692      0.832        0.836
   1.000      1.693      1.672      1.687        1.699
   1.500      2.577      3.059      2.566        2.588
   2.000      3.488      4.757      3.472        3.504
   3.000      5.388      7.930      5.361        5.415
   4.000      7.399     20.434      7.329        7.469
   5.000      9.523     35.089      9.402        9.644
   6.000     11.764     44.538     11.611       11.917
   7.000     14.126     52.170     13.946       14.306
   8.000     16.610     58.766     16.408       16.812
   8.900     18.942     83.236     18.655       19.229
   9.000     19.207     83.236     18.920       19.494
   9.500     20.556    448.796     19.011       22.101
  10.000     21.935   1159.965     17.941       25.929
```

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0	41.5	82.94	124.41	165.88	Depth (Ft.)
0.083	0.05	0.00	0.000	O	|	|	|	|	0.00
0.167	0.26	0.00	0.001	O	|	|	|	|	0.00
0.250	0.80	0.00	0.005	O	|	|	|	|	0.00
0.333	1.17	0.01	0.012	O	|	|	|	|	0.01
0.417	1.34	0.02	0.020	O	|	|	|	|	0.01
0.500	1.45	0.02	0.030	O	|	|	|	|	0.02
0.583	1.53	0.03	0.040	O	|	|	|	|	0.02
0.667	1.59	0.04	0.050	O	|	|	|	|	0.03
0.750	1.64	0.05	0.061	O	|	|	|	|	0.04
0.833	1.67	0.06	0.072	O	|	|	|	|	0.04
0.917	1.68	0.07	0.083	O	|	|	|	|	0.05
1.000	1.70	0.08	0.094	O	|	|	|	|	0.06
1.083	1.71	0.09	0.105	O	|	|	|	|	0.06
1.167	1.72	0.10	0.117	O	|	|	|	|	0.07
1.250	1.73	0.11	0.128	O	|	|	|	|	0.08
1.333	1.74	0.12	0.139	O	|	|	|	|	0.08
1.417	1.75	0.12	0.150	O	|	|	|	|	0.09
1.500	1.76	0.13	0.161	O	|	|	|	|	0.10
1.583	1.76	0.14	0.172	O	|	|	|	|	0.10
1.667	1.77	0.15	0.184	O	|	|	|	|	0.11
1.750	1.77	0.16	0.195	O	|	|	|	|	0.12
1.833	1.78	0.17	0.206	O	|	|	|	|	0.12
1.917	1.79	0.18	0.217	O	|	|	|	|	0.13
2.000	1.79	0.19	0.228	O	|	|	|	|	0.14
2.083	1.80	0.20	0.239	O	|	|	|	|	0.14
2.167	1.81	0.21	0.250	O	|	|	|	|	0.15
2.250	1.81	0.22	0.261	O	|	|	|	|	0.16
2.333	1.82	0.23	0.272	O	|	|	|	|	0.16
2.417	1.83	0.23	0.283	O	|	|	|	|	0.17
2.500	1.83	0.24	0.294	O	|	|	|	|	0.18
2.583	1.84	0.25	0.305	O	|	|	|	|	0.18
2.667	1.85	0.26	0.316	O	|	|	|	|	0.19
2.750	1.86	0.27	0.327	O	|	|	|	|	0.20
2.833	1.86	0.28	0.338	O	|	|	|	|	0.20
2.917	1.87	0.29	0.349	O	|	|	|	|	0.21
3.000	1.88	0.30	0.359	O	|	|	|	|	0.22
3.083	1.88	0.31	0.370	O	|	|	|	|	0.22
3.167	1.89	0.32	0.381	O	|	|	|	|	0.23
3.250	1.90	0.33	0.392	O	|	|	|	|	0.24
3.333	1.91	0.33	0.403	O	|	|	|	|	0.24
3.417	1.92	0.34	0.414	O	|	|	|	|	0.25
3.500	1.92	0.35	0.425	O	|	|	|	|	0.25
3.583	1.93	0.36	0.435	O	|	|	|	|	0.26
3.667	1.94	0.37	0.446	O	|	|	|	|	0.27
3.750	1.95	0.38	0.457	O	|	|	|	|	0.27
3.833	1.95	0.39	0.468	O	|	|	|	|	0.28
3.917	1.96	0.40	0.479	O	|	|	|	|	0.29
4.000	1.97	0.41	0.489	O	|	|	|	|	0.29
4.083	1.98	0.41	0.500	O	|	|	|	|	0.30
4.167	1.99	0.42	0.511	O	|	|	|	|	0.31
4.250	2.00	0.43	0.522	O	|	|	|	|	0.31
4.333	2.01	0.44	0.532	O	|	|	|	|	0.32
4.417	2.01	0.45	0.543	O	|	|	|	|	0.33
4.500	2.02	0.46	0.554	O	|	|	|	|	0.33
4.583	2.03	0.47	0.565	O	|	|	|	|	0.34
4.667	2.04	0.48	0.575	O	|	|	|	|	0.35
4.750	2.05	0.49	0.586	O	|	|	|	|	0.35
4.833	2.06	0.50	0.597	O	|	|	|	|	0.36
4.917	2.07	0.50	0.608	O	|	|	|	|	0.36
5.000	2.08	0.51	0.619	O	|	|	|	|	0.37
5.083	2.09	0.52	0.629	O	|	|	|	|	0.38
5.167	2.10	0.53	0.640	O	|	|	|	|	0.38
5.250	2.11	0.54	0.651	O	|	|	|	|	0.39

5.333	2.12	0.55	0.662	O					0.40
5.417	2.13	0.56	0.673	O					0.40
5.500	2.14	0.57	0.683	O					0.41
5.583	2.15	0.58	0.694	O					0.42
5.667	2.16	0.59	0.705	O					0.42
5.750	2.17	0.59	0.716	O					0.43
5.833	2.18	0.60	0.727	O					0.44
5.917	2.19	0.61	0.738	O					0.44
6.000	2.20	0.62	0.749	O					0.45
6.083	2.21	0.63	0.759	O					0.46
6.167	2.23	0.64	0.770	O					0.46
6.250	2.24	0.65	0.781	O					0.47
6.333	2.25	0.66	0.792	O					0.47
6.417	2.26	0.67	0.803	O					0.48
6.500	2.27	0.68	0.814	O					0.49
6.583	2.29	0.68	0.825	O					0.49
6.667	2.30	0.69	0.836	O					0.50
6.750	2.31	0.71	0.847	O					0.51
6.833	2.32	0.72	0.858	O					0.51
6.917	2.34	0.73	0.869	O					0.52
7.000	2.35	0.74	0.880	O					0.53
7.083	2.36	0.76	0.891	O					0.53
7.167	2.38	0.77	0.902	O					0.54
7.250	2.39	0.78	0.914	O					0.55
7.333	2.40	0.80	0.925	O					0.55
7.417	2.42	0.81	0.936	O					0.56
7.500	2.43	0.82	0.947	O					0.57
7.583	2.45	0.83	0.958	O					0.57
7.667	2.46	0.85	0.969	O					0.58
7.750	2.48	0.86	0.980	O					0.59
7.833	2.49	0.87	0.991	O					0.59
7.917	2.51	0.88	1.002	O					0.60
8.000	2.52	0.90	1.014	O					0.60
8.083	2.54	0.91	1.025	O					0.61
8.167	2.55	0.92	1.036	O					0.62
8.250	2.57	0.94	1.047	O					0.62
8.333	2.59	0.95	1.059	O					0.63
8.417	2.60	0.96	1.070	O					0.64
8.500	2.62	0.97	1.081	O					0.64
8.583	2.64	0.99	1.093	O					0.65
8.667	2.66	1.00	1.104	O					0.66
8.750	2.68	1.01	1.115	O					0.66
8.833	2.69	1.03	1.127	O					0.67
8.917	2.71	1.04	1.138	O					0.68
9.000	2.73	1.05	1.150	O					0.68
9.083	2.75	1.07	1.161	O					0.69
9.167	2.77	1.08	1.173	O					0.70
9.250	2.79	1.09	1.185	O					0.70
9.333	2.81	1.11	1.197	O					0.71
9.417	2.84	1.12	1.208	O					0.72
9.500	2.86	1.13	1.220	O					0.72
9.583	2.88	1.15	1.232	O					0.73
9.667	2.90	1.16	1.244	O					0.74
9.750	2.92	1.17	1.256	O					0.75
9.833	2.95	1.19	1.268	O					0.75
9.917	2.97	1.20	1.280	O					0.76
10.000	3.00	1.22	1.293	O					0.77
10.083	3.02	1.23	1.305	O					0.77
10.167	3.05	1.24	1.317	O					0.78
10.250	3.07	1.26	1.330	O					0.79
10.333	3.10	1.27	1.342	O					0.80
10.417	3.13	1.29	1.355	O					0.80
10.500	3.15	1.30	1.368	O					0.81
10.583	3.18	1.32	1.380	O					0.82
10.667	3.21	1.33	1.393	O					0.83
10.750	3.24	1.34	1.406	O					0.83
10.833	3.27	1.36	1.419	O					0.84
10.917	3.31	1.38	1.433	O					0.85
11.000	3.34	1.39	1.446	O					0.86
11.083	3.37	1.41	1.460	O					0.86
11.167	3.40	1.42	1.473	O					0.87

11.250	3.44	1.44	1.487	O	|	|	|	|	0.88
11.333	3.48	1.45	1.501	O	|	|	|	|	0.89
11.417	3.51	1.47	1.515	O	|	|	|	|	0.90
11.500	3.55	1.48	1.529	O	|	|	|	|	0.90
11.583	3.59	1.50	1.543	O	|	|	|	|	0.91
11.667	3.63	1.52	1.558	O	|	|	|	|	0.92
11.750	3.67	1.53	1.572	O	|	|	|	|	0.93
11.833	3.71	1.55	1.587	O	|	|	|	|	0.94
11.917	3.76	1.57	1.602	O	|	|	|	|	0.95
12.000	3.80	1.59	1.617	O	|	|	|	|	0.96
12.083	3.88	1.60	1.633	O	|	|	|	|	0.96
12.167	4.06	1.62	1.649	O	|	|	|	|	0.97
12.250	4.44	1.64	1.667	O	|	|	|	|	0.98
12.333	4.71	1.67	1.687	O	|	|	|	|	1.00
12.417	4.87	1.70	1.709	O	|	|	|	|	1.01
12.500	4.99	1.73	1.731	O	|	|	|	|	1.02
12.583	5.10	1.77	1.753	O	|	|	|	|	1.03
12.667	5.20	1.80	1.777	OI	|	|	|	|	1.05
12.750	5.29	1.84	1.800	OI	|	|	|	|	1.06
12.833	5.37	1.88	1.824	OI	|	|	|	|	1.07
12.917	5.45	1.92	1.848	OI	|	|	|	|	1.09
13.000	5.52	1.95	1.873	OI	|	|	|	|	1.10
13.083	5.60	1.99	1.897	OI	|	|	|	|	1.12
13.167	5.68	2.03	1.922	OI	|	|	|	|	1.13
13.250	5.77	2.07	1.948	OI	|	|	|	|	1.14
13.333	5.85	2.11	1.973	OI	|	|	|	|	1.16
13.417	5.95	2.15	1.999	OI	|	|	|	|	1.17
13.500	6.04	2.19	2.026	OI	|	|	|	|	1.19
13.583	6.14	2.24	2.052	OI	|	|	|	|	1.20
13.667	6.24	2.28	2.079	OI	|	|	|	|	1.22
13.750	6.35	2.32	2.107	OI	|	|	|	|	1.23
13.833	6.46	2.37	2.135	OI	|	|	|	|	1.25
13.917	6.58	2.41	2.163	OI	|	|	|	|	1.27
14.000	6.70	2.46	2.192	OI	|	|	|	|	1.28
14.083	6.84	2.50	2.222	OI	|	|	|	|	1.30
14.167	6.99	2.55	2.252	OI	|	|	|	|	1.32
14.250	7.19	2.60	2.283	OI	|	|	|	|	1.33
14.333	7.38	2.65	2.315	OI	|	|	|	|	1.35
14.417	7.57	2.70	2.348	OI	|	|	|	|	1.37
14.500	7.75	2.75	2.382	OI	|	|	|	|	1.39
14.583	7.96	2.81	2.417	OI	|	|	|	|	1.41
14.667	8.17	2.86	2.453	OI	|	|	|	|	1.43
14.750	8.40	2.92	2.490	OI	|	|	|	|	1.45
14.833	8.65	2.98	2.529	OI	|	|	|	|	1.47
14.917	8.97	3.05	2.569	OI	|	|	|	|	1.50
15.000	9.46	3.12	2.611	OI	|	|	|	|	1.52
15.083	10.32	3.21	2.657	OI	|	|	|	|	1.54
15.167	11.34	3.31	2.709	O I	|	|	|	|	1.57
15.250	12.64	3.42	2.769	O I	|	|	|	|	1.61
15.333	14.07	3.54	2.837	O I	|	|	|	|	1.64
15.417	15.63	3.69	2.914	O I	|	|	|	|	1.69
15.500	16.74	3.85	3.000	O I	|	|	|	|	1.73
15.583	16.96	4.01	3.089	O I	|	|	|	|	1.78
15.667	18.26	4.19	3.182	O I	|	|	|	|	1.83
15.750	21.59	4.39	3.289	O I	|	|	|	|	1.89
15.833	26.70	4.64	3.425	O I	|	|	|	|	1.97
15.917	36.00	4.96	3.608	O I	|	|	|	|	2.06
16.000	48.04	5.38	3.861	|O |I	|	|	|	|	2.20
16.083	73.55	6.01	4.241	|O | I	|	|	|	|	2.40
16.167	113.38	7.01	4.840	|O | I	|	|	|	|	2.71
16.250	165.88	10.13	5.742	|O | I	|	|	|	|	3.18
16.333	124.76	15.80	6.654	| O | I	|	|	|	|	3.63
16.417	77.86	19.39	7.230	| O | I	|	|	|	|	3.92
16.500	57.10	21.51	7.554	| O | I	|	|	|	|	4.07
16.583	45.07	22.88	7.753	| O I	|	|	|	|	4.17
16.667	35.67	23.69	7.871	| O I	|	|	|	|	4.22
16.750	27.57	24.06	7.924	| OI	|	|	|	|	4.25
16.833	21.18	24.07	7.926	| O	|	|	|	|	4.25
16.917	15.98	23.82	7.889	| IO	|	|	|	|	4.23
17.000	13.29	23.39	7.828	| I O	|	|	|	|	4.20
17.083	11.72	22.89	7.754	| I O	|	|	|	|	4.17

17.167	10.47	22.34	7.675	| I O	|	|	|	| 4.13
17.250	9.73	21.77	7.593	|I O	|	|	|	| 4.09
17.333	8.71	21.19	7.508	|I O	|	|	|	| 4.05
17.417	7.87	20.59	7.422	|I O	|	|	|	| 4.01
17.500	7.22	20.03	7.334	|I O	|	|	|	| 3.97
17.583	6.71	19.48	7.246	|I O	|	|	|	| 3.92
17.667	6.41	18.94	7.158	|I O	|	|	|	| 3.88
17.750	6.17	18.41	7.073	|I O	|	|	|	| 3.84
17.833	5.95	17.89	6.990	|I O	|	|	|	| 3.80
17.917	5.77	17.39	6.909	|I O	|	|	|	| 3.76
18.000	5.60	16.90	6.830	|I O	|	|	|	| 3.72
18.083	5.41	16.42	6.753	|I O	|	|	|	| 3.68
18.167	5.15	15.95	6.678	I O	|	|	|	| 3.64
18.250	4.69	15.49	6.604	I O	|	|	|	| 3.60
18.333	4.35	15.03	6.530	I O	|	|	|	| 3.57
18.417	4.15	14.58	6.457	I O	|	|	|	| 3.53
18.500	3.98	14.14	6.386	I O	|	|	|	| 3.50
18.583	3.84	13.71	6.317	I O	|	|	|	| 3.46
18.667	3.72	13.29	6.250	I O	|	|	|	| 3.43
18.750	3.62	12.89	6.185	I O	|	|	|	| 3.40
18.833	3.52	12.50	6.122	I O	|	|	|	| 3.37
18.917	3.44	12.12	6.062	I O	|	|	|	| 3.34
19.000	3.37	11.75	6.003	I O	|	|	|	| 3.31
19.083	3.30	11.40	5.946	I O	|	|	|	| 3.28
19.167	3.24	11.06	5.891	I O	|	|	|	| 3.25
19.250	3.17	10.73	5.838	I O	|	|	|	| 3.22
19.333	3.12	10.41	5.787	I O	|	|	|	| 3.20
19.417	3.06	10.11	5.738	IO	|	|	|	| 3.17
19.500	3.01	9.81	5.690	IO	|	|	|	| 3.15
19.583	2.96	9.52	5.644	IO	|	|	|	| 3.13
19.667	2.91	9.25	5.600	IO	|	|	|	| 3.11
19.750	2.87	8.98	5.557	IO	|	|	|	| 3.08
19.833	2.82	8.72	5.516	IO	|	|	|	| 3.06
19.917	2.78	8.47	5.476	IO	|	|	|	| 3.04
20.000	2.74	8.24	5.437	IO	|	|	|	| 3.02
20.083	2.70	8.00	5.400	IO	|	|	|	| 3.01
20.167	2.67	7.89	5.364	IO	|	|	|	| 2.99
20.250	2.63	7.83	5.328	IO	|	|	|	| 2.97
20.333	2.59	7.77	5.292	IO	|	|	|	| 2.95
20.417	2.56	7.71	5.257	IO	|	|	|	| 2.93
20.500	2.53	7.65	5.221	IO	|	|	|	| 2.91
20.583	2.50	7.59	5.186	IO	|	|	|	| 2.89
20.667	2.47	7.53	5.151	IO	|	|	|	| 2.88
20.750	2.44	7.48	5.116	IO	|	|	|	| 2.86
20.833	2.41	7.42	5.082	IO	|	|	|	| 2.84
20.917	2.38	7.36	5.047	IO	|	|	|	| 2.82
21.000	2.35	7.30	5.013	IO	|	|	|	| 2.80
21.083	2.33	7.25	4.979	IO	|	|	|	| 2.78
21.167	2.30	7.19	4.945	IO	|	|	|	| 2.77
21.250	2.28	7.13	4.912	IO	|	|	|	| 2.75
21.333	2.25	7.08	4.878	IO	|	|	|	| 2.73
21.417	2.23	7.02	4.845	IO	|	|	|	| 2.71
21.500	2.21	6.97	4.812	IO	|	|	|	| 2.70
21.583	2.19	6.91	4.780	IO	|	|	|	| 2.68
21.667	2.16	6.86	4.747	IO	|	|	|	| 2.66
21.750	2.14	6.81	4.715	IO	|	|	|	| 2.65
21.833	2.12	6.75	4.683	IO	|	|	|	| 2.63
21.917	2.10	6.70	4.651	IO	|	|	|	| 2.61
22.000	2.08	6.65	4.620	IO	|	|	|	| 2.60
22.083	2.06	6.59	4.588	IO	|	|	|	| 2.58
22.167	2.04	6.54	4.557	IO	|	|	|	| 2.56
22.250	2.03	6.49	4.526	IO	|	|	|	| 2.55
22.333	2.01	6.44	4.496	IO	|	|	|	| 2.53
22.417	1.99	6.39	4.465	IO	|	|	|	| 2.51
22.500	1.97	6.34	4.435	IO	|	|	|	| 2.50
22.583	1.96	6.29	4.405	IO	|	|	|	| 2.48
22.667	1.94	6.24	4.375	IO	|	|	|	| 2.47
22.750	1.93	6.19	4.346	IO	|	|	|	| 2.45
22.833	1.91	6.14	4.317	IO	|	|	|	| 2.44
22.917	1.89	6.09	4.288	IO	|	|	|	| 2.42
23.000	1.88	6.04	4.259	IO	|	|	|	| 2.41

23.083	1.87	6.00	4.230	IO					2.39
23.167	1.85	5.95	4.202	IO					2.38
23.250	1.84	5.90	4.174	IO					2.36
23.333	1.82	5.86	4.146	IO					2.35
23.417	1.81	5.81	4.118	IO					2.33
23.500	1.80	5.76	4.091	IO					2.32
23.583	1.78	5.72	4.064	IO					2.30
23.667	1.77	5.67	4.037	IO					2.29
23.750	1.76	5.63	4.010	IO					2.27
23.833	1.75	5.58	3.983	IO					2.26
23.917	1.73	5.54	3.957	IO					2.25
24.000	1.72	5.50	3.931	IO					2.23
24.083	1.66	5.45	3.905	IO					2.22
24.167	1.44	5.41	3.878	IO					2.21
24.250	0.89	5.36	3.849	IO					2.19
24.333	0.52	5.31	3.817	IO					2.17
24.417	0.35	5.25	3.784	IO					2.16
24.500	0.24	5.19	3.750	IO					2.14
24.583	0.16	5.14	3.716	O					2.12
24.667	0.11	5.08	3.681	O					2.10
24.750	0.07	5.02	3.647	O					2.08
24.833	0.04	4.97	3.613	O					2.07
24.917	0.03	4.91	3.580	O					2.05
25.000	0.02	4.85	3.546	O					2.03
25.083	0.02	4.80	3.513	O					2.01
25.167	0.01	4.74	3.480	O					2.00
25.250	0.01	4.68	3.448	O					1.98
25.333	0.00	4.62	3.416	O					1.96
25.417	0.00	4.56	3.384	O					1.94
25.500	0.00	4.51	3.353	O					1.93
25.583	0.00	4.45	3.322	O					1.91
25.667	0.00	4.39	3.292	O					1.89
25.750	0.00	4.34	3.262	O					1.88
25.833	0.00	4.28	3.232	O					1.86
25.917	0.00	4.23	3.203	O					1.84
26.000	0.00	4.17	3.174	O					1.83
26.083	0.00	4.12	3.145	O					1.81
26.167	0.00	4.07	3.117	O					1.80
26.250	0.00	4.01	3.089	O					1.78
26.333	0.00	3.96	3.062	O					1.77
26.417	0.00	3.91	3.035	O					1.75
26.500	0.00	3.86	3.008	O					1.74
26.583	0.00	3.81	2.981	O					1.72
26.667	0.00	3.76	2.955	O					1.71
26.750	0.00	3.72	2.930	O					1.69
26.833	0.00	3.67	2.904	O					1.68
26.917	0.00	3.62	2.879	O					1.67
27.000	0.00	3.58	2.854	O					1.65
27.083	0.00	3.53	2.830	O					1.64
27.167	0.00	3.49	2.806	O					1.63
27.250	0.00	3.44	2.782	O					1.61
27.333	0.00	3.40	2.758	O					1.60
27.417	0.00	3.35	2.735	O					1.59
27.500	0.00	3.31	2.712	O					1.57
27.583	0.00	3.27	2.689	O					1.56
27.667	0.00	3.23	2.667	O					1.55
27.750	0.00	3.19	2.645	O					1.54
27.833	0.00	3.15	2.623	O					1.53
27.917	0.00	3.10	2.602	O					1.51
28.000	0.00	3.07	2.580	O					1.50
28.083	0.00	3.03	2.559	O					1.49
28.167	0.00	3.00	2.539	O					1.48
28.250	0.00	2.97	2.518	O					1.47
28.333	0.00	2.93	2.498	O					1.46
28.417	0.00	2.90	2.478	O					1.44
28.500	0.00	2.87	2.458	O					1.43
28.583	0.00	2.84	2.438	O					1.42
28.667	0.00	2.81	2.419	O					1.41
28.750	0.00	2.78	2.399	O					1.40
28.833	0.00	2.75	2.380	O					1.39
28.917	0.00	2.72	2.362	O					1.38

29.000	0.00	2.69	2.343	O	|	|	|	|	1.37
29.083	0.00	2.66	2.324	O	|	|	|	|	1.36
29.167	0.00	2.63	2.306	O	|	|	|	|	1.35
29.250	0.00	2.61	2.288	O	|	|	|	|	1.34
29.333	0.00	2.58	2.270	O	|	|	|	|	1.33
29.417	0.00	2.55	2.253	O	|	|	|	|	1.32
29.500	0.00	2.52	2.235	O	|	|	|	|	1.31
29.583	0.00	2.50	2.218	O	|	|	|	|	1.30
29.667	0.00	2.47	2.201	O	|	|	|	|	1.29
29.750	0.00	2.44	2.184	O	|	|	|	|	1.28
29.833	0.00	2.42	2.167	O	|	|	|	|	1.27
29.917	0.00	2.39	2.151	O	|	|	|	|	1.26
30.000	0.00	2.36	2.134	O	|	|	|	|	1.25
30.083	0.00	2.34	2.118	O	|	|	|	|	1.24
30.167	0.00	2.31	2.102	O	|	|	|	|	1.23
30.250	0.00	2.29	2.086	O	|	|	|	|	1.22
30.333	0.00	2.26	2.070	O	|	|	|	|	1.21
30.417	0.00	2.24	2.055	O	|	|	|	|	1.20
30.500	0.00	2.22	2.040	O	|	|	|	|	1.20
30.583	0.00	2.19	2.024	O	|	|	|	|	1.19
30.667	0.00	2.17	2.009	O	|	|	|	|	1.18
30.750	0.00	2.15	1.995	O	|	|	|	|	1.17
30.833	0.00	2.12	1.980	O	|	|	|	|	1.16
30.917	0.00	2.10	1.965	O	|	|	|	|	1.15
31.000	0.00	2.08	1.951	O	|	|	|	|	1.15
31.083	0.00	2.05	1.937	O	|	|	|	|	1.14
31.167	0.00	2.03	1.923	O	|	|	|	|	1.13
31.250	0.00	2.01	1.909	O	|	|	|	|	1.12
31.333	0.00	1.99	1.895	O	|	|	|	|	1.11
31.417	0.00	1.97	1.881	O	|	|	|	|	1.11
31.500	0.00	1.95	1.868	O	|	|	|	|	1.10
31.583	0.00	1.93	1.855	O	|	|	|	|	1.09
31.667	0.00	1.90	1.841	O	|	|	|	|	1.08
31.750	0.00	1.88	1.828	O	|	|	|	|	1.08
31.833	0.00	1.86	1.815	O	|	|	|	|	1.07
31.917	0.00	1.84	1.803	O	|	|	|	|	1.06
32.000	0.00	1.82	1.790	O	|	|	|	|	1.05
32.083	0.00	1.80	1.778	O	|	|	|	|	1.05
32.167	0.00	1.79	1.765	O	|	|	|	|	1.04
32.250	0.00	1.77	1.753	O	|	|	|	|	1.03
32.333	0.00	1.75	1.741	O	|	|	|	|	1.03
32.417	0.00	1.73	1.729	O	|	|	|	|	1.02
32.500	0.00	1.71	1.717	O	|	|	|	|	1.01
32.583	0.00	1.69	1.705	O	|	|	|	|	1.01
32.667	0.00	1.67	1.694	O	|	|	|	|	1.00
32.750	0.00	1.66	1.682	O	|	|	|	|	0.99
32.833	0.00	1.65	1.671	O	|	|	|	|	0.99
32.917	0.00	1.63	1.660	O	|	|	|	|	0.98
33.000	0.00	1.62	1.648	O	|	|	|	|	0.97
33.083	0.00	1.61	1.637	O	|	|	|	|	0.97
33.167	0.00	1.60	1.626	O	|	|	|	|	0.96
33.250	0.00	1.58	1.615	O	|	|	|	|	0.95
33.333	0.00	1.57	1.604	O	|	|	|	|	0.95
33.417	0.00	1.56	1.594	O	|	|	|	|	0.94
33.500	0.00	1.55	1.583	O	|	|	|	|	0.94
33.583	0.00	1.53	1.572	O	|	|	|	|	0.93
33.667	0.00	1.52	1.562	O	|	|	|	|	0.92
33.750	0.00	1.51	1.551	O	|	|	|	|	0.92
33.833	0.00	1.50	1.541	O	|	|	|	|	0.91
33.917	0.00	1.49	1.531	O	|	|	|	|	0.91
34.000	0.00	1.48	1.520	O	|	|	|	|	0.90
34.083	0.00	1.46	1.510	O	|	|	|	|	0.89
34.167	0.00	1.45	1.500	O	|	|	|	|	0.89
34.250	0.00	1.44	1.490	O	|	|	|	|	0.88
34.333	0.00	1.43	1.480	O	|	|	|	|	0.88
34.417	0.00	1.42	1.471	O	|	|	|	|	0.87
34.500	0.00	1.41	1.461	O	|	|	|	|	0.86
34.583	0.00	1.40	1.451	O	|	|	|	|	0.86
34.667	0.00	1.39	1.442	O	|	|	|	|	0.85
34.750	0.00	1.37	1.432	O	|	|	|	|	0.85
34.833	0.00	1.36	1.423	O	|	|	|	|	0.84

34.917	0.00	1.35	1.413	O	|	|	|	|	0.84
35.000	0.00	1.34	1.404	O	|	|	|	|	0.83
35.083	0.00	1.33	1.395	O	|	|	|	|	0.83
35.167	0.00	1.32	1.386	O	|	|	|	|	0.82
35.250	0.00	1.31	1.377	O	|	|	|	|	0.82
35.333	0.00	1.30	1.368	O	|	|	|	|	0.81
35.417	0.00	1.29	1.359	O	|	|	|	|	0.81
35.500	0.00	1.28	1.350	O	|	|	|	|	0.80
35.583	0.00	1.27	1.341	O	|	|	|	|	0.80
35.667	0.00	1.26	1.332	O	|	|	|	|	0.79
35.750	0.00	1.25	1.324	O	|	|	|	|	0.79
35.833	0.00	1.24	1.315	O	|	|	|	|	0.78
35.917	0.00	1.23	1.307	O	|	|	|	|	0.78
36.000	0.00	1.22	1.298	O	|	|	|	|	0.77
36.083	0.00	1.21	1.290	O	|	|	|	|	0.77
36.167	0.00	1.20	1.282	O	|	|	|	|	0.76
36.250	0.00	1.19	1.273	O	|	|	|	|	0.76
36.333	0.00	1.18	1.265	O	|	|	|	|	0.75
36.417	0.00	1.17	1.257	O	|	|	|	|	0.75
36.500	0.00	1.17	1.249	O	|	|	|	|	0.74
36.583	0.00	1.16	1.241	O	|	|	|	|	0.74
36.667	0.00	1.15	1.233	O	|	|	|	|	0.73
36.750	0.00	1.14	1.225	O	|	|	|	|	0.73
36.833	0.00	1.13	1.217	O	|	|	|	|	0.72
36.917	0.00	1.12	1.210	O	|	|	|	|	0.72
37.000	0.00	1.11	1.202	O	|	|	|	|	0.71
37.083	0.00	1.10	1.194	O	|	|	|	|	0.71
37.167	0.00	1.09	1.187	O	|	|	|	|	0.71
37.250	0.00	1.09	1.179	O	|	|	|	|	0.70
37.333	0.00	1.08	1.172	O	|	|	|	|	0.70
37.417	0.00	1.07	1.164	O	|	|	|	|	0.69
37.500	0.00	1.06	1.157	O	|	|	|	|	0.69
37.583	0.00	1.05	1.150	O	|	|	|	|	0.68
37.667	0.00	1.04	1.143	O	|	|	|	|	0.68
37.750	0.00	1.04	1.135	O	|	|	|	|	0.68
37.833	0.00	1.03	1.128	O	|	|	|	|	0.67
37.917	0.00	1.02	1.121	O	|	|	|	|	0.67
38.000	0.00	1.01	1.114	O	|	|	|	|	0.66
38.083	0.00	1.00	1.107	O	|	|	|	|	0.66
38.167	0.00	1.00	1.100	O	|	|	|	|	0.66
38.250	0.00	0.99	1.094	O	|	|	|	|	0.65
38.333	0.00	0.98	1.087	O	|	|	|	|	0.65
38.417	0.00	0.97	1.080	O	|	|	|	|	0.64
38.500	0.00	0.97	1.073	O	|	|	|	|	0.64
38.583	0.00	0.96	1.067	O	|	|	|	|	0.64
38.667	0.00	0.95	1.060	O	|	|	|	|	0.63
38.750	0.00	0.94	1.054	O	|	|	|	|	0.63
38.833	0.00	0.94	1.047	O	|	|	|	|	0.62
38.917	0.00	0.93	1.041	O	|	|	|	|	0.62
39.000	0.00	0.92	1.034	O	|	|	|	|	0.62
39.083	0.00	0.91	1.028	O	|	|	|	|	0.61
39.167	0.00	0.91	1.022	O	|	|	|	|	0.61
39.250	0.00	0.90	1.016	O	|	|	|	|	0.61
39.333	0.00	0.89	1.009	O	|	|	|	|	0.60
39.417	0.00	0.89	1.003	O	|	|	|	|	0.60
39.500	0.00	0.88	0.997	O	|	|	|	|	0.60
39.583	0.00	0.87	0.991	O	|	|	|	|	0.59
39.667	0.00	0.86	0.985	O	|	|	|	|	0.59
39.750	0.00	0.86	0.979	O	|	|	|	|	0.58
39.833	0.00	0.85	0.973	O	|	|	|	|	0.58
39.917	0.00	0.84	0.968	O	|	|	|	|	0.58
40.000	0.00	0.84	0.962	O	|	|	|	|	0.57
40.083	0.00	0.83	0.956	O	|	|	|	|	0.57
40.167	0.00	0.82	0.950	O	|	|	|	|	0.57
40.250	0.00	0.82	0.945	O	|	|	|	|	0.56
40.333	0.00	0.81	0.939	O	|	|	|	|	0.56
40.417	0.00	0.81	0.934	O	|	|	|	|	0.56
40.500	0.00	0.80	0.928	O	|	|	|	|	0.55
40.583	0.00	0.79	0.923	O	|	|	|	|	0.55
40.667	0.00	0.79	0.917	O	|	|	|	|	0.55
40.750	0.00	0.78	0.912	O	|	|	|	|	0.55

40.833	0.00	0.77	0.906	O	|	|	|	|	0.54
40.917	0.00	0.77	0.901	O	|	|	|	|	0.54
41.000	0.00	0.76	0.896	O	|	|	|	|	0.54
41.083	0.00	0.76	0.891	O	|	|	|	|	0.53
41.167	0.00	0.75	0.885	O	|	|	|	|	0.53
41.250	0.00	0.74	0.880	O	|	|	|	|	0.53
41.333	0.00	0.74	0.875	O	|	|	|	|	0.52
41.417	0.00	0.73	0.870	O	|	|	|	|	0.52
41.500	0.00	0.73	0.865	O	|	|	|	|	0.52
41.583	0.00	0.72	0.860	O	|	|	|	|	0.52
41.667	0.00	0.72	0.855	O	|	|	|	|	0.51
41.750	0.00	0.71	0.850	O	|	|	|	|	0.51
41.833	0.00	0.70	0.845	O	|	|	|	|	0.51
41.917	0.00	0.70	0.840	O	|	|	|	|	0.50
42.000	0.00	0.69	0.836	O	|	|	|	|	0.50
42.083	0.00	0.69	0.831	O	|	|	|	|	0.50
42.167	0.00	0.69	0.826	O	|	|	|	|	0.50
42.250	0.00	0.68	0.821	O	|	|	|	|	0.49
42.333	0.00	0.68	0.817	O	|	|	|	|	0.49
42.417	0.00	0.67	0.812	O	|	|	|	|	0.49
42.500	0.00	0.67	0.807	O	|	|	|	|	0.48
42.583	0.00	0.67	0.803	O	|	|	|	|	0.48
42.667	0.00	0.66	0.798	O	|	|	|	|	0.48
42.750	0.00	0.66	0.794	O	|	|	|	|	0.48
42.833	0.00	0.65	0.789	O	|	|	|	|	0.47
42.917	0.00	0.65	0.785	O	|	|	|	|	0.47
43.000	0.00	0.65	0.780	O	|	|	|	|	0.47
43.083	0.00	0.64	0.776	O	|	|	|	|	0.47
43.167	0.00	0.64	0.771	O	|	|	|	|	0.46
43.250	0.00	0.64	0.767	O	|	|	|	|	0.46
43.333	0.00	0.63	0.763	O	|	|	|	|	0.46
43.417	0.00	0.63	0.758	O	|	|	|	|	0.45
43.500	0.00	0.63	0.754	O	|	|	|	|	0.45
43.583	0.00	0.62	0.750	O	|	|	|	|	0.45
43.667	0.00	0.62	0.745	O	|	|	|	|	0.45
43.750	0.00	0.61	0.741	O	|	|	|	|	0.44
43.833	0.00	0.61	0.737	O	|	|	|	|	0.44
43.917	0.00	0.61	0.733	O	|	|	|	|	0.44
44.000	0.00	0.60	0.729	O	|	|	|	|	0.44
44.083	0.00	0.60	0.724	O	|	|	|	|	0.43
44.167	0.00	0.60	0.720	O	|	|	|	|	0.43
44.250	0.00	0.59	0.716	O	|	|	|	|	0.43
44.333	0.00	0.59	0.712	O	|	|	|	|	0.43
44.417	0.00	0.59	0.708	O	|	|	|	|	0.42
44.500	0.00	0.58	0.704	O	|	|	|	|	0.42
44.583	0.00	0.58	0.700	O	|	|	|	|	0.42
44.667	0.00	0.58	0.696	O	|	|	|	|	0.42
44.750	0.00	0.57	0.692	O	|	|	|	|	0.41
44.833	0.00	0.57	0.688	O	|	|	|	|	0.41
44.917	0.00	0.57	0.684	O	|	|	|	|	0.41
45.000	0.00	0.56	0.680	O	|	|	|	|	0.41
45.083	0.00	0.56	0.676	O	|	|	|	|	0.41
45.167	0.00	0.56	0.673	O	|	|	|	|	0.40
45.250	0.00	0.55	0.669	O	|	|	|	|	0.40
45.333	0.00	0.55	0.665	O	|	|	|	|	0.40
45.417	0.00	0.55	0.661	O	|	|	|	|	0.40
45.500	0.00	0.55	0.657	O	|	|	|	|	0.39
45.583	0.00	0.54	0.654	O	|	|	|	|	0.39
45.667	0.00	0.54	0.650	O	|	|	|	|	0.39
45.750	0.00	0.54	0.646	O	|	|	|	|	0.39
45.833	0.00	0.53	0.642	O	|	|	|	|	0.39
45.917	0.00	0.53	0.639	O	|	|	|	|	0.38
46.000	0.00	0.53	0.635	O	|	|	|	|	0.38
46.083	0.00	0.52	0.632	O	|	|	|	|	0.38
46.167	0.00	0.52	0.628	O	|	|	|	|	0.38
46.250	0.00	0.52	0.624	O	|	|	|	|	0.37
46.333	0.00	0.52	0.621	O	|	|	|	|	0.37
46.417	0.00	0.51	0.617	O	|	|	|	|	0.37
46.500	0.00	0.51	0.614	O	|	|	|	|	0.37
46.583	0.00	0.51	0.610	O	|	|	|	|	0.37
46.667	0.00	0.50	0.607	O	|	|	|	|	0.36

46.750	0.00	0.50	0.603	O	|	|	|	|	0.36
46.833	0.00	0.50	0.600	O	|	|	|	|	0.36
46.917	0.00	0.49	0.596	O	|	|	|	|	0.36
47.000	0.00	0.49	0.593	O	|	|	|	|	0.36
47.083	0.00	0.49	0.590	O	|	|	|	|	0.35
47.167	0.00	0.49	0.586	O	|	|	|	|	0.35
47.250	0.00	0.48	0.583	O	|	|	|	|	0.35
47.333	0.00	0.48	0.580	O	|	|	|	|	0.35
47.417	0.00	0.48	0.576	O	|	|	|	|	0.35
47.500	0.00	0.48	0.573	O	|	|	|	|	0.34
47.583	0.00	0.47	0.570	O	|	|	|	|	0.34
47.667	0.00	0.47	0.567	O	|	|	|	|	0.34
47.750	0.00	0.47	0.563	O	|	|	|	|	0.34
47.833	0.00	0.46	0.560	O	|	|	|	|	0.34
47.917	0.00	0.46	0.557	O	|	|	|	|	0.33
48.000	0.00	0.46	0.554	O	|	|	|	|	0.33
48.083	0.00	0.46	0.551	O	|	|	|	|	0.33
48.167	0.00	0.45	0.547	O	|	|	|	|	0.33
48.250	0.00	0.45	0.544	O	|	|	|	|	0.33
48.333	0.00	0.45	0.541	O	|	|	|	|	0.32
48.417	0.00	0.45	0.538	O	|	|	|	|	0.32
48.500	0.00	0.44	0.535	O	|	|	|	|	0.32
48.583	0.00	0.44	0.532	O	|	|	|	|	0.32
48.667	0.00	0.44	0.529	O	|	|	|	|	0.32
48.750	0.00	0.44	0.526	O	|	|	|	|	0.32
48.833	0.00	0.43	0.523	O	|	|	|	|	0.31
48.917	0.00	0.43	0.520	O	|	|	|	|	0.31
49.000	0.00	0.43	0.517	O	|	|	|	|	0.31
49.083	0.00	0.43	0.514	O	|	|	|	|	0.31
49.167	0.00	0.42	0.511	O	|	|	|	|	0.31
49.250	0.00	0.42	0.508	O	|	|	|	|	0.30
49.333	0.00	0.42	0.505	O	|	|	|	|	0.30
49.417	0.00	0.42	0.502	O	|	|	|	|	0.30
49.500	0.00	0.41	0.500	O	|	|	|	|	0.30
49.583	0.00	0.41	0.497	O	|	|	|	|	0.30
49.667	0.00	0.41	0.494	O	|	|	|	|	0.30
49.750	0.00	0.41	0.491	O	|	|	|	|	0.29
49.833	0.00	0.41	0.488	O	|	|	|	|	0.29
49.917	0.00	0.40	0.486	O	|	|	|	|	0.29
50.000	0.00	0.40	0.483	O	|	|	|	|	0.29
50.083	0.00	0.40	0.480	O	|	|	|	|	0.29
50.167	0.00	0.40	0.477	O	|	|	|	|	0.29
50.250	0.00	0.39	0.475	O	|	|	|	|	0.28
50.333	0.00	0.39	0.472	O	|	|	|	|	0.28
50.417	0.00	0.39	0.469	O	|	|	|	|	0.28
50.500	0.00	0.39	0.467	O	|	|	|	|	0.28
50.583	0.00	0.38	0.464	O	|	|	|	|	0.28
50.667	0.00	0.38	0.461	O	|	|	|	|	0.28
50.750	0.00	0.38	0.459	O	|	|	|	|	0.27
50.833	0.00	0.38	0.456	O	|	|	|	|	0.27
50.917	0.00	0.38	0.453	O	|	|	|	|	0.27
51.000	0.00	0.37	0.451	O	|	|	|	|	0.27
51.083	0.00	0.37	0.448	O	|	|	|	|	0.27
51.167	0.00	0.37	0.446	O	|	|	|	|	0.27
51.250	0.00	0.37	0.443	O	|	|	|	|	0.27
51.333	0.00	0.37	0.441	O	|	|	|	|	0.26
51.417	0.00	0.36	0.438	O	|	|	|	|	0.26
51.500	0.00	0.36	0.436	O	|	|	|	|	0.26
51.583	0.00	0.36	0.433	O	|	|	|	|	0.26
51.667	0.00	0.36	0.431	O	|	|	|	|	0.26
51.750	0.00	0.36	0.428	O	|	|	|	|	0.26
51.833	0.00	0.35	0.426	O	|	|	|	|	0.26
51.917	0.00	0.35	0.423	O	|	|	|	|	0.25
52.000	0.00	0.35	0.421	O	|	|	|	|	0.25
52.083	0.00	0.35	0.419	O	|	|	|	|	0.25
52.167	0.00	0.35	0.416	O	|	|	|	|	0.25
52.250	0.00	0.34	0.414	O	|	|	|	|	0.25
52.333	0.00	0.34	0.411	O	|	|	|	|	0.25
52.417	0.00	0.34	0.409	O	|	|	|	|	0.25
52.500	0.00	0.34	0.407	O	|	|	|	|	0.24
52.583	0.00	0.34	0.404	O	|	|	|	|	0.24

52.667	0.00	0.33	0.402	O	|	|	|	|	0.24
52.750	0.00	0.33	0.400	O	|	|	|	|	0.24
52.833	0.00	0.33	0.398	O	|	|	|	|	0.24
52.917	0.00	0.33	0.395	O	|	|	|	|	0.24
53.000	0.00	0.33	0.393	O	|	|	|	|	0.24
53.083	0.00	0.32	0.391	O	|	|	|	|	0.23
53.167	0.00	0.32	0.389	O	|	|	|	|	0.23
53.250	0.00	0.32	0.386	O	|	|	|	|	0.23
53.333	0.00	0.32	0.384	O	|	|	|	|	0.23
53.417	0.00	0.32	0.382	O	|	|	|	|	0.23
53.500	0.00	0.32	0.380	O	|	|	|	|	0.23
53.583	0.00	0.31	0.378	O	|	|	|	|	0.23
53.667	0.00	0.31	0.375	O	|	|	|	|	0.23
53.750	0.00	0.31	0.373	O	|	|	|	|	0.22
53.833	0.00	0.31	0.371	O	|	|	|	|	0.22
53.917	0.00	0.31	0.369	O	|	|	|	|	0.22
54.000	0.00	0.30	0.367	O	|	|	|	|	0.22
54.083	0.00	0.30	0.365	O	|	|	|	|	0.22
54.167	0.00	0.30	0.363	O	|	|	|	|	0.22
54.250	0.00	0.30	0.361	O	|	|	|	|	0.22
54.333	0.00	0.30	0.359	O	|	|	|	|	0.22
54.417	0.00	0.30	0.357	O	|	|	|	|	0.21
54.500	0.00	0.29	0.355	O	|	|	|	|	0.21
54.583	0.00	0.29	0.353	O	|	|	|	|	0.21
54.667	0.00	0.29	0.351	O	|	|	|	|	0.21
54.750	0.00	0.29	0.349	O	|	|	|	|	0.21
54.833	0.00	0.29	0.347	O	|	|	|	|	0.21
54.917	0.00	0.29	0.345	O	|	|	|	|	0.21
55.000	0.00	0.28	0.343	O	|	|	|	|	0.21
55.083	0.00	0.28	0.341	O	|	|	|	|	0.20
55.167	0.00	0.28	0.339	O	|	|	|	|	0.20
55.250	0.00	0.28	0.337	O	|	|	|	|	0.20
55.333	0.00	0.28	0.335	O	|	|	|	|	0.20
55.417	0.00	0.28	0.333	O	|	|	|	|	0.20
55.500	0.00	0.27	0.331	O	|	|	|	|	0.20
55.583	0.00	0.27	0.329	O	|	|	|	|	0.20
55.667	0.00	0.27	0.327	O	|	|	|	|	0.20
55.750	0.00	0.27	0.325	O	|	|	|	|	0.20
55.833	0.00	0.27	0.324	O	|	|	|	|	0.19
55.917	0.00	0.27	0.322	O	|	|	|	|	0.19
56.000	0.00	0.27	0.320	O	|	|	|	|	0.19
56.083	0.00	0.26	0.318	O	|	|	|	|	0.19
56.167	0.00	0.26	0.316	O	|	|	|	|	0.19
56.250	0.00	0.26	0.315	O	|	|	|	|	0.19
56.333	0.00	0.26	0.313	O	|	|	|	|	0.19
56.417	0.00	0.26	0.311	O	|	|	|	|	0.19
56.500	0.00	0.26	0.309	O	|	|	|	|	0.19
56.583	0.00	0.26	0.307	O	|	|	|	|	0.18
56.667	0.00	0.25	0.306	O	|	|	|	|	0.18
56.750	0.00	0.25	0.304	O	|	|	|	|	0.18
56.833	0.00	0.25	0.302	O	|	|	|	|	0.18
56.917	0.00	0.25	0.300	O	|	|	|	|	0.18
57.000	0.00	0.25	0.299	O	|	|	|	|	0.18
57.083	0.00	0.25	0.297	O	|	|	|	|	0.18
57.167	0.00	0.25	0.295	O	|	|	|	|	0.18
57.250	0.00	0.24	0.294	O	|	|	|	|	0.18
57.333	0.00	0.24	0.292	O	|	|	|	|	0.18
57.417	0.00	0.24	0.290	O	|	|	|	|	0.17
57.500	0.00	0.24	0.289	O	|	|	|	|	0.17
57.583	0.00	0.24	0.287	O	|	|	|	|	0.17
57.667	0.00	0.24	0.285	O	|	|	|	|	0.17
57.750	0.00	0.24	0.284	O	|	|	|	|	0.17
57.833	0.00	0.23	0.282	O	|	|	|	|	0.17
57.917	0.00	0.23	0.281	O	|	|	|	|	0.17
58.000	0.00	0.23	0.279	O	|	|	|	|	0.17
58.083	0.00	0.23	0.277	O	|	|	|	|	0.17
58.167	0.00	0.23	0.276	O	|	|	|	|	0.17
58.250	0.00	0.23	0.274	O	|	|	|	|	0.16
58.333	0.00	0.23	0.273	O	|	|	|	|	0.16
58.417	0.00	0.22	0.271	O	|	|	|	|	0.16
58.500	0.00	0.22	0.270	O	|	|	|	|	0.16

58.583	0.00	0.22	0.268	O	|	|	|	|	0.16
58.667	0.00	0.22	0.266	O	|	|	|	|	0.16
58.750	0.00	0.22	0.265	O	|	|	|	|	0.16
58.833	0.00	0.22	0.263	O	|	|	|	|	0.16
58.917	0.00	0.22	0.262	O	|	|	|	|	0.16
59.000	0.00	0.22	0.260	O	|	|	|	|	0.16
59.083	0.00	0.21	0.259	O	|	|	|	|	0.16
59.167	0.00	0.21	0.257	O	|	|	|	|	0.15
59.250	0.00	0.21	0.256	O	|	|	|	|	0.15
59.333	0.00	0.21	0.255	O	|	|	|	|	0.15
59.417	0.00	0.21	0.253	O	|	|	|	|	0.15
59.500	0.00	0.21	0.252	O	|	|	|	|	0.15
59.583	0.00	0.21	0.250	O	|	|	|	|	0.15
59.667	0.00	0.21	0.249	O	|	|	|	|	0.15
59.750	0.00	0.21	0.247	O	|	|	|	|	0.15
59.833	0.00	0.20	0.246	O	|	|	|	|	0.15
59.917	0.00	0.20	0.245	O	|	|	|	|	0.15
60.000	0.00	0.20	0.243	O	|	|	|	|	0.15
60.083	0.00	0.20	0.242	O	|	|	|	|	0.14
60.167	0.00	0.20	0.240	O	|	|	|	|	0.14
60.250	0.00	0.20	0.239	O	|	|	|	|	0.14
60.333	0.00	0.20	0.238	O	|	|	|	|	0.14
60.417	0.00	0.20	0.236	O	|	|	|	|	0.14
60.500	0.00	0.19	0.235	O	|	|	|	|	0.14
60.583	0.00	0.19	0.234	O	|	|	|	|	0.14
60.667	0.00	0.19	0.232	O	|	|	|	|	0.14
60.750	0.00	0.19	0.231	O	|	|	|	|	0.14
60.833	0.00	0.19	0.230	O	|	|	|	|	0.14
60.917	0.00	0.19	0.228	O	|	|	|	|	0.14
61.000	0.00	0.19	0.227	O	|	|	|	|	0.14
61.083	0.00	0.19	0.226	O	|	|	|	|	0.14
61.167	0.00	0.19	0.224	O	|	|	|	|	0.13
61.250	0.00	0.19	0.223	O	|	|	|	|	0.13
61.333	0.00	0.18	0.222	O	|	|	|	|	0.13
61.417	0.00	0.18	0.221	O	|	|	|	|	0.13
61.500	0.00	0.18	0.219	O	|	|	|	|	0.13
61.583	0.00	0.18	0.218	O	|	|	|	|	0.13
61.667	0.00	0.18	0.217	O	|	|	|	|	0.13
61.750	0.00	0.18	0.216	O	|	|	|	|	0.13
61.833	0.00	0.18	0.214	O	|	|	|	|	0.13
61.917	0.00	0.18	0.213	O	|	|	|	|	0.13
62.000	0.00	0.18	0.212	O	|	|	|	|	0.13
62.083	0.00	0.17	0.211	O	|	|	|	|	0.13
62.167	0.00	0.17	0.210	O	|	|	|	|	0.13
62.250	0.00	0.17	0.208	O	|	|	|	|	0.12
62.333	0.00	0.17	0.207	O	|	|	|	|	0.12
62.417	0.00	0.17	0.206	O	|	|	|	|	0.12
62.500	0.00	0.17	0.205	O	|	|	|	|	0.12
62.583	0.00	0.17	0.204	O	|	|	|	|	0.12
62.667	0.00	0.17	0.203	O	|	|	|	|	0.12
62.750	0.00	0.17	0.201	O	|	|	|	|	0.12
62.833	0.00	0.17	0.200	O	|	|	|	|	0.12
62.917	0.00	0.17	0.199	O	|	|	|	|	0.12
63.000	0.00	0.16	0.198	O	|	|	|	|	0.12
63.083	0.00	0.16	0.197	O	|	|	|	|	0.12
63.167	0.00	0.16	0.196	O	|	|	|	|	0.12
63.250	0.00	0.16	0.195	O	|	|	|	|	0.12
63.333	0.00	0.16	0.193	O	|	|	|	|	0.12
63.417	0.00	0.16	0.192	O	|	|	|	|	0.12
63.500	0.00	0.16	0.191	O	|	|	|	|	0.11
63.583	0.00	0.16	0.190	O	|	|	|	|	0.11
63.667	0.00	0.16	0.189	O	|	|	|	|	0.11
63.750	0.00	0.16	0.188	O	|	|	|	|	0.11
63.833	0.00	0.16	0.187	O	|	|	|	|	0.11
63.917	0.00	0.15	0.186	O	|	|	|	|	0.11
64.000	0.00	0.15	0.185	O	|	|	|	|	0.11
64.083	0.00	0.15	0.184	O	|	|	|	|	0.11
64.167	0.00	0.15	0.183	O	|	|	|	|	0.11
64.250	0.00	0.15	0.182	O	|	|	|	|	0.11
64.333	0.00	0.15	0.181	O	|	|	|	|	0.11
64.417	0.00	0.15	0.180	O	|	|	|	|	0.11

64.500	0.00	0.15	0.179	O	|	|	|	|	0.11
64.583	0.00	0.15	0.178	O	|	|	|	|	0.11
64.667	0.00	0.15	0.177	O	|	|	|	|	0.11
64.750	0.00	0.15	0.176	O	|	|	|	|	0.11
64.833	0.00	0.14	0.175	O	|	|	|	|	0.10
64.917	0.00	0.14	0.174	O	|	|	|	|	0.10
65.000	0.00	0.14	0.173	O	|	|	|	|	0.10
65.083	0.00	0.14	0.172	O	|	|	|	|	0.10
65.167	0.00	0.14	0.171	O	|	|	|	|	0.10
65.250	0.00	0.14	0.170	O	|	|	|	|	0.10
65.333	0.00	0.14	0.169	O	|	|	|	|	0.10
65.417	0.00	0.14	0.168	O	|	|	|	|	0.10
65.500	0.00	0.14	0.167	O	|	|	|	|	0.10
65.583	0.00	0.14	0.166	O	|	|	|	|	0.10
65.667	0.00	0.14	0.165	O	|	|	|	|	0.10
65.750	0.00	0.14	0.164	O	|	|	|	|	0.10
65.833	0.00	0.14	0.163	O	|	|	|	|	0.10
65.917	0.00	0.13	0.162	O	|	|	|	|	0.10
66.000	0.00	0.13	0.161	O	|	|	|	|	0.10
66.083	0.00	0.13	0.160	O	|	|	|	|	0.10
66.167	0.00	0.13	0.159	O	|	|	|	|	0.10
66.250	0.00	0.13	0.158	O	|	|	|	|	0.09
66.333	0.00	0.13	0.158	O	|	|	|	|	0.09
66.417	0.00	0.13	0.157	O	|	|	|	|	0.09
66.500	0.00	0.13	0.156	O	|	|	|	|	0.09
66.583	0.00	0.13	0.155	O	|	|	|	|	0.09
66.667	0.00	0.13	0.154	O	|	|	|	|	0.09
66.750	0.00	0.13	0.153	O	|	|	|	|	0.09
66.833	0.00	0.13	0.152	O	|	|	|	|	0.09
66.917	0.00	0.13	0.151	O	|	|	|	|	0.09
67.000	0.00	0.12	0.150	O	|	|	|	|	0.09
67.083	0.00	0.12	0.150	O	|	|	|	|	0.09
67.167	0.00	0.12	0.149	O	|	|	|	|	0.09
67.250	0.00	0.12	0.148	O	|	|	|	|	0.09
67.333	0.00	0.12	0.147	O	|	|	|	|	0.09
67.417	0.00	0.12	0.146	O	|	|	|	|	0.09
67.500	0.00	0.12	0.145	O	|	|	|	|	0.09
67.583	0.00	0.12	0.145	O	|	|	|	|	0.09
67.667	0.00	0.12	0.144	O	|	|	|	|	0.09
67.750	0.00	0.12	0.143	O	|	|	|	|	0.09
67.833	0.00	0.12	0.142	O	|	|	|	|	0.09
67.917	0.00	0.12	0.141	O	|	|	|	|	0.08
68.000	0.00	0.12	0.141	O	|	|	|	|	0.08
68.083	0.00	0.12	0.140	O	|	|	|	|	0.08
68.167	0.00	0.12	0.139	O	|	|	|	|	0.08
68.250	0.00	0.11	0.138	O	|	|	|	|	0.08
68.333	0.00	0.11	0.137	O	|	|	|	|	0.08
68.417	0.00	0.11	0.137	O	|	|	|	|	0.08
68.500	0.00	0.11	0.136	O	|	|	|	|	0.08
68.583	0.00	0.11	0.135	O	|	|	|	|	0.08
68.667	0.00	0.11	0.134	O	|	|	|	|	0.08
68.750	0.00	0.11	0.133	O	|	|	|	|	0.08
68.833	0.00	0.11	0.133	O	|	|	|	|	0.08
68.917	0.00	0.11	0.132	O	|	|	|	|	0.08
69.000	0.00	0.11	0.131	O	|	|	|	|	0.08
69.083	0.00	0.11	0.130	O	|	|	|	|	0.08
69.167	0.00	0.11	0.130	O	|	|	|	|	0.08
69.250	0.00	0.11	0.129	O	|	|	|	|	0.08
69.333	0.00	0.11	0.128	O	|	|	|	|	0.08
69.417	0.00	0.11	0.128	O	|	|	|	|	0.08
69.500	0.00	0.11	0.127	O	|	|	|	|	0.08
69.583	0.00	0.10	0.126	O	|	|	|	|	0.08
69.667	0.00	0.10	0.125	O	|	|	|	|	0.08
69.750	0.00	0.10	0.125	O	|	|	|	|	0.07
69.833	0.00	0.10	0.124	O	|	|	|	|	0.07
69.917	0.00	0.10	0.123	O	|	|	|	|	0.07
70.000	0.00	0.10	0.123	O	|	|	|	|	0.07
70.083	0.00	0.10	0.122	O	|	|	|	|	0.07
70.167	0.00	0.10	0.121	O	|	|	|	|	0.07
70.250	0.00	0.10	0.120	O	|	|	|	|	0.07
70.333	0.00	0.10	0.120	O	|	|	|	|	0.07

70.417	0.00	0.10	0.119	O	|	|	|	|	0.07
70.500	0.00	0.10	0.118	O	|	|	|	|	0.07
70.583	0.00	0.10	0.118	O	|	|	|	|	0.07
70.667	0.00	0.10	0.117	O	|	|	|	|	0.07
70.750	0.00	0.10	0.116	O	|	|	|	|	0.07
70.833	0.00	0.10	0.116	O	|	|	|	|	0.07
70.917	0.00	0.10	0.115	O	|	|	|	|	0.07
71.000	0.00	0.09	0.114	O	|	|	|	|	0.07
71.083	0.00	0.09	0.114	O	|	|	|	|	0.07
71.167	0.00	0.09	0.113	O	|	|	|	|	0.07
71.250	0.00	0.09	0.112	O	|	|	|	|	0.07
71.333	0.00	0.09	0.112	O	|	|	|	|	0.07
71.417	0.00	0.09	0.111	O	|	|	|	|	0.07
71.500	0.00	0.09	0.111	O	|	|	|	|	0.07
71.583	0.00	0.09	0.110	O	|	|	|	|	0.07
71.667	0.00	0.09	0.109	O	|	|	|	|	0.07
71.750	0.00	0.09	0.109	O	|	|	|	|	0.07
71.833	0.00	0.09	0.108	O	|	|	|	|	0.06
71.917	0.00	0.09	0.107	O	|	|	|	|	0.06
72.000	0.00	0.09	0.107	O	|	|	|	|	0.06
72.083	0.00	0.09	0.106	O	|	|	|	|	0.06
72.167	0.00	0.09	0.106	O	|	|	|	|	0.06
72.250	0.00	0.09	0.105	O	|	|	|	|	0.06
72.333	0.00	0.09	0.104	O	|	|	|	|	0.06
72.417	0.00	0.09	0.104	O	|	|	|	|	0.06
72.500	0.00	0.09	0.103	O	|	|	|	|	0.06
72.583	0.00	0.09	0.103	O	|	|	|	|	0.06
72.667	0.00	0.08	0.102	O	|	|	|	|	0.06
72.750	0.00	0.08	0.101	O	|	|	|	|	0.06
72.833	0.00	0.08	0.101	O	|	|	|	|	0.06
72.917	0.00	0.08	0.100	O	|	|	|	|	0.06
73.000	0.00	0.08	0.100	O	|	|	|	|	0.06
73.083	0.00	0.08	0.099	O	|	|	|	|	0.06
73.167	0.00	0.08	0.099	O	|	|	|	|	0.06
73.250	0.00	0.08	0.098	O	|	|	|	|	0.06
73.333	0.00	0.08	0.097	O	|	|	|	|	0.06
73.417	0.00	0.08	0.097	O	|	|	|	|	0.06
73.500	0.00	0.08	0.096	O	|	|	|	|	0.06
73.583	0.00	0.08	0.096	O	|	|	|	|	0.06
73.667	0.00	0.08	0.095	O	|	|	|	|	0.06
73.750	0.00	0.08	0.095	O	|	|	|	|	0.06
73.833	0.00	0.08	0.094	O	|	|	|	|	0.06
73.917	0.00	0.08	0.094	O	|	|	|	|	0.06
74.000	0.00	0.08	0.093	O	|	|	|	|	0.06
74.083	0.00	0.08	0.093	O	|	|	|	|	0.06
74.167	0.00	0.08	0.092	O	|	|	|	|	0.06
74.250	0.00	0.08	0.092	O	|	|	|	|	0.05
74.333	0.00	0.08	0.091	O	|	|	|	|	0.05
74.417	0.00	0.08	0.090	O	|	|	|	|	0.05
74.500	0.00	0.07	0.090	O	|	|	|	|	0.05
74.583	0.00	0.07	0.089	O	|	|	|	|	0.05
74.667	0.00	0.07	0.089	O	|	|	|	|	0.05
74.750	0.00	0.07	0.088	O	|	|	|	|	0.05
74.833	0.00	0.07	0.088	O	|	|	|	|	0.05
74.917	0.00	0.07	0.087	O	|	|	|	|	0.05
75.000	0.00	0.07	0.087	O	|	|	|	|	0.05
75.083	0.00	0.07	0.086	O	|	|	|	|	0.05
75.167	0.00	0.07	0.086	O	|	|	|	|	0.05
75.250	0.00	0.07	0.085	O	|	|	|	|	0.05
75.333	0.00	0.07	0.085	O	|	|	|	|	0.05
75.417	0.00	0.07	0.084	O	|	|	|	|	0.05
75.500	0.00	0.07	0.084	O	|	|	|	|	0.05
75.583	0.00	0.07	0.084	O	|	|	|	|	0.05
75.667	0.00	0.07	0.083	O	|	|	|	|	0.05
75.750	0.00	0.07	0.083	O	|	|	|	|	0.05
75.833	0.00	0.07	0.082	O	|	|	|	|	0.05
75.917	0.00	0.07	0.082	O	|	|	|	|	0.05
76.000	0.00	0.07	0.081	O	|	|	|	|	0.05
76.083	0.00	0.07	0.081	O	|	|	|	|	0.05
76.167	0.00	0.07	0.080	O	|	|	|	|	0.05
76.250	0.00	0.07	0.080	O	|	|	|	|	0.05

76.333	0.00	0.07	0.079	O					0.05
76.417	0.00	0.07	0.079	O					0.05
76.500	0.00	0.07	0.078	O					0.05
76.583	0.00	0.06	0.078	O					0.05
76.667	0.00	0.06	0.078	O					0.05
76.750	0.00	0.06	0.077	O					0.05
76.833	0.00	0.06	0.077	O					0.05
76.917	0.00	0.06	0.076	O					0.05
77.000	0.00	0.06	0.076	O					0.05
77.083	0.00	0.06	0.075	O					0.05
77.167	0.00	0.06	0.075	O					0.04
77.250	0.00	0.06	0.075	O					0.04
77.333	0.00	0.06	0.074	O					0.04
77.417	0.00	0.06	0.074	O					0.04
77.500	0.00	0.06	0.073	O					0.04
77.583	0.00	0.06	0.073	O					0.04
77.667	0.00	0.06	0.072	O					0.04
77.750	0.00	0.06	0.072	O					0.04
77.833	0.00	0.06	0.072	O					0.04
77.917	0.00	0.06	0.071	O					0.04
78.000	0.00	0.06	0.071	O					0.04
78.083	0.00	0.06	0.070	O					0.04
78.167	0.00	0.06	0.070	O					0.04
78.250	0.00	0.06	0.070	O					0.04
78.333	0.00	0.06	0.069	O					0.04
78.417	0.00	0.06	0.069	O					0.04
78.500	0.00	0.06	0.068	O					0.04
78.583	0.00	0.06	0.068	O					0.04
78.667	0.00	0.06	0.068	O					0.04
78.750	0.00	0.06	0.067	O					0.04
78.833	0.00	0.06	0.067	O					0.04
78.917	0.00	0.06	0.066	O					0.04
79.000	0.00	0.05	0.066	O					0.04
79.083	0.00	0.05	0.066	O					0.04
79.167	0.00	0.05	0.065	O					0.04
79.250	0.00	0.05	0.065	O					0.04
79.333	0.00	0.05	0.065	O					0.04
79.417	0.00	0.05	0.064	O					0.04
79.500	0.00	0.05	0.064	O					0.04
79.583	0.00	0.05	0.063	O					0.04
79.667	0.00	0.05	0.063	O					0.04
79.750	0.00	0.05	0.063	O					0.04
79.833	0.00	0.05	0.062	O					0.04
79.917	0.00	0.05	0.062	O					0.04
80.000	0.00	0.05	0.062	O					0.04
80.083	0.00	0.05	0.061	O					0.04
80.167	0.00	0.05	0.061	O					0.04
80.250	0.00	0.05	0.061	O					0.04
80.333	0.00	0.05	0.060	O					0.04
80.417	0.00	0.05	0.060	O					0.04
80.500	0.00	0.05	0.060	O					0.04
80.583	0.00	0.05	0.059	O					0.04
80.667	0.00	0.05	0.059	O					0.04
80.750	0.00	0.05	0.059	O					0.04
80.833	0.00	0.05	0.058	O					0.03
80.917	0.00	0.05	0.058	O					0.03
81.000	0.00	0.05	0.058	O					0.03
81.083	0.00	0.05	0.057	O					0.03
81.167	0.00	0.05	0.057	O					0.03
81.250	0.00	0.05	0.057	O					0.03
81.333	0.00	0.05	0.056	O					0.03
81.417	0.00	0.05	0.056	O					0.03
81.500	0.00	0.05	0.056	O					0.03
81.583	0.00	0.05	0.055	O					0.03
81.667	0.00	0.05	0.055	O					0.03
81.750	0.00	0.05	0.055	O					0.03
81.833	0.00	0.05	0.054	O					0.03
81.917	0.00	0.04	0.054	O					0.03
82.000	0.00	0.04	0.054	O					0.03
82.083	0.00	0.04	0.053	O					0.03
82.167	0.00	0.04	0.053	O					0.03

82.250	0.00	0.04	0.053	O	|	|	|	|	0.03
82.333	0.00	0.04	0.053	O	|	|	|	|	0.03
82.417	0.00	0.04	0.052	O	|	|	|	|	0.03
82.500	0.00	0.04	0.052	O	|	|	|	|	0.03
82.583	0.00	0.04	0.052	O	|	|	|	|	0.03
82.667	0.00	0.04	0.051	O	|	|	|	|	0.03
82.750	0.00	0.04	0.051	O	|	|	|	|	0.03
82.833	0.00	0.04	0.051	O	|	|	|	|	0.03
82.917	0.00	0.04	0.051	O	|	|	|	|	0.03
83.000	0.00	0.04	0.050	O	|	|	|	|	0.03
83.083	0.00	0.04	0.050	O	|	|	|	|	0.03
83.167	0.00	0.04	0.050	O	|	|	|	|	0.03
83.250	0.00	0.04	0.049	O	|	|	|	|	0.03
83.333	0.00	0.04	0.049	O	|	|	|	|	0.03
83.417	0.00	0.04	0.049	O	|	|	|	|	0.03
83.500	0.00	0.04	0.049	O	|	|	|	|	0.03
83.583	0.00	0.04	0.048	O	|	|	|	|	0.03
83.667	0.00	0.04	0.048	O	|	|	|	|	0.03
83.750	0.00	0.04	0.048	O	|	|	|	|	0.03
83.833	0.00	0.04	0.047	O	|	|	|	|	0.03
83.917	0.00	0.04	0.047	O	|	|	|	|	0.03
84.000	0.00	0.04	0.047	O	|	|	|	|	0.03
84.083	0.00	0.04	0.047	O	|	|	|	|	0.03
84.167	0.00	0.04	0.046	O	|	|	|	|	0.03
84.250	0.00	0.04	0.046	O	|	|	|	|	0.03
84.333	0.00	0.04	0.046	O	|	|	|	|	0.03
84.417	0.00	0.04	0.046	O	|	|	|	|	0.03
84.500	0.00	0.04	0.045	O	|	|	|	|	0.03
84.583	0.00	0.04	0.045	O	|	|	|	|	0.03
84.667	0.00	0.04	0.045	O	|	|	|	|	0.03
84.750	0.00	0.04	0.045	O	|	|	|	|	0.03
84.833	0.00	0.04	0.044	O	|	|	|	|	0.03
84.917	0.00	0.04	0.044	O	|	|	|	|	0.03
85.000	0.00	0.04	0.044	O	|	|	|	|	0.03
85.083	0.00	0.04	0.044	O	|	|	|	|	0.03
85.167	0.00	0.04	0.043	O	|	|	|	|	0.03
85.250	0.00	0.04	0.043	O	|	|	|	|	0.03
85.333	0.00	0.04	0.043	O	|	|	|	|	0.03
85.417	0.00	0.04	0.043	O	|	|	|	|	0.03
85.500	0.00	0.04	0.042	O	|	|	|	|	0.03
85.583	0.00	0.03	0.042	O	|	|	|	|	0.03
85.667	0.00	0.03	0.042	O	|	|	|	|	0.03
85.750	0.00	0.03	0.042	O	|	|	|	|	0.02
85.833	0.00	0.03	0.041	O	|	|	|	|	0.02
85.917	0.00	0.03	0.041	O	|	|	|	|	0.02
86.000	0.00	0.03	0.041	O	|	|	|	|	0.02
86.083	0.00	0.03	0.041	O	|	|	|	|	0.02
86.167	0.00	0.03	0.040	O	|	|	|	|	0.02
86.250	0.00	0.03	0.040	O	|	|	|	|	0.02
86.333	0.00	0.03	0.040	O	|	|	|	|	0.02
86.417	0.00	0.03	0.040	O	|	|	|	|	0.02
86.500	0.00	0.03	0.040	O	|	|	|	|	0.02
86.583	0.00	0.03	0.039	O	|	|	|	|	0.02
86.667	0.00	0.03	0.039	O	|	|	|	|	0.02
86.750	0.00	0.03	0.039	O	|	|	|	|	0.02
86.833	0.00	0.03	0.039	O	|	|	|	|	0.02
86.917	0.00	0.03	0.038	O	|	|	|	|	0.02
87.000	0.00	0.03	0.038	O	|	|	|	|	0.02
87.083	0.00	0.03	0.038	O	|	|	|	|	0.02
87.167	0.00	0.03	0.038	O	|	|	|	|	0.02
87.250	0.00	0.03	0.038	O	|	|	|	|	0.02
87.333	0.00	0.03	0.037	O	|	|	|	|	0.02
87.417	0.00	0.03	0.037	O	|	|	|	|	0.02
87.500	0.00	0.03	0.037	O	|	|	|	|	0.02
87.583	0.00	0.03	0.037	O	|	|	|	|	0.02
87.667	0.00	0.03	0.036	O	|	|	|	|	0.02
87.750	0.00	0.03	0.036	O	|	|	|	|	0.02
87.833	0.00	0.03	0.036	O	|	|	|	|	0.02
87.917	0.00	0.03	0.036	O	|	|	|	|	0.02
88.000	0.00	0.03	0.036	O	|	|	|	|	0.02
88.083	0.00	0.03	0.035	O	|	|	|	|	0.02

88.167	0.00	0.03	0.035	O					0.02
88.250	0.00	0.03	0.035	O					0.02
88.333	0.00	0.03	0.035	O					0.02
88.417	0.00	0.03	0.035	O					0.02
88.500	0.00	0.03	0.034	O					0.02
88.583	0.00	0.03	0.034	O					0.02
88.667	0.00	0.03	0.034	O					0.02
88.750	0.00	0.03	0.034	O					0.02
88.833	0.00	0.03	0.034	O					0.02
88.917	0.00	0.03	0.033	O					0.02
89.000	0.00	0.03	0.033	O					0.02
89.083	0.00	0.03	0.033	O					0.02
89.167	0.00	0.03	0.033	O					0.02
89.250	0.00	0.03	0.033	O					0.02
89.333	0.00	0.03	0.033	O					0.02
89.417	0.00	0.03	0.032	O					0.02
89.500	0.00	0.03	0.032	O					0.02
89.583	0.00	0.03	0.032	O					0.02
89.667	0.00	0.03	0.032	O					0.02
89.750	0.00	0.03	0.032	O					0.02
89.833	0.00	0.03	0.031	O					0.02
89.917	0.00	0.03	0.031	O					0.02
90.000	0.00	0.03	0.031	O					0.02
90.083	0.00	0.03	0.031	O					0.02
90.167	0.00	0.03	0.031	O					0.02
90.250	0.00	0.03	0.031	O					0.02
90.333	0.00	0.03	0.030	O					0.02
90.417	0.00	0.03	0.030	O					0.02
90.500	0.00	0.02	0.030	O					0.02
90.583	0.00	0.02	0.030	O					0.02
90.667	0.00	0.02	0.030	O					0.02
90.750	0.00	0.02	0.030	O					0.02
90.833	0.00	0.02	0.029	O					0.02
90.917	0.00	0.02	0.029	O					0.02
91.000	0.00	0.02	0.029	O					0.02
91.083	0.00	0.02	0.029	O					0.02
91.167	0.00	0.02	0.029	O					0.02
91.250	0.00	0.02	0.029	O					0.02
91.333	0.00	0.02	0.028	O					0.02
91.417	0.00	0.02	0.028	O					0.02
91.500	0.00	0.02	0.028	O					0.02
91.583	0.00	0.02	0.028	O					0.02
91.667	0.00	0.02	0.028	O					0.02
91.750	0.00	0.02	0.028	O					0.02
91.833	0.00	0.02	0.027	O					0.02
91.917	0.00	0.02	0.027	O					0.02
92.000	0.00	0.02	0.027	O					0.02
92.083	0.00	0.02	0.027	O					0.02
92.167	0.00	0.02	0.027	O					0.02
92.250	0.00	0.02	0.027	O					0.02
92.333	0.00	0.02	0.026	O					0.02
92.417	0.00	0.02	0.026	O					0.02
92.500	0.00	0.02	0.026	O					0.02
92.583	0.00	0.02	0.026	O					0.02
92.667	0.00	0.02	0.026	O					0.02
92.750	0.00	0.02	0.026	O					0.02
92.833	0.00	0.02	0.026	O					0.02
92.917	0.00	0.02	0.025	O					0.02
93.000	0.00	0.02	0.025	O					0.02
93.083	0.00	0.02	0.025	O					0.02
93.167	0.00	0.02	0.025	O					0.01
93.250	0.00	0.02	0.025	O					0.01
93.333	0.00	0.02	0.025	O					0.01
93.417	0.00	0.02	0.025	O					0.01
93.500	0.00	0.02	0.024	O					0.01
93.583	0.00	0.02	0.024	O					0.01
93.667	0.00	0.02	0.024	O					0.01
93.750	0.00	0.02	0.024	O					0.01
93.833	0.00	0.02	0.024	O					0.01
93.917	0.00	0.02	0.024	O					0.01
94.000	0.00	0.02	0.024	O					0.01

94.083	0.00	0.02	0.023	O	|	|	|	|	0.01
94.167	0.00	0.02	0.023	O	|	|	|	|	0.01
94.250	0.00	0.02	0.023	O	|	|	|	|	0.01
94.333	0.00	0.02	0.023	O	|	|	|	|	0.01
94.417	0.00	0.02	0.023	O	|	|	|	|	0.01
94.500	0.00	0.02	0.023	O	|	|	|	|	0.01
94.583	0.00	0.02	0.023	O	|	|	|	|	0.01
94.667	0.00	0.02	0.023	O	|	|	|	|	0.01
94.750	0.00	0.02	0.022	O	|	|	|	|	0.01
94.833	0.00	0.02	0.022	O	|	|	|	|	0.01
94.917	0.00	0.02	0.022	O	|	|	|	|	0.01
95.000	0.00	0.02	0.022	O	|	|	|	|	0.01
95.083	0.00	0.02	0.022	O	|	|	|	|	0.01
95.167	0.00	0.02	0.022	O	|	|	|	|	0.01
95.250	0.00	0.02	0.022	O	|	|	|	|	0.01
95.333	0.00	0.02	0.022	O	|	|	|	|	0.01
95.417	0.00	0.02	0.021	O	|	|	|	|	0.01
95.500	0.00	0.02	0.021	O	|	|	|	|	0.01
95.583	0.00	0.02	0.021	O	|	|	|	|	0.01
95.667	0.00	0.02	0.021	O	|	|	|	|	0.01
95.750	0.00	0.02	0.021	O	|	|	|	|	0.01
95.833	0.00	0.02	0.021	O	|	|	|	|	0.01
95.917	0.00	0.02	0.021	O	|	|	|	|	0.01
96.000	0.00	0.02	0.021	O	|	|	|	|	0.01
96.083	0.00	0.02	0.020	O	|	|	|	|	0.01
96.167	0.00	0.02	0.020	O	|	|	|	|	0.01
96.250	0.00	0.02	0.020	O	|	|	|	|	0.01
96.333	0.00	0.02	0.020	O	|	|	|	|	0.01
96.417	0.00	0.02	0.020	O	|	|	|	|	0.01
96.500	0.00	0.02	0.020	O	|	|	|	|	0.01
96.583	0.00	0.02	0.020	O	|	|	|	|	0.01
96.667	0.00	0.02	0.020	O	|	|	|	|	0.01
96.750	0.00	0.02	0.020	O	|	|	|	|	0.01
96.833	0.00	0.02	0.019	O	|	|	|	|	0.01
96.917	0.00	0.02	0.019	O	|	|	|	|	0.01
97.000	0.00	0.02	0.019	O	|	|	|	|	0.01
97.083	0.00	0.02	0.019	O	|	|	|	|	0.01
97.167	0.00	0.02	0.019	O	|	|	|	|	0.01
97.250	0.00	0.02	0.019	O	|	|	|	|	0.01
97.333	0.00	0.02	0.019	O	|	|	|	|	0.01
97.417	0.00	0.02	0.019	O	|	|	|	|	0.01
97.500	0.00	0.02	0.019	O	|	|	|	|	0.01
97.583	0.00	0.02	0.018	O	|	|	|	|	0.01
97.667	0.00	0.02	0.018	O	|	|	|	|	0.01
97.750	0.00	0.02	0.018	O	|	|	|	|	0.01
97.833	0.00	0.02	0.018	O	|	|	|	|	0.01
97.917	0.00	0.01	0.018	O	|	|	|	|	0.01
98.000	0.00	0.01	0.018	O	|	|	|	|	0.01
98.083	0.00	0.01	0.018	O	|	|	|	|	0.01
98.167	0.00	0.01	0.018	O	|	|	|	|	0.01
98.250	0.00	0.01	0.018	O	|	|	|	|	0.01
98.333	0.00	0.01	0.018	O	|	|	|	|	0.01
98.417	0.00	0.01	0.017	O	|	|	|	|	0.01
98.500	0.00	0.01	0.017	O	|	|	|	|	0.01
98.583	0.00	0.01	0.017	O	|	|	|	|	0.01
98.667	0.00	0.01	0.017	O	|	|	|	|	0.01
98.750	0.00	0.01	0.017	O	|	|	|	|	0.01
98.833	0.00	0.01	0.017	O	|	|	|	|	0.01
98.917	0.00	0.01	0.017	O	|	|	|	|	0.01
99.000	0.00	0.01	0.017	O	|	|	|	|	0.01
99.083	0.00	0.01	0.017	O	|	|	|	|	0.01
99.167	0.00	0.01	0.017	O	|	|	|	|	0.01
99.250	0.00	0.01	0.016	O	|	|	|	|	0.01
99.333	0.00	0.01	0.016	O	|	|	|	|	0.01
99.417	0.00	0.01	0.016	O	|	|	|	|	0.01
99.500	0.00	0.01	0.016	O	|	|	|	|	0.01
99.583	0.00	0.01	0.016	O	|	|	|	|	0.01
99.667	0.00	0.01	0.016	O	|	|	|	|	0.01
99.750	0.00	0.01	0.016	O	|	|	|	|	0.01
99.833	0.00	0.01	0.016	O	|	|	|	|	0.01
99.917	0.00	0.01	0.016	O	|	|	|	|	0.01

100.000	0.00	0.01	0.016	O	|	|	|	|	0.01
100.083	0.00	0.01	0.016	O	|	|	|	|	0.01
100.167	0.00	0.01	0.015	O	|	|	|	|	0.01
100.250	0.00	0.01	0.015	O	|	|	|	|	0.01
100.333	0.00	0.01	0.015	O	|	|	|	|	0.01
100.417	0.00	0.01	0.015	O	|	|	|	|	0.01
100.500	0.00	0.01	0.015	O	|	|	|	|	0.01
100.583	0.00	0.01	0.015	O	|	|	|	|	0.01
100.667	0.00	0.01	0.015	O	|	|	|	|	0.01
100.750	0.00	0.01	0.015	O	|	|	|	|	0.01
100.833	0.00	0.01	0.015	O	|	|	|	|	0.01
100.917	0.00	0.01	0.015	O	|	|	|	|	0.01
101.000	0.00	0.01	0.015	O	|	|	|	|	0.01
101.083	0.00	0.01	0.015	O	|	|	|	|	0.01
101.167	0.00	0.01	0.014	O	|	|	|	|	0.01
101.250	0.00	0.01	0.014	O	|	|	|	|	0.01
101.333	0.00	0.01	0.014	O	|	|	|	|	0.01
101.417	0.00	0.01	0.014	O	|	|	|	|	0.01
101.500	0.00	0.01	0.014	O	|	|	|	|	0.01
101.583	0.00	0.01	0.014	O	|	|	|	|	0.01
101.667	0.00	0.01	0.014	O	|	|	|	|	0.01
101.750	0.00	0.01	0.014	O	|	|	|	|	0.01
101.833	0.00	0.01	0.014	O	|	|	|	|	0.01
101.917	0.00	0.01	0.014	O	|	|	|	|	0.01
102.000	0.00	0.01	0.014	O	|	|	|	|	0.01
102.083	0.00	0.01	0.014	O	|	|	|	|	0.01
102.167	0.00	0.01	0.013	O	|	|	|	|	0.01
102.250	0.00	0.01	0.013	O	|	|	|	|	0.01
102.333	0.00	0.01	0.013	O	|	|	|	|	0.01
102.417	0.00	0.01	0.013	O	|	|	|	|	0.01
102.500	0.00	0.01	0.013	O	|	|	|	|	0.01
102.583	0.00	0.01	0.013	O	|	|	|	|	0.01
102.667	0.00	0.01	0.013	O	|	|	|	|	0.01
102.750	0.00	0.01	0.013	O	|	|	|	|	0.01
102.833	0.00	0.01	0.013	O	|	|	|	|	0.01
102.917	0.00	0.01	0.013	O	|	|	|	|	0.01
103.000	0.00	0.01	0.013	O	|	|	|	|	0.01
103.083	0.00	0.01	0.013	O	|	|	|	|	0.01
103.167	0.00	0.01	0.013	O	|	|	|	|	0.01
103.250	0.00	0.01	0.013	O	|	|	|	|	0.01
103.333	0.00	0.01	0.012	O	|	|	|	|	0.01
103.417	0.00	0.01	0.012	O	|	|	|	|	0.01
103.500	0.00	0.01	0.012	O	|	|	|	|	0.01
103.583	0.00	0.01	0.012	O	|	|	|	|	0.01
103.667	0.00	0.01	0.012	O	|	|	|	|	0.01
103.750	0.00	0.01	0.012	O	|	|	|	|	0.01
103.833	0.00	0.01	0.012	O	|	|	|	|	0.01
103.917	0.00	0.01	0.012	O	|	|	|	|	0.01
104.000	0.00	0.01	0.012	O	|	|	|	|	0.01
104.083	0.00	0.01	0.012	O	|	|	|	|	0.01
104.167	0.00	0.01	0.012	O	|	|	|	|	0.01
104.250	0.00	0.01	0.012	O	|	|	|	|	0.01
104.333	0.00	0.01	0.012	O	|	|	|	|	0.01
104.417	0.00	0.01	0.012	O	|	|	|	|	0.01
104.500	0.00	0.01	0.011	O	|	|	|	|	0.01
104.583	0.00	0.01	0.011	O	|	|	|	|	0.01
104.667	0.00	0.01	0.011	O	|	|	|	|	0.01
104.750	0.00	0.01	0.011	O	|	|	|	|	0.01
104.833	0.00	0.01	0.011	O	|	|	|	|	0.01
104.917	0.00	0.01	0.011	O	|	|	|	|	0.01
105.000	0.00	0.01	0.011	O	|	|	|	|	0.01
105.083	0.00	0.01	0.011	O	|	|	|	|	0.01
105.167	0.00	0.01	0.011	O	|	|	|	|	0.01
105.250	0.00	0.01	0.011	O	|	|	|	|	0.01
105.333	0.00	0.01	0.011	O	|	|	|	|	0.01
105.417	0.00	0.01	0.011	O	|	|	|	|	0.01
105.500	0.00	0.01	0.011	O	|	|	|	|	0.01
105.583	0.00	0.01	0.011	O	|	|	|	|	0.01
105.667	0.00	0.01	0.011	O	|	|	|	|	0.01
105.750	0.00	0.01	0.011	O	|	|	|	|	0.01
105.833	0.00	0.01	0.010	O	|	|	|	|	0.01

105.917	0.00	0.01	0.010	O					0.01
106.000	0.00	0.01	0.010	O					0.01
106.083	0.00	0.01	0.010	O					0.01
106.167	0.00	0.01	0.010	O					0.01
106.250	0.00	0.01	0.010	O					0.01
106.333	0.00	0.01	0.010	O					0.01
106.417	0.00	0.01	0.010	O					0.01
106.500	0.00	0.01	0.010	O					0.01
106.583	0.00	0.01	0.010	O					0.01
106.667	0.00	0.01	0.010	O					0.01
106.750	0.00	0.01	0.010	O					0.01
106.833	0.00	0.01	0.010	O					0.01
106.917	0.00	0.01	0.010	O					0.01
107.000	0.00	0.01	0.010	O					0.01
107.083	0.00	0.01	0.010	O					0.01
107.167	0.00	0.01	0.010	O					0.01
107.250	0.00	0.01	0.010	O					0.01
107.333	0.00	0.01	0.009	O					0.01
107.417	0.00	0.01	0.009	O					0.01
107.500	0.00	0.01	0.009	O					0.01
107.583	0.00	0.01	0.009	O					0.01
107.667	0.00	0.01	0.009	O					0.01
107.750	0.00	0.01	0.009	O					0.01
107.833	0.00	0.01	0.009	O					0.01
107.917	0.00	0.01	0.009	O					0.01
108.000	0.00	0.01	0.009	O					0.01
108.083	0.00	0.01	0.009	O					0.01
108.167	0.00	0.01	0.009	O					0.01
108.250	0.00	0.01	0.009	O					0.01
108.333	0.00	0.01	0.009	O					0.01
108.417	0.00	0.01	0.009	O					0.01
108.500	0.00	0.01	0.009	O					0.01
108.583	0.00	0.01	0.009	O					0.01
108.667	0.00	0.01	0.009	O					0.01
108.750	0.00	0.01	0.009	O					0.01
108.833	0.00	0.01	0.009	O					0.01
108.917	0.00	0.01	0.008	O					0.01
109.000	0.00	0.01	0.008	O					0.01
109.083	0.00	0.01	0.008	O					0.01
109.167	0.00	0.01	0.008	O					0.01
109.250	0.00	0.01	0.008	O					0.00
109.333	0.00	0.01	0.008	O					0.00
109.417	0.00	0.01	0.008	O					0.00
109.500	0.00	0.01	0.008	O					0.00
109.583	0.00	0.01	0.008	O					0.00
109.667	0.00	0.01	0.008	O					0.00
109.750	0.00	0.01	0.008	O					0.00
109.833	0.00	0.01	0.008	O					0.00
109.917	0.00	0.01	0.008	O					0.00
110.000	0.00	0.01	0.008	O					0.00
110.083	0.00	0.01	0.008	O					0.00
110.167	0.00	0.01	0.008	O					0.00
110.250	0.00	0.01	0.008	O					0.00
110.333	0.00	0.01	0.008	O					0.00
110.417	0.00	0.01	0.008	O					0.00
110.500	0.00	0.01	0.008	O					0.00
110.583	0.00	0.01	0.008	O					0.00
110.667	0.00	0.01	0.008	O					0.00
110.750	0.00	0.01	0.007	O					0.00
110.833	0.00	0.01	0.007	O					0.00
110.917	0.00	0.01	0.007	O					0.00
111.000	0.00	0.01	0.007	O					0.00
111.083	0.00	0.01	0.007	O					0.00
111.167	0.00	0.01	0.007	O					0.00
111.250	0.00	0.01	0.007	O					0.00
111.333	0.00	0.01	0.007	O					0.00
111.417	0.00	0.01	0.007	O					0.00
111.500	0.00	0.01	0.007	O					0.00
111.583	0.00	0.01	0.007	O					0.00
111.667	0.00	0.01	0.007	O					0.00
111.750	0.00	0.01	0.007	O					0.00

111.833	0.00	0.01	0.007	O	|	|	|	|	0.00
111.917	0.00	0.01	0.007	O	|	|	|	|	0.00
112.000	0.00	0.01	0.007	O	|	|	|	|	0.00
112.083	0.00	0.01	0.007	O	|	|	|	|	0.00
112.167	0.00	0.01	0.007	O	|	|	|	|	0.00
112.250	0.00	0.01	0.007	O	|	|	|	|	0.00
112.333	0.00	0.01	0.007	O	|	|	|	|	0.00
112.417	0.00	0.01	0.007	O	|	|	|	|	0.00
112.500	0.00	0.01	0.007	O	|	|	|	|	0.00
112.583	0.00	0.01	0.007	O	|	|	|	|	0.00
112.667	0.00	0.01	0.007	O	|	|	|	|	0.00
112.750	0.00	0.01	0.007	O	|	|	|	|	0.00
112.833	0.00	0.01	0.006	O	|	|	|	|	0.00
112.917	0.00	0.01	0.006	O	|	|	|	|	0.00
113.000	0.00	0.01	0.006	O	|	|	|	|	0.00
113.083	0.00	0.01	0.006	O	|	|	|	|	0.00
113.167	0.00	0.01	0.006	O	|	|	|	|	0.00
113.250	0.00	0.01	0.006	O	|	|	|	|	0.00
113.333	0.00	0.01	0.006	O	|	|	|	|	0.00
113.417	0.00	0.01	0.006	O	|	|	|	|	0.00
113.500	0.00	0.01	0.006	O	|	|	|	|	0.00
113.583	0.00	0.01	0.006	O	|	|	|	|	0.00
113.667	0.00	0.01	0.006	O	|	|	|	|	0.00
113.750	0.00	0.01	0.006	O	|	|	|	|	0.00
113.833	0.00	0.01	0.006	O	|	|	|	|	0.00
113.917	0.00	0.01	0.006	O	|	|	|	|	0.00
114.000	0.00	0.00	0.006	O	|	|	|	|	0.00
114.083	0.00	0.00	0.006	O	|	|	|	|	0.00
114.167	0.00	0.00	0.006	O	|	|	|	|	0.00
114.250	0.00	0.00	0.006	O	|	|	|	|	0.00
114.333	0.00	0.00	0.006	O	|	|	|	|	0.00
114.417	0.00	0.00	0.006	O	|	|	|	|	0.00
114.500	0.00	0.00	0.006	O	|	|	|	|	0.00
114.583	0.00	0.00	0.006	O	|	|	|	|	0.00
114.667	0.00	0.00	0.006	O	|	|	|	|	0.00
114.750	0.00	0.00	0.006	O	|	|	|	|	0.00
114.833	0.00	0.00	0.006	O	|	|	|	|	0.00
114.917	0.00	0.00	0.006	O	|	|	|	|	0.00
115.000	0.00	0.00	0.006	O	|	|	|	|	0.00
115.083	0.00	0.00	0.006	O	|	|	|	|	0.00
115.167	0.00	0.00	0.006	O	|	|	|	|	0.00
115.250	0.00	0.00	0.006	O	|	|	|	|	0.00
115.333	0.00	0.00	0.005	O	|	|	|	|	0.00
115.417	0.00	0.00	0.005	O	|	|	|	|	0.00
115.500	0.00	0.00	0.005	O	|	|	|	|	0.00
115.583	0.00	0.00	0.005	O	|	|	|	|	0.00
115.667	0.00	0.00	0.005	O	|	|	|	|	0.00
115.750	0.00	0.00	0.005	O	|	|	|	|	0.00
115.833	0.00	0.00	0.005	O	|	|	|	|	0.00
115.917	0.00	0.00	0.005	O	|	|	|	|	0.00
116.000	0.00	0.00	0.005	O	|	|	|	|	0.00
116.083	0.00	0.00	0.005	O	|	|	|	|	0.00
116.167	0.00	0.00	0.005	O	|	|	|	|	0.00
116.250	0.00	0.00	0.005	O	|	|	|	|	0.00
116.333	0.00	0.00	0.005	O	|	|	|	|	0.00
116.417	0.00	0.00	0.005	O	|	|	|	|	0.00
116.500	0.00	0.00	0.005	O	|	|	|	|	0.00
116.583	0.00	0.00	0.005	O	|	|	|	|	0.00
116.667	0.00	0.00	0.005	O	|	|	|	|	0.00
116.750	0.00	0.00	0.005	O	|	|	|	|	0.00
116.833	0.00	0.00	0.005	O	|	|	|	|	0.00
116.917	0.00	0.00	0.005	O	|	|	|	|	0.00
117.000	0.00	0.00	0.005	O	|	|	|	|	0.00
117.083	0.00	0.00	0.005	O	|	|	|	|	0.00
117.167	0.00	0.00	0.005	O	|	|	|	|	0.00
117.250	0.00	0.00	0.005	O	|	|	|	|	0.00
117.333	0.00	0.00	0.005	O	|	|	|	|	0.00
117.417	0.00	0.00	0.005	O	|	|	|	|	0.00
117.500	0.00	0.00	0.005	O	|	|	|	|	0.00
117.583	0.00	0.00	0.005	O	|	|	|	|	0.00
117.667	0.00	0.00	0.005	O	|	|	|	|	0.00

117.750	0.00	0.00	0.005	O	|	|	|	|	0.00
117.833	0.00	0.00	0.005	O	|	|	|	|	0.00
117.917	0.00	0.00	0.005	O	|	|	|	|	0.00
118.000	0.00	0.00	0.005	O	|	|	|	|	0.00
118.083	0.00	0.00	0.005	O	|	|	|	|	0.00
118.167	0.00	0.00	0.005	O	|	|	|	|	0.00
118.250	0.00	0.00	0.004	O	|	|	|	|	0.00
118.333	0.00	0.00	0.004	O	|	|	|	|	0.00
118.417	0.00	0.00	0.004	O	|	|	|	|	0.00
118.500	0.00	0.00	0.004	O	|	|	|	|	0.00
118.583	0.00	0.00	0.004	O	|	|	|	|	0.00
118.667	0.00	0.00	0.004	O	|	|	|	|	0.00
118.750	0.00	0.00	0.004	O	|	|	|	|	0.00
118.833	0.00	0.00	0.004	O	|	|	|	|	0.00
118.917	0.00	0.00	0.004	O	|	|	|	|	0.00
119.000	0.00	0.00	0.004	O	|	|	|	|	0.00
119.083	0.00	0.00	0.004	O	|	|	|	|	0.00
119.167	0.00	0.00	0.004	O	|	|	|	|	0.00
119.250	0.00	0.00	0.004	O	|	|	|	|	0.00
119.333	0.00	0.00	0.004	O	|	|	|	|	0.00
119.417	0.00	0.00	0.004	O	|	|	|	|	0.00
119.500	0.00	0.00	0.004	O	|	|	|	|	0.00
119.583	0.00	0.00	0.004	O	|	|	|	|	0.00
119.667	0.00	0.00	0.004	O	|	|	|	|	0.00
119.750	0.00	0.00	0.004	O	|	|	|	|	0.00
119.833	0.00	0.00	0.004	O	|	|	|	|	0.00
119.917	0.00	0.00	0.004	O	|	|	|	|	0.00
120.000	0.00	0.00	0.004	O	|	|	|	|	0.00
120.083	0.00	0.00	0.004	O	|	|	|	|	0.00
120.167	0.00	0.00	0.004	O	|	|	|	|	0.00
120.250	0.00	0.00	0.004	O	|	|	|	|	0.00
120.333	0.00	0.00	0.004	O	|	|	|	|	0.00
120.417	0.00	0.00	0.004	O	|	|	|	|	0.00
120.500	0.00	0.00	0.004	O	|	|	|	|	0.00
120.583	0.00	0.00	0.004	O	|	|	|	|	0.00
120.667	0.00	0.00	0.004	O	|	|	|	|	0.00
120.750	0.00	0.00	0.004	O	|	|	|	|	0.00
120.833	0.00	0.00	0.004	O	|	|	|	|	0.00
120.917	0.00	0.00	0.004	O	|	|	|	|	0.00
121.000	0.00	0.00	0.004	O	|	|	|	|	0.00
121.083	0.00	0.00	0.004	O	|	|	|	|	0.00
121.167	0.00	0.00	0.004	O	|	|	|	|	0.00
121.250	0.00	0.00	0.004	O	|	|	|	|	0.00
121.333	0.00	0.00	0.004	O	|	|	|	|	0.00
121.417	0.00	0.00	0.004	O	|	|	|	|	0.00
121.500	0.00	0.00	0.004	O	|	|	|	|	0.00
121.583	0.00	0.00	0.004	O	|	|	|	|	0.00
121.667	0.00	0.00	0.004	O	|	|	|	|	0.00
121.750	0.00	0.00	0.004	O	|	|	|	|	0.00
121.833	0.00	0.00	0.004	O	|	|	|	|	0.00
121.917	0.00	0.00	0.003	O	|	|	|	|	0.00
122.000	0.00	0.00	0.003	O	|	|	|	|	0.00
122.083	0.00	0.00	0.003	O	|	|	|	|	0.00
122.167	0.00	0.00	0.003	O	|	|	|	|	0.00
122.250	0.00	0.00	0.003	O	|	|	|	|	0.00
122.333	0.00	0.00	0.003	O	|	|	|	|	0.00
122.417	0.00	0.00	0.003	O	|	|	|	|	0.00
122.500	0.00	0.00	0.003	O	|	|	|	|	0.00
122.583	0.00	0.00	0.003	O	|	|	|	|	0.00
122.667	0.00	0.00	0.003	O	|	|	|	|	0.00
122.750	0.00	0.00	0.003	O	|	|	|	|	0.00
122.833	0.00	0.00	0.003	O	|	|	|	|	0.00
122.917	0.00	0.00	0.003	O	|	|	|	|	0.00
123.000	0.00	0.00	0.003	O	|	|	|	|	0.00
123.083	0.00	0.00	0.003	O	|	|	|	|	0.00
123.167	0.00	0.00	0.003	O	|	|	|	|	0.00
123.250	0.00	0.00	0.003	O	|	|	|	|	0.00
123.333	0.00	0.00	0.003	O	|	|	|	|	0.00
123.417	0.00	0.00	0.003	O	|	|	|	|	0.00
123.500	0.00	0.00	0.003	O	|	|	|	|	0.00
123.583	0.00	0.00	0.003	O	|	|	|	|	0.00

123.667	0.00	0.00	0.003	O	|	|	|	|	0.00
123.750	0.00	0.00	0.003	O	|	|	|	|	0.00
123.833	0.00	0.00	0.003	O	|	|	|	|	0.00
123.917	0.00	0.00	0.003	O	|	|	|	|	0.00
124.000	0.00	0.00	0.003	O	|	|	|	|	0.00
124.083	0.00	0.00	0.003	O	|	|	|	|	0.00
124.167	0.00	0.00	0.003	O	|	|	|	|	0.00
124.250	0.00	0.00	0.003	O	|	|	|	|	0.00
124.333	0.00	0.00	0.003	O	|	|	|	|	0.00
124.417	0.00	0.00	0.003	O	|	|	|	|	0.00
124.500	0.00	0.00	0.003	O	|	|	|	|	0.00
124.583	0.00	0.00	0.003	O	|	|	|	|	0.00
124.667	0.00	0.00	0.003	O	|	|	|	|	0.00
124.750	0.00	0.00	0.003	O	|	|	|	|	0.00
124.833	0.00	0.00	0.003	O	|	|	|	|	0.00
124.917	0.00	0.00	0.003	O	|	|	|	|	0.00
125.000	0.00	0.00	0.003	O	|	|	|	|	0.00
125.083	0.00	0.00	0.003	O	|	|	|	|	0.00
125.167	0.00	0.00	0.003	O	|	|	|	|	0.00
125.250	0.00	0.00	0.003	O	|	|	|	|	0.00
125.333	0.00	0.00	0.003	O	|	|	|	|	0.00
125.417	0.00	0.00	0.003	O	|	|	|	|	0.00
125.500	0.00	0.00	0.003	O	|	|	|	|	0.00
125.583	0.00	0.00	0.003	O	|	|	|	|	0.00
125.667	0.00	0.00	0.003	O	|	|	|	|	0.00
125.750	0.00	0.00	0.003	O	|	|	|	|	0.00
125.833	0.00	0.00	0.003	O	|	|	|	|	0.00
125.917	0.00	0.00	0.003	O	|	|	|	|	0.00
126.000	0.00	0.00	0.003	O	|	|	|	|	0.00
126.083	0.00	0.00	0.003	O	|	|	|	|	0.00
126.167	0.00	0.00	0.003	O	|	|	|	|	0.00
126.250	0.00	0.00	0.003	O	|	|	|	|	0.00
126.333	0.00	0.00	0.003	O	|	|	|	|	0.00
126.417	0.00	0.00	0.003	O	|	|	|	|	0.00
126.500	0.00	0.00	0.003	O	|	|	|	|	0.00
126.583	0.00	0.00	0.003	O	|	|	|	|	0.00
126.667	0.00	0.00	0.003	O	|	|	|	|	0.00
126.750	0.00	0.00	0.003	O	|	|	|	|	0.00
126.833	0.00	0.00	0.002	O	|	|	|	|	0.00
126.917	0.00	0.00	0.002	O	|	|	|	|	0.00
127.000	0.00	0.00	0.002	O	|	|	|	|	0.00
127.083	0.00	0.00	0.002	O	|	|	|	|	0.00
127.167	0.00	0.00	0.002	O	|	|	|	|	0.00
127.250	0.00	0.00	0.002	O	|	|	|	|	0.00
127.333	0.00	0.00	0.002	O	|	|	|	|	0.00
127.417	0.00	0.00	0.002	O	|	|	|	|	0.00
127.500	0.00	0.00	0.002	O	|	|	|	|	0.00
127.583	0.00	0.00	0.002	O	|	|	|	|	0.00
127.667	0.00	0.00	0.002	O	|	|	|	|	0.00
127.750	0.00	0.00	0.002	O	|	|	|	|	0.00
127.833	0.00	0.00	0.002	O	|	|	|	|	0.00
127.917	0.00	0.00	0.002	O	|	|	|	|	0.00
128.000	0.00	0.00	0.002	O	|	|	|	|	0.00
128.083	0.00	0.00	0.002	O	|	|	|	|	0.00
128.167	0.00	0.00	0.002	O	|	|	|	|	0.00
128.250	0.00	0.00	0.002	O	|	|	|	|	0.00
128.333	0.00	0.00	0.002	O	|	|	|	|	0.00
128.417	0.00	0.00	0.002	O	|	|	|	|	0.00
128.500	0.00	0.00	0.002	O	|	|	|	|	0.00
128.583	0.00	0.00	0.002	O	|	|	|	|	0.00
128.667	0.00	0.00	0.002	O	|	|	|	|	0.00
128.750	0.00	0.00	0.002	O	|	|	|	|	0.00
128.833	0.00	0.00	0.002	O	|	|	|	|	0.00
128.917	0.00	0.00	0.002	O	|	|	|	|	0.00
129.000	0.00	0.00	0.002	O	|	|	|	|	0.00
129.083	0.00	0.00	0.002	O	|	|	|	|	0.00
129.167	0.00	0.00	0.002	O	|	|	|	|	0.00
129.250	0.00	0.00	0.002	O	|	|	|	|	0.00
129.333	0.00	0.00	0.002	O	|	|	|	|	0.00
129.417	0.00	0.00	0.002	O	|	|	|	|	0.00
129.500	0.00	0.00	0.002	O	|	|	|	|	0.00

```
129.583    0.00    0.00      0.002  O       |       |       |       |      0.00
129.667    0.00    0.00      0.002  O       |       |       |       |      0.00
129.750    0.00    0.00      0.002  O       |       |       |       |      0.00
129.833    0.00    0.00      0.002  O       |       |       |       |      0.00
129.917    0.00    0.00      0.002  O       |       |       |       |      0.00
130.000    0.00    0.00      0.002  O       |       |       |       |      0.00
130.083    0.00    0.00      0.002  O       |       |       |       |      0.00
130.167    0.00    0.00      0.002  O       |       |       |       |      0.00
130.250    0.00    0.00      0.002  O       |       |       |       |      0.00
130.333    0.00    0.00      0.002  O       |       |       |       |      0.00
130.417    0.00    0.00      0.002  O       |       |       |       |      0.00
130.500    0.00    0.00      0.002  O       |       |       |       |      0.00
130.583    0.00    0.00      0.002  O       |       |       |       |      0.00
130.667    0.00    0.00      0.002  O       |       |       |       |      0.00
130.750    0.00    0.00      0.002  O       |       |       |       |      0.00
130.833    0.00    0.00      0.002  O       |       |       |       |      0.00
130.917    0.00    0.00      0.002  O       |       |       |       |      0.00
131.000    0.00    0.00      0.002  O       |       |       |       |      0.00
131.083    0.00    0.00      0.002  O       |       |       |       |      0.00
131.167    0.00    0.00      0.002  O       |       |       |       |      0.00
131.250    0.00    0.00      0.002  O       |       |       |       |      0.00
131.333    0.00    0.00      0.002  O       |       |       |       |      0.00
131.417    0.00    0.00      0.002  O       |       |       |       |      0.00
131.500    0.00    0.00      0.002  O       |       |       |       |      0.00
131.583    0.00    0.00      0.002  O       |       |       |       |      0.00
131.667    0.00    0.00      0.002  O       |       |       |       |      0.00
131.750    0.00    0.00      0.002  O       |       |       |       |      0.00
131.833    0.00    0.00      0.002  O       |       |       |       |      0.00
131.917    0.00    0.00      0.002  O       |       |       |       |      0.00
132.000    0.00    0.00      0.002  O       |       |       |       |      0.00
132.083    0.00    0.00      0.002  O       |       |       |       |      0.00
132.167    0.00    0.00      0.002  O       |       |       |       |      0.00
132.250    0.00    0.00      0.002  O       |       |       |       |      0.00
132.333    0.00    0.00      0.002  O       |       |       |       |      0.00
132.417    0.00    0.00      0.002  O       |       |       |       |      0.00
132.500    0.00    0.00      0.002  O       |       |       |       |      0.00
132.583    0.00    0.00      0.002  O       |       |       |       |      0.00
132.667    0.00    0.00      0.002  O       |       |       |       |      0.00

        Remaining water in basin =    0.00 (Ac.Ft)

        ****************************HYDROGRAPH DATA****************************
                      Number of intervals =  1592
                      Time interval =    5.0 (Min.)
                      Maximum/Peak flow rate =       24.073 (CFS)
                      Total volume =      12.856 (Ac.Ft)
               Status of hydrographs being held in storage
                         Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
               Peak (CFS)      0.000     0.000     0.000     0.000     0.000
               Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
        ***********************************************************************

        ---------------------------------------------------------------------
```

- Basin 'C' - 25 Year 3 Hour Storm Routing Analysis

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                    FLOOD HYDROGRAPH ROUTING PROGRAM
          Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012
                       Study date: 03/20/17

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WESTRIDGE HYDROLOGY STUDY
PROPOSED ROUTING - BASIN 'C' - 25 YEAR 3 HOUR STORM
HUNSAKER & ASSOCIATES, MARCH 20, 2017
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------


Program License Serial Number 4094

------------------------------------------------------------------------
******************** HYDROGRAPH INFORMATION **********************

               From study/file name: PRC02503.rte
*****************************HYDROGRAPH DATA*****************************
               Number of intervals =    52
               Time interval =    5.0 (Min.)
               Maximum/Peak flow rate =      270.991 (CFS)
               Total volume =      14.352 (Ac.Ft)
       Status of hydrographs being held in storage
                   Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
       Peak (CFS)      0.000     0.000     0.000     0.000     0.000
       Vol (Ac.Ft)     0.000     0.000     0.000     0.000     0.000
************************************************************************



++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      300.000 to Point/Station      301.000
**** RETARDING BASIN ROUTING ****
________________________________________________________________________

User entry of depth-outflow-storage data
------------------------------------------------------------------------
Total number of inflow hydrograph intervals = 52
Hydrograph time unit =  5.000 (Min.)
Initial depth in storage basin =   0.00(Ft.)
------------------------------------------------------------------------
------------------------------------------------------------------------
Initial basin depth =   0.00 (Ft.)
Initial basin storage =      0.00 (Ac.Ft)
Initial basin outflow =   0.00 (CFS)
------------------------------------------------------------------------
------------------------------------------------------------------------
Depth vs. Storage and Depth vs. Discharge data:
 Basin Depth  Storage    Outflow   (S-O*dt/2)   (S+O*dt/2)
     (Ft.)    (Ac.Ft)    (CFS)     (Ac.Ft)    (Ac.Ft)
------------------------------------------------------------------------
   0.000      0.000      0.000      0.000        0.000
   0.500      0.834      0.692      0.832        0.836
   1.000      1.693      1.672      1.687        1.699
   1.500      2.577      3.059      2.566        2.588
   2.000      3.488      4.757      3.472        3.504
   3.000      5.388      7.930      5.361        5.415
   4.000      7.399     20.434      7.329        7.469
   5.000      9.523     35.089      9.402        9.644
   6.000     11.764     44.538     11.611       11.917
   7.000     14.126     52.170     13.946       14.306
   8.000     16.610     58.766     16.408       16.812
   8.900     18.942     83.236     18.655       19.229
   9.000     19.207     83.236     18.920       19.494
   9.500     20.556    448.796     19.011       22.101
  10.000     21.935   1159.965     17.941       25.929
```

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0 67.7 135.50 203.24 270.99	Depth (Ft.)
0.083	0.75	0.00	0.003	O	0.00
0.167	3.72	0.01	0.018	O	0.01
0.250	11.43	0.06	0.070	OI	0.04
0.333	15.93	0.14	0.163	OI	0.10
0.417	18.39	0.23	0.280	O I	0.17
0.500	20.19	0.34	0.411	O I	0.25
0.583	21.68	0.46	0.553	O I	0.33
0.667	22.91	0.58	0.703	O I	0.42
0.750	24.03	0.72	0.860	O I	0.51
0.833	24.97	0.91	1.023	O I	0.61
0.917	25.90	1.10	1.191	O I	0.71
1.000	26.81	1.30	1.364	O I	0.81
1.083	27.88	1.50	1.543	O I	0.91
1.167	29.07	1.73	1.728	O I	1.02
1.250	30.75	2.03	1.921	O I	1.13
1.333	32.71	2.35	2.124	O I	1.24
1.417	34.95	2.69	2.340	O I	1.37
1.500	36.33	3.04	2.566	O I	1.49
1.583	36.26	3.46	2.793	O I	1.62
1.667	38.27	3.89	3.025	O I	1.75
1.750	43.17	4.36	3.277	O I	1.88
1.833	50.27	4.89	3.567	O I	2.04
1.917	62.95	5.48	3.921	O I	2.23
2.000	80.06	6.23	4.373	O I	2.47
2.083	120.40	7.31	5.017	O I	2.80
2.167	185.66	11.77	6.005	O I	3.31
2.250	270.99	20.89	7.465	O I	4.03
2.333	187.73	30.57	8.867	O I	4.69
2.417	122.97	35.87	9.709	O I	5.08
2.500	93.19	37.94	10.199	O I	5.30
2.583	75.88	39.27	10.515	O I	5.44
2.667	62.00	40.12	10.716	O I	5.53
2.750	50.22	40.58	10.825	OI	5.58
2.833	41.26	40.73	10.860	O	5.60
2.917	34.58	40.65	10.841	O	5.59
3.000	31.26	40.42	10.788	IO	5.56
3.083	27.86	40.11	10.715	IO	5.53
3.167	23.25	39.70	10.616	I O	5.49
3.250	14.08	39.10	10.473	I O	5.42
3.333	8.41	38.30	10.284	I O	5.34
3.417	5.44	37.40	10.071	I O	5.24
3.500	3.37	36.46	9.847	I O	5.14
3.583	2.18	35.49	9.618	I O	5.04
3.667	1.37	34.18	9.391	I O	4.94
3.750	0.85	32.64	9.168	I O	4.83
3.833	0.53	31.16	8.953	I O	4.73
3.917	0.38	29.73	8.747	I O	4.63
4.000	0.27	28.37	8.549	I O	4.54
4.083	0.19	27.06	8.360	I O	4.45
4.167	0.11	25.81	8.179	I O	4.37
4.250	0.05	24.62	8.006	I O	4.29
4.333	0.02	23.48	7.840	I O	4.21
4.417	0.00	22.39	7.682	I O	4.13
4.500	0.00	21.35	7.532	I O	4.06
4.583	0.00	20.37	7.388	I O	3.99
4.667	0.00	19.51	7.251	I O	3.93
4.750	0.00	18.69	7.119	I O	3.86
4.833	0.00	17.91	6.993	I O	3.80
4.917	0.00	17.16	6.872	I O	3.74
5.000	0.00	16.44	6.757	IO	3.68
5.083	0.00	15.75	6.646	IO	3.63
5.167	0.00	15.09	6.540	IO	3.57
5.250	0.00	14.46	6.438	IO	3.52

5.333	0.00	13.85	6.340	IO	|	|	|	|	3.47
5.417	0.00	13.27	6.247	IO	|	|	|	|	3.43
5.500	0.00	12.71	6.157	IO	|	|	|	|	3.38
5.583	0.00	12.18	6.072	IO	|	|	|	|	3.34
5.667	0.00	11.67	5.990	IO	|	|	|	|	3.30
5.750	0.00	11.18	5.911	IO	|	|	|	|	3.26
5.833	0.00	10.71	5.836	IO	|	|	|	|	3.22
5.917	0.00	10.26	5.763	IO	|	|	|	|	3.19
6.000	0.00	9.83	5.694	IO	|	|	|	|	3.15
6.083	0.00	9.42	5.628	IO	|	|	|	|	3.12
6.167	0.00	9.03	5.564	IO	|	|	|	|	3.09
6.250	0.00	8.65	5.503	IO	|	|	|	|	3.06
6.333	0.00	8.29	5.445	O	|	|	|	|	3.03
6.417	0.00	7.94	5.389	O	|	|	|	|	3.00
6.500	0.00	7.84	5.335	O	|	|	|	|	2.97
6.583	0.00	7.75	5.281	O	|	|	|	|	2.94
6.667	0.00	7.66	5.228	O	|	|	|	|	2.92
6.750	0.00	7.58	5.176	O	|	|	|	|	2.89
6.833	0.00	7.49	5.124	O	|	|	|	|	2.86
6.917	0.00	7.40	5.072	O	|	|	|	|	2.83
7.000	0.00	7.32	5.022	O	|	|	|	|	2.81
7.083	0.00	7.23	4.972	O	|	|	|	|	2.78
7.167	0.00	7.15	4.922	O	|	|	|	|	2.75
7.250	0.00	7.07	4.873	O	|	|	|	|	2.73
7.333	0.00	6.99	4.825	O	|	|	|	|	2.70
7.417	0.00	6.91	4.777	O	|	|	|	|	2.68
7.500	0.00	6.83	4.730	O	|	|	|	|	2.65
7.583	0.00	6.75	4.683	O	|	|	|	|	2.63
7.667	0.00	6.68	4.637	O	|	|	|	|	2.60
7.750	0.00	6.60	4.591	O	|	|	|	|	2.58
7.833	0.00	6.52	4.546	O	|	|	|	|	2.56
7.917	0.00	6.45	4.501	O	|	|	|	|	2.53
8.000	0.00	6.37	4.457	O	|	|	|	|	2.51
8.083	0.00	6.30	4.413	O	|	|	|	|	2.49
8.167	0.00	6.23	4.370	O	|	|	|	|	2.46
8.250	0.00	6.16	4.327	O	|	|	|	|	2.44
8.333	0.00	6.09	4.285	O	|	|	|	|	2.42
8.417	0.00	6.02	4.244	O	|	|	|	|	2.40
8.500	0.00	5.95	4.202	O	|	|	|	|	2.38
8.583	0.00	5.88	4.162	O	|	|	|	|	2.35
8.667	0.00	5.81	4.121	O	|	|	|	|	2.33
8.750	0.00	5.75	4.081	O	|	|	|	|	2.31
8.833	0.00	5.68	4.042	O	|	|	|	|	2.29
8.917	0.00	5.62	4.003	O	|	|	|	|	2.27
9.000	0.00	5.55	3.965	O	|	|	|	|	2.25
9.083	0.00	5.49	3.927	O	|	|	|	|	2.23
9.167	0.00	5.43	3.889	O	|	|	|	|	2.21
9.250	0.00	5.36	3.852	O	|	|	|	|	2.19
9.333	0.00	5.30	3.815	O	|	|	|	|	2.17
9.417	0.00	5.24	3.779	O	|	|	|	|	2.15
9.500	0.00	5.18	3.743	O	|	|	|	|	2.13
9.583	0.00	5.12	3.708	O	|	|	|	|	2.12
9.667	0.00	5.06	3.672	O	|	|	|	|	2.10
9.750	0.00	5.01	3.638	O	|	|	|	|	2.08
9.833	0.00	4.95	3.603	O	|	|	|	|	2.06
9.917	0.00	4.89	3.570	O	|	|	|	|	2.04
10.000	0.00	4.84	3.536	O	|	|	|	|	2.03
10.083	0.00	4.78	3.503	O	|	|	|	|	2.01
10.167	0.00	4.72	3.470	O	|	|	|	|	1.99
10.250	0.00	4.66	3.438	O	|	|	|	|	1.97
10.333	0.00	4.60	3.406	O	|	|	|	|	1.95
10.417	0.00	4.55	3.374	O	|	|	|	|	1.94
10.500	0.00	4.49	3.343	O	|	|	|	|	1.92
10.583	0.00	4.43	3.313	O	|	|	|	|	1.90
10.667	0.00	4.37	3.282	O	|	|	|	|	1.89
10.750	0.00	4.32	3.252	O	|	|	|	|	1.87
10.833	0.00	4.26	3.223	O	|	|	|	|	1.85
10.917	0.00	4.21	3.194	O	|	|	|	|	1.84
11.000	0.00	4.15	3.165	O	|	|	|	|	1.82
11.083	0.00	4.10	3.136	O	|	|	|	|	1.81
11.167	0.00	4.05	3.108	O	|	|	|	|	1.79

11.250	0.00	4.00	3.081	O	|	|	|	|	1.78
11.333	0.00	3.95	3.053	O	|	|	|	|	1.76
11.417	0.00	3.90	3.026	O	|	|	|	|	1.75
11.500	0.00	3.85	3.000	O	|	|	|	|	1.73
11.583	0.00	3.80	2.973	O	|	|	|	|	1.72
11.667	0.00	3.75	2.947	O	|	|	|	|	1.70
11.750	0.00	3.70	2.922	O	|	|	|	|	1.69
11.833	0.00	3.65	2.896	O	|	|	|	|	1.68
11.917	0.00	3.61	2.871	O	|	|	|	|	1.66
12.000	0.00	3.56	2.847	O	|	|	|	|	1.65
12.083	0.00	3.52	2.822	O	|	|	|	|	1.63
12.167	0.00	3.47	2.798	O	|	|	|	|	1.62
12.250	0.00	3.43	2.774	O	|	|	|	|	1.61
12.333	0.00	3.38	2.751	O	|	|	|	|	1.60
12.417	0.00	3.34	2.728	O	|	|	|	|	1.58
12.500	0.00	3.30	2.705	O	|	|	|	|	1.57
12.583	0.00	3.26	2.682	O	|	|	|	|	1.56
12.667	0.00	3.21	2.660	O	|	|	|	|	1.55
12.750	0.00	3.17	2.638	O	|	|	|	|	1.53
12.833	0.00	3.13	2.616	O	|	|	|	|	1.52
12.917	0.00	3.09	2.595	O	|	|	|	|	1.51
13.000	0.00	3.05	2.574	O	|	|	|	|	1.50
13.083	0.00	3.02	2.553	O	|	|	|	|	1.49
13.167	0.00	2.99	2.532	O	|	|	|	|	1.47
13.250	0.00	2.96	2.512	O	|	|	|	|	1.46
13.333	0.00	2.92	2.491	O	|	|	|	|	1.45
13.417	0.00	2.89	2.471	O	|	|	|	|	1.44
13.500	0.00	2.86	2.452	O	|	|	|	|	1.43
13.583	0.00	2.83	2.432	O	|	|	|	|	1.42
13.667	0.00	2.80	2.413	O	|	|	|	|	1.41
13.750	0.00	2.77	2.393	O	|	|	|	|	1.40
13.833	0.00	2.74	2.374	O	|	|	|	|	1.39
13.917	0.00	2.71	2.356	O	|	|	|	|	1.37
14.000	0.00	2.68	2.337	O	|	|	|	|	1.36
14.083	0.00	2.65	2.319	O	|	|	|	|	1.35
14.167	0.00	2.63	2.301	O	|	|	|	|	1.34
14.250	0.00	2.60	2.283	O	|	|	|	|	1.33
14.333	0.00	2.57	2.265	O	|	|	|	|	1.32
14.417	0.00	2.54	2.247	O	|	|	|	|	1.31
14.500	0.00	2.51	2.230	O	|	|	|	|	1.30
14.583	0.00	2.49	2.213	O	|	|	|	|	1.29
14.667	0.00	2.46	2.196	O	|	|	|	|	1.28
14.750	0.00	2.43	2.179	O	|	|	|	|	1.27
14.833	0.00	2.41	2.162	O	|	|	|	|	1.27
14.917	0.00	2.38	2.145	O	|	|	|	|	1.26
15.000	0.00	2.36	2.129	O	|	|	|	|	1.25
15.083	0.00	2.33	2.113	O	|	|	|	|	1.24
15.167	0.00	2.31	2.097	O	|	|	|	|	1.23
15.250	0.00	2.28	2.081	O	|	|	|	|	1.22
15.333	0.00	2.26	2.066	O	|	|	|	|	1.21
15.417	0.00	2.23	2.050	O	|	|	|	|	1.20
15.500	0.00	2.21	2.035	O	|	|	|	|	1.19
15.583	0.00	2.18	2.020	O	|	|	|	|	1.18
15.667	0.00	2.16	2.005	O	|	|	|	|	1.18
15.750	0.00	2.14	1.990	O	|	|	|	|	1.17
15.833	0.00	2.12	1.975	O	|	|	|	|	1.16
15.917	0.00	2.09	1.961	O	|	|	|	|	1.15
16.000	0.00	2.07	1.947	O	|	|	|	|	1.14
16.083	0.00	2.05	1.932	O	|	|	|	|	1.14
16.167	0.00	2.03	1.918	O	|	|	|	|	1.13
16.250	0.00	2.00	1.904	O	|	|	|	|	1.12
16.333	0.00	1.98	1.891	O	|	|	|	|	1.11
16.417	0.00	1.96	1.877	O	|	|	|	|	1.10
16.500	0.00	1.94	1.864	O	|	|	|	|	1.10
16.583	0.00	1.92	1.850	O	|	|	|	|	1.09
16.667	0.00	1.90	1.837	O	|	|	|	|	1.08
16.750	0.00	1.88	1.824	O	|	|	|	|	1.07
16.833	0.00	1.86	1.811	O	|	|	|	|	1.07
16.917	0.00	1.84	1.799	O	|	|	|	|	1.06
17.000	0.00	1.82	1.786	O	|	|	|	|	1.05
17.083	0.00	1.80	1.774	O	|	|	|	|	1.05

17.167	0.00	1.78	1.761	O	|	|	|	|	1.04
17.250	0.00	1.76	1.749	O	|	|	|	|	1.03
17.333	0.00	1.74	1.737	O	|	|	|	|	1.02
17.417	0.00	1.72	1.725	O	|	|	|	|	1.02
17.500	0.00	1.70	1.713	O	|	|	|	|	1.01
17.583	0.00	1.69	1.702	O	|	|	|	|	1.00
17.667	0.00	1.67	1.690	O	|	|	|	|	1.00
17.750	0.00	1.66	1.679	O	|	|	|	|	0.99
17.833	0.00	1.64	1.667	O	|	|	|	|	0.99
17.917	0.00	1.63	1.656	O	|	|	|	|	0.98
18.000	0.00	1.62	1.645	O	|	|	|	|	0.97
18.083	0.00	1.60	1.634	O	|	|	|	|	0.97
18.167	0.00	1.59	1.623	O	|	|	|	|	0.96
18.250	0.00	1.58	1.612	O	|	|	|	|	0.95
18.333	0.00	1.57	1.601	O	|	|	|	|	0.95
18.417	0.00	1.55	1.590	O	|	|	|	|	0.94
18.500	0.00	1.54	1.580	O	|	|	|	|	0.93
18.583	0.00	1.53	1.569	O	|	|	|	|	0.93
18.667	0.00	1.52	1.559	O	|	|	|	|	0.92
18.750	0.00	1.51	1.548	O	|	|	|	|	0.92
18.833	0.00	1.49	1.538	O	|	|	|	|	0.91
18.917	0.00	1.48	1.528	O	|	|	|	|	0.90
19.000	0.00	1.47	1.517	O	|	|	|	|	0.90
19.083	0.00	1.46	1.507	O	|	|	|	|	0.89
19.167	0.00	1.45	1.497	O	|	|	|	|	0.89
19.250	0.00	1.44	1.487	O	|	|	|	|	0.88
19.333	0.00	1.43	1.477	O	|	|	|	|	0.87
19.417	0.00	1.41	1.468	O	|	|	|	|	0.87
19.500	0.00	1.40	1.458	O	|	|	|	|	0.86
19.583	0.00	1.39	1.448	O	|	|	|	|	0.86
19.667	0.00	1.38	1.439	O	|	|	|	|	0.85
19.750	0.00	1.37	1.429	O	|	|	|	|	0.85
19.833	0.00	1.36	1.420	O	|	|	|	|	0.84
19.917	0.00	1.35	1.411	O	|	|	|	|	0.84
20.000	0.00	1.34	1.401	O	|	|	|	|	0.83
20.083	0.00	1.33	1.392	O	|	|	|	|	0.82
20.167	0.00	1.32	1.383	O	|	|	|	|	0.82
20.250	0.00	1.31	1.374	O	|	|	|	|	0.81
20.333	0.00	1.30	1.365	O	|	|	|	|	0.81
20.417	0.00	1.29	1.356	O	|	|	|	|	0.80
20.500	0.00	1.28	1.347	O	|	|	|	|	0.80
20.583	0.00	1.27	1.338	O	|	|	|	|	0.79
20.667	0.00	1.26	1.330	O	|	|	|	|	0.79
20.750	0.00	1.25	1.321	O	|	|	|	|	0.78
20.833	0.00	1.24	1.313	O	|	|	|	|	0.78
20.917	0.00	1.23	1.304	O	|	|	|	|	0.77
21.000	0.00	1.22	1.296	O	|	|	|	|	0.77
21.083	0.00	1.21	1.287	O	|	|	|	|	0.76
21.167	0.00	1.20	1.279	O	|	|	|	|	0.76
21.250	0.00	1.19	1.271	O	|	|	|	|	0.75
21.333	0.00	1.18	1.263	O	|	|	|	|	0.75
21.417	0.00	1.17	1.255	O	|	|	|	|	0.74
21.500	0.00	1.16	1.246	O	|	|	|	|	0.74
21.583	0.00	1.15	1.238	O	|	|	|	|	0.74
21.667	0.00	1.14	1.231	O	|	|	|	|	0.73
21.750	0.00	1.14	1.223	O	|	|	|	|	0.73
21.833	0.00	1.13	1.215	O	|	|	|	|	0.72
21.917	0.00	1.12	1.207	O	|	|	|	|	0.72
22.000	0.00	1.11	1.200	O	|	|	|	|	0.71
22.083	0.00	1.10	1.192	O	|	|	|	|	0.71
22.167	0.00	1.09	1.184	O	|	|	|	|	0.70
22.250	0.00	1.08	1.177	O	|	|	|	|	0.70
22.333	0.00	1.07	1.169	O	|	|	|	|	0.70
22.417	0.00	1.07	1.162	O	|	|	|	|	0.69
22.500	0.00	1.06	1.155	O	|	|	|	|	0.69
22.583	0.00	1.05	1.148	O	|	|	|	|	0.68
22.667	0.00	1.04	1.140	O	|	|	|	|	0.68
22.750	0.00	1.03	1.133	O	|	|	|	|	0.67
22.833	0.00	1.03	1.126	O	|	|	|	|	0.67
22.917	0.00	1.02	1.119	O	|	|	|	|	0.67
23.000	0.00	1.01	1.112	O	|	|	|	|	0.66

23.083	0.00	1.00	1.105	O	|	|	|	|	0.66
23.167	0.00	0.99	1.098	O	|	|	|	|	0.65
23.250	0.00	0.99	1.091	O	|	|	|	|	0.65
23.333	0.00	0.98	1.085	O	|	|	|	|	0.65
23.417	0.00	0.97	1.078	O	|	|	|	|	0.64
23.500	0.00	0.96	1.071	O	|	|	|	|	0.64
23.583	0.00	0.96	1.065	O	|	|	|	|	0.63
23.667	0.00	0.95	1.058	O	|	|	|	|	0.63
23.750	0.00	0.94	1.052	O	|	|	|	|	0.63
23.833	0.00	0.93	1.045	O	|	|	|	|	0.62
23.917	0.00	0.93	1.039	O	|	|	|	|	0.62
24.000	0.00	0.92	1.032	O	|	|	|	|	0.62
24.083	0.00	0.91	1.026	O	|	|	|	|	0.61
24.167	0.00	0.90	1.020	O	|	|	|	|	0.61
24.250	0.00	0.90	1.014	O	|	|	|	|	0.60
24.333	0.00	0.89	1.008	O	|	|	|	|	0.60
24.417	0.00	0.88	1.001	O	|	|	|	|	0.60
24.500	0.00	0.88	0.995	O	|	|	|	|	0.59
24.583	0.00	0.87	0.989	O	|	|	|	|	0.59
24.667	0.00	0.86	0.983	O	|	|	|	|	0.59
24.750	0.00	0.86	0.978	O	|	|	|	|	0.58
24.833	0.00	0.85	0.972	O	|	|	|	|	0.58
24.917	0.00	0.84	0.966	O	|	|	|	|	0.58
25.000	0.00	0.84	0.960	O	|	|	|	|	0.57
25.083	0.00	0.83	0.954	O	|	|	|	|	0.57
25.167	0.00	0.82	0.949	O	|	|	|	|	0.57
25.250	0.00	0.82	0.943	O	|	|	|	|	0.56
25.333	0.00	0.81	0.937	O	|	|	|	|	0.56
25.417	0.00	0.80	0.932	O	|	|	|	|	0.56
25.500	0.00	0.80	0.926	O	|	|	|	|	0.55
25.583	0.00	0.79	0.921	O	|	|	|	|	0.55
25.667	0.00	0.78	0.915	O	|	|	|	|	0.55
25.750	0.00	0.78	0.910	O	|	|	|	|	0.54
25.833	0.00	0.77	0.905	O	|	|	|	|	0.54
25.917	0.00	0.77	0.899	O	|	|	|	|	0.54
26.000	0.00	0.76	0.894	O	|	|	|	|	0.53
26.083	0.00	0.75	0.889	O	|	|	|	|	0.53
26.167	0.00	0.75	0.884	O	|	|	|	|	0.53
26.250	0.00	0.74	0.879	O	|	|	|	|	0.53
26.333	0.00	0.74	0.873	O	|	|	|	|	0.52
26.417	0.00	0.73	0.868	O	|	|	|	|	0.52
26.500	0.00	0.73	0.863	O	|	|	|	|	0.52
26.583	0.00	0.72	0.858	O	|	|	|	|	0.51
26.667	0.00	0.71	0.854	O	|	|	|	|	0.51
26.750	0.00	0.71	0.849	O	|	|	|	|	0.51
26.833	0.00	0.70	0.844	O	|	|	|	|	0.51
26.917	0.00	0.70	0.839	O	|	|	|	|	0.50
27.000	0.00	0.69	0.834	O	|	|	|	|	0.50
27.083	0.00	0.69	0.829	O	|	|	|	|	0.50
27.167	0.00	0.68	0.825	O	|	|	|	|	0.49
27.250	0.00	0.68	0.820	O	|	|	|	|	0.49
27.333	0.00	0.68	0.815	O	|	|	|	|	0.49
27.417	0.00	0.67	0.811	O	|	|	|	|	0.49
27.500	0.00	0.67	0.806	O	|	|	|	|	0.48
27.583	0.00	0.66	0.801	O	|	|	|	|	0.48
27.667	0.00	0.66	0.797	O	|	|	|	|	0.48
27.750	0.00	0.66	0.792	O	|	|	|	|	0.48
27.833	0.00	0.65	0.788	O	|	|	|	|	0.47
27.917	0.00	0.65	0.783	O	|	|	|	|	0.47
28.000	0.00	0.65	0.779	O	|	|	|	|	0.47
28.083	0.00	0.64	0.774	O	|	|	|	|	0.46
28.167	0.00	0.64	0.770	O	|	|	|	|	0.46
28.250	0.00	0.64	0.766	O	|	|	|	|	0.46
28.333	0.00	0.63	0.761	O	|	|	|	|	0.46
28.417	0.00	0.63	0.757	O	|	|	|	|	0.45
28.500	0.00	0.62	0.753	O	|	|	|	|	0.45
28.583	0.00	0.62	0.748	O	|	|	|	|	0.45
28.667	0.00	0.62	0.744	O	|	|	|	|	0.45
28.750	0.00	0.61	0.740	O	|	|	|	|	0.44
28.833	0.00	0.61	0.736	O	|	|	|	|	0.44
28.917	0.00	0.61	0.731	O	|	|	|	|	0.44

29.000	0.00	0.60	0.727	O	|	|	|	|	0.44
29.083	0.00	0.60	0.723	O	|	|	|	|	0.43
29.167	0.00	0.60	0.719	O	|	|	|	|	0.43
29.250	0.00	0.59	0.715	O	|	|	|	|	0.43
29.333	0.00	0.59	0.711	O	|	|	|	|	0.43
29.417	0.00	0.59	0.707	O	|	|	|	|	0.42
29.500	0.00	0.58	0.703	O	|	|	|	|	0.42
29.583	0.00	0.58	0.699	O	|	|	|	|	0.42
29.667	0.00	0.58	0.695	O	|	|	|	|	0.42
29.750	0.00	0.57	0.691	O	|	|	|	|	0.41
29.833	0.00	0.57	0.687	O	|	|	|	|	0.41
29.917	0.00	0.57	0.683	O	|	|	|	|	0.41
30.000	0.00	0.56	0.679	O	|	|	|	|	0.41
30.083	0.00	0.56	0.675	O	|	|	|	|	0.40
30.167	0.00	0.56	0.671	O	|	|	|	|	0.40
30.250	0.00	0.55	0.667	O	|	|	|	|	0.40
30.333	0.00	0.55	0.664	O	|	|	|	|	0.40
30.417	0.00	0.55	0.660	O	|	|	|	|	0.40
30.500	0.00	0.54	0.656	O	|	|	|	|	0.39
30.583	0.00	0.54	0.652	O	|	|	|	|	0.39
30.667	0.00	0.54	0.649	O	|	|	|	|	0.39
30.750	0.00	0.54	0.645	O	|	|	|	|	0.39
30.833	0.00	0.53	0.641	O	|	|	|	|	0.38
30.917	0.00	0.53	0.638	O	|	|	|	|	0.38
31.000	0.00	0.53	0.634	O	|	|	|	|	0.38
31.083	0.00	0.52	0.630	O	|	|	|	|	0.38
31.167	0.00	0.52	0.627	O	|	|	|	|	0.38
31.250	0.00	0.52	0.623	O	|	|	|	|	0.37
31.333	0.00	0.51	0.620	O	|	|	|	|	0.37
31.417	0.00	0.51	0.616	O	|	|	|	|	0.37
31.500	0.00	0.51	0.613	O	|	|	|	|	0.37
31.583	0.00	0.51	0.609	O	|	|	|	|	0.37
31.667	0.00	0.50	0.606	O	|	|	|	|	0.36
31.750	0.00	0.50	0.602	O	|	|	|	|	0.36
31.833	0.00	0.50	0.599	O	|	|	|	|	0.36
31.917	0.00	0.49	0.595	O	|	|	|	|	0.36
32.000	0.00	0.49	0.592	O	|	|	|	|	0.35
32.083	0.00	0.49	0.589	O	|	|	|	|	0.35
32.167	0.00	0.49	0.585	O	|	|	|	|	0.35
32.250	0.00	0.48	0.582	O	|	|	|	|	0.35
32.333	0.00	0.48	0.579	O	|	|	|	|	0.35
32.417	0.00	0.48	0.575	O	|	|	|	|	0.34
32.500	0.00	0.47	0.572	O	|	|	|	|	0.34
32.583	0.00	0.47	0.569	O	|	|	|	|	0.34
32.667	0.00	0.47	0.566	O	|	|	|	|	0.34
32.750	0.00	0.47	0.562	O	|	|	|	|	0.34
32.833	0.00	0.46	0.559	O	|	|	|	|	0.34
32.917	0.00	0.46	0.556	O	|	|	|	|	0.33
33.000	0.00	0.46	0.553	O	|	|	|	|	0.33
33.083	0.00	0.46	0.550	O	|	|	|	|	0.33
33.167	0.00	0.45	0.546	O	|	|	|	|	0.33
33.250	0.00	0.45	0.543	O	|	|	|	|	0.33
33.333	0.00	0.45	0.540	O	|	|	|	|	0.32
33.417	0.00	0.45	0.537	O	|	|	|	|	0.32
33.500	0.00	0.44	0.534	O	|	|	|	|	0.32
33.583	0.00	0.44	0.531	O	|	|	|	|	0.32
33.667	0.00	0.44	0.528	O	|	|	|	|	0.32
33.750	0.00	0.44	0.525	O	|	|	|	|	0.31
33.833	0.00	0.43	0.522	O	|	|	|	|	0.31
33.917	0.00	0.43	0.519	O	|	|	|	|	0.31
34.000	0.00	0.43	0.516	O	|	|	|	|	0.31
34.083	0.00	0.43	0.513	O	|	|	|	|	0.31
34.167	0.00	0.42	0.510	O	|	|	|	|	0.31
34.250	0.00	0.42	0.507	O	|	|	|	|	0.30
34.333	0.00	0.42	0.504	O	|	|	|	|	0.30
34.417	0.00	0.42	0.502	O	|	|	|	|	0.30
34.500	0.00	0.41	0.499	O	|	|	|	|	0.30
34.583	0.00	0.41	0.496	O	|	|	|	|	0.30
34.667	0.00	0.41	0.493	O	|	|	|	|	0.30
34.750	0.00	0.41	0.490	O	|	|	|	|	0.29
34.833	0.00	0.40	0.487	O	|	|	|	|	0.29

34.917	0.00	0.40	0.485	O	|	|	|	|	0.29
35.000	0.00	0.40	0.482	O	|	|	|	|	0.29
35.083	0.00	0.40	0.479	O	|	|	|	|	0.29
35.167	0.00	0.40	0.476	O	|	|	|	|	0.29
35.250	0.00	0.39	0.474	O	|	|	|	|	0.28
35.333	0.00	0.39	0.471	O	|	|	|	|	0.28
35.417	0.00	0.39	0.468	O	|	|	|	|	0.28
35.500	0.00	0.39	0.466	O	|	|	|	|	0.28
35.583	0.00	0.38	0.463	O	|	|	|	|	0.28
35.667	0.00	0.38	0.460	O	|	|	|	|	0.28
35.750	0.00	0.38	0.458	O	|	|	|	|	0.27
35.833	0.00	0.38	0.455	O	|	|	|	|	0.27
35.917	0.00	0.38	0.453	O	|	|	|	|	0.27
36.000	0.00	0.37	0.450	O	|	|	|	|	0.27
36.083	0.00	0.37	0.447	O	|	|	|	|	0.27
36.167	0.00	0.37	0.445	O	|	|	|	|	0.27
36.250	0.00	0.37	0.442	O	|	|	|	|	0.27
36.333	0.00	0.36	0.440	O	|	|	|	|	0.26
36.417	0.00	0.36	0.437	O	|	|	|	|	0.26
36.500	0.00	0.36	0.435	O	|	|	|	|	0.26
36.583	0.00	0.36	0.432	O	|	|	|	|	0.26
36.667	0.00	0.36	0.430	O	|	|	|	|	0.26
36.750	0.00	0.35	0.427	O	|	|	|	|	0.26
36.833	0.00	0.35	0.425	O	|	|	|	|	0.25
36.917	0.00	0.35	0.423	O	|	|	|	|	0.25
37.000	0.00	0.35	0.420	O	|	|	|	|	0.25
37.083	0.00	0.35	0.418	O	|	|	|	|	0.25
37.167	0.00	0.34	0.415	O	|	|	|	|	0.25
37.250	0.00	0.34	0.413	O	|	|	|	|	0.25
37.333	0.00	0.34	0.411	O	|	|	|	|	0.25
37.417	0.00	0.34	0.408	O	|	|	|	|	0.24
37.500	0.00	0.34	0.406	O	|	|	|	|	0.24
37.583	0.00	0.33	0.404	O	|	|	|	|	0.24
37.667	0.00	0.33	0.401	O	|	|	|	|	0.24
37.750	0.00	0.33	0.399	O	|	|	|	|	0.24
37.833	0.00	0.33	0.397	O	|	|	|	|	0.24
37.917	0.00	0.33	0.395	O	|	|	|	|	0.24
38.000	0.00	0.33	0.392	O	|	|	|	|	0.24
38.083	0.00	0.32	0.390	O	|	|	|	|	0.23
38.167	0.00	0.32	0.388	O	|	|	|	|	0.23
38.250	0.00	0.32	0.386	O	|	|	|	|	0.23
38.333	0.00	0.32	0.383	O	|	|	|	|	0.23
38.417	0.00	0.32	0.381	O	|	|	|	|	0.23
38.500	0.00	0.31	0.379	O	|	|	|	|	0.23
38.583	0.00	0.31	0.377	O	|	|	|	|	0.23
38.667	0.00	0.31	0.375	O	|	|	|	|	0.22
38.750	0.00	0.31	0.373	O	|	|	|	|	0.22
38.833	0.00	0.31	0.371	O	|	|	|	|	0.22
38.917	0.00	0.31	0.368	O	|	|	|	|	0.22
39.000	0.00	0.30	0.366	O	|	|	|	|	0.22
39.083	0.00	0.30	0.364	O	|	|	|	|	0.22
39.167	0.00	0.30	0.362	O	|	|	|	|	0.22
39.250	0.00	0.30	0.360	O	|	|	|	|	0.22
39.333	0.00	0.30	0.358	O	|	|	|	|	0.21
39.417	0.00	0.30	0.356	O	|	|	|	|	0.21
39.500	0.00	0.29	0.354	O	|	|	|	|	0.21
39.583	0.00	0.29	0.352	O	|	|	|	|	0.21
39.667	0.00	0.29	0.350	O	|	|	|	|	0.21
39.750	0.00	0.29	0.348	O	|	|	|	|	0.21
39.833	0.00	0.29	0.346	O	|	|	|	|	0.21
39.917	0.00	0.29	0.344	O	|	|	|	|	0.21
40.000	0.00	0.28	0.342	O	|	|	|	|	0.21
40.083	0.00	0.28	0.340	O	|	|	|	|	0.20
40.167	0.00	0.28	0.338	O	|	|	|	|	0.20
40.250	0.00	0.28	0.336	O	|	|	|	|	0.20
40.333	0.00	0.28	0.334	O	|	|	|	|	0.20
40.417	0.00	0.28	0.332	O	|	|	|	|	0.20
40.500	0.00	0.27	0.331	O	|	|	|	|	0.20
40.583	0.00	0.27	0.329	O	|	|	|	|	0.20
40.667	0.00	0.27	0.327	O	|	|	|	|	0.20
40.750	0.00	0.27	0.325	O	|	|	|	|	0.19

40.833	0.00	0.27	0.323	O	|	|	|	|	0.19
40.917	0.00	0.27	0.321	O	|	|	|	|	0.19
41.000	0.00	0.26	0.319	O	|	|	|	|	0.19
41.083	0.00	0.26	0.318	O	|	|	|	|	0.19
41.167	0.00	0.26	0.316	O	|	|	|	|	0.19
41.250	0.00	0.26	0.314	O	|	|	|	|	0.19
41.333	0.00	0.26	0.312	O	|	|	|	|	0.19
41.417	0.00	0.26	0.310	O	|	|	|	|	0.19
41.500	0.00	0.26	0.309	O	|	|	|	|	0.19
41.583	0.00	0.25	0.307	O	|	|	|	|	0.18
41.667	0.00	0.25	0.305	O	|	|	|	|	0.18
41.750	0.00	0.25	0.303	O	|	|	|	|	0.18
41.833	0.00	0.25	0.302	O	|	|	|	|	0.18
41.917	0.00	0.25	0.300	O	|	|	|	|	0.18
42.000	0.00	0.25	0.298	O	|	|	|	|	0.18
42.083	0.00	0.25	0.297	O	|	|	|	|	0.18
42.167	0.00	0.24	0.295	O	|	|	|	|	0.18
42.250	0.00	0.24	0.293	O	|	|	|	|	0.18
42.333	0.00	0.24	0.291	O	|	|	|	|	0.17
42.417	0.00	0.24	0.290	O	|	|	|	|	0.17
42.500	0.00	0.24	0.288	O	|	|	|	|	0.17
42.583	0.00	0.24	0.287	O	|	|	|	|	0.17
42.667	0.00	0.24	0.285	O	|	|	|	|	0.17
42.750	0.00	0.24	0.283	O	|	|	|	|	0.17
42.833	0.00	0.23	0.282	O	|	|	|	|	0.17
42.917	0.00	0.23	0.280	O	|	|	|	|	0.17
43.000	0.00	0.23	0.278	O	|	|	|	|	0.17
43.083	0.00	0.23	0.277	O	|	|	|	|	0.17
43.167	0.00	0.23	0.275	O	|	|	|	|	0.17
43.250	0.00	0.23	0.274	O	|	|	|	|	0.16
43.333	0.00	0.23	0.272	O	|	|	|	|	0.16
43.417	0.00	0.22	0.271	O	|	|	|	|	0.16
43.500	0.00	0.22	0.269	O	|	|	|	|	0.16
43.583	0.00	0.22	0.268	O	|	|	|	|	0.16
43.667	0.00	0.22	0.266	O	|	|	|	|	0.16
43.750	0.00	0.22	0.264	O	|	|	|	|	0.16
43.833	0.00	0.22	0.263	O	|	|	|	|	0.16
43.917	0.00	0.22	0.261	O	|	|	|	|	0.16
44.000	0.00	0.22	0.260	O	|	|	|	|	0.16
44.083	0.00	0.21	0.259	O	|	|	|	|	0.15
44.167	0.00	0.21	0.257	O	|	|	|	|	0.15
44.250	0.00	0.21	0.256	O	|	|	|	|	0.15
44.333	0.00	0.21	0.254	O	|	|	|	|	0.15
44.417	0.00	0.21	0.253	O	|	|	|	|	0.15
44.500	0.00	0.21	0.251	O	|	|	|	|	0.15
44.583	0.00	0.21	0.250	O	|	|	|	|	0.15
44.667	0.00	0.21	0.248	O	|	|	|	|	0.15
44.750	0.00	0.20	0.247	O	|	|	|	|	0.15
44.833	0.00	0.20	0.246	O	|	|	|	|	0.15
44.917	0.00	0.20	0.244	O	|	|	|	|	0.15
45.000	0.00	0.20	0.243	O	|	|	|	|	0.15
45.083	0.00	0.20	0.241	O	|	|	|	|	0.14
45.167	0.00	0.20	0.240	O	|	|	|	|	0.14
45.250	0.00	0.20	0.239	O	|	|	|	|	0.14
45.333	0.00	0.20	0.237	O	|	|	|	|	0.14
45.417	0.00	0.20	0.236	O	|	|	|	|	0.14
45.500	0.00	0.19	0.235	O	|	|	|	|	0.14
45.583	0.00	0.19	0.233	O	|	|	|	|	0.14
45.667	0.00	0.19	0.232	O	|	|	|	|	0.14
45.750	0.00	0.19	0.231	O	|	|	|	|	0.14
45.833	0.00	0.19	0.229	O	|	|	|	|	0.14
45.917	0.00	0.19	0.228	O	|	|	|	|	0.14
46.000	0.00	0.19	0.227	O	|	|	|	|	0.14
46.083	0.00	0.19	0.225	O	|	|	|	|	0.14
46.167	0.00	0.19	0.224	O	|	|	|	|	0.13
46.250	0.00	0.18	0.223	O	|	|	|	|	0.13
46.333	0.00	0.18	0.222	O	|	|	|	|	0.13
46.417	0.00	0.18	0.220	O	|	|	|	|	0.13
46.500	0.00	0.18	0.219	O	|	|	|	|	0.13
46.583	0.00	0.18	0.218	O	|	|	|	|	0.13
46.667	0.00	0.18	0.217	O	|	|	|	|	0.13

46.750	0.00	0.18	0.215	O					0.13
46.833	0.00	0.18	0.214	O					0.13
46.917	0.00	0.18	0.213	O					0.13
47.000	0.00	0.18	0.212	O					0.13
47.083	0.00	0.17	0.210	O					0.13
47.167	0.00	0.17	0.209	O					0.13
47.250	0.00	0.17	0.208	O					0.12
47.333	0.00	0.17	0.207	O					0.12
47.417	0.00	0.17	0.206	O					0.12
47.500	0.00	0.17	0.205	O					0.12
47.583	0.00	0.17	0.203	O					0.12
47.667	0.00	0.17	0.202	O					0.12
47.750	0.00	0.17	0.201	O					0.12
47.833	0.00	0.17	0.200	O					0.12
47.917	0.00	0.16	0.199	O					0.12
48.000	0.00	0.16	0.198	O					0.12
48.083	0.00	0.16	0.196	O					0.12
48.167	0.00	0.16	0.195	O					0.12
48.250	0.00	0.16	0.194	O					0.12
48.333	0.00	0.16	0.193	O					0.12
48.417	0.00	0.16	0.192	O					0.12
48.500	0.00	0.16	0.191	O					0.11
48.583	0.00	0.16	0.190	O					0.11
48.667	0.00	0.16	0.189	O					0.11
48.750	0.00	0.16	0.188	O					0.11
48.833	0.00	0.15	0.187	O					0.11
48.917	0.00	0.15	0.186	O					0.11
49.000	0.00	0.15	0.185	O					0.11
49.083	0.00	0.15	0.183	O					0.11
49.167	0.00	0.15	0.182	O					0.11
49.250	0.00	0.15	0.181	O					0.11
49.333	0.00	0.15	0.180	O					0.11
49.417	0.00	0.15	0.179	O					0.11
49.500	0.00	0.15	0.178	O					0.11
49.583	0.00	0.15	0.177	O					0.11
49.667	0.00	0.15	0.176	O					0.11
49.750	0.00	0.15	0.175	O					0.11
49.833	0.00	0.14	0.174	O					0.10
49.917	0.00	0.14	0.173	O					0.10
50.000	0.00	0.14	0.172	O					0.10
50.083	0.00	0.14	0.171	O					0.10
50.167	0.00	0.14	0.170	O					0.10
50.250	0.00	0.14	0.169	O					0.10
50.333	0.00	0.14	0.168	O					0.10
50.417	0.00	0.14	0.167	O					0.10
50.500	0.00	0.14	0.166	O					0.10
50.583	0.00	0.14	0.166	O					0.10
50.667	0.00	0.14	0.165	O					0.10
50.750	0.00	0.14	0.164	O					0.10
50.833	0.00	0.14	0.163	O					0.10
50.917	0.00	0.13	0.162	O					0.10
51.000	0.00	0.13	0.161	O					0.10
51.083	0.00	0.13	0.160	O					0.10
51.167	0.00	0.13	0.159	O					0.10
51.250	0.00	0.13	0.158	O					0.09
51.333	0.00	0.13	0.157	O					0.09
51.417	0.00	0.13	0.156	O					0.09
51.500	0.00	0.13	0.155	O					0.09
51.583	0.00	0.13	0.155	O					0.09
51.667	0.00	0.13	0.154	O					0.09
51.750	0.00	0.13	0.153	O					0.09
51.833	0.00	0.13	0.152	O					0.09
51.917	0.00	0.13	0.151	O					0.09
52.000	0.00	0.12	0.150	O					0.09
52.083	0.00	0.12	0.149	O					0.09
52.167	0.00	0.12	0.149	O					0.09
52.250	0.00	0.12	0.148	O					0.09
52.333	0.00	0.12	0.147	O					0.09
52.417	0.00	0.12	0.146	O					0.09
52.500	0.00	0.12	0.145	O					0.09
52.583	0.00	0.12	0.144	O					0.09

52.667	0.00	0.12	0.144	O	|	|	|	|	0.09
52.750	0.00	0.12	0.143	O	|	|	|	|	0.09
52.833	0.00	0.12	0.142	O	|	|	|	|	0.09
52.917	0.00	0.12	0.141	O	|	|	|	|	0.08
53.000	0.00	0.12	0.140	O	|	|	|	|	0.08
53.083	0.00	0.12	0.139	O	|	|	|	|	0.08
53.167	0.00	0.12	0.139	O	|	|	|	|	0.08
53.250	0.00	0.11	0.138	O	|	|	|	|	0.08
53.333	0.00	0.11	0.137	O	|	|	|	|	0.08
53.417	0.00	0.11	0.136	O	|	|	|	|	0.08
53.500	0.00	0.11	0.136	O	|	|	|	|	0.08
53.583	0.00	0.11	0.135	O	|	|	|	|	0.08
53.667	0.00	0.11	0.134	O	|	|	|	|	0.08
53.750	0.00	0.11	0.133	O	|	|	|	|	0.08
53.833	0.00	0.11	0.132	O	|	|	|	|	0.08
53.917	0.00	0.11	0.132	O	|	|	|	|	0.08
54.000	0.00	0.11	0.131	O	|	|	|	|	0.08
54.083	0.00	0.11	0.130	O	|	|	|	|	0.08
54.167	0.00	0.11	0.129	O	|	|	|	|	0.08
54.250	0.00	0.11	0.129	O	|	|	|	|	0.08
54.333	0.00	0.11	0.128	O	|	|	|	|	0.08
54.417	0.00	0.11	0.127	O	|	|	|	|	0.08
54.500	0.00	0.11	0.127	O	|	|	|	|	0.08
54.583	0.00	0.10	0.126	O	|	|	|	|	0.08
54.667	0.00	0.10	0.125	O	|	|	|	|	0.08
54.750	0.00	0.10	0.124	O	|	|	|	|	0.07
54.833	0.00	0.10	0.124	O	|	|	|	|	0.07
54.917	0.00	0.10	0.123	O	|	|	|	|	0.07
55.000	0.00	0.10	0.122	O	|	|	|	|	0.07
55.083	0.00	0.10	0.122	O	|	|	|	|	0.07
55.167	0.00	0.10	0.121	O	|	|	|	|	0.07
55.250	0.00	0.10	0.120	O	|	|	|	|	0.07
55.333	0.00	0.10	0.120	O	|	|	|	|	0.07
55.417	0.00	0.10	0.119	O	|	|	|	|	0.07
55.500	0.00	0.10	0.118	O	|	|	|	|	0.07
55.583	0.00	0.10	0.117	O	|	|	|	|	0.07
55.667	0.00	0.10	0.117	O	|	|	|	|	0.07
55.750	0.00	0.10	0.116	O	|	|	|	|	0.07
55.833	0.00	0.10	0.115	O	|	|	|	|	0.07
55.917	0.00	0.10	0.115	O	|	|	|	|	0.07
56.000	0.00	0.09	0.114	O	|	|	|	|	0.07
56.083	0.00	0.09	0.114	O	|	|	|	|	0.07
56.167	0.00	0.09	0.113	O	|	|	|	|	0.07
56.250	0.00	0.09	0.112	O	|	|	|	|	0.07
56.333	0.00	0.09	0.112	O	|	|	|	|	0.07
56.417	0.00	0.09	0.111	O	|	|	|	|	0.07
56.500	0.00	0.09	0.110	O	|	|	|	|	0.07
56.583	0.00	0.09	0.110	O	|	|	|	|	0.07
56.667	0.00	0.09	0.109	O	|	|	|	|	0.07
56.750	0.00	0.09	0.108	O	|	|	|	|	0.07
56.833	0.00	0.09	0.108	O	|	|	|	|	0.06
56.917	0.00	0.09	0.107	O	|	|	|	|	0.06
57.000	0.00	0.09	0.107	O	|	|	|	|	0.06
57.083	0.00	0.09	0.106	O	|	|	|	|	0.06
57.167	0.00	0.09	0.105	O	|	|	|	|	0.06
57.250	0.00	0.09	0.105	O	|	|	|	|	0.06
57.333	0.00	0.09	0.104	O	|	|	|	|	0.06
57.417	0.00	0.09	0.104	O	|	|	|	|	0.06
57.500	0.00	0.09	0.103	O	|	|	|	|	0.06
57.583	0.00	0.08	0.102	O	|	|	|	|	0.06
57.667	0.00	0.08	0.102	O	|	|	|	|	0.06
57.750	0.00	0.08	0.101	O	|	|	|	|	0.06
57.833	0.00	0.08	0.101	O	|	|	|	|	0.06
57.917	0.00	0.08	0.100	O	|	|	|	|	0.06
58.000	0.00	0.08	0.100	O	|	|	|	|	0.06
58.083	0.00	0.08	0.099	O	|	|	|	|	0.06
58.167	0.00	0.08	0.098	O	|	|	|	|	0.06
58.250	0.00	0.08	0.098	O	|	|	|	|	0.06
58.333	0.00	0.08	0.097	O	|	|	|	|	0.06
58.417	0.00	0.08	0.097	O	|	|	|	|	0.06
58.500	0.00	0.08	0.096	O	|	|	|	|	0.06

58.583	0.00	0.08	0.096	O	|	|	|	|	0.06
58.667	0.00	0.08	0.095	O	|	|	|	|	0.06
58.750	0.00	0.08	0.095	O	|	|	|	|	0.06
58.833	0.00	0.08	0.094	O	|	|	|	|	0.06
58.917	0.00	0.08	0.093	O	|	|	|	|	0.06
59.000	0.00	0.08	0.093	O	|	|	|	|	0.06
59.083	0.00	0.08	0.092	O	|	|	|	|	0.06
59.167	0.00	0.08	0.092	O	|	|	|	|	0.06
59.250	0.00	0.08	0.091	O	|	|	|	|	0.05
59.333	0.00	0.08	0.091	O	|	|	|	|	0.05
59.417	0.00	0.07	0.090	O	|	|	|	|	0.05
59.500	0.00	0.07	0.090	O	|	|	|	|	0.05
59.583	0.00	0.07	0.089	O	|	|	|	|	0.05
59.667	0.00	0.07	0.089	O	|	|	|	|	0.05
59.750	0.00	0.07	0.088	O	|	|	|	|	0.05
59.833	0.00	0.07	0.088	O	|	|	|	|	0.05
59.917	0.00	0.07	0.087	O	|	|	|	|	0.05
60.000	0.00	0.07	0.087	O	|	|	|	|	0.05
60.083	0.00	0.07	0.086	O	|	|	|	|	0.05
60.167	0.00	0.07	0.086	O	|	|	|	|	0.05
60.250	0.00	0.07	0.085	O	|	|	|	|	0.05
60.333	0.00	0.07	0.085	O	|	|	|	|	0.05
60.417	0.00	0.07	0.084	O	|	|	|	|	0.05
60.500	0.00	0.07	0.084	O	|	|	|	|	0.05
60.583	0.00	0.07	0.083	O	|	|	|	|	0.05
60.667	0.00	0.07	0.083	O	|	|	|	|	0.05
60.750	0.00	0.07	0.082	O	|	|	|	|	0.05
60.833	0.00	0.07	0.082	O	|	|	|	|	0.05
60.917	0.00	0.07	0.082	O	|	|	|	|	0.05
61.000	0.00	0.07	0.081	O	|	|	|	|	0.05
61.083	0.00	0.07	0.081	O	|	|	|	|	0.05
61.167	0.00	0.07	0.080	O	|	|	|	|	0.05
61.250	0.00	0.07	0.080	O	|	|	|	|	0.05
61.333	0.00	0.07	0.079	O	|	|	|	|	0.05
61.417	0.00	0.07	0.079	O	|	|	|	|	0.05
61.500	0.00	0.06	0.078	O	|	|	|	|	0.05
61.583	0.00	0.06	0.078	O	|	|	|	|	0.05
61.667	0.00	0.06	0.077	O	|	|	|	|	0.05
61.750	0.00	0.06	0.077	O	|	|	|	|	0.05
61.833	0.00	0.06	0.077	O	|	|	|	|	0.05
61.917	0.00	0.06	0.076	O	|	|	|	|	0.05
62.000	0.00	0.06	0.076	O	|	|	|	|	0.05
62.083	0.00	0.06	0.075	O	|	|	|	|	0.05
62.167	0.00	0.06	0.075	O	|	|	|	|	0.04
62.250	0.00	0.06	0.074	O	|	|	|	|	0.04
62.333	0.00	0.06	0.074	O	|	|	|	|	0.04
62.417	0.00	0.06	0.074	O	|	|	|	|	0.04
62.500	0.00	0.06	0.073	O	|	|	|	|	0.04
62.583	0.00	0.06	0.073	O	|	|	|	|	0.04
62.667	0.00	0.06	0.072	O	|	|	|	|	0.04
62.750	0.00	0.06	0.072	O	|	|	|	|	0.04
62.833	0.00	0.06	0.071	O	|	|	|	|	0.04
62.917	0.00	0.06	0.071	O	|	|	|	|	0.04
63.000	0.00	0.06	0.071	O	|	|	|	|	0.04
63.083	0.00	0.06	0.070	O	|	|	|	|	0.04
63.167	0.00	0.06	0.070	O	|	|	|	|	0.04
63.250	0.00	0.06	0.069	O	|	|	|	|	0.04
63.333	0.00	0.06	0.069	O	|	|	|	|	0.04
63.417	0.00	0.06	0.069	O	|	|	|	|	0.04
63.500	0.00	0.06	0.068	O	|	|	|	|	0.04
63.583	0.00	0.06	0.068	O	|	|	|	|	0.04
63.667	0.00	0.06	0.067	O	|	|	|	|	0.04
63.750	0.00	0.06	0.067	O	|	|	|	|	0.04
63.833	0.00	0.06	0.067	O	|	|	|	|	0.04
63.917	0.00	0.06	0.066	O	|	|	|	|	0.04
64.000	0.00	0.05	0.066	O	|	|	|	|	0.04
64.083	0.00	0.05	0.066	O	|	|	|	|	0.04
64.167	0.00	0.05	0.065	O	|	|	|	|	0.04
64.250	0.00	0.05	0.065	O	|	|	|	|	0.04
64.333	0.00	0.05	0.064	O	|	|	|	|	0.04
64.417	0.00	0.05	0.064	O	|	|	|	|	0.04

64.500	0.00	0.05	0.064	O	|	|	|	|	0.04
64.583	0.00	0.05	0.063	O	|	|	|	|	0.04
64.667	0.00	0.05	0.063	O	|	|	|	|	0.04
64.750	0.00	0.05	0.063	O	|	|	|	|	0.04
64.833	0.00	0.05	0.062	O	|	|	|	|	0.04
64.917	0.00	0.05	0.062	O	|	|	|	|	0.04
65.000	0.00	0.05	0.062	O	|	|	|	|	0.04
65.083	0.00	0.05	0.061	O	|	|	|	|	0.04
65.167	0.00	0.05	0.061	O	|	|	|	|	0.04
65.250	0.00	0.05	0.061	O	|	|	|	|	0.04
65.333	0.00	0.05	0.060	O	|	|	|	|	0.04
65.417	0.00	0.05	0.060	O	|	|	|	|	0.04
65.500	0.00	0.05	0.060	O	|	|	|	|	0.04
65.583	0.00	0.05	0.059	O	|	|	|	|	0.04
65.667	0.00	0.05	0.059	O	|	|	|	|	0.04
65.750	0.00	0.05	0.059	O	|	|	|	|	0.04
65.833	0.00	0.05	0.058	O	|	|	|	|	0.03
65.917	0.00	0.05	0.058	O	|	|	|	|	0.03
66.000	0.00	0.05	0.058	O	|	|	|	|	0.03
66.083	0.00	0.05	0.057	O	|	|	|	|	0.03
66.167	0.00	0.05	0.057	O	|	|	|	|	0.03
66.250	0.00	0.05	0.057	O	|	|	|	|	0.03
66.333	0.00	0.05	0.056	O	|	|	|	|	0.03
66.417	0.00	0.05	0.056	O	|	|	|	|	0.03
66.500	0.00	0.05	0.056	O	|	|	|	|	0.03
66.583	0.00	0.05	0.055	O	|	|	|	|	0.03
66.667	0.00	0.05	0.055	O	|	|	|	|	0.03
66.750	0.00	0.05	0.055	O	|	|	|	|	0.03
66.833	0.00	0.05	0.054	O	|	|	|	|	0.03
66.917	0.00	0.04	0.054	O	|	|	|	|	0.03
67.000	0.00	0.04	0.054	O	|	|	|	|	0.03
67.083	0.00	0.04	0.053	O	|	|	|	|	0.03
67.167	0.00	0.04	0.053	O	|	|	|	|	0.03
67.250	0.00	0.04	0.053	O	|	|	|	|	0.03
67.333	0.00	0.04	0.052	O	|	|	|	|	0.03
67.417	0.00	0.04	0.052	O	|	|	|	|	0.03
67.500	0.00	0.04	0.052	O	|	|	|	|	0.03
67.583	0.00	0.04	0.052	O	|	|	|	|	0.03
67.667	0.00	0.04	0.051	O	|	|	|	|	0.03
67.750	0.00	0.04	0.051	O	|	|	|	|	0.03
67.833	0.00	0.04	0.051	O	|	|	|	|	0.03
67.917	0.00	0.04	0.050	O	|	|	|	|	0.03
68.000	0.00	0.04	0.050	O	|	|	|	|	0.03
68.083	0.00	0.04	0.050	O	|	|	|	|	0.03
68.167	0.00	0.04	0.050	O	|	|	|	|	0.03
68.250	0.00	0.04	0.049	O	|	|	|	|	0.03
68.333	0.00	0.04	0.049	O	|	|	|	|	0.03
68.417	0.00	0.04	0.049	O	|	|	|	|	0.03
68.500	0.00	0.04	0.048	O	|	|	|	|	0.03
68.583	0.00	0.04	0.048	O	|	|	|	|	0.03
68.667	0.00	0.04	0.048	O	|	|	|	|	0.03
68.750	0.00	0.04	0.048	O	|	|	|	|	0.03
68.833	0.00	0.04	0.047	O	|	|	|	|	0.03
68.917	0.00	0.04	0.047	O	|	|	|	|	0.03
69.000	0.00	0.04	0.047	O	|	|	|	|	0.03
69.083	0.00	0.04	0.047	O	|	|	|	|	0.03
69.167	0.00	0.04	0.046	O	|	|	|	|	0.03
69.250	0.00	0.04	0.046	O	|	|	|	|	0.03
69.333	0.00	0.04	0.046	O	|	|	|	|	0.03
69.417	0.00	0.04	0.046	O	|	|	|	|	0.03
69.500	0.00	0.04	0.045	O	|	|	|	|	0.03
69.583	0.00	0.04	0.045	O	|	|	|	|	0.03
69.667	0.00	0.04	0.045	O	|	|	|	|	0.03
69.750	0.00	0.04	0.044	O	|	|	|	|	0.03
69.833	0.00	0.04	0.044	O	|	|	|	|	0.03
69.917	0.00	0.04	0.044	O	|	|	|	|	0.03
70.000	0.00	0.04	0.044	O	|	|	|	|	0.03
70.083	0.00	0.04	0.043	O	|	|	|	|	0.03
70.167	0.00	0.04	0.043	O	|	|	|	|	0.03
70.250	0.00	0.04	0.043	O	|	|	|	|	0.03
70.333	0.00	0.04	0.043	O	|	|	|	|	0.03

70.417	0.00	0.04	0.042	O	|	|	|	|	0.03
70.500	0.00	0.04	0.042	O	|	|	|	|	0.03
70.583	0.00	0.03	0.042	O	|	|	|	|	0.03
70.667	0.00	0.03	0.042	O	|	|	|	|	0.03
70.750	0.00	0.03	0.042	O	|	|	|	|	0.02
70.833	0.00	0.03	0.041	O	|	|	|	|	0.02
70.917	0.00	0.03	0.041	O	|	|	|	|	0.02
71.000	0.00	0.03	0.041	O	|	|	|	|	0.02
71.083	0.00	0.03	0.041	O	|	|	|	|	0.02
71.167	0.00	0.03	0.040	O	|	|	|	|	0.02
71.250	0.00	0.03	0.040	O	|	|	|	|	0.02
71.333	0.00	0.03	0.040	O	|	|	|	|	0.02
71.417	0.00	0.03	0.040	O	|	|	|	|	0.02
71.500	0.00	0.03	0.039	O	|	|	|	|	0.02
71.583	0.00	0.03	0.039	O	|	|	|	|	0.02
71.667	0.00	0.03	0.039	O	|	|	|	|	0.02
71.750	0.00	0.03	0.039	O	|	|	|	|	0.02
71.833	0.00	0.03	0.039	O	|	|	|	|	0.02
71.917	0.00	0.03	0.038	O	|	|	|	|	0.02
72.000	0.00	0.03	0.038	O	|	|	|	|	0.02
72.083	0.00	0.03	0.038	O	|	|	|	|	0.02
72.167	0.00	0.03	0.038	O	|	|	|	|	0.02
72.250	0.00	0.03	0.037	O	|	|	|	|	0.02
72.333	0.00	0.03	0.037	O	|	|	|	|	0.02
72.417	0.00	0.03	0.037	O	|	|	|	|	0.02
72.500	0.00	0.03	0.037	O	|	|	|	|	0.02
72.583	0.00	0.03	0.037	O	|	|	|	|	0.02
72.667	0.00	0.03	0.036	O	|	|	|	|	0.02
72.750	0.00	0.03	0.036	O	|	|	|	|	0.02
72.833	0.00	0.03	0.036	O	|	|	|	|	0.02
72.917	0.00	0.03	0.036	O	|	|	|	|	0.02
73.000	0.00	0.03	0.036	O	|	|	|	|	0.02
73.083	0.00	0.03	0.035	O	|	|	|	|	0.02
73.167	0.00	0.03	0.035	O	|	|	|	|	0.02
73.250	0.00	0.03	0.035	O	|	|	|	|	0.02
73.333	0.00	0.03	0.035	O	|	|	|	|	0.02
73.417	0.00	0.03	0.035	O	|	|	|	|	0.02
73.500	0.00	0.03	0.034	O	|	|	|	|	0.02
73.583	0.00	0.03	0.034	O	|	|	|	|	0.02
73.667	0.00	0.03	0.034	O	|	|	|	|	0.02
73.750	0.00	0.03	0.034	O	|	|	|	|	0.02
73.833	0.00	0.03	0.034	O	|	|	|	|	0.02
73.917	0.00	0.03	0.033	O	|	|	|	|	0.02
74.000	0.00	0.03	0.033	O	|	|	|	|	0.02
74.083	0.00	0.03	0.033	O	|	|	|	|	0.02
74.167	0.00	0.03	0.033	O	|	|	|	|	0.02
74.250	0.00	0.03	0.033	O	|	|	|	|	0.02
74.333	0.00	0.03	0.032	O	|	|	|	|	0.02
74.417	0.00	0.03	0.032	O	|	|	|	|	0.02
74.500	0.00	0.03	0.032	O	|	|	|	|	0.02
74.583	0.00	0.03	0.032	O	|	|	|	|	0.02
74.667	0.00	0.03	0.032	O	|	|	|	|	0.02
74.750	0.00	0.03	0.032	O	|	|	|	|	0.02
74.833	0.00	0.03	0.031	O	|	|	|	|	0.02
74.917	0.00	0.03	0.031	O	|	|	|	|	0.02
75.000	0.00	0.03	0.031	O	|	|	|	|	0.02
75.083	0.00	0.03	0.031	O	|	|	|	|	0.02
75.167	0.00	0.03	0.031	O	|	|	|	|	0.02
75.250	0.00	0.03	0.031	O	|	|	|	|	0.02
75.333	0.00	0.03	0.030	O	|	|	|	|	0.02
75.417	0.00	0.03	0.030	O	|	|	|	|	0.02
75.500	0.00	0.02	0.030	O	|	|	|	|	0.02
75.583	0.00	0.02	0.030	O	|	|	|	|	0.02
75.667	0.00	0.02	0.030	O	|	|	|	|	0.02
75.750	0.00	0.02	0.029	O	|	|	|	|	0.02
75.833	0.00	0.02	0.029	O	|	|	|	|	0.02
75.917	0.00	0.02	0.029	O	|	|	|	|	0.02
76.000	0.00	0.02	0.029	O	|	|	|	|	0.02
76.083	0.00	0.02	0.029	O	|	|	|	|	0.02
76.167	0.00	0.02	0.029	O	|	|	|	|	0.02
76.250	0.00	0.02	0.028	O	|	|	|	|	0.02

76.333	0.00	0.02	0.028	O					0.02
76.417	0.00	0.02	0.028	O					0.02
76.500	0.00	0.02	0.028	O					0.02
76.583	0.00	0.02	0.028	O					0.02
76.667	0.00	0.02	0.028	O					0.02
76.750	0.00	0.02	0.028	O					0.02
76.833	0.00	0.02	0.027	O					0.02
76.917	0.00	0.02	0.027	O					0.02
77.000	0.00	0.02	0.027	O					0.02
77.083	0.00	0.02	0.027	O					0.02
77.167	0.00	0.02	0.027	O					0.02
77.250	0.00	0.02	0.027	O					0.02
77.333	0.00	0.02	0.026	O					0.02
77.417	0.00	0.02	0.026	O					0.02
77.500	0.00	0.02	0.026	O					0.02
77.583	0.00	0.02	0.026	O					0.02
77.667	0.00	0.02	0.026	O					0.02
77.750	0.00	0.02	0.026	O					0.02
77.833	0.00	0.02	0.026	O					0.02
77.917	0.00	0.02	0.025	O					0.02
78.000	0.00	0.02	0.025	O					0.02
78.083	0.00	0.02	0.025	O					0.02
78.167	0.00	0.02	0.025	O					0.01
78.250	0.00	0.02	0.025	O					0.01
78.333	0.00	0.02	0.025	O					0.01
78.417	0.00	0.02	0.025	O					0.01
78.500	0.00	0.02	0.024	O					0.01
78.583	0.00	0.02	0.024	O					0.01
78.667	0.00	0.02	0.024	O					0.01
78.750	0.00	0.02	0.024	O					0.01
78.833	0.00	0.02	0.024	O					0.01
78.917	0.00	0.02	0.024	O					0.01
79.000	0.00	0.02	0.024	O					0.01
79.083	0.00	0.02	0.023	O					0.01
79.167	0.00	0.02	0.023	O					0.01
79.250	0.00	0.02	0.023	O					0.01
79.333	0.00	0.02	0.023	O					0.01
79.417	0.00	0.02	0.023	O					0.01
79.500	0.00	0.02	0.023	O					0.01
79.583	0.00	0.02	0.023	O					0.01
79.667	0.00	0.02	0.023	O					0.01
79.750	0.00	0.02	0.022	O					0.01
79.833	0.00	0.02	0.022	O					0.01
79.917	0.00	0.02	0.022	O					0.01
80.000	0.00	0.02	0.022	O					0.01
80.083	0.00	0.02	0.022	O					0.01
80.167	0.00	0.02	0.022	O					0.01
80.250	0.00	0.02	0.022	O					0.01
80.333	0.00	0.02	0.022	O					0.01
80.417	0.00	0.02	0.021	O					0.01
80.500	0.00	0.02	0.021	O					0.01
80.583	0.00	0.02	0.021	O					0.01
80.667	0.00	0.02	0.021	O					0.01
80.750	0.00	0.02	0.021	O					0.01
80.833	0.00	0.02	0.021	O					0.01
80.917	0.00	0.02	0.021	O					0.01
81.000	0.00	0.02	0.021	O					0.01
81.083	0.00	0.02	0.020	O					0.01
81.167	0.00	0.02	0.020	O					0.01
81.250	0.00	0.02	0.020	O					0.01
81.333	0.00	0.02	0.020	O					0.01
81.417	0.00	0.02	0.020	O					0.01
81.500	0.00	0.02	0.020	O					0.01
81.583	0.00	0.02	0.020	O					0.01
81.667	0.00	0.02	0.020	O					0.01
81.750	0.00	0.02	0.020	O					0.01
81.833	0.00	0.02	0.019	O					0.01
81.917	0.00	0.02	0.019	O					0.01
82.000	0.00	0.02	0.019	O					0.01
82.083	0.00	0.02	0.019	O					0.01
82.167	0.00	0.02	0.019	O					0.01

82.250	0.00	0.02	0.019	O					0.01
82.333	0.00	0.02	0.019	O					0.01
82.417	0.00	0.02	0.019	O					0.01
82.500	0.00	0.02	0.019	O					0.01
82.583	0.00	0.02	0.018	O					0.01
82.667	0.00	0.02	0.018	O					0.01
82.750	0.00	0.02	0.018	O					0.01
82.833	0.00	0.02	0.018	O					0.01
82.917	0.00	0.01	0.018	O					0.01
83.000	0.00	0.01	0.018	O					0.01
83.083	0.00	0.01	0.018	O					0.01
83.167	0.00	0.01	0.018	O					0.01
83.250	0.00	0.01	0.018	O					0.01
83.333	0.00	0.01	0.018	O					0.01
83.417	0.00	0.01	0.017	O					0.01
83.500	0.00	0.01	0.017	O					0.01
83.583	0.00	0.01	0.017	O					0.01
83.667	0.00	0.01	0.017	O					0.01
83.750	0.00	0.01	0.017	O					0.01
83.833	0.00	0.01	0.017	O					0.01
83.917	0.00	0.01	0.017	O					0.01
84.000	0.00	0.01	0.017	O					0.01
84.083	0.00	0.01	0.017	O					0.01
84.167	0.00	0.01	0.017	O					0.01
84.250	0.00	0.01	0.016	O					0.01
84.333	0.00	0.01	0.016	O					0.01
84.417	0.00	0.01	0.016	O					0.01
84.500	0.00	0.01	0.016	O					0.01
84.583	0.00	0.01	0.016	O					0.01
84.667	0.00	0.01	0.016	O					0.01
84.750	0.00	0.01	0.016	O					0.01
84.833	0.00	0.01	0.016	O					0.01
84.917	0.00	0.01	0.016	O					0.01
85.000	0.00	0.01	0.016	O					0.01
85.083	0.00	0.01	0.016	O					0.01
85.167	0.00	0.01	0.015	O					0.01
85.250	0.00	0.01	0.015	O					0.01
85.333	0.00	0.01	0.015	O					0.01
85.417	0.00	0.01	0.015	O					0.01
85.500	0.00	0.01	0.015	O					0.01
85.583	0.00	0.01	0.015	O					0.01
85.667	0.00	0.01	0.015	O					0.01
85.750	0.00	0.01	0.015	O					0.01
85.833	0.00	0.01	0.015	O					0.01
85.917	0.00	0.01	0.015	O					0.01
86.000	0.00	0.01	0.015	O					0.01
86.083	0.00	0.01	0.015	O					0.01
86.167	0.00	0.01	0.014	O					0.01
86.250	0.00	0.01	0.014	O					0.01
86.333	0.00	0.01	0.014	O					0.01
86.417	0.00	0.01	0.014	O					0.01
86.500	0.00	0.01	0.014	O					0.01
86.583	0.00	0.01	0.014	O					0.01
86.667	0.00	0.01	0.014	O					0.01
86.750	0.00	0.01	0.014	O					0.01
86.833	0.00	0.01	0.014	O					0.01
86.917	0.00	0.01	0.014	O					0.01
87.000	0.00	0.01	0.014	O					0.01
87.083	0.00	0.01	0.014	O					0.01
87.167	0.00	0.01	0.013	O					0.01
87.250	0.00	0.01	0.013	O					0.01
87.333	0.00	0.01	0.013	O					0.01
87.417	0.00	0.01	0.013	O					0.01
87.500	0.00	0.01	0.013	O					0.01
87.583	0.00	0.01	0.013	O					0.01
87.667	0.00	0.01	0.013	O					0.01
87.750	0.00	0.01	0.013	O					0.01
87.833	0.00	0.01	0.013	O					0.01
87.917	0.00	0.01	0.013	O					0.01
88.000	0.00	0.01	0.013	O					0.01
88.083	0.00	0.01	0.013	O					0.01

88.167	0.00	0.01	0.013	O	|	|	|	|	0.01
88.250	0.00	0.01	0.013	O	|	|	|	|	0.01
88.333	0.00	0.01	0.012	O	|	|	|	|	0.01
88.417	0.00	0.01	0.012	O	|	|	|	|	0.01
88.500	0.00	0.01	0.012	O	|	|	|	|	0.01
88.583	0.00	0.01	0.012	O	|	|	|	|	0.01
88.667	0.00	0.01	0.012	O	|	|	|	|	0.01
88.750	0.00	0.01	0.012	O	|	|	|	|	0.01
88.833	0.00	0.01	0.012	O	|	|	|	|	0.01
88.917	0.00	0.01	0.012	O	|	|	|	|	0.01
89.000	0.00	0.01	0.012	O	|	|	|	|	0.01
89.083	0.00	0.01	0.012	O	|	|	|	|	0.01
89.167	0.00	0.01	0.012	O	|	|	|	|	0.01
89.250	0.00	0.01	0.012	O	|	|	|	|	0.01
89.333	0.00	0.01	0.012	O	|	|	|	|	0.01
89.417	0.00	0.01	0.012	O	|	|	|	|	0.01
89.500	0.00	0.01	0.011	O	|	|	|	|	0.01
89.583	0.00	0.01	0.011	O	|	|	|	|	0.01
89.667	0.00	0.01	0.011	O	|	|	|	|	0.01
89.750	0.00	0.01	0.011	O	|	|	|	|	0.01
89.833	0.00	0.01	0.011	O	|	|	|	|	0.01
89.917	0.00	0.01	0.011	O	|	|	|	|	0.01
90.000	0.00	0.01	0.011	O	|	|	|	|	0.01
90.083	0.00	0.01	0.011	O	|	|	|	|	0.01
90.167	0.00	0.01	0.011	O	|	|	|	|	0.01
90.250	0.00	0.01	0.011	O	|	|	|	|	0.01
90.333	0.00	0.01	0.011	O	|	|	|	|	0.01
90.417	0.00	0.01	0.011	O	|	|	|	|	0.01
90.500	0.00	0.01	0.011	O	|	|	|	|	0.01
90.583	0.00	0.01	0.011	O	|	|	|	|	0.01
90.667	0.00	0.01	0.011	O	|	|	|	|	0.01
90.750	0.00	0.01	0.011	O	|	|	|	|	0.01
90.833	0.00	0.01	0.010	O	|	|	|	|	0.01
90.917	0.00	0.01	0.010	O	|	|	|	|	0.01
91.000	0.00	0.01	0.010	O	|	|	|	|	0.01
91.083	0.00	0.01	0.010	O	|	|	|	|	0.01
91.167	0.00	0.01	0.010	O	|	|	|	|	0.01
91.250	0.00	0.01	0.010	O	|	|	|	|	0.01
91.333	0.00	0.01	0.010	O	|	|	|	|	0.01
91.417	0.00	0.01	0.010	O	|	|	|	|	0.01
91.500	0.00	0.01	0.010	O	|	|	|	|	0.01
91.583	0.00	0.01	0.010	O	|	|	|	|	0.01
91.667	0.00	0.01	0.010	O	|	|	|	|	0.01
91.750	0.00	0.01	0.010	O	|	|	|	|	0.01
91.833	0.00	0.01	0.010	O	|	|	|	|	0.01
91.917	0.00	0.01	0.010	O	|	|	|	|	0.01
92.000	0.00	0.01	0.010	O	|	|	|	|	0.01
92.083	0.00	0.01	0.010	O	|	|	|	|	0.01
92.167	0.00	0.01	0.010	O	|	|	|	|	0.01
92.250	0.00	0.01	0.010	O	|	|	|	|	0.01
92.333	0.00	0.01	0.009	O	|	|	|	|	0.01
92.417	0.00	0.01	0.009	O	|	|	|	|	0.01
92.500	0.00	0.01	0.009	O	|	|	|	|	0.01
92.583	0.00	0.01	0.009	O	|	|	|	|	0.01
92.667	0.00	0.01	0.009	O	|	|	|	|	0.01
92.750	0.00	0.01	0.009	O	|	|	|	|	0.01
92.833	0.00	0.01	0.009	O	|	|	|	|	0.01
92.917	0.00	0.01	0.009	O	|	|	|	|	0.01
93.000	0.00	0.01	0.009	O	|	|	|	|	0.01
93.083	0.00	0.01	0.009	O	|	|	|	|	0.01
93.167	0.00	0.01	0.009	O	|	|	|	|	0.01
93.250	0.00	0.01	0.009	O	|	|	|	|	0.01
93.333	0.00	0.01	0.009	O	|	|	|	|	0.01
93.417	0.00	0.01	0.009	O	|	|	|	|	0.01
93.500	0.00	0.01	0.009	O	|	|	|	|	0.01
93.583	0.00	0.01	0.009	O	|	|	|	|	0.01
93.667	0.00	0.01	0.009	O	|	|	|	|	0.01
93.750	0.00	0.01	0.009	O	|	|	|	|	0.01
93.833	0.00	0.01	0.009	O	|	|	|	|	0.01
93.917	0.00	0.01	0.008	O	|	|	|	|	0.01
94.000	0.00	0.01	0.008	O	|	|	|	|	0.01

94.083	0.00	0.01	0.008	O	|	|	|	|	0.01
94.167	0.00	0.01	0.008	O	|	|	|	|	0.00
94.250	0.00	0.01	0.008	O	|	|	|	|	0.00
94.333	0.00	0.01	0.008	O	|	|	|	|	0.00
94.417	0.00	0.01	0.008	O	|	|	|	|	0.00
94.500	0.00	0.01	0.008	O	|	|	|	|	0.00
94.583	0.00	0.01	0.008	O	|	|	|	|	0.00
94.667	0.00	0.01	0.008	O	|	|	|	|	0.00
94.750	0.00	0.01	0.008	O	|	|	|	|	0.00
94.833	0.00	0.01	0.008	O	|	|	|	|	0.00
94.917	0.00	0.01	0.008	O	|	|	|	|	0.00
95.000	0.00	0.01	0.008	O	|	|	|	|	0.00
95.083	0.00	0.01	0.008	O	|	|	|	|	0.00
95.167	0.00	0.01	0.008	O	|	|	|	|	0.00
95.250	0.00	0.01	0.008	O	|	|	|	|	0.00
95.333	0.00	0.01	0.008	O	|	|	|	|	0.00
95.417	0.00	0.01	0.008	O	|	|	|	|	0.00
95.500	0.00	0.01	0.008	O	|	|	|	|	0.00
95.583	0.00	0.01	0.008	O	|	|	|	|	0.00
95.667	0.00	0.01	0.008	O	|	|	|	|	0.00
95.750	0.00	0.01	0.007	O	|	|	|	|	0.00
95.833	0.00	0.01	0.007	O	|	|	|	|	0.00
95.917	0.00	0.01	0.007	O	|	|	|	|	0.00
96.000	0.00	0.01	0.007	O	|	|	|	|	0.00
96.083	0.00	0.01	0.007	O	|	|	|	|	0.00
96.167	0.00	0.01	0.007	O	|	|	|	|	0.00
96.250	0.00	0.01	0.007	O	|	|	|	|	0.00
96.333	0.00	0.01	0.007	O	|	|	|	|	0.00
96.417	0.00	0.01	0.007	O	|	|	|	|	0.00
96.500	0.00	0.01	0.007	O	|	|	|	|	0.00
96.583	0.00	0.01	0.007	O	|	|	|	|	0.00
96.667	0.00	0.01	0.007	O	|	|	|	|	0.00
96.750	0.00	0.01	0.007	O	|	|	|	|	0.00
96.833	0.00	0.01	0.007	O	|	|	|	|	0.00
96.917	0.00	0.01	0.007	O	|	|	|	|	0.00
97.000	0.00	0.01	0.007	O	|	|	|	|	0.00
97.083	0.00	0.01	0.007	O	|	|	|	|	0.00
97.167	0.00	0.01	0.007	O	|	|	|	|	0.00
97.250	0.00	0.01	0.007	O	|	|	|	|	0.00
97.333	0.00	0.01	0.007	O	|	|	|	|	0.00
97.417	0.00	0.01	0.007	O	|	|	|	|	0.00
97.500	0.00	0.01	0.007	O	|	|	|	|	0.00
97.583	0.00	0.01	0.007	O	|	|	|	|	0.00
97.667	0.00	0.01	0.007	O	|	|	|	|	0.00
97.750	0.00	0.01	0.007	O	|	|	|	|	0.00
97.833	0.00	0.01	0.006	O	|	|	|	|	0.00
97.917	0.00	0.01	0.006	O	|	|	|	|	0.00
98.000	0.00	0.01	0.006	O	|	|	|	|	0.00
98.083	0.00	0.01	0.006	O	|	|	|	|	0.00
98.167	0.00	0.01	0.006	O	|	|	|	|	0.00
98.250	0.00	0.01	0.006	O	|	|	|	|	0.00
98.333	0.00	0.01	0.006	O	|	|	|	|	0.00
98.417	0.00	0.01	0.006	O	|	|	|	|	0.00
98.500	0.00	0.01	0.006	O	|	|	|	|	0.00
98.583	0.00	0.01	0.006	O	|	|	|	|	0.00
98.667	0.00	0.01	0.006	O	|	|	|	|	0.00
98.750	0.00	0.01	0.006	O	|	|	|	|	0.00
98.833	0.00	0.01	0.006	O	|	|	|	|	0.00
98.917	0.00	0.00	0.006	O	|	|	|	|	0.00
99.000	0.00	0.00	0.006	O	|	|	|	|	0.00
99.083	0.00	0.00	0.006	O	|	|	|	|	0.00
99.167	0.00	0.00	0.006	O	|	|	|	|	0.00
99.250	0.00	0.00	0.006	O	|	|	|	|	0.00
99.333	0.00	0.00	0.006	O	|	|	|	|	0.00
99.417	0.00	0.00	0.006	O	|	|	|	|	0.00
99.500	0.00	0.00	0.006	O	|	|	|	|	0.00
99.583	0.00	0.00	0.006	O	|	|	|	|	0.00
99.667	0.00	0.00	0.006	O	|	|	|	|	0.00
99.750	0.00	0.00	0.006	O	|	|	|	|	0.00
99.833	0.00	0.00	0.006	O	|	|	|	|	0.00
99.917	0.00	0.00	0.006	O	|	|	|	|	0.00

100.000	0.00	0.00	0.006	O	|	|	|	|	0.00
100.083	0.00	0.00	0.006	O	|	|	|	|	0.00
100.167	0.00	0.00	0.006	O	|	|	|	|	0.00
100.250	0.00	0.00	0.005	O	|	|	|	|	0.00
100.333	0.00	0.00	0.005	O	|	|	|	|	0.00
100.417	0.00	0.00	0.005	O	|	|	|	|	0.00
100.500	0.00	0.00	0.005	O	|	|	|	|	0.00
100.583	0.00	0.00	0.005	O	|	|	|	|	0.00
100.667	0.00	0.00	0.005	O	|	|	|	|	0.00
100.750	0.00	0.00	0.005	O	|	|	|	|	0.00
100.833	0.00	0.00	0.005	O	|	|	|	|	0.00
100.917	0.00	0.00	0.005	O	|	|	|	|	0.00
101.000	0.00	0.00	0.005	O	|	|	|	|	0.00
101.083	0.00	0.00	0.005	O	|	|	|	|	0.00
101.167	0.00	0.00	0.005	O	|	|	|	|	0.00
101.250	0.00	0.00	0.005	O	|	|	|	|	0.00
101.333	0.00	0.00	0.005	O	|	|	|	|	0.00
101.417	0.00	0.00	0.005	O	|	|	|	|	0.00
101.500	0.00	0.00	0.005	O	|	|	|	|	0.00
101.583	0.00	0.00	0.005	O	|	|	|	|	0.00
101.667	0.00	0.00	0.005	O	|	|	|	|	0.00
101.750	0.00	0.00	0.005	O	|	|	|	|	0.00
101.833	0.00	0.00	0.005	O	|	|	|	|	0.00
101.917	0.00	0.00	0.005	O	|	|	|	|	0.00
102.000	0.00	0.00	0.005	O	|	|	|	|	0.00
102.083	0.00	0.00	0.005	O	|	|	|	|	0.00
102.167	0.00	0.00	0.005	O	|	|	|	|	0.00
102.250	0.00	0.00	0.005	O	|	|	|	|	0.00
102.333	0.00	0.00	0.005	O	|	|	|	|	0.00
102.417	0.00	0.00	0.005	O	|	|	|	|	0.00
102.500	0.00	0.00	0.005	O	|	|	|	|	0.00
102.583	0.00	0.00	0.005	O	|	|	|	|	0.00
102.667	0.00	0.00	0.005	O	|	|	|	|	0.00
102.750	0.00	0.00	0.005	O	|	|	|	|	0.00
102.833	0.00	0.00	0.005	O	|	|	|	|	0.00
102.917	0.00	0.00	0.005	O	|	|	|	|	0.00
103.000	0.00	0.00	0.005	O	|	|	|	|	0.00
103.083	0.00	0.00	0.005	O	|	|	|	|	0.00
103.167	0.00	0.00	0.004	O	|	|	|	|	0.00
103.250	0.00	0.00	0.004	O	|	|	|	|	0.00
103.333	0.00	0.00	0.004	O	|	|	|	|	0.00
103.417	0.00	0.00	0.004	O	|	|	|	|	0.00
103.500	0.00	0.00	0.004	O	|	|	|	|	0.00
103.583	0.00	0.00	0.004	O	|	|	|	|	0.00
103.667	0.00	0.00	0.004	O	|	|	|	|	0.00
103.750	0.00	0.00	0.004	O	|	|	|	|	0.00
103.833	0.00	0.00	0.004	O	|	|	|	|	0.00
103.917	0.00	0.00	0.004	O	|	|	|	|	0.00
104.000	0.00	0.00	0.004	O	|	|	|	|	0.00
104.083	0.00	0.00	0.004	O	|	|	|	|	0.00
104.167	0.00	0.00	0.004	O	|	|	|	|	0.00
104.250	0.00	0.00	0.004	O	|	|	|	|	0.00
104.333	0.00	0.00	0.004	O	|	|	|	|	0.00
104.417	0.00	0.00	0.004	O	|	|	|	|	0.00
104.500	0.00	0.00	0.004	O	|	|	|	|	0.00
104.583	0.00	0.00	0.004	O	|	|	|	|	0.00
104.667	0.00	0.00	0.004	O	|	|	|	|	0.00
104.750	0.00	0.00	0.004	O	|	|	|	|	0.00
104.833	0.00	0.00	0.004	O	|	|	|	|	0.00
104.917	0.00	0.00	0.004	O	|	|	|	|	0.00
105.000	0.00	0.00	0.004	O	|	|	|	|	0.00
105.083	0.00	0.00	0.004	O	|	|	|	|	0.00
105.167	0.00	0.00	0.004	O	|	|	|	|	0.00
105.250	0.00	0.00	0.004	O	|	|	|	|	0.00
105.333	0.00	0.00	0.004	O	|	|	|	|	0.00
105.417	0.00	0.00	0.004	O	|	|	|	|	0.00
105.500	0.00	0.00	0.004	O	|	|	|	|	0.00
105.583	0.00	0.00	0.004	O	|	|	|	|	0.00
105.667	0.00	0.00	0.004	O	|	|	|	|	0.00
105.750	0.00	0.00	0.004	O	|	|	|	|	0.00
105.833	0.00	0.00	0.004	O	|	|	|	|	0.00

105.917	0.00	0.00	0.004	O	|	|	|	|	0.00
106.000	0.00	0.00	0.004	O	|	|	|	|	0.00
106.083	0.00	0.00	0.004	O	|	|	|	|	0.00
106.167	0.00	0.00	0.004	O	|	|	|	|	0.00
106.250	0.00	0.00	0.004	O	|	|	|	|	0.00
106.333	0.00	0.00	0.004	O	|	|	|	|	0.00
106.417	0.00	0.00	0.004	O	|	|	|	|	0.00
106.500	0.00	0.00	0.004	O	|	|	|	|	0.00
106.583	0.00	0.00	0.004	O	|	|	|	|	0.00
106.667	0.00	0.00	0.004	O	|	|	|	|	0.00
106.750	0.00	0.00	0.004	O	|	|	|	|	0.00
106.833	0.00	0.00	0.003	O	|	|	|	|	0.00
106.917	0.00	0.00	0.003	O	|	|	|	|	0.00
107.000	0.00	0.00	0.003	O	|	|	|	|	0.00
107.083	0.00	0.00	0.003	O	|	|	|	|	0.00
107.167	0.00	0.00	0.003	O	|	|	|	|	0.00
107.250	0.00	0.00	0.003	O	|	|	|	|	0.00
107.333	0.00	0.00	0.003	O	|	|	|	|	0.00
107.417	0.00	0.00	0.003	O	|	|	|	|	0.00
107.500	0.00	0.00	0.003	O	|	|	|	|	0.00
107.583	0.00	0.00	0.003	O	|	|	|	|	0.00
107.667	0.00	0.00	0.003	O	|	|	|	|	0.00
107.750	0.00	0.00	0.003	O	|	|	|	|	0.00
107.833	0.00	0.00	0.003	O	|	|	|	|	0.00
107.917	0.00	0.00	0.003	O	|	|	|	|	0.00
108.000	0.00	0.00	0.003	O	|	|	|	|	0.00
108.083	0.00	0.00	0.003	O	|	|	|	|	0.00
108.167	0.00	0.00	0.003	O	|	|	|	|	0.00
108.250	0.00	0.00	0.003	O	|	|	|	|	0.00
108.333	0.00	0.00	0.003	O	|	|	|	|	0.00
108.417	0.00	0.00	0.003	O	|	|	|	|	0.00
108.500	0.00	0.00	0.003	O	|	|	|	|	0.00
108.583	0.00	0.00	0.003	O	|	|	|	|	0.00
108.667	0.00	0.00	0.003	O	|	|	|	|	0.00
108.750	0.00	0.00	0.003	O	|	|	|	|	0.00
108.833	0.00	0.00	0.003	O	|	|	|	|	0.00
108.917	0.00	0.00	0.003	O	|	|	|	|	0.00
109.000	0.00	0.00	0.003	O	|	|	|	|	0.00
109.083	0.00	0.00	0.003	O	|	|	|	|	0.00
109.167	0.00	0.00	0.003	O	|	|	|	|	0.00
109.250	0.00	0.00	0.003	O	|	|	|	|	0.00
109.333	0.00	0.00	0.003	O	|	|	|	|	0.00
109.417	0.00	0.00	0.003	O	|	|	|	|	0.00
109.500	0.00	0.00	0.003	O	|	|	|	|	0.00
109.583	0.00	0.00	0.003	O	|	|	|	|	0.00
109.667	0.00	0.00	0.003	O	|	|	|	|	0.00
109.750	0.00	0.00	0.003	O	|	|	|	|	0.00
109.833	0.00	0.00	0.003	O	|	|	|	|	0.00
109.917	0.00	0.00	0.003	O	|	|	|	|	0.00
110.000	0.00	0.00	0.003	O	|	|	|	|	0.00
110.083	0.00	0.00	0.003	O	|	|	|	|	0.00
110.167	0.00	0.00	0.003	O	|	|	|	|	0.00
110.250	0.00	0.00	0.003	O	|	|	|	|	0.00
110.333	0.00	0.00	0.003	O	|	|	|	|	0.00
110.417	0.00	0.00	0.003	O	|	|	|	|	0.00
110.500	0.00	0.00	0.003	O	|	|	|	|	0.00
110.583	0.00	0.00	0.003	O	|	|	|	|	0.00
110.667	0.00	0.00	0.003	O	|	|	|	|	0.00
110.750	0.00	0.00	0.003	O	|	|	|	|	0.00
110.833	0.00	0.00	0.003	O	|	|	|	|	0.00
110.917	0.00	0.00	0.003	O	|	|	|	|	0.00
111.000	0.00	0.00	0.003	O	|	|	|	|	0.00
111.083	0.00	0.00	0.003	O	|	|	|	|	0.00
111.167	0.00	0.00	0.003	O	|	|	|	|	0.00
111.250	0.00	0.00	0.003	O	|	|	|	|	0.00
111.333	0.00	0.00	0.003	O	|	|	|	|	0.00
111.417	0.00	0.00	0.003	O	|	|	|	|	0.00
111.500	0.00	0.00	0.003	O	|	|	|	|	0.00
111.583	0.00	0.00	0.003	O	|	|	|	|	0.00
111.667	0.00	0.00	0.003	O	|	|	|	|	0.00
111.750	0.00	0.00	0.002	O	|	|	|	|	0.00

111.833	0.00	0.00	0.002	O	|	|	|	|	0.00
111.917	0.00	0.00	0.002	O	|	|	|	|	0.00
112.000	0.00	0.00	0.002	O	|	|	|	|	0.00
112.083	0.00	0.00	0.002	O	|	|	|	|	0.00
112.167	0.00	0.00	0.002	O	|	|	|	|	0.00
112.250	0.00	0.00	0.002	O	|	|	|	|	0.00
112.333	0.00	0.00	0.002	O	|	|	|	|	0.00
112.417	0.00	0.00	0.002	O	|	|	|	|	0.00
112.500	0.00	0.00	0.002	O	|	|	|	|	0.00
112.583	0.00	0.00	0.002	O	|	|	|	|	0.00
112.667	0.00	0.00	0.002	O	|	|	|	|	0.00
112.750	0.00	0.00	0.002	O	|	|	|	|	0.00
112.833	0.00	0.00	0.002	O	|	|	|	|	0.00
112.917	0.00	0.00	0.002	O	|	|	|	|	0.00
113.000	0.00	0.00	0.002	O	|	|	|	|	0.00
113.083	0.00	0.00	0.002	O	|	|	|	|	0.00
113.167	0.00	0.00	0.002	O	|	|	|	|	0.00
113.250	0.00	0.00	0.002	O	|	|	|	|	0.00
113.333	0.00	0.00	0.002	O	|	|	|	|	0.00
113.417	0.00	0.00	0.002	O	|	|	|	|	0.00
113.500	0.00	0.00	0.002	O	|	|	|	|	0.00
113.583	0.00	0.00	0.002	O	|	|	|	|	0.00
113.667	0.00	0.00	0.002	O	|	|	|	|	0.00
113.750	0.00	0.00	0.002	O	|	|	|	|	0.00
113.833	0.00	0.00	0.002	O	|	|	|	|	0.00
113.917	0.00	0.00	0.002	O	|	|	|	|	0.00
114.000	0.00	0.00	0.002	O	|	|	|	|	0.00
114.083	0.00	0.00	0.002	O	|	|	|	|	0.00
114.167	0.00	0.00	0.002	O	|	|	|	|	0.00
114.250	0.00	0.00	0.002	O	|	|	|	|	0.00
114.333	0.00	0.00	0.002	O	|	|	|	|	0.00
114.417	0.00	0.00	0.002	O	|	|	|	|	0.00
114.500	0.00	0.00	0.002	O	|	|	|	|	0.00
114.583	0.00	0.00	0.002	O	|	|	|	|	0.00
114.667	0.00	0.00	0.002	O	|	|	|	|	0.00
114.750	0.00	0.00	0.002	O	|	|	|	|	0.00
114.833	0.00	0.00	0.002	O	|	|	|	|	0.00
114.917	0.00	0.00	0.002	O	|	|	|	|	0.00
115.000	0.00	0.00	0.002	O	|	|	|	|	0.00
115.083	0.00	0.00	0.002	O	|	|	|	|	0.00
115.167	0.00	0.00	0.002	O	|	|	|	|	0.00
115.250	0.00	0.00	0.002	O	|	|	|	|	0.00
115.333	0.00	0.00	0.002	O	|	|	|	|	0.00
115.417	0.00	0.00	0.002	O	|	|	|	|	0.00
115.500	0.00	0.00	0.002	O	|	|	|	|	0.00
115.583	0.00	0.00	0.002	O	|	|	|	|	0.00
115.667	0.00	0.00	0.002	O	|	|	|	|	0.00
115.750	0.00	0.00	0.002	O	|	|	|	|	0.00
115.833	0.00	0.00	0.002	O	|	|	|	|	0.00
115.917	0.00	0.00	0.002	O	|	|	|	|	0.00
116.000	0.00	0.00	0.002	O	|	|	|	|	0.00
116.083	0.00	0.00	0.002	O	|	|	|	|	0.00
116.167	0.00	0.00	0.002	O	|	|	|	|	0.00
116.250	0.00	0.00	0.002	O	|	|	|	|	0.00
116.333	0.00	0.00	0.002	O	|	|	|	|	0.00
116.417	0.00	0.00	0.002	O	|	|	|	|	0.00
116.500	0.00	0.00	0.002	O	|	|	|	|	0.00
116.583	0.00	0.00	0.002	O	|	|	|	|	0.00
116.667	0.00	0.00	0.002	O	|	|	|	|	0.00
116.750	0.00	0.00	0.002	O	|	|	|	|	0.00
116.833	0.00	0.00	0.002	O	|	|	|	|	0.00
116.917	0.00	0.00	0.002	O	|	|	|	|	0.00
117.000	0.00	0.00	0.002	O	|	|	|	|	0.00
117.083	0.00	0.00	0.002	O	|	|	|	|	0.00
117.167	0.00	0.00	0.002	O	|	|	|	|	0.00
117.250	0.00	0.00	0.002	O	|	|	|	|	0.00
117.333	0.00	0.00	0.002	O	|	|	|	|	0.00
117.417	0.00	0.00	0.002	O	|	|	|	|	0.00
117.500	0.00	0.00	0.002	O	|	|	|	|	0.00
117.583	0.00	0.00	0.002	O	|	|	|	|	0.00
117.667	0.00	0.00	0.002	O	|	|	|	|	0.00

```
Remaining water in basin =    0.00 (Ac.Ft)


**************************HYDROGRAPH DATA**************************
               Number of intervals =  1412
               Time interval =    5.0 (Min.)
               Maximum/Peak flow rate =       40.726 (CFS)
               Total volume =      14.350 (Ac.Ft)
       Status of hydrographs being held in storage
                   Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
       Peak (CFS)      0.000     0.000     0.000     0.000     0.000
       Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
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- Basin 'C' - 25 Year 6 Hour Storm Routing Analysis

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                    FLOOD HYDROGRAPH ROUTING PROGRAM
          Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012
                       Study date: 03/20/17

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WESTRIDGE HYDROLOGY STUDY
PROPOSED ROUTING - BASIN 'C' - 25 YEAR 6 HOUR STORM
HUNSAKER & ASSOCIATES, MARCH 20, 2017
BY: BRIAN LOWELL, PE
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Program License Serial Number 4094

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******************** HYDROGRAPH INFORMATION **********************

               From study/file name: PRC02506.rte
*****************************HYDROGRAPH DATA*****************************
               Number of intervals =    88
               Time interval =    5.0 (Min.)
               Maximum/Peak flow rate =      270.991 (CFS)
               Total volume =      18.808 (Ac.Ft)
       Status of hydrographs being held in storage
                   Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
       Peak (CFS)      0.000     0.000     0.000     0.000     0.000
       Vol (Ac.Ft)     0.000     0.000     0.000     0.000     0.000
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Process from Point/Station      300.000 to Point/Station      301.000
**** RETARDING BASIN ROUTING ****
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User entry of depth-outflow-storage data
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Total number of inflow hydrograph intervals = 88
Hydrograph time unit =  5.000 (Min.)
Initial depth in storage basin =   0.00(Ft.)
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Initial basin depth =   0.00 (Ft.)
Initial basin storage =      0.00 (Ac.Ft)
Initial basin outflow =   0.00 (CFS)
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Depth vs. Storage and Depth vs. Discharge data:
 Basin Depth  Storage    Outflow   (S-O*dt/2)   (S+O*dt/2)
     (Ft.)    (Ac.Ft)    (CFS)     (Ac.Ft)    (Ac.Ft)
------------------------------------------------------------------------
   0.000      0.000      0.000      0.000        0.000
   0.500      0.834      0.692      0.832        0.836
   1.000      1.693      1.672      1.687        1.699
   1.500      2.577      3.059      2.566        2.588
   2.000      3.488      4.757      3.472        3.504
   3.000      5.388      7.930      5.361        5.415
   4.000      7.399     20.434      7.329        7.469
   5.000      9.523     35.089      9.402        9.644
   6.000     11.764     44.538     11.611       11.917
   7.000     14.126     52.170     13.946       14.306
   8.000     16.610     58.766     16.408       16.812
   8.900     18.942     83.236     18.655       19.229
   9.000     19.207     83.236     18.920       19.494
   9.500     20.556    448.796     19.011       22.101
  10.000     21.935   1159.965     17.941       25.929
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Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0	67.7	135.50	203.24	270.99	Depth (Ft.)
0.083	0.53	0.00	0.002	O	|	|	|	|	0.00
0.167	2.59	0.01	0.013	O	|	|	|	|	0.01
0.250	7.97	0.04	0.049	O	|	|	|	|	0.03
0.333	11.03	0.09	0.114	OI	|	|	|	|	0.07
0.417	12.61	0.16	0.194	OI	|	|	|	|	0.12
0.500	13.70	0.24	0.283	OI	|	|	|	|	0.17
0.583	14.54	0.31	0.379	OI	|	|	|	|	0.23
0.667	15.18	0.40	0.479	OI	|	|	|	|	0.29
0.750	15.69	0.48	0.582	OI	|	|	|	|	0.35
0.833	16.06	0.57	0.688	OI	|	|	|	|	0.41
0.917	16.36	0.66	0.795	OI	|	|	|	|	0.48
1.000	16.63	0.77	0.904	OI	|	|	|	|	0.54
1.083	16.90	0.90	1.013	OI	|	|	|	|	0.60
1.167	17.17	1.02	1.124	O I	|	|	|	|	0.67
1.250	17.46	1.15	1.236	O I	|	|	|	|	0.73
1.333	17.72	1.28	1.349	O I	|	|	|	|	0.80
1.417	18.01	1.41	1.462	O I	|	|	|	|	0.87
1.500	18.27	1.54	1.577	O I	|	|	|	|	0.93
1.583	18.57	1.67	1.693	O I	|	|	|	|	1.00
1.667	18.86	1.86	1.810	O I	|	|	|	|	1.07
1.750	19.18	2.04	1.927	O I	|	|	|	|	1.13
1.833	19.50	2.23	2.046	O I	|	|	|	|	1.20
1.917	19.86	2.41	2.165	O I	|	|	|	|	1.27
2.000	20.22	2.60	2.286	O I	|	|	|	|	1.34
2.083	20.62	2.79	2.408	O I	|	|	|	|	1.40
2.167	21.00	2.99	2.532	O I	|	|	|	|	1.47
2.250	21.42	3.21	2.656	O I	|	|	|	|	1.54
2.333	21.84	3.44	2.782	O I	|	|	|	|	1.61
2.417	22.35	3.68	2.910	O I	|	|	|	|	1.68
2.500	22.85	3.92	3.039	O I	|	|	|	|	1.75
2.583	23.44	4.17	3.171	O I	|	|	|	|	1.83
2.667	24.02	4.42	3.305	O I	|	|	|	|	1.90
2.750	24.71	4.67	3.441	O I	|	|	|	|	1.97
2.833	25.40	4.91	3.581	O I	|	|	|	|	2.05
2.917	26.21	5.15	3.724	O I	|	|	|	|	2.12
3.000	27.04	5.40	3.871	O I	|	|	|	|	2.20
3.083	28.05	5.65	4.023	O I	|	|	|	|	2.28
3.167	29.18	5.91	4.180	O I	|	|	|	|	2.36
3.250	30.79	6.19	4.345	O I	|	|	|	|	2.45
3.333	32.72	6.48	4.520	O I	|	|	|	|	2.54
3.417	34.95	6.79	4.707	O I	|	|	|	|	2.64
3.500	36.33	7.12	4.905	O I	|	|	|	|	2.75
3.583	36.26	7.46	5.105	O I	|	|	|	|	2.85
3.667	38.27	7.80	5.309	O I	|	|	|	|	2.96
3.750	43.17	8.82	5.532	|O I	|	|	|	|	3.07
3.833	50.27	10.41	5.787	|O I	|	|	|	|	3.20
3.917	62.95	12.35	6.099	|O I|	|	|	|	3.35
4.000	80.06	14.83	6.498	|O |I	|	|	|	3.55
4.083	120.40	18.41	7.074	| O | I	|	|	|	3.84
4.167	185.66	24.44	7.980	| O | I	|	|	|	4.27
4.250	270.99	33.91	9.351	| O |	|	|	| I	4.92
4.333	187.73	39.95	10.677	| O |	| I	|	|	5.51
4.417	122.97	43.26	11.460	| O | I	|	|	|	5.86
4.500	93.19	44.98	11.901	| O | I	|	|	|	6.06
4.583	75.88	45.85	12.170	| O I	|	|	|	6.17
4.667	62.00	46.36	12.327	| O I|	|	|	|	6.24
4.750	50.22	46.57	12.394	| O |	|	|	|	6.27
4.833	41.26	46.55	12.388	| IO |	|	|	|	6.26
4.917	34.58	46.36	12.329	| IO |	|	|	|	6.24
5.000	31.26	46.07	12.238	| I O |	|	|	|	6.20
5.083	28.61	45.71	12.128	| I O |	|	|	|	6.15
5.167	26.89	45.32	12.005	| I O |	|	|	|	6.10
5.250	25.15	44.89	11.874	| I O |	|	|	|	6.05

5.333	23.28	44.41	11.733	| I O |	|	|	|	5.99
5.417	21.81	43.78	11.585	| I O |	|	|	|	5.92
5.500	20.52	43.14	11.431	| I O |	|	|	|	5.85
5.583	19.71	42.48	11.275	| I O |	|	|	|	5.78
5.667	19.01	41.81	11.118	| I O |	|	|	|	5.71
5.750	18.39	41.15	10.961	| I O |	|	|	|	5.64
5.833	17.83	40.49	10.805	| I O |	|	|	|	5.57
5.917	17.32	39.84	10.649	| I O |	|	|	|	5.50
6.000	16.85	39.19	10.495	|I O |	|	|	|	5.43
6.083	15.90	38.53	10.340	|I O |	|	|	|	5.36
6.167	13.46	37.85	10.178	|I O |	|	|	|	5.29
6.250	7.83	37.07	9.993	I O |	|	|	|	5.21
6.333	4.67	36.19	9.784	I O |	|	|	|	5.12
6.417	3.12	35.26	9.565	I O |	|	|	|	5.02
6.500	2.09	33.86	9.345	I O |	|	|	|	4.92
6.583	1.37	32.37	9.129	I O |	|	|	|	4.81
6.667	0.87	30.92	8.918	I O |	|	|	|	4.72
6.750	0.54	29.51	8.715	I O |	|	|	|	4.62
6.833	0.34	28.17	8.519	I O |	|	|	|	4.53
6.917	0.25	26.87	8.332	I O |	|	|	|	4.44
7.000	0.18	25.63	8.153	I O |	|	|	|	4.35
7.083	0.13	24.45	7.981	I O |	|	|	|	4.27
7.167	0.08	23.32	7.817	I O |	|	|	|	4.20
7.250	0.03	22.24	7.661	I O |	|	|	|	4.12
7.333	0.01	21.21	7.511	I O |	|	|	|	4.05
7.417	0.00	20.25	7.369	I O |	|	|	|	3.98
7.500	0.00	19.40	7.232	I O |	|	|	|	3.92
7.583	0.00	18.58	7.101	I O |	|	|	|	3.85
7.667	0.00	17.80	6.976	I O |	|	|	|	3.79
7.750	0.00	17.06	6.856	I O |	|	|	|	3.73
7.833	0.00	16.34	6.741	IO |	|	|	|	3.67
7.917	0.00	15.66	6.631	IO |	|	|	|	3.62
8.000	0.00	15.00	6.525	IO |	|	|	|	3.57
8.083	0.00	14.37	6.424	IO |	|	|	|	3.52
8.167	0.00	13.77	6.327	IO |	|	|	|	3.47
8.250	0.00	13.19	6.234	IO |	|	|	|	3.42
8.333	0.00	12.64	6.145	IO |	|	|	|	3.38
8.417	0.00	12.11	6.060	IO |	|	|	|	3.33
8.500	0.00	11.60	5.979	IO |	|	|	|	3.29
8.583	0.00	11.12	5.900	IO |	|	|	|	3.25
8.667	0.00	10.65	5.825	IO |	|	|	|	3.22
8.750	0.00	10.20	5.754	IO |	|	|	|	3.18
8.833	0.00	9.78	5.685	IO |	|	|	|	3.15
8.917	0.00	9.37	5.619	IO |	|	|	|	3.11
9.000	0.00	8.97	5.556	IO |	|	|	|	3.08
9.083	0.00	8.60	5.495	IO |	|	|	|	3.05
9.167	0.00	8.24	5.437	O |	|	|	|	3.02
9.250	0.00	7.92	5.382	O |	|	|	|	3.00
9.333	0.00	7.83	5.327	O |	|	|	|	2.97
9.417	0.00	7.74	5.274	O |	|	|	|	2.94
9.500	0.00	7.65	5.221	O |	|	|	|	2.91
9.583	0.00	7.56	5.168	O |	|	|	|	2.88
9.667	0.00	7.48	5.117	O |	|	|	|	2.86
9.750	0.00	7.39	5.065	O |	|	|	|	2.83
9.833	0.00	7.31	5.015	O |	|	|	|	2.80
9.917	0.00	7.22	4.965	O |	|	|	|	2.78
10.000	0.00	7.14	4.915	O |	|	|	|	2.75
10.083	0.00	7.06	4.866	O |	|	|	|	2.73
10.167	0.00	6.98	4.818	O |	|	|	|	2.70
10.250	0.00	6.90	4.770	O |	|	|	|	2.67
10.333	0.00	6.82	4.723	O |	|	|	|	2.65
10.417	0.00	6.74	4.676	O |	|	|	|	2.63
10.500	0.00	6.66	4.630	O |	|	|	|	2.60
10.583	0.00	6.59	4.585	O |	|	|	|	2.58
10.667	0.00	6.51	4.539	O |	|	|	|	2.55
10.750	0.00	6.44	4.495	O |	|	|	|	2.53
10.833	0.00	6.36	4.451	O |	|	|	|	2.51
10.917	0.00	6.29	4.407	O |	|	|	|	2.48
11.000	0.00	6.22	4.364	O |	|	|	|	2.46
11.083	0.00	6.15	4.321	O |	|	|	|	2.44
11.167	0.00	6.08	4.279	O |	|	|	|	2.42

11.250	0.00	6.01	4.238	O	|	|	|	|	2.39
11.333	0.00	5.94	4.197	O	|	|	|	|	2.37
11.417	0.00	5.87	4.156	O	|	|	|	|	2.35
11.500	0.00	5.81	4.116	O	|	|	|	|	2.33
11.583	0.00	5.74	4.076	O	|	|	|	|	2.31
11.667	0.00	5.67	4.037	O	|	|	|	|	2.29
11.750	0.00	5.61	3.998	O	|	|	|	|	2.27
11.833	0.00	5.54	3.959	O	|	|	|	|	2.25
11.917	0.00	5.48	3.921	O	|	|	|	|	2.23
12.000	0.00	5.42	3.884	O	|	|	|	|	2.21
12.083	0.00	5.36	3.847	O	|	|	|	|	2.19
12.167	0.00	5.29	3.810	O	|	|	|	|	2.17
12.250	0.00	5.23	3.774	O	|	|	|	|	2.15
12.333	0.00	5.17	3.738	O	|	|	|	|	2.13
12.417	0.00	5.12	3.703	O	|	|	|	|	2.11
12.500	0.00	5.06	3.668	O	|	|	|	|	2.09
12.583	0.00	5.00	3.633	O	|	|	|	|	2.08
12.667	0.00	4.94	3.599	O	|	|	|	|	2.06
12.750	0.00	4.89	3.565	O	|	|	|	|	2.04
12.833	0.00	4.83	3.531	O	|	|	|	|	2.02
12.917	0.00	4.77	3.498	O	|	|	|	|	2.01
13.000	0.00	4.72	3.466	O	|	|	|	|	1.99
13.083	0.00	4.66	3.433	O	|	|	|	|	1.97
13.167	0.00	4.60	3.402	O	|	|	|	|	1.95
13.250	0.00	4.54	3.370	O	|	|	|	|	1.94
13.333	0.00	4.48	3.339	O	|	|	|	|	1.92
13.417	0.00	4.42	3.308	O	|	|	|	|	1.90
13.500	0.00	4.37	3.278	O	|	|	|	|	1.88
13.583	0.00	4.31	3.248	O	|	|	|	|	1.87
13.667	0.00	4.26	3.219	O	|	|	|	|	1.85
13.750	0.00	4.20	3.190	O	|	|	|	|	1.84
13.833	0.00	4.15	3.161	O	|	|	|	|	1.82
13.917	0.00	4.09	3.133	O	|	|	|	|	1.80
14.000	0.00	4.04	3.104	O	|	|	|	|	1.79
14.083	0.00	3.99	3.077	O	|	|	|	|	1.77
14.167	0.00	3.94	3.050	O	|	|	|	|	1.76
14.250	0.00	3.89	3.023	O	|	|	|	|	1.74
14.333	0.00	3.84	2.996	O	|	|	|	|	1.73
14.417	0.00	3.79	2.970	O	|	|	|	|	1.72
14.500	0.00	3.74	2.944	O	|	|	|	|	1.70
14.583	0.00	3.69	2.918	O	|	|	|	|	1.69
14.667	0.00	3.65	2.893	O	|	|	|	|	1.67
14.750	0.00	3.60	2.868	O	|	|	|	|	1.66
14.833	0.00	3.56	2.843	O	|	|	|	|	1.65
14.917	0.00	3.51	2.819	O	|	|	|	|	1.63
15.000	0.00	3.47	2.795	O	|	|	|	|	1.62
15.083	0.00	3.42	2.771	O	|	|	|	|	1.61
15.167	0.00	3.38	2.748	O	|	|	|	|	1.59
15.250	0.00	3.33	2.725	O	|	|	|	|	1.58
15.333	0.00	3.29	2.702	O	|	|	|	|	1.57
15.417	0.00	3.25	2.679	O	|	|	|	|	1.56
15.500	0.00	3.21	2.657	O	|	|	|	|	1.54
15.583	0.00	3.17	2.635	O	|	|	|	|	1.53
15.667	0.00	3.13	2.613	O	|	|	|	|	1.52
15.750	0.00	3.09	2.592	O	|	|	|	|	1.51
15.833	0.00	3.05	2.571	O	|	|	|	|	1.50
15.917	0.00	3.02	2.550	O	|	|	|	|	1.48
16.000	0.00	2.98	2.529	O	|	|	|	|	1.47
16.083	0.00	2.95	2.509	O	|	|	|	|	1.46
16.167	0.00	2.92	2.489	O	|	|	|	|	1.45
16.250	0.00	2.89	2.469	O	|	|	|	|	1.44
16.333	0.00	2.86	2.449	O	|	|	|	|	1.43
16.417	0.00	2.83	2.429	O	|	|	|	|	1.42
16.500	0.00	2.80	2.410	O	|	|	|	|	1.41
16.583	0.00	2.77	2.391	O	|	|	|	|	1.39
16.667	0.00	2.74	2.372	O	|	|	|	|	1.38
16.750	0.00	2.71	2.353	O	|	|	|	|	1.37
16.833	0.00	2.68	2.335	O	|	|	|	|	1.36
16.917	0.00	2.65	2.316	O	|	|	|	|	1.35
17.000	0.00	2.62	2.298	O	|	|	|	|	1.34
17.083	0.00	2.59	2.280	O	|	|	|	|	1.33

17.167	0.00	2.57	2.262	O	|	|	|	|	1.32
17.250	0.00	2.54	2.245	O	|	|	|	|	1.31
17.333	0.00	2.51	2.227	O	|	|	|	|	1.30
17.417	0.00	2.48	2.210	O	|	|	|	|	1.29
17.500	0.00	2.46	2.193	O	|	|	|	|	1.28
17.583	0.00	2.43	2.176	O	|	|	|	|	1.27
17.667	0.00	2.40	2.160	O	|	|	|	|	1.26
17.750	0.00	2.38	2.143	O	|	|	|	|	1.25
17.833	0.00	2.35	2.127	O	|	|	|	|	1.25
17.917	0.00	2.33	2.111	O	|	|	|	|	1.24
18.000	0.00	2.30	2.095	O	|	|	|	|	1.23
18.083	0.00	2.28	2.079	O	|	|	|	|	1.22
18.167	0.00	2.25	2.063	O	|	|	|	|	1.21
18.250	0.00	2.23	2.048	O	|	|	|	|	1.20
18.333	0.00	2.21	2.033	O	|	|	|	|	1.19
18.417	0.00	2.18	2.018	O	|	|	|	|	1.18
18.500	0.00	2.16	2.003	O	|	|	|	|	1.18
18.583	0.00	2.13	1.988	O	|	|	|	|	1.17
18.667	0.00	2.11	1.973	O	|	|	|	|	1.16
18.750	0.00	2.09	1.959	O	|	|	|	|	1.15
18.833	0.00	2.07	1.945	O	|	|	|	|	1.14
18.917	0.00	2.04	1.930	O	|	|	|	|	1.13
19.000	0.00	2.02	1.916	O	|	|	|	|	1.13
19.083	0.00	2.00	1.903	O	|	|	|	|	1.12
19.167	0.00	1.98	1.889	O	|	|	|	|	1.11
19.250	0.00	1.96	1.875	O	|	|	|	|	1.10
19.333	0.00	1.94	1.862	O	|	|	|	|	1.10
19.417	0.00	1.92	1.849	O	|	|	|	|	1.09
19.500	0.00	1.90	1.835	O	|	|	|	|	1.08
19.583	0.00	1.88	1.822	O	|	|	|	|	1.07
19.667	0.00	1.86	1.810	O	|	|	|	|	1.07
19.750	0.00	1.84	1.797	O	|	|	|	|	1.06
19.833	0.00	1.82	1.784	O	|	|	|	|	1.05
19.917	0.00	1.80	1.772	O	|	|	|	|	1.04
20.000	0.00	1.78	1.760	O	|	|	|	|	1.04
20.083	0.00	1.76	1.747	O	|	|	|	|	1.03
20.167	0.00	1.74	1.735	O	|	|	|	|	1.02
20.250	0.00	1.72	1.724	O	|	|	|	|	1.02
20.333	0.00	1.70	1.712	O	|	|	|	|	1.01
20.417	0.00	1.68	1.700	O	|	|	|	|	1.00
20.500	0.00	1.67	1.689	O	|	|	|	|	1.00
20.583	0.00	1.65	1.677	O	|	|	|	|	0.99
20.667	0.00	1.64	1.666	O	|	|	|	|	0.98
20.750	0.00	1.63	1.654	O	|	|	|	|	0.98
20.833	0.00	1.62	1.643	O	|	|	|	|	0.97
20.917	0.00	1.60	1.632	O	|	|	|	|	0.96
21.000	0.00	1.59	1.621	O	|	|	|	|	0.96
21.083	0.00	1.58	1.610	O	|	|	|	|	0.95
21.167	0.00	1.57	1.600	O	|	|	|	|	0.95
21.250	0.00	1.55	1.589	O	|	|	|	|	0.94
21.333	0.00	1.54	1.578	O	|	|	|	|	0.93
21.417	0.00	1.53	1.568	O	|	|	|	|	0.93
21.500	0.00	1.52	1.557	O	|	|	|	|	0.92
21.583	0.00	1.51	1.547	O	|	|	|	|	0.91
21.667	0.00	1.49	1.536	O	|	|	|	|	0.91
21.750	0.00	1.48	1.526	O	|	|	|	|	0.90
21.833	0.00	1.47	1.516	O	|	|	|	|	0.90
21.917	0.00	1.46	1.506	O	|	|	|	|	0.89
22.000	0.00	1.45	1.496	O	|	|	|	|	0.89
22.083	0.00	1.44	1.486	O	|	|	|	|	0.88
22.167	0.00	1.42	1.476	O	|	|	|	|	0.87
22.250	0.00	1.41	1.466	O	|	|	|	|	0.87
22.333	0.00	1.40	1.457	O	|	|	|	|	0.86
22.417	0.00	1.39	1.447	O	|	|	|	|	0.86
22.500	0.00	1.38	1.437	O	|	|	|	|	0.85
22.583	0.00	1.37	1.428	O	|	|	|	|	0.85
22.667	0.00	1.36	1.419	O	|	|	|	|	0.84
22.750	0.00	1.35	1.409	O	|	|	|	|	0.83
22.833	0.00	1.34	1.400	O	|	|	|	|	0.83
22.917	0.00	1.33	1.391	O	|	|	|	|	0.82
23.000	0.00	1.32	1.382	O	|	|	|	|	0.82

23.083	0.00	1.31	1.373	O	|	|	|	|	0.81
23.167	0.00	1.30	1.364	O	|	|	|	|	0.81
23.250	0.00	1.29	1.355	O	|	|	|	|	0.80
23.333	0.00	1.28	1.346	O	|	|	|	|	0.80
23.417	0.00	1.27	1.337	O	|	|	|	|	0.79
23.500	0.00	1.26	1.329	O	|	|	|	|	0.79
23.583	0.00	1.25	1.320	O	|	|	|	|	0.78
23.667	0.00	1.24	1.311	O	|	|	|	|	0.78
23.750	0.00	1.23	1.303	O	|	|	|	|	0.77
23.833	0.00	1.22	1.294	O	|	|	|	|	0.77
23.917	0.00	1.21	1.286	O	|	|	|	|	0.76
24.000	0.00	1.20	1.278	O	|	|	|	|	0.76
24.083	0.00	1.19	1.270	O	|	|	|	|	0.75
24.167	0.00	1.18	1.261	O	|	|	|	|	0.75
24.250	0.00	1.17	1.253	O	|	|	|	|	0.74
24.333	0.00	1.16	1.245	O	|	|	|	|	0.74
24.417	0.00	1.15	1.237	O	|	|	|	|	0.73
24.500	0.00	1.14	1.229	O	|	|	|	|	0.73
24.583	0.00	1.13	1.222	O	|	|	|	|	0.73
24.667	0.00	1.13	1.214	O	|	|	|	|	0.72
24.750	0.00	1.12	1.206	O	|	|	|	|	0.72
24.833	0.00	1.11	1.198	O	|	|	|	|	0.71
24.917	0.00	1.10	1.191	O	|	|	|	|	0.71
25.000	0.00	1.09	1.183	O	|	|	|	|	0.70
25.083	0.00	1.08	1.176	O	|	|	|	|	0.70
25.167	0.00	1.07	1.168	O	|	|	|	|	0.69
25.250	0.00	1.07	1.161	O	|	|	|	|	0.69
25.333	0.00	1.06	1.154	O	|	|	|	|	0.69
25.417	0.00	1.05	1.147	O	|	|	|	|	0.68
25.500	0.00	1.04	1.139	O	|	|	|	|	0.68
25.583	0.00	1.03	1.132	O	|	|	|	|	0.67
25.667	0.00	1.02	1.125	O	|	|	|	|	0.67
25.750	0.00	1.02	1.118	O	|	|	|	|	0.67
25.833	0.00	1.01	1.111	O	|	|	|	|	0.66
25.917	0.00	1.00	1.104	O	|	|	|	|	0.66
26.000	0.00	0.99	1.097	O	|	|	|	|	0.65
26.083	0.00	0.98	1.091	O	|	|	|	|	0.65
26.167	0.00	0.98	1.084	O	|	|	|	|	0.65
26.250	0.00	0.97	1.077	O	|	|	|	|	0.64
26.333	0.00	0.96	1.070	O	|	|	|	|	0.64
26.417	0.00	0.95	1.064	O	|	|	|	|	0.63
26.500	0.00	0.95	1.057	O	|	|	|	|	0.63
26.583	0.00	0.94	1.051	O	|	|	|	|	0.63
26.667	0.00	0.93	1.044	O	|	|	|	|	0.62
26.750	0.00	0.92	1.038	O	|	|	|	|	0.62
26.833	0.00	0.92	1.032	O	|	|	|	|	0.62
26.917	0.00	0.91	1.025	O	|	|	|	|	0.61
27.000	0.00	0.90	1.019	O	|	|	|	|	0.61
27.083	0.00	0.90	1.013	O	|	|	|	|	0.60
27.167	0.00	0.89	1.007	O	|	|	|	|	0.60
27.250	0.00	0.88	1.001	O	|	|	|	|	0.60
27.333	0.00	0.88	0.995	O	|	|	|	|	0.59
27.417	0.00	0.87	0.989	O	|	|	|	|	0.59
27.500	0.00	0.86	0.983	O	|	|	|	|	0.59
27.583	0.00	0.85	0.977	O	|	|	|	|	0.58
27.667	0.00	0.85	0.971	O	|	|	|	|	0.58
27.750	0.00	0.84	0.965	O	|	|	|	|	0.58
27.833	0.00	0.83	0.959	O	|	|	|	|	0.57
27.917	0.00	0.83	0.954	O	|	|	|	|	0.57
28.000	0.00	0.82	0.948	O	|	|	|	|	0.57
28.083	0.00	0.82	0.942	O	|	|	|	|	0.56
28.167	0.00	0.81	0.937	O	|	|	|	|	0.56
28.250	0.00	0.80	0.931	O	|	|	|	|	0.56
28.333	0.00	0.80	0.926	O	|	|	|	|	0.55
28.417	0.00	0.79	0.920	O	|	|	|	|	0.55
28.500	0.00	0.78	0.915	O	|	|	|	|	0.55
28.583	0.00	0.78	0.909	O	|	|	|	|	0.54
28.667	0.00	0.77	0.904	O	|	|	|	|	0.54
28.750	0.00	0.77	0.899	O	|	|	|	|	0.54
28.833	0.00	0.76	0.893	O	|	|	|	|	0.53
28.917	0.00	0.75	0.888	O	|	|	|	|	0.53

29.000	0.00	0.75	0.883	O	|	|	|	|	0.53
29.083	0.00	0.74	0.878	O	|	|	|	|	0.53
29.167	0.00	0.74	0.873	O	|	|	|	|	0.52
29.250	0.00	0.73	0.868	O	|	|	|	|	0.52
29.333	0.00	0.72	0.863	O	|	|	|	|	0.52
29.417	0.00	0.72	0.858	O	|	|	|	|	0.51
29.500	0.00	0.71	0.853	O	|	|	|	|	0.51
29.583	0.00	0.71	0.848	O	|	|	|	|	0.51
29.667	0.00	0.70	0.843	O	|	|	|	|	0.51
29.750	0.00	0.70	0.838	O	|	|	|	|	0.50
29.833	0.00	0.69	0.833	O	|	|	|	|	0.50
29.917	0.00	0.69	0.829	O	|	|	|	|	0.50
30.000	0.00	0.68	0.824	O	|	|	|	|	0.49
30.083	0.00	0.68	0.819	O	|	|	|	|	0.49
30.167	0.00	0.68	0.815	O	|	|	|	|	0.49
30.250	0.00	0.67	0.810	O	|	|	|	|	0.49
30.333	0.00	0.67	0.805	O	|	|	|	|	0.48
30.417	0.00	0.66	0.801	O	|	|	|	|	0.48
30.500	0.00	0.66	0.796	O	|	|	|	|	0.48
30.583	0.00	0.66	0.792	O	|	|	|	|	0.47
30.667	0.00	0.65	0.787	O	|	|	|	|	0.47
30.750	0.00	0.65	0.783	O	|	|	|	|	0.47
30.833	0.00	0.65	0.778	O	|	|	|	|	0.47
30.917	0.00	0.64	0.774	O	|	|	|	|	0.46
31.000	0.00	0.64	0.769	O	|	|	|	|	0.46
31.083	0.00	0.63	0.765	O	|	|	|	|	0.46
31.167	0.00	0.63	0.761	O	|	|	|	|	0.46
31.250	0.00	0.63	0.756	O	|	|	|	|	0.45
31.333	0.00	0.62	0.752	O	|	|	|	|	0.45
31.417	0.00	0.62	0.748	O	|	|	|	|	0.45
31.500	0.00	0.62	0.743	O	|	|	|	|	0.45
31.583	0.00	0.61	0.739	O	|	|	|	|	0.44
31.667	0.00	0.61	0.735	O	|	|	|	|	0.44
31.750	0.00	0.61	0.731	O	|	|	|	|	0.44
31.833	0.00	0.60	0.727	O	|	|	|	|	0.44
31.917	0.00	0.60	0.723	O	|	|	|	|	0.43
32.000	0.00	0.60	0.718	O	|	|	|	|	0.43
32.083	0.00	0.59	0.714	O	|	|	|	|	0.43
32.167	0.00	0.59	0.710	O	|	|	|	|	0.43
32.250	0.00	0.59	0.706	O	|	|	|	|	0.42
32.333	0.00	0.58	0.702	O	|	|	|	|	0.42
32.417	0.00	0.58	0.698	O	|	|	|	|	0.42
32.500	0.00	0.58	0.694	O	|	|	|	|	0.42
32.583	0.00	0.57	0.690	O	|	|	|	|	0.41
32.667	0.00	0.57	0.686	O	|	|	|	|	0.41
32.750	0.00	0.57	0.682	O	|	|	|	|	0.41
32.833	0.00	0.56	0.678	O	|	|	|	|	0.41
32.917	0.00	0.56	0.675	O	|	|	|	|	0.40
33.000	0.00	0.56	0.671	O	|	|	|	|	0.40
33.083	0.00	0.55	0.667	O	|	|	|	|	0.40
33.167	0.00	0.55	0.663	O	|	|	|	|	0.40
33.250	0.00	0.55	0.659	O	|	|	|	|	0.40
33.333	0.00	0.54	0.656	O	|	|	|	|	0.39
33.417	0.00	0.54	0.652	O	|	|	|	|	0.39
33.500	0.00	0.54	0.648	O	|	|	|	|	0.39
33.583	0.00	0.53	0.644	O	|	|	|	|	0.39
33.667	0.00	0.53	0.641	O	|	|	|	|	0.38
33.750	0.00	0.53	0.637	O	|	|	|	|	0.38
33.833	0.00	0.53	0.634	O	|	|	|	|	0.38
33.917	0.00	0.52	0.630	O	|	|	|	|	0.38
34.000	0.00	0.52	0.626	O	|	|	|	|	0.38
34.083	0.00	0.52	0.623	O	|	|	|	|	0.37
34.167	0.00	0.51	0.619	O	|	|	|	|	0.37
34.250	0.00	0.51	0.616	O	|	|	|	|	0.37
34.333	0.00	0.51	0.612	O	|	|	|	|	0.37
34.417	0.00	0.51	0.609	O	|	|	|	|	0.36
34.500	0.00	0.50	0.605	O	|	|	|	|	0.36
34.583	0.00	0.50	0.602	O	|	|	|	|	0.36
34.667	0.00	0.50	0.598	O	|	|	|	|	0.36
34.750	0.00	0.49	0.595	O	|	|	|	|	0.36
34.833	0.00	0.49	0.592	O	|	|	|	|	0.35

34.917	0.00	0.49	0.588	O	|	|	|	|	0.35
35.000	0.00	0.49	0.585	O	|	|	|	|	0.35
35.083	0.00	0.48	0.581	O	|	|	|	|	0.35
35.167	0.00	0.48	0.578	O	|	|	|	|	0.35
35.250	0.00	0.48	0.575	O	|	|	|	|	0.34
35.333	0.00	0.47	0.572	O	|	|	|	|	0.34
35.417	0.00	0.47	0.568	O	|	|	|	|	0.34
35.500	0.00	0.47	0.565	O	|	|	|	|	0.34
35.583	0.00	0.47	0.562	O	|	|	|	|	0.34
35.667	0.00	0.46	0.559	O	|	|	|	|	0.33
35.750	0.00	0.46	0.556	O	|	|	|	|	0.33
35.833	0.00	0.46	0.552	O	|	|	|	|	0.33
35.917	0.00	0.46	0.549	O	|	|	|	|	0.33
36.000	0.00	0.45	0.546	O	|	|	|	|	0.33
36.083	0.00	0.45	0.543	O	|	|	|	|	0.33
36.167	0.00	0.45	0.540	O	|	|	|	|	0.32
36.250	0.00	0.45	0.537	O	|	|	|	|	0.32
36.333	0.00	0.44	0.534	O	|	|	|	|	0.32
36.417	0.00	0.44	0.531	O	|	|	|	|	0.32
36.500	0.00	0.44	0.528	O	|	|	|	|	0.32
36.583	0.00	0.44	0.525	O	|	|	|	|	0.31
36.667	0.00	0.43	0.522	O	|	|	|	|	0.31
36.750	0.00	0.43	0.519	O	|	|	|	|	0.31
36.833	0.00	0.43	0.516	O	|	|	|	|	0.31
36.917	0.00	0.43	0.513	O	|	|	|	|	0.31
37.000	0.00	0.42	0.510	O	|	|	|	|	0.31
37.083	0.00	0.42	0.507	O	|	|	|	|	0.30
37.167	0.00	0.42	0.504	O	|	|	|	|	0.30
37.250	0.00	0.42	0.501	O	|	|	|	|	0.30
37.333	0.00	0.41	0.498	O	|	|	|	|	0.30
37.417	0.00	0.41	0.496	O	|	|	|	|	0.30
37.500	0.00	0.41	0.493	O	|	|	|	|	0.30
37.583	0.00	0.41	0.490	O	|	|	|	|	0.29
37.667	0.00	0.40	0.487	O	|	|	|	|	0.29
37.750	0.00	0.40	0.484	O	|	|	|	|	0.29
37.833	0.00	0.40	0.482	O	|	|	|	|	0.29
37.917	0.00	0.40	0.479	O	|	|	|	|	0.29
38.000	0.00	0.40	0.476	O	|	|	|	|	0.29
38.083	0.00	0.39	0.473	O	|	|	|	|	0.28
38.167	0.00	0.39	0.471	O	|	|	|	|	0.28
38.250	0.00	0.39	0.468	O	|	|	|	|	0.28
38.333	0.00	0.39	0.465	O	|	|	|	|	0.28
38.417	0.00	0.38	0.463	O	|	|	|	|	0.28
38.500	0.00	0.38	0.460	O	|	|	|	|	0.28
38.583	0.00	0.38	0.457	O	|	|	|	|	0.27
38.667	0.00	0.38	0.455	O	|	|	|	|	0.27
38.750	0.00	0.38	0.452	O	|	|	|	|	0.27
38.833	0.00	0.37	0.450	O	|	|	|	|	0.27
38.917	0.00	0.37	0.447	O	|	|	|	|	0.27
39.000	0.00	0.37	0.445	O	|	|	|	|	0.27
39.083	0.00	0.37	0.442	O	|	|	|	|	0.26
39.167	0.00	0.36	0.439	O	|	|	|	|	0.26
39.250	0.00	0.36	0.437	O	|	|	|	|	0.26
39.333	0.00	0.36	0.434	O	|	|	|	|	0.26
39.417	0.00	0.36	0.432	O	|	|	|	|	0.26
39.500	0.00	0.36	0.430	O	|	|	|	|	0.26
39.583	0.00	0.35	0.427	O	|	|	|	|	0.26
39.667	0.00	0.35	0.425	O	|	|	|	|	0.25
39.750	0.00	0.35	0.422	O	|	|	|	|	0.25
39.833	0.00	0.35	0.420	O	|	|	|	|	0.25
39.917	0.00	0.35	0.417	O	|	|	|	|	0.25
40.000	0.00	0.34	0.415	O	|	|	|	|	0.25
40.083	0.00	0.34	0.413	O	|	|	|	|	0.25
40.167	0.00	0.34	0.410	O	|	|	|	|	0.25
40.250	0.00	0.34	0.408	O	|	|	|	|	0.24
40.333	0.00	0.34	0.406	O	|	|	|	|	0.24
40.417	0.00	0.33	0.403	O	|	|	|	|	0.24
40.500	0.00	0.33	0.401	O	|	|	|	|	0.24
40.583	0.00	0.33	0.399	O	|	|	|	|	0.24
40.667	0.00	0.33	0.397	O	|	|	|	|	0.24
40.750	0.00	0.33	0.394	O	|	|	|	|	0.24

40.833	0.00	0.33	0.392	O	|	|	|	|	0.24
40.917	0.00	0.32	0.390	O	|	|	|	|	0.23
41.000	0.00	0.32	0.388	O	|	|	|	|	0.23
41.083	0.00	0.32	0.385	O	|	|	|	|	0.23
41.167	0.00	0.32	0.383	O	|	|	|	|	0.23
41.250	0.00	0.32	0.381	O	|	|	|	|	0.23
41.333	0.00	0.31	0.379	O	|	|	|	|	0.23
41.417	0.00	0.31	0.377	O	|	|	|	|	0.23
41.500	0.00	0.31	0.374	O	|	|	|	|	0.22
41.583	0.00	0.31	0.372	O	|	|	|	|	0.22
41.667	0.00	0.31	0.370	O	|	|	|	|	0.22
41.750	0.00	0.31	0.368	O	|	|	|	|	0.22
41.833	0.00	0.30	0.366	O	|	|	|	|	0.22
41.917	0.00	0.30	0.364	O	|	|	|	|	0.22
42.000	0.00	0.30	0.362	O	|	|	|	|	0.22
42.083	0.00	0.30	0.360	O	|	|	|	|	0.22
42.167	0.00	0.30	0.358	O	|	|	|	|	0.21
42.250	0.00	0.30	0.356	O	|	|	|	|	0.21
42.333	0.00	0.29	0.354	O	|	|	|	|	0.21
42.417	0.00	0.29	0.352	O	|	|	|	|	0.21
42.500	0.00	0.29	0.350	O	|	|	|	|	0.21
42.583	0.00	0.29	0.348	O	|	|	|	|	0.21
42.667	0.00	0.29	0.346	O	|	|	|	|	0.21
42.750	0.00	0.29	0.344	O	|	|	|	|	0.21
42.833	0.00	0.28	0.342	O	|	|	|	|	0.20
42.917	0.00	0.28	0.340	O	|	|	|	|	0.20
43.000	0.00	0.28	0.338	O	|	|	|	|	0.20
43.083	0.00	0.28	0.336	O	|	|	|	|	0.20
43.167	0.00	0.28	0.334	O	|	|	|	|	0.20
43.250	0.00	0.28	0.332	O	|	|	|	|	0.20
43.333	0.00	0.27	0.330	O	|	|	|	|	0.20
43.417	0.00	0.27	0.328	O	|	|	|	|	0.20
43.500	0.00	0.27	0.327	O	|	|	|	|	0.20
43.583	0.00	0.27	0.325	O	|	|	|	|	0.19
43.667	0.00	0.27	0.323	O	|	|	|	|	0.19
43.750	0.00	0.27	0.321	O	|	|	|	|	0.19
43.833	0.00	0.26	0.319	O	|	|	|	|	0.19
43.917	0.00	0.26	0.317	O	|	|	|	|	0.19
44.000	0.00	0.26	0.315	O	|	|	|	|	0.19
44.083	0.00	0.26	0.314	O	|	|	|	|	0.19
44.167	0.00	0.26	0.312	O	|	|	|	|	0.19
44.250	0.00	0.26	0.310	O	|	|	|	|	0.19
44.333	0.00	0.26	0.308	O	|	|	|	|	0.18
44.417	0.00	0.25	0.307	O	|	|	|	|	0.18
44.500	0.00	0.25	0.305	O	|	|	|	|	0.18
44.583	0.00	0.25	0.303	O	|	|	|	|	0.18
44.667	0.00	0.25	0.301	O	|	|	|	|	0.18
44.750	0.00	0.25	0.300	O	|	|	|	|	0.18
44.833	0.00	0.25	0.298	O	|	|	|	|	0.18
44.917	0.00	0.25	0.296	O	|	|	|	|	0.18
45.000	0.00	0.24	0.295	O	|	|	|	|	0.18
45.083	0.00	0.24	0.293	O	|	|	|	|	0.18
45.167	0.00	0.24	0.291	O	|	|	|	|	0.17
45.250	0.00	0.24	0.290	O	|	|	|	|	0.17
45.333	0.00	0.24	0.288	O	|	|	|	|	0.17
45.417	0.00	0.24	0.286	O	|	|	|	|	0.17
45.500	0.00	0.24	0.285	O	|	|	|	|	0.17
45.583	0.00	0.23	0.283	O	|	|	|	|	0.17
45.667	0.00	0.23	0.281	O	|	|	|	|	0.17
45.750	0.00	0.23	0.280	O	|	|	|	|	0.17
45.833	0.00	0.23	0.278	O	|	|	|	|	0.17
45.917	0.00	0.23	0.277	O	|	|	|	|	0.17
46.000	0.00	0.23	0.275	O	|	|	|	|	0.16
46.083	0.00	0.23	0.273	O	|	|	|	|	0.16
46.167	0.00	0.23	0.272	O	|	|	|	|	0.16
46.250	0.00	0.22	0.270	O	|	|	|	|	0.16
46.333	0.00	0.22	0.269	O	|	|	|	|	0.16
46.417	0.00	0.22	0.267	O	|	|	|	|	0.16
46.500	0.00	0.22	0.266	O	|	|	|	|	0.16
46.583	0.00	0.22	0.264	O	|	|	|	|	0.16
46.667	0.00	0.22	0.263	O	|	|	|	|	0.16

46.750	0.00	0.22	0.261	O	|	|	|	|	0.16
46.833	0.00	0.22	0.260	O	|	|	|	|	0.16
46.917	0.00	0.21	0.258	O	|	|	|	|	0.15
47.000	0.00	0.21	0.257	O	|	|	|	|	0.15
47.083	0.00	0.21	0.255	O	|	|	|	|	0.15
47.167	0.00	0.21	0.254	O	|	|	|	|	0.15
47.250	0.00	0.21	0.252	O	|	|	|	|	0.15
47.333	0.00	0.21	0.251	O	|	|	|	|	0.15
47.417	0.00	0.21	0.250	O	|	|	|	|	0.15
47.500	0.00	0.21	0.248	O	|	|	|	|	0.15
47.583	0.00	0.20	0.247	O	|	|	|	|	0.15
47.667	0.00	0.20	0.245	O	|	|	|	|	0.15
47.750	0.00	0.20	0.244	O	|	|	|	|	0.15
47.833	0.00	0.20	0.243	O	|	|	|	|	0.15
47.917	0.00	0.20	0.241	O	|	|	|	|	0.14
48.000	0.00	0.20	0.240	O	|	|	|	|	0.14
48.083	0.00	0.20	0.238	O	|	|	|	|	0.14
48.167	0.00	0.20	0.237	O	|	|	|	|	0.14
48.250	0.00	0.20	0.236	O	|	|	|	|	0.14
48.333	0.00	0.19	0.234	O	|	|	|	|	0.14
48.417	0.00	0.19	0.233	O	|	|	|	|	0.14
48.500	0.00	0.19	0.232	O	|	|	|	|	0.14
48.583	0.00	0.19	0.230	O	|	|	|	|	0.14
48.667	0.00	0.19	0.229	O	|	|	|	|	0.14
48.750	0.00	0.19	0.228	O	|	|	|	|	0.14
48.833	0.00	0.19	0.226	O	|	|	|	|	0.14
48.917	0.00	0.19	0.225	O	|	|	|	|	0.14
49.000	0.00	0.19	0.224	O	|	|	|	|	0.13
49.083	0.00	0.18	0.223	O	|	|	|	|	0.13
49.167	0.00	0.18	0.221	O	|	|	|	|	0.13
49.250	0.00	0.18	0.220	O	|	|	|	|	0.13
49.333	0.00	0.18	0.219	O	|	|	|	|	0.13
49.417	0.00	0.18	0.218	O	|	|	|	|	0.13
49.500	0.00	0.18	0.216	O	|	|	|	|	0.13
49.583	0.00	0.18	0.215	O	|	|	|	|	0.13
49.667	0.00	0.18	0.214	O	|	|	|	|	0.13
49.750	0.00	0.18	0.213	O	|	|	|	|	0.13
49.833	0.00	0.18	0.211	O	|	|	|	|	0.13
49.917	0.00	0.17	0.210	O	|	|	|	|	0.13
50.000	0.00	0.17	0.209	O	|	|	|	|	0.13
50.083	0.00	0.17	0.208	O	|	|	|	|	0.12
50.167	0.00	0.17	0.207	O	|	|	|	|	0.12
50.250	0.00	0.17	0.206	O	|	|	|	|	0.12
50.333	0.00	0.17	0.204	O	|	|	|	|	0.12
50.417	0.00	0.17	0.203	O	|	|	|	|	0.12
50.500	0.00	0.17	0.202	O	|	|	|	|	0.12
50.583	0.00	0.17	0.201	O	|	|	|	|	0.12
50.667	0.00	0.17	0.200	O	|	|	|	|	0.12
50.750	0.00	0.16	0.199	O	|	|	|	|	0.12
50.833	0.00	0.16	0.197	O	|	|	|	|	0.12
50.917	0.00	0.16	0.196	O	|	|	|	|	0.12
51.000	0.00	0.16	0.195	O	|	|	|	|	0.12
51.083	0.00	0.16	0.194	O	|	|	|	|	0.12
51.167	0.00	0.16	0.193	O	|	|	|	|	0.12
51.250	0.00	0.16	0.192	O	|	|	|	|	0.12
51.333	0.00	0.16	0.191	O	|	|	|	|	0.11
51.417	0.00	0.16	0.190	O	|	|	|	|	0.11
51.500	0.00	0.16	0.189	O	|	|	|	|	0.11
51.583	0.00	0.16	0.188	O	|	|	|	|	0.11
51.667	0.00	0.15	0.186	O	|	|	|	|	0.11
51.750	0.00	0.15	0.185	O	|	|	|	|	0.11
51.833	0.00	0.15	0.184	O	|	|	|	|	0.11
51.917	0.00	0.15	0.183	O	|	|	|	|	0.11
52.000	0.00	0.15	0.182	O	|	|	|	|	0.11
52.083	0.00	0.15	0.181	O	|	|	|	|	0.11
52.167	0.00	0.15	0.180	O	|	|	|	|	0.11
52.250	0.00	0.15	0.179	O	|	|	|	|	0.11
52.333	0.00	0.15	0.178	O	|	|	|	|	0.11
52.417	0.00	0.15	0.177	O	|	|	|	|	0.11
52.500	0.00	0.15	0.176	O	|	|	|	|	0.11
52.583	0.00	0.15	0.175	O	|	|	|	|	0.10

52.667	0.00	0.14	0.174	O	|	|	|	|	0.10
52.750	0.00	0.14	0.173	O	|	|	|	|	0.10
52.833	0.00	0.14	0.172	O	|	|	|	|	0.10
52.917	0.00	0.14	0.171	O	|	|	|	|	0.10
53.000	0.00	0.14	0.170	O	|	|	|	|	0.10
53.083	0.00	0.14	0.169	O	|	|	|	|	0.10
53.167	0.00	0.14	0.168	O	|	|	|	|	0.10
53.250	0.00	0.14	0.167	O	|	|	|	|	0.10
53.333	0.00	0.14	0.166	O	|	|	|	|	0.10
53.417	0.00	0.14	0.165	O	|	|	|	|	0.10
53.500	0.00	0.14	0.164	O	|	|	|	|	0.10
53.583	0.00	0.14	0.164	O	|	|	|	|	0.10
53.667	0.00	0.13	0.163	O	|	|	|	|	0.10
53.750	0.00	0.13	0.162	O	|	|	|	|	0.10
53.833	0.00	0.13	0.161	O	|	|	|	|	0.10
53.917	0.00	0.13	0.160	O	|	|	|	|	0.10
54.000	0.00	0.13	0.159	O	|	|	|	|	0.10
54.083	0.00	0.13	0.158	O	|	|	|	|	0.09
54.167	0.00	0.13	0.157	O	|	|	|	|	0.09
54.250	0.00	0.13	0.156	O	|	|	|	|	0.09
54.333	0.00	0.13	0.155	O	|	|	|	|	0.09
54.417	0.00	0.13	0.154	O	|	|	|	|	0.09
54.500	0.00	0.13	0.154	O	|	|	|	|	0.09
54.583	0.00	0.13	0.153	O	|	|	|	|	0.09
54.667	0.00	0.13	0.152	O	|	|	|	|	0.09
54.750	0.00	0.13	0.151	O	|	|	|	|	0.09
54.833	0.00	0.12	0.150	O	|	|	|	|	0.09
54.917	0.00	0.12	0.149	O	|	|	|	|	0.09
55.000	0.00	0.12	0.148	O	|	|	|	|	0.09
55.083	0.00	0.12	0.148	O	|	|	|	|	0.09
55.167	0.00	0.12	0.147	O	|	|	|	|	0.09
55.250	0.00	0.12	0.146	O	|	|	|	|	0.09
55.333	0.00	0.12	0.145	O	|	|	|	|	0.09
55.417	0.00	0.12	0.144	O	|	|	|	|	0.09
55.500	0.00	0.12	0.143	O	|	|	|	|	0.09
55.583	0.00	0.12	0.143	O	|	|	|	|	0.09
55.667	0.00	0.12	0.142	O	|	|	|	|	0.08
55.750	0.00	0.12	0.141	O	|	|	|	|	0.08
55.833	0.00	0.12	0.140	O	|	|	|	|	0.08
55.917	0.00	0.12	0.139	O	|	|	|	|	0.08
56.000	0.00	0.11	0.139	O	|	|	|	|	0.08
56.083	0.00	0.11	0.138	O	|	|	|	|	0.08
56.167	0.00	0.11	0.137	O	|	|	|	|	0.08
56.250	0.00	0.11	0.136	O	|	|	|	|	0.08
56.333	0.00	0.11	0.135	O	|	|	|	|	0.08
56.417	0.00	0.11	0.135	O	|	|	|	|	0.08
56.500	0.00	0.11	0.134	O	|	|	|	|	0.08
56.583	0.00	0.11	0.133	O	|	|	|	|	0.08
56.667	0.00	0.11	0.132	O	|	|	|	|	0.08
56.750	0.00	0.11	0.132	O	|	|	|	|	0.08
56.833	0.00	0.11	0.131	O	|	|	|	|	0.08
56.917	0.00	0.11	0.130	O	|	|	|	|	0.08
57.000	0.00	0.11	0.129	O	|	|	|	|	0.08
57.083	0.00	0.11	0.129	O	|	|	|	|	0.08
57.167	0.00	0.11	0.128	O	|	|	|	|	0.08
57.250	0.00	0.11	0.127	O	|	|	|	|	0.08
57.333	0.00	0.10	0.126	O	|	|	|	|	0.08
57.417	0.00	0.10	0.126	O	|	|	|	|	0.08
57.500	0.00	0.10	0.125	O	|	|	|	|	0.07
57.583	0.00	0.10	0.124	O	|	|	|	|	0.07
57.667	0.00	0.10	0.124	O	|	|	|	|	0.07
57.750	0.00	0.10	0.123	O	|	|	|	|	0.07
57.833	0.00	0.10	0.122	O	|	|	|	|	0.07
57.917	0.00	0.10	0.121	O	|	|	|	|	0.07
58.000	0.00	0.10	0.121	O	|	|	|	|	0.07
58.083	0.00	0.10	0.120	O	|	|	|	|	0.07
58.167	0.00	0.10	0.119	O	|	|	|	|	0.07
58.250	0.00	0.10	0.119	O	|	|	|	|	0.07
58.333	0.00	0.10	0.118	O	|	|	|	|	0.07
58.417	0.00	0.10	0.117	O	|	|	|	|	0.07
58.500	0.00	0.10	0.117	O	|	|	|	|	0.07

58.583	0.00	0.10	0.116	O	|	|	|	|	0.07
58.667	0.00	0.10	0.115	O	|	|	|	|	0.07
58.750	0.00	0.10	0.115	O	|	|	|	|	0.07
58.833	0.00	0.09	0.114	O	|	|	|	|	0.07
58.917	0.00	0.09	0.113	O	|	|	|	|	0.07
59.000	0.00	0.09	0.113	O	|	|	|	|	0.07
59.083	0.00	0.09	0.112	O	|	|	|	|	0.07
59.167	0.00	0.09	0.112	O	|	|	|	|	0.07
59.250	0.00	0.09	0.111	O	|	|	|	|	0.07
59.333	0.00	0.09	0.110	O	|	|	|	|	0.07
59.417	0.00	0.09	0.110	O	|	|	|	|	0.07
59.500	0.00	0.09	0.109	O	|	|	|	|	0.07
59.583	0.00	0.09	0.108	O	|	|	|	|	0.06
59.667	0.00	0.09	0.108	O	|	|	|	|	0.06
59.750	0.00	0.09	0.107	O	|	|	|	|	0.06
59.833	0.00	0.09	0.107	O	|	|	|	|	0.06
59.917	0.00	0.09	0.106	O	|	|	|	|	0.06
60.000	0.00	0.09	0.105	O	|	|	|	|	0.06
60.083	0.00	0.09	0.105	O	|	|	|	|	0.06
60.167	0.00	0.09	0.104	O	|	|	|	|	0.06
60.250	0.00	0.09	0.104	O	|	|	|	|	0.06
60.333	0.00	0.09	0.103	O	|	|	|	|	0.06
60.417	0.00	0.08	0.102	O	|	|	|	|	0.06
60.500	0.00	0.08	0.102	O	|	|	|	|	0.06
60.583	0.00	0.08	0.101	O	|	|	|	|	0.06
60.667	0.00	0.08	0.101	O	|	|	|	|	0.06
60.750	0.00	0.08	0.100	O	|	|	|	|	0.06
60.833	0.00	0.08	0.099	O	|	|	|	|	0.06
60.917	0.00	0.08	0.099	O	|	|	|	|	0.06
61.000	0.00	0.08	0.098	O	|	|	|	|	0.06
61.083	0.00	0.08	0.098	O	|	|	|	|	0.06
61.167	0.00	0.08	0.097	O	|	|	|	|	0.06
61.250	0.00	0.08	0.097	O	|	|	|	|	0.06
61.333	0.00	0.08	0.096	O	|	|	|	|	0.06
61.417	0.00	0.08	0.096	O	|	|	|	|	0.06
61.500	0.00	0.08	0.095	O	|	|	|	|	0.06
61.583	0.00	0.08	0.094	O	|	|	|	|	0.06
61.667	0.00	0.08	0.094	O	|	|	|	|	0.06
61.750	0.00	0.08	0.093	O	|	|	|	|	0.06
61.833	0.00	0.08	0.093	O	|	|	|	|	0.06
61.917	0.00	0.08	0.092	O	|	|	|	|	0.06
62.000	0.00	0.08	0.092	O	|	|	|	|	0.06
62.083	0.00	0.08	0.091	O	|	|	|	|	0.05
62.167	0.00	0.08	0.091	O	|	|	|	|	0.05
62.250	0.00	0.07	0.090	O	|	|	|	|	0.05
62.333	0.00	0.07	0.090	O	|	|	|	|	0.05
62.417	0.00	0.07	0.089	O	|	|	|	|	0.05
62.500	0.00	0.07	0.089	O	|	|	|	|	0.05
62.583	0.00	0.07	0.088	O	|	|	|	|	0.05
62.667	0.00	0.07	0.088	O	|	|	|	|	0.05
62.750	0.00	0.07	0.087	O	|	|	|	|	0.05
62.833	0.00	0.07	0.087	O	|	|	|	|	0.05
62.917	0.00	0.07	0.086	O	|	|	|	|	0.05
63.000	0.00	0.07	0.086	O	|	|	|	|	0.05
63.083	0.00	0.07	0.085	O	|	|	|	|	0.05
63.167	0.00	0.07	0.085	O	|	|	|	|	0.05
63.250	0.00	0.07	0.084	O	|	|	|	|	0.05
63.333	0.00	0.07	0.084	O	|	|	|	|	0.05
63.417	0.00	0.07	0.083	O	|	|	|	|	0.05
63.500	0.00	0.07	0.083	O	|	|	|	|	0.05
63.583	0.00	0.07	0.082	O	|	|	|	|	0.05
63.667	0.00	0.07	0.082	O	|	|	|	|	0.05
63.750	0.00	0.07	0.081	O	|	|	|	|	0.05
63.833	0.00	0.07	0.081	O	|	|	|	|	0.05
63.917	0.00	0.07	0.081	O	|	|	|	|	0.05
64.000	0.00	0.07	0.080	O	|	|	|	|	0.05
64.083	0.00	0.07	0.080	O	|	|	|	|	0.05
64.167	0.00	0.07	0.079	O	|	|	|	|	0.05
64.250	0.00	0.07	0.079	O	|	|	|	|	0.05
64.333	0.00	0.06	0.078	O	|	|	|	|	0.05
64.417	0.00	0.06	0.078	O	|	|	|	|	0.05

64.500	0.00	0.06	0.077	O	|	|	|	|	0.05
64.583	0.00	0.06	0.077	O	|	|	|	|	0.05
64.667	0.00	0.06	0.076	O	|	|	|	|	0.05
64.750	0.00	0.06	0.076	O	|	|	|	|	0.05
64.833	0.00	0.06	0.076	O	|	|	|	|	0.05
64.917	0.00	0.06	0.075	O	|	|	|	|	0.05
65.000	0.00	0.06	0.075	O	|	|	|	|	0.04
65.083	0.00	0.06	0.074	O	|	|	|	|	0.04
65.167	0.00	0.06	0.074	O	|	|	|	|	0.04
65.250	0.00	0.06	0.073	O	|	|	|	|	0.04
65.333	0.00	0.06	0.073	O	|	|	|	|	0.04
65.417	0.00	0.06	0.073	O	|	|	|	|	0.04
65.500	0.00	0.06	0.072	O	|	|	|	|	0.04
65.583	0.00	0.06	0.072	O	|	|	|	|	0.04
65.667	0.00	0.06	0.071	O	|	|	|	|	0.04
65.750	0.00	0.06	0.071	O	|	|	|	|	0.04
65.833	0.00	0.06	0.071	O	|	|	|	|	0.04
65.917	0.00	0.06	0.070	O	|	|	|	|	0.04
66.000	0.00	0.06	0.070	O	|	|	|	|	0.04
66.083	0.00	0.06	0.069	O	|	|	|	|	0.04
66.167	0.00	0.06	0.069	O	|	|	|	|	0.04
66.250	0.00	0.06	0.069	O	|	|	|	|	0.04
66.333	0.00	0.06	0.068	O	|	|	|	|	0.04
66.417	0.00	0.06	0.068	O	|	|	|	|	0.04
66.500	0.00	0.06	0.067	O	|	|	|	|	0.04
66.583	0.00	0.06	0.067	O	|	|	|	|	0.04
66.667	0.00	0.06	0.067	O	|	|	|	|	0.04
66.750	0.00	0.06	0.066	O	|	|	|	|	0.04
66.833	0.00	0.05	0.066	O	|	|	|	|	0.04
66.917	0.00	0.05	0.066	O	|	|	|	|	0.04
67.000	0.00	0.05	0.065	O	|	|	|	|	0.04
67.083	0.00	0.05	0.065	O	|	|	|	|	0.04
67.167	0.00	0.05	0.064	O	|	|	|	|	0.04
67.250	0.00	0.05	0.064	O	|	|	|	|	0.04
67.333	0.00	0.05	0.064	O	|	|	|	|	0.04
67.417	0.00	0.05	0.063	O	|	|	|	|	0.04
67.500	0.00	0.05	0.063	O	|	|	|	|	0.04
67.583	0.00	0.05	0.063	O	|	|	|	|	0.04
67.667	0.00	0.05	0.062	O	|	|	|	|	0.04
67.750	0.00	0.05	0.062	O	|	|	|	|	0.04
67.833	0.00	0.05	0.062	O	|	|	|	|	0.04
67.917	0.00	0.05	0.061	O	|	|	|	|	0.04
68.000	0.00	0.05	0.061	O	|	|	|	|	0.04
68.083	0.00	0.05	0.061	O	|	|	|	|	0.04
68.167	0.00	0.05	0.060	O	|	|	|	|	0.04
68.250	0.00	0.05	0.060	O	|	|	|	|	0.04
68.333	0.00	0.05	0.059	O	|	|	|	|	0.04
68.417	0.00	0.05	0.059	O	|	|	|	|	0.04
68.500	0.00	0.05	0.059	O	|	|	|	|	0.04
68.583	0.00	0.05	0.058	O	|	|	|	|	0.04
68.667	0.00	0.05	0.058	O	|	|	|	|	0.03
68.750	0.00	0.05	0.058	O	|	|	|	|	0.03
68.833	0.00	0.05	0.057	O	|	|	|	|	0.03
68.917	0.00	0.05	0.057	O	|	|	|	|	0.03
69.000	0.00	0.05	0.057	O	|	|	|	|	0.03
69.083	0.00	0.05	0.056	O	|	|	|	|	0.03
69.167	0.00	0.05	0.056	O	|	|	|	|	0.03
69.250	0.00	0.05	0.056	O	|	|	|	|	0.03
69.333	0.00	0.05	0.056	O	|	|	|	|	0.03
69.417	0.00	0.05	0.055	O	|	|	|	|	0.03
69.500	0.00	0.05	0.055	O	|	|	|	|	0.03
69.583	0.00	0.05	0.055	O	|	|	|	|	0.03
69.667	0.00	0.05	0.054	O	|	|	|	|	0.03
69.750	0.00	0.04	0.054	O	|	|	|	|	0.03
69.833	0.00	0.04	0.054	O	|	|	|	|	0.03
69.917	0.00	0.04	0.053	O	|	|	|	|	0.03
70.000	0.00	0.04	0.053	O	|	|	|	|	0.03
70.083	0.00	0.04	0.053	O	|	|	|	|	0.03
70.167	0.00	0.04	0.052	O	|	|	|	|	0.03
70.250	0.00	0.04	0.052	O	|	|	|	|	0.03
70.333	0.00	0.04	0.052	O	|	|	|	|	0.03

70.417	0.00	0.04	0.052	O	|	|	|	|	0.03
70.500	0.00	0.04	0.051	O	|	|	|	|	0.03
70.583	0.00	0.04	0.051	O	|	|	|	|	0.03
70.667	0.00	0.04	0.051	O	|	|	|	|	0.03
70.750	0.00	0.04	0.050	O	|	|	|	|	0.03
70.833	0.00	0.04	0.050	O	|	|	|	|	0.03
70.917	0.00	0.04	0.050	O	|	|	|	|	0.03
71.000	0.00	0.04	0.050	O	|	|	|	|	0.03
71.083	0.00	0.04	0.049	O	|	|	|	|	0.03
71.167	0.00	0.04	0.049	O	|	|	|	|	0.03
71.250	0.00	0.04	0.049	O	|	|	|	|	0.03
71.333	0.00	0.04	0.048	O	|	|	|	|	0.03
71.417	0.00	0.04	0.048	O	|	|	|	|	0.03
71.500	0.00	0.04	0.048	O	|	|	|	|	0.03
71.583	0.00	0.04	0.048	O	|	|	|	|	0.03
71.667	0.00	0.04	0.047	O	|	|	|	|	0.03
71.750	0.00	0.04	0.047	O	|	|	|	|	0.03
71.833	0.00	0.04	0.047	O	|	|	|	|	0.03
71.917	0.00	0.04	0.047	O	|	|	|	|	0.03
72.000	0.00	0.04	0.046	O	|	|	|	|	0.03
72.083	0.00	0.04	0.046	O	|	|	|	|	0.03
72.167	0.00	0.04	0.046	O	|	|	|	|	0.03
72.250	0.00	0.04	0.045	O	|	|	|	|	0.03
72.333	0.00	0.04	0.045	O	|	|	|	|	0.03
72.417	0.00	0.04	0.045	O	|	|	|	|	0.03
72.500	0.00	0.04	0.045	O	|	|	|	|	0.03
72.583	0.00	0.04	0.044	O	|	|	|	|	0.03
72.667	0.00	0.04	0.044	O	|	|	|	|	0.03
72.750	0.00	0.04	0.044	O	|	|	|	|	0.03
72.833	0.00	0.04	0.044	O	|	|	|	|	0.03
72.917	0.00	0.04	0.043	O	|	|	|	|	0.03
73.000	0.00	0.04	0.043	O	|	|	|	|	0.03
73.083	0.00	0.04	0.043	O	|	|	|	|	0.03
73.167	0.00	0.04	0.043	O	|	|	|	|	0.03
73.250	0.00	0.04	0.042	O	|	|	|	|	0.03
73.333	0.00	0.04	0.042	O	|	|	|	|	0.03
73.417	0.00	0.03	0.042	O	|	|	|	|	0.03
73.500	0.00	0.03	0.042	O	|	|	|	|	0.03
73.583	0.00	0.03	0.041	O	|	|	|	|	0.02
73.667	0.00	0.03	0.041	O	|	|	|	|	0.02
73.750	0.00	0.03	0.041	O	|	|	|	|	0.02
73.833	0.00	0.03	0.041	O	|	|	|	|	0.02
73.917	0.00	0.03	0.041	O	|	|	|	|	0.02
74.000	0.00	0.03	0.040	O	|	|	|	|	0.02
74.083	0.00	0.03	0.040	O	|	|	|	|	0.02
74.167	0.00	0.03	0.040	O	|	|	|	|	0.02
74.250	0.00	0.03	0.040	O	|	|	|	|	0.02
74.333	0.00	0.03	0.039	O	|	|	|	|	0.02
74.417	0.00	0.03	0.039	O	|	|	|	|	0.02
74.500	0.00	0.03	0.039	O	|	|	|	|	0.02
74.583	0.00	0.03	0.039	O	|	|	|	|	0.02
74.667	0.00	0.03	0.039	O	|	|	|	|	0.02
74.750	0.00	0.03	0.038	O	|	|	|	|	0.02
74.833	0.00	0.03	0.038	O	|	|	|	|	0.02
74.917	0.00	0.03	0.038	O	|	|	|	|	0.02
75.000	0.00	0.03	0.038	O	|	|	|	|	0.02
75.083	0.00	0.03	0.037	O	|	|	|	|	0.02
75.167	0.00	0.03	0.037	O	|	|	|	|	0.02
75.250	0.00	0.03	0.037	O	|	|	|	|	0.02
75.333	0.00	0.03	0.037	O	|	|	|	|	0.02
75.417	0.00	0.03	0.037	O	|	|	|	|	0.02
75.500	0.00	0.03	0.036	O	|	|	|	|	0.02
75.583	0.00	0.03	0.036	O	|	|	|	|	0.02
75.667	0.00	0.03	0.036	O	|	|	|	|	0.02
75.750	0.00	0.03	0.036	O	|	|	|	|	0.02
75.833	0.00	0.03	0.036	O	|	|	|	|	0.02
75.917	0.00	0.03	0.035	O	|	|	|	|	0.02
76.000	0.00	0.03	0.035	O	|	|	|	|	0.02
76.083	0.00	0.03	0.035	O	|	|	|	|	0.02
76.167	0.00	0.03	0.035	O	|	|	|	|	0.02
76.250	0.00	0.03	0.035	O	|	|	|	|	0.02

76.333	0.00	0.03	0.034	O					0.02
76.417	0.00	0.03	0.034	O					0.02
76.500	0.00	0.03	0.034	O					0.02
76.583	0.00	0.03	0.034	O					0.02
76.667	0.00	0.03	0.034	O					0.02
76.750	0.00	0.03	0.033	O					0.02
76.833	0.00	0.03	0.033	O					0.02
76.917	0.00	0.03	0.033	O					0.02
77.000	0.00	0.03	0.033	O					0.02
77.083	0.00	0.03	0.033	O					0.02
77.167	0.00	0.03	0.032	O					0.02
77.250	0.00	0.03	0.032	O					0.02
77.333	0.00	0.03	0.032	O					0.02
77.417	0.00	0.03	0.032	O					0.02
77.500	0.00	0.03	0.032	O					0.02
77.583	0.00	0.03	0.032	O					0.02
77.667	0.00	0.03	0.031	O					0.02
77.750	0.00	0.03	0.031	O					0.02
77.833	0.00	0.03	0.031	O					0.02
77.917	0.00	0.03	0.031	O					0.02
78.000	0.00	0.03	0.031	O					0.02
78.083	0.00	0.03	0.030	O					0.02
78.167	0.00	0.03	0.030	O					0.02
78.250	0.00	0.02	0.030	O					0.02
78.333	0.00	0.02	0.030	O					0.02
78.417	0.00	0.02	0.030	O					0.02
78.500	0.00	0.02	0.030	O					0.02
78.583	0.00	0.02	0.029	O					0.02
78.667	0.00	0.02	0.029	O					0.02
78.750	0.00	0.02	0.029	O					0.02
78.833	0.00	0.02	0.029	O					0.02
78.917	0.00	0.02	0.029	O					0.02
79.000	0.00	0.02	0.029	O					0.02
79.083	0.00	0.02	0.028	O					0.02
79.167	0.00	0.02	0.028	O					0.02
79.250	0.00	0.02	0.028	O					0.02
79.333	0.00	0.02	0.028	O					0.02
79.417	0.00	0.02	0.028	O					0.02
79.500	0.00	0.02	0.028	O					0.02
79.583	0.00	0.02	0.027	O					0.02
79.667	0.00	0.02	0.027	O					0.02
79.750	0.00	0.02	0.027	O					0.02
79.833	0.00	0.02	0.027	O					0.02
79.917	0.00	0.02	0.027	O					0.02
80.000	0.00	0.02	0.027	O					0.02
80.083	0.00	0.02	0.027	O					0.02
80.167	0.00	0.02	0.026	O					0.02
80.250	0.00	0.02	0.026	O					0.02
80.333	0.00	0.02	0.026	O					0.02
80.417	0.00	0.02	0.026	O					0.02
80.500	0.00	0.02	0.026	O					0.02
80.583	0.00	0.02	0.026	O					0.02
80.667	0.00	0.02	0.026	O					0.02
80.750	0.00	0.02	0.025	O					0.02
80.833	0.00	0.02	0.025	O					0.02
80.917	0.00	0.02	0.025	O					0.02
81.000	0.00	0.02	0.025	O					0.01
81.083	0.00	0.02	0.025	O					0.01
81.167	0.00	0.02	0.025	O					0.01
81.250	0.00	0.02	0.025	O					0.01
81.333	0.00	0.02	0.024	O					0.01
81.417	0.00	0.02	0.024	O					0.01
81.500	0.00	0.02	0.024	O					0.01
81.583	0.00	0.02	0.024	O					0.01
81.667	0.00	0.02	0.024	O					0.01
81.750	0.00	0.02	0.024	O					0.01
81.833	0.00	0.02	0.024	O					0.01
81.917	0.00	0.02	0.023	O					0.01
82.000	0.00	0.02	0.023	O					0.01
82.083	0.00	0.02	0.023	O					0.01
82.167	0.00	0.02	0.023	O					0.01

82.250	0.00	0.02	0.023	O					0.01
82.333	0.00	0.02	0.023	O					0.01
82.417	0.00	0.02	0.023	O					0.01
82.500	0.00	0.02	0.023	O					0.01
82.583	0.00	0.02	0.022	O					0.01
82.667	0.00	0.02	0.022	O					0.01
82.750	0.00	0.02	0.022	O					0.01
82.833	0.00	0.02	0.022	O					0.01
82.917	0.00	0.02	0.022	O					0.01
83.000	0.00	0.02	0.022	O					0.01
83.083	0.00	0.02	0.022	O					0.01
83.167	0.00	0.02	0.022	O					0.01
83.250	0.00	0.02	0.021	O					0.01
83.333	0.00	0.02	0.021	O					0.01
83.417	0.00	0.02	0.021	O					0.01
83.500	0.00	0.02	0.021	O					0.01
83.583	0.00	0.02	0.021	O					0.01
83.667	0.00	0.02	0.021	O					0.01
83.750	0.00	0.02	0.021	O					0.01
83.833	0.00	0.02	0.021	O					0.01
83.917	0.00	0.02	0.020	O					0.01
84.000	0.00	0.02	0.020	O					0.01
84.083	0.00	0.02	0.020	O					0.01
84.167	0.00	0.02	0.020	O					0.01
84.250	0.00	0.02	0.020	O					0.01
84.333	0.00	0.02	0.020	O					0.01
84.417	0.00	0.02	0.020	O					0.01
84.500	0.00	0.02	0.020	O					0.01
84.583	0.00	0.02	0.020	O					0.01
84.667	0.00	0.02	0.019	O					0.01
84.750	0.00	0.02	0.019	O					0.01
84.833	0.00	0.02	0.019	O					0.01
84.917	0.00	0.02	0.019	O					0.01
85.000	0.00	0.02	0.019	O					0.01
85.083	0.00	0.02	0.019	O					0.01
85.167	0.00	0.02	0.019	O					0.01
85.250	0.00	0.02	0.019	O					0.01
85.333	0.00	0.02	0.019	O					0.01
85.417	0.00	0.02	0.018	O					0.01
85.500	0.00	0.02	0.018	O					0.01
85.583	0.00	0.02	0.018	O					0.01
85.667	0.00	0.02	0.018	O					0.01
85.750	0.00	0.01	0.018	O					0.01
85.833	0.00	0.01	0.018	O					0.01
85.917	0.00	0.01	0.018	O					0.01
86.000	0.00	0.01	0.018	O					0.01
86.083	0.00	0.01	0.018	O					0.01
86.167	0.00	0.01	0.018	O					0.01
86.250	0.00	0.01	0.017	O					0.01
86.333	0.00	0.01	0.017	O					0.01
86.417	0.00	0.01	0.017	O					0.01
86.500	0.00	0.01	0.017	O					0.01
86.583	0.00	0.01	0.017	O					0.01
86.667	0.00	0.01	0.017	O					0.01
86.750	0.00	0.01	0.017	O					0.01
86.833	0.00	0.01	0.017	O					0.01
86.917	0.00	0.01	0.017	O					0.01
87.000	0.00	0.01	0.017	O					0.01
87.083	0.00	0.01	0.016	O					0.01
87.167	0.00	0.01	0.016	O					0.01
87.250	0.00	0.01	0.016	O					0.01
87.333	0.00	0.01	0.016	O					0.01
87.417	0.00	0.01	0.016	O					0.01
87.500	0.00	0.01	0.016	O					0.01
87.583	0.00	0.01	0.016	O					0.01
87.667	0.00	0.01	0.016	O					0.01
87.750	0.00	0.01	0.016	O					0.01
87.833	0.00	0.01	0.016	O					0.01
87.917	0.00	0.01	0.016	O					0.01
88.000	0.00	0.01	0.015	O					0.01
88.083	0.00	0.01	0.015	O					0.01

88.167	0.00	0.01	0.015	O					0.01
88.250	0.00	0.01	0.015	O					0.01
88.333	0.00	0.01	0.015	O					0.01
88.417	0.00	0.01	0.015	O					0.01
88.500	0.00	0.01	0.015	O					0.01
88.583	0.00	0.01	0.015	O					0.01
88.667	0.00	0.01	0.015	O					0.01
88.750	0.00	0.01	0.015	O					0.01
88.833	0.00	0.01	0.015	O					0.01
88.917	0.00	0.01	0.014	O					0.01
89.000	0.00	0.01	0.014	O					0.01
89.083	0.00	0.01	0.014	O					0.01
89.167	0.00	0.01	0.014	O					0.01
89.250	0.00	0.01	0.014	O					0.01
89.333	0.00	0.01	0.014	O					0.01
89.417	0.00	0.01	0.014	O					0.01
89.500	0.00	0.01	0.014	O					0.01
89.583	0.00	0.01	0.014	O					0.01
89.667	0.00	0.01	0.014	O					0.01
89.750	0.00	0.01	0.014	O					0.01
89.833	0.00	0.01	0.014	O					0.01
89.917	0.00	0.01	0.014	O					0.01
90.000	0.00	0.01	0.013	O					0.01
90.083	0.00	0.01	0.013	O					0.01
90.167	0.00	0.01	0.013	O					0.01
90.250	0.00	0.01	0.013	O					0.01
90.333	0.00	0.01	0.013	O					0.01
90.417	0.00	0.01	0.013	O					0.01
90.500	0.00	0.01	0.013	O					0.01
90.583	0.00	0.01	0.013	O					0.01
90.667	0.00	0.01	0.013	O					0.01
90.750	0.00	0.01	0.013	O					0.01
90.833	0.00	0.01	0.013	O					0.01
90.917	0.00	0.01	0.013	O					0.01
91.000	0.00	0.01	0.013	O					0.01
91.083	0.00	0.01	0.012	O					0.01
91.167	0.00	0.01	0.012	O					0.01
91.250	0.00	0.01	0.012	O					0.01
91.333	0.00	0.01	0.012	O					0.01
91.417	0.00	0.01	0.012	O					0.01
91.500	0.00	0.01	0.012	O					0.01
91.583	0.00	0.01	0.012	O					0.01
91.667	0.00	0.01	0.012	O					0.01
91.750	0.00	0.01	0.012	O					0.01
91.833	0.00	0.01	0.012	O					0.01
91.917	0.00	0.01	0.012	O					0.01
92.000	0.00	0.01	0.012	O					0.01
92.083	0.00	0.01	0.012	O					0.01
92.167	0.00	0.01	0.012	O					0.01
92.250	0.00	0.01	0.012	O					0.01
92.333	0.00	0.01	0.011	O					0.01
92.417	0.00	0.01	0.011	O					0.01
92.500	0.00	0.01	0.011	O					0.01
92.583	0.00	0.01	0.011	O					0.01
92.667	0.00	0.01	0.011	O					0.01
92.750	0.00	0.01	0.011	O					0.01
92.833	0.00	0.01	0.011	O					0.01
92.917	0.00	0.01	0.011	O					0.01
93.000	0.00	0.01	0.011	O					0.01
93.083	0.00	0.01	0.011	O					0.01
93.167	0.00	0.01	0.011	O					0.01
93.250	0.00	0.01	0.011	O					0.01
93.333	0.00	0.01	0.011	O					0.01
93.417	0.00	0.01	0.011	O					0.01
93.500	0.00	0.01	0.011	O					0.01
93.583	0.00	0.01	0.011	O					0.01
93.667	0.00	0.01	0.010	O					0.01
93.750	0.00	0.01	0.010	O					0.01
93.833	0.00	0.01	0.010	O					0.01
93.917	0.00	0.01	0.010	O					0.01
94.000	0.00	0.01	0.010	O					0.01

94.083	0.00	0.01	0.010	O	|	|	|	|	0.01
94.167	0.00	0.01	0.010	O	|	|	|	|	0.01
94.250	0.00	0.01	0.010	O	|	|	|	|	0.01
94.333	0.00	0.01	0.010	O	|	|	|	|	0.01
94.417	0.00	0.01	0.010	O	|	|	|	|	0.01
94.500	0.00	0.01	0.010	O	|	|	|	|	0.01
94.583	0.00	0.01	0.010	O	|	|	|	|	0.01
94.667	0.00	0.01	0.010	O	|	|	|	|	0.01
94.750	0.00	0.01	0.010	O	|	|	|	|	0.01
94.833	0.00	0.01	0.010	O	|	|	|	|	0.01
94.917	0.00	0.01	0.010	O	|	|	|	|	0.01
95.000	0.00	0.01	0.010	O	|	|	|	|	0.01
95.083	0.00	0.01	0.009	O	|	|	|	|	0.01
95.167	0.00	0.01	0.009	O	|	|	|	|	0.01
95.250	0.00	0.01	0.009	O	|	|	|	|	0.01
95.333	0.00	0.01	0.009	O	|	|	|	|	0.01
95.417	0.00	0.01	0.009	O	|	|	|	|	0.01
95.500	0.00	0.01	0.009	O	|	|	|	|	0.01
95.583	0.00	0.01	0.009	O	|	|	|	|	0.01
95.667	0.00	0.01	0.009	O	|	|	|	|	0.01
95.750	0.00	0.01	0.009	O	|	|	|	|	0.01
95.833	0.00	0.01	0.009	O	|	|	|	|	0.01
95.917	0.00	0.01	0.009	O	|	|	|	|	0.01
96.000	0.00	0.01	0.009	O	|	|	|	|	0.01
96.083	0.00	0.01	0.009	O	|	|	|	|	0.01
96.167	0.00	0.01	0.009	O	|	|	|	|	0.01
96.250	0.00	0.01	0.009	O	|	|	|	|	0.01
96.333	0.00	0.01	0.009	O	|	|	|	|	0.01
96.417	0.00	0.01	0.009	O	|	|	|	|	0.01
96.500	0.00	0.01	0.009	O	|	|	|	|	0.01
96.583	0.00	0.01	0.009	O	|	|	|	|	0.01
96.667	0.00	0.01	0.009	O	|	|	|	|	0.01
96.750	0.00	0.01	0.008	O	|	|	|	|	0.01
96.833	0.00	0.01	0.008	O	|	|	|	|	0.01
96.917	0.00	0.01	0.008	O	|	|	|	|	0.01
97.000	0.00	0.01	0.008	O	|	|	|	|	0.00
97.083	0.00	0.01	0.008	O	|	|	|	|	0.00
97.167	0.00	0.01	0.008	O	|	|	|	|	0.00
97.250	0.00	0.01	0.008	O	|	|	|	|	0.00
97.333	0.00	0.01	0.008	O	|	|	|	|	0.00
97.417	0.00	0.01	0.008	O	|	|	|	|	0.00
97.500	0.00	0.01	0.008	O	|	|	|	|	0.00
97.583	0.00	0.01	0.008	O	|	|	|	|	0.00
97.667	0.00	0.01	0.008	O	|	|	|	|	0.00
97.750	0.00	0.01	0.008	O	|	|	|	|	0.00
97.833	0.00	0.01	0.008	O	|	|	|	|	0.00
97.917	0.00	0.01	0.008	O	|	|	|	|	0.00
98.000	0.00	0.01	0.008	O	|	|	|	|	0.00
98.083	0.00	0.01	0.008	O	|	|	|	|	0.00
98.167	0.00	0.01	0.008	O	|	|	|	|	0.00
98.250	0.00	0.01	0.008	O	|	|	|	|	0.00
98.333	0.00	0.01	0.008	O	|	|	|	|	0.00
98.417	0.00	0.01	0.008	O	|	|	|	|	0.00
98.500	0.00	0.01	0.008	O	|	|	|	|	0.00
98.583	0.00	0.01	0.007	O	|	|	|	|	0.00
98.667	0.00	0.01	0.007	O	|	|	|	|	0.00
98.750	0.00	0.01	0.007	O	|	|	|	|	0.00
98.833	0.00	0.01	0.007	O	|	|	|	|	0.00
98.917	0.00	0.01	0.007	O	|	|	|	|	0.00
99.000	0.00	0.01	0.007	O	|	|	|	|	0.00
99.083	0.00	0.01	0.007	O	|	|	|	|	0.00
99.167	0.00	0.01	0.007	O	|	|	|	|	0.00
99.250	0.00	0.01	0.007	O	|	|	|	|	0.00
99.333	0.00	0.01	0.007	O	|	|	|	|	0.00
99.417	0.00	0.01	0.007	O	|	|	|	|	0.00
99.500	0.00	0.01	0.007	O	|	|	|	|	0.00
99.583	0.00	0.01	0.007	O	|	|	|	|	0.00
99.667	0.00	0.01	0.007	O	|	|	|	|	0.00
99.750	0.00	0.01	0.007	O	|	|	|	|	0.00
99.833	0.00	0.01	0.007	O	|	|	|	|	0.00
99.917	0.00	0.01	0.007	O	|	|	|	|	0.00

100.000	0.00	0.01	0.007	O	|	|	|	|	0.00
100.083	0.00	0.01	0.007	O	|	|	|	|	0.00
100.167	0.00	0.01	0.007	O	|	|	|	|	0.00
100.250	0.00	0.01	0.007	O	|	|	|	|	0.00
100.333	0.00	0.01	0.007	O	|	|	|	|	0.00
100.417	0.00	0.01	0.007	O	|	|	|	|	0.00
100.500	0.00	0.01	0.007	O	|	|	|	|	0.00
100.583	0.00	0.01	0.007	O	|	|	|	|	0.00
100.667	0.00	0.01	0.006	O	|	|	|	|	0.00
100.750	0.00	0.01	0.006	O	|	|	|	|	0.00
100.833	0.00	0.01	0.006	O	|	|	|	|	0.00
100.917	0.00	0.01	0.006	O	|	|	|	|	0.00
101.000	0.00	0.01	0.006	O	|	|	|	|	0.00
101.083	0.00	0.01	0.006	O	|	|	|	|	0.00
101.167	0.00	0.01	0.006	O	|	|	|	|	0.00
101.250	0.00	0.01	0.006	O	|	|	|	|	0.00
101.333	0.00	0.01	0.006	O	|	|	|	|	0.00
101.417	0.00	0.01	0.006	O	|	|	|	|	0.00
101.500	0.00	0.01	0.006	O	|	|	|	|	0.00
101.583	0.00	0.01	0.006	O	|	|	|	|	0.00
101.667	0.00	0.01	0.006	O	|	|	|	|	0.00
101.750	0.00	0.00	0.006	O	|	|	|	|	0.00
101.833	0.00	0.00	0.006	O	|	|	|	|	0.00
101.917	0.00	0.00	0.006	O	|	|	|	|	0.00
102.000	0.00	0.00	0.006	O	|	|	|	|	0.00
102.083	0.00	0.00	0.006	O	|	|	|	|	0.00
102.167	0.00	0.00	0.006	O	|	|	|	|	0.00
102.250	0.00	0.00	0.006	O	|	|	|	|	0.00
102.333	0.00	0.00	0.006	O	|	|	|	|	0.00
102.417	0.00	0.00	0.006	O	|	|	|	|	0.00
102.500	0.00	0.00	0.006	O	|	|	|	|	0.00
102.583	0.00	0.00	0.006	O	|	|	|	|	0.00
102.667	0.00	0.00	0.006	O	|	|	|	|	0.00
102.750	0.00	0.00	0.006	O	|	|	|	|	0.00
102.833	0.00	0.00	0.006	O	|	|	|	|	0.00
102.917	0.00	0.00	0.006	O	|	|	|	|	0.00
103.000	0.00	0.00	0.006	O	|	|	|	|	0.00
103.083	0.00	0.00	0.005	O	|	|	|	|	0.00
103.167	0.00	0.00	0.005	O	|	|	|	|	0.00
103.250	0.00	0.00	0.005	O	|	|	|	|	0.00
103.333	0.00	0.00	0.005	O	|	|	|	|	0.00
103.417	0.00	0.00	0.005	O	|	|	|	|	0.00
103.500	0.00	0.00	0.005	O	|	|	|	|	0.00
103.583	0.00	0.00	0.005	O	|	|	|	|	0.00
103.667	0.00	0.00	0.005	O	|	|	|	|	0.00
103.750	0.00	0.00	0.005	O	|	|	|	|	0.00
103.833	0.00	0.00	0.005	O	|	|	|	|	0.00
103.917	0.00	0.00	0.005	O	|	|	|	|	0.00
104.000	0.00	0.00	0.005	O	|	|	|	|	0.00
104.083	0.00	0.00	0.005	O	|	|	|	|	0.00
104.167	0.00	0.00	0.005	O	|	|	|	|	0.00
104.250	0.00	0.00	0.005	O	|	|	|	|	0.00
104.333	0.00	0.00	0.005	O	|	|	|	|	0.00
104.417	0.00	0.00	0.005	O	|	|	|	|	0.00
104.500	0.00	0.00	0.005	O	|	|	|	|	0.00
104.583	0.00	0.00	0.005	O	|	|	|	|	0.00
104.667	0.00	0.00	0.005	O	|	|	|	|	0.00
104.750	0.00	0.00	0.005	O	|	|	|	|	0.00
104.833	0.00	0.00	0.005	O	|	|	|	|	0.00
104.917	0.00	0.00	0.005	O	|	|	|	|	0.00
105.000	0.00	0.00	0.005	O	|	|	|	|	0.00
105.083	0.00	0.00	0.005	O	|	|	|	|	0.00
105.167	0.00	0.00	0.005	O	|	|	|	|	0.00
105.250	0.00	0.00	0.005	O	|	|	|	|	0.00
105.333	0.00	0.00	0.005	O	|	|	|	|	0.00
105.417	0.00	0.00	0.005	O	|	|	|	|	0.00
105.500	0.00	0.00	0.005	O	|	|	|	|	0.00
105.583	0.00	0.00	0.005	O	|	|	|	|	0.00
105.667	0.00	0.00	0.005	O	|	|	|	|	0.00
105.750	0.00	0.00	0.005	O	|	|	|	|	0.00
105.833	0.00	0.00	0.005	O	|	|	|	|	0.00

105.917	0.00	0.00	0.005	O	|	|	|	|	0.00
106.000	0.00	0.00	0.004	O	|	|	|	|	0.00
106.083	0.00	0.00	0.004	O	|	|	|	|	0.00
106.167	0.00	0.00	0.004	O	|	|	|	|	0.00
106.250	0.00	0.00	0.004	O	|	|	|	|	0.00
106.333	0.00	0.00	0.004	O	|	|	|	|	0.00
106.417	0.00	0.00	0.004	O	|	|	|	|	0.00
106.500	0.00	0.00	0.004	O	|	|	|	|	0.00
106.583	0.00	0.00	0.004	O	|	|	|	|	0.00
106.667	0.00	0.00	0.004	O	|	|	|	|	0.00
106.750	0.00	0.00	0.004	O	|	|	|	|	0.00
106.833	0.00	0.00	0.004	O	|	|	|	|	0.00
106.917	0.00	0.00	0.004	O	|	|	|	|	0.00
107.000	0.00	0.00	0.004	O	|	|	|	|	0.00
107.083	0.00	0.00	0.004	O	|	|	|	|	0.00
107.167	0.00	0.00	0.004	O	|	|	|	|	0.00
107.250	0.00	0.00	0.004	O	|	|	|	|	0.00
107.333	0.00	0.00	0.004	O	|	|	|	|	0.00
107.417	0.00	0.00	0.004	O	|	|	|	|	0.00
107.500	0.00	0.00	0.004	O	|	|	|	|	0.00
107.583	0.00	0.00	0.004	O	|	|	|	|	0.00
107.667	0.00	0.00	0.004	O	|	|	|	|	0.00
107.750	0.00	0.00	0.004	O	|	|	|	|	0.00
107.833	0.00	0.00	0.004	O	|	|	|	|	0.00
107.917	0.00	0.00	0.004	O	|	|	|	|	0.00
108.000	0.00	0.00	0.004	O	|	|	|	|	0.00
108.083	0.00	0.00	0.004	O	|	|	|	|	0.00
108.167	0.00	0.00	0.004	O	|	|	|	|	0.00
108.250	0.00	0.00	0.004	O	|	|	|	|	0.00
108.333	0.00	0.00	0.004	O	|	|	|	|	0.00
108.417	0.00	0.00	0.004	O	|	|	|	|	0.00
108.500	0.00	0.00	0.004	O	|	|	|	|	0.00
108.583	0.00	0.00	0.004	O	|	|	|	|	0.00
108.667	0.00	0.00	0.004	O	|	|	|	|	0.00
108.750	0.00	0.00	0.004	O	|	|	|	|	0.00
108.833	0.00	0.00	0.004	O	|	|	|	|	0.00
108.917	0.00	0.00	0.004	O	|	|	|	|	0.00
109.000	0.00	0.00	0.004	O	|	|	|	|	0.00
109.083	0.00	0.00	0.004	O	|	|	|	|	0.00
109.167	0.00	0.00	0.004	O	|	|	|	|	0.00
109.250	0.00	0.00	0.004	O	|	|	|	|	0.00
109.333	0.00	0.00	0.004	O	|	|	|	|	0.00
109.417	0.00	0.00	0.004	O	|	|	|	|	0.00
109.500	0.00	0.00	0.004	O	|	|	|	|	0.00
109.583	0.00	0.00	0.004	O	|	|	|	|	0.00
109.667	0.00	0.00	0.003	O	|	|	|	|	0.00
109.750	0.00	0.00	0.003	O	|	|	|	|	0.00
109.833	0.00	0.00	0.003	O	|	|	|	|	0.00
109.917	0.00	0.00	0.003	O	|	|	|	|	0.00
110.000	0.00	0.00	0.003	O	|	|	|	|	0.00
110.083	0.00	0.00	0.003	O	|	|	|	|	0.00
110.167	0.00	0.00	0.003	O	|	|	|	|	0.00
110.250	0.00	0.00	0.003	O	|	|	|	|	0.00
110.333	0.00	0.00	0.003	O	|	|	|	|	0.00
110.417	0.00	0.00	0.003	O	|	|	|	|	0.00
110.500	0.00	0.00	0.003	O	|	|	|	|	0.00
110.583	0.00	0.00	0.003	O	|	|	|	|	0.00
110.667	0.00	0.00	0.003	O	|	|	|	|	0.00
110.750	0.00	0.00	0.003	O	|	|	|	|	0.00
110.833	0.00	0.00	0.003	O	|	|	|	|	0.00
110.917	0.00	0.00	0.003	O	|	|	|	|	0.00
111.000	0.00	0.00	0.003	O	|	|	|	|	0.00
111.083	0.00	0.00	0.003	O	|	|	|	|	0.00
111.167	0.00	0.00	0.003	O	|	|	|	|	0.00
111.250	0.00	0.00	0.003	O	|	|	|	|	0.00
111.333	0.00	0.00	0.003	O	|	|	|	|	0.00
111.417	0.00	0.00	0.003	O	|	|	|	|	0.00
111.500	0.00	0.00	0.003	O	|	|	|	|	0.00
111.583	0.00	0.00	0.003	O	|	|	|	|	0.00
111.667	0.00	0.00	0.003	O	|	|	|	|	0.00
111.750	0.00	0.00	0.003	O	|	|	|	|	0.00

111.833	0.00	0.00	0.003	O	|	|	|	|	0.00
111.917	0.00	0.00	0.003	O	|	|	|	|	0.00
112.000	0.00	0.00	0.003	O	|	|	|	|	0.00
112.083	0.00	0.00	0.003	O	|	|	|	|	0.00
112.167	0.00	0.00	0.003	O	|	|	|	|	0.00
112.250	0.00	0.00	0.003	O	|	|	|	|	0.00
112.333	0.00	0.00	0.003	O	|	|	|	|	0.00
112.417	0.00	0.00	0.003	O	|	|	|	|	0.00
112.500	0.00	0.00	0.003	O	|	|	|	|	0.00
112.583	0.00	0.00	0.003	O	|	|	|	|	0.00
112.667	0.00	0.00	0.003	O	|	|	|	|	0.00
112.750	0.00	0.00	0.003	O	|	|	|	|	0.00
112.833	0.00	0.00	0.003	O	|	|	|	|	0.00
112.917	0.00	0.00	0.003	O	|	|	|	|	0.00
113.000	0.00	0.00	0.003	O	|	|	|	|	0.00
113.083	0.00	0.00	0.003	O	|	|	|	|	0.00
113.167	0.00	0.00	0.003	O	|	|	|	|	0.00
113.250	0.00	0.00	0.003	O	|	|	|	|	0.00
113.333	0.00	0.00	0.003	O	|	|	|	|	0.00
113.417	0.00	0.00	0.003	O	|	|	|	|	0.00
113.500	0.00	0.00	0.003	O	|	|	|	|	0.00
113.583	0.00	0.00	0.003	O	|	|	|	|	0.00
113.667	0.00	0.00	0.003	O	|	|	|	|	0.00
113.750	0.00	0.00	0.003	O	|	|	|	|	0.00
113.833	0.00	0.00	0.003	O	|	|	|	|	0.00
113.917	0.00	0.00	0.003	O	|	|	|	|	0.00
114.000	0.00	0.00	0.003	O	|	|	|	|	0.00
114.083	0.00	0.00	0.003	O	|	|	|	|	0.00
114.167	0.00	0.00	0.003	O	|	|	|	|	0.00
114.250	0.00	0.00	0.003	O	|	|	|	|	0.00
114.333	0.00	0.00	0.003	O	|	|	|	|	0.00
114.417	0.00	0.00	0.003	O	|	|	|	|	0.00
114.500	0.00	0.00	0.003	O	|	|	|	|	0.00
114.583	0.00	0.00	0.002	O	|	|	|	|	0.00
114.667	0.00	0.00	0.002	O	|	|	|	|	0.00
114.750	0.00	0.00	0.002	O	|	|	|	|	0.00
114.833	0.00	0.00	0.002	O	|	|	|	|	0.00
114.917	0.00	0.00	0.002	O	|	|	|	|	0.00
115.000	0.00	0.00	0.002	O	|	|	|	|	0.00
115.083	0.00	0.00	0.002	O	|	|	|	|	0.00
115.167	0.00	0.00	0.002	O	|	|	|	|	0.00
115.250	0.00	0.00	0.002	O	|	|	|	|	0.00
115.333	0.00	0.00	0.002	O	|	|	|	|	0.00
115.417	0.00	0.00	0.002	O	|	|	|	|	0.00
115.500	0.00	0.00	0.002	O	|	|	|	|	0.00
115.583	0.00	0.00	0.002	O	|	|	|	|	0.00
115.667	0.00	0.00	0.002	O	|	|	|	|	0.00
115.750	0.00	0.00	0.002	O	|	|	|	|	0.00
115.833	0.00	0.00	0.002	O	|	|	|	|	0.00
115.917	0.00	0.00	0.002	O	|	|	|	|	0.00
116.000	0.00	0.00	0.002	O	|	|	|	|	0.00
116.083	0.00	0.00	0.002	O	|	|	|	|	0.00
116.167	0.00	0.00	0.002	O	|	|	|	|	0.00
116.250	0.00	0.00	0.002	O	|	|	|	|	0.00
116.333	0.00	0.00	0.002	O	|	|	|	|	0.00
116.417	0.00	0.00	0.002	O	|	|	|	|	0.00
116.500	0.00	0.00	0.002	O	|	|	|	|	0.00
116.583	0.00	0.00	0.002	O	|	|	|	|	0.00
116.667	0.00	0.00	0.002	O	|	|	|	|	0.00
116.750	0.00	0.00	0.002	O	|	|	|	|	0.00
116.833	0.00	0.00	0.002	O	|	|	|	|	0.00
116.917	0.00	0.00	0.002	O	|	|	|	|	0.00
117.000	0.00	0.00	0.002	O	|	|	|	|	0.00
117.083	0.00	0.00	0.002	O	|	|	|	|	0.00
117.167	0.00	0.00	0.002	O	|	|	|	|	0.00
117.250	0.00	0.00	0.002	O	|	|	|	|	0.00
117.333	0.00	0.00	0.002	O	|	|	|	|	0.00
117.417	0.00	0.00	0.002	O	|	|	|	|	0.00
117.500	0.00	0.00	0.002	O	|	|	|	|	0.00
117.583	0.00	0.00	0.002	O	|	|	|	|	0.00
117.667	0.00	0.00	0.002	O	|	|	|	|	0.00

```
117.750    0.00    0.00      0.002  O       |       |       |       |      0.00
117.833    0.00    0.00      0.002  O       |       |       |       |      0.00
117.917    0.00    0.00      0.002  O       |       |       |       |      0.00
118.000    0.00    0.00      0.002  O       |       |       |       |      0.00
118.083    0.00    0.00      0.002  O       |       |       |       |      0.00
118.167    0.00    0.00      0.002  O       |       |       |       |      0.00
118.250    0.00    0.00      0.002  O       |       |       |       |      0.00
118.333    0.00    0.00      0.002  O       |       |       |       |      0.00
118.417    0.00    0.00      0.002  O       |       |       |       |      0.00
118.500    0.00    0.00      0.002  O       |       |       |       |      0.00
118.583    0.00    0.00      0.002  O       |       |       |       |      0.00
118.667    0.00    0.00      0.002  O       |       |       |       |      0.00
118.750    0.00    0.00      0.002  O       |       |       |       |      0.00
118.833    0.00    0.00      0.002  O       |       |       |       |      0.00
118.917    0.00    0.00      0.002  O       |       |       |       |      0.00
119.000    0.00    0.00      0.002  O       |       |       |       |      0.00
119.083    0.00    0.00      0.002  O       |       |       |       |      0.00
119.167    0.00    0.00      0.002  O       |       |       |       |      0.00
119.250    0.00    0.00      0.002  O       |       |       |       |      0.00
119.333    0.00    0.00      0.002  O       |       |       |       |      0.00
119.417    0.00    0.00      0.002  O       |       |       |       |      0.00
119.500    0.00    0.00      0.002  O       |       |       |       |      0.00
119.583    0.00    0.00      0.002  O       |       |       |       |      0.00
119.667    0.00    0.00      0.002  O       |       |       |       |      0.00
119.750    0.00    0.00      0.002  O       |       |       |       |      0.00
119.833    0.00    0.00      0.002  O       |       |       |       |      0.00
119.917    0.00    0.00      0.002  O       |       |       |       |      0.00
120.000    0.00    0.00      0.002  O       |       |       |       |      0.00
120.083    0.00    0.00      0.002  O       |       |       |       |      0.00
120.167    0.00    0.00      0.002  O       |       |       |       |      0.00
120.250    0.00    0.00      0.002  O       |       |       |       |      0.00
120.333    0.00    0.00      0.002  O       |       |       |       |      0.00
120.417    0.00    0.00      0.002  O       |       |       |       |      0.00
120.500    0.00    0.00      0.002  O       |       |       |       |      0.00

        Remaining water in basin =    0.00 (Ac.Ft)


        ****************************HYDROGRAPH DATA****************************
                      Number of intervals =  1446
                      Time interval =    5.0 (Min.)
                      Maximum/Peak flow rate =       46.573 (CFS)
                      Total volume =      18.806 (Ac.Ft)
               Status of hydrographs being held in storage
                         Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
               Peak (CFS)      0.000     0.000     0.000     0.000     0.000
               Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
        ***********************************************************************

        -----------------------------------------------------------------------
```

- Basin 'C' - 25 Year 12 Hour Storm Routing Analysis

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                    FLOOD HYDROGRAPH ROUTING PROGRAM
          Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012
                       Study date: 03/20/17

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WESTRIDGE HYDROLOGY STUDY
PROPOSED ROUTING - BASIN 'C' - 25 YEAR 12 HOUR STORM
HUNSAKER & ASSOCIATES, MARCH 20, 2017
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------


Program License Serial Number 4094

------------------------------------------------------------------------
******************** HYDROGRAPH INFORMATION **********************

               From study/file name: PRC02512.rte
*****************************HYDROGRAPH DATA*****************************
               Number of intervals =   160
               Time interval =    5.0 (Min.)
               Maximum/Peak flow rate =      270.991 (CFS)
               Total volume =      23.309 (Ac.Ft)
       Status of hydrographs being held in storage
                   Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
       Peak (CFS)      0.000     0.000     0.000     0.000     0.000
       Vol (Ac.Ft)     0.000     0.000     0.000     0.000     0.000
************************************************************************



++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      300.000 to Point/Station      301.000
**** RETARDING BASIN ROUTING ****
________________________________________________________________________

User entry of depth-outflow-storage data
------------------------------------------------------------------------
Total number of inflow hydrograph intervals = 160
Hydrograph time unit =  5.000 (Min.)
Initial depth in storage basin =   0.00(Ft.)
------------------------------------------------------------------------
------------------------------------------------------------------------
Initial basin depth =   0.00 (Ft.)
Initial basin storage =      0.00 (Ac.Ft)
Initial basin outflow =   0.00 (CFS)
------------------------------------------------------------------------
------------------------------------------------------------------------
Depth vs. Storage and Depth vs. Discharge data:
 Basin Depth  Storage    Outflow   (S-O*dt/2)   (S+O*dt/2)
     (Ft.)    (Ac.Ft)    (CFS)     (Ac.Ft)    (Ac.Ft)
------------------------------------------------------------------------
   0.000      0.000      0.000      0.000        0.000
   0.500      0.834      0.692      0.832        0.836
   1.000      1.693      1.672      1.687        1.699
   1.500      2.577      3.059      2.566        2.588
   2.000      3.488      4.757      3.472        3.504
   3.000      5.388      7.930      5.361        5.415
   4.000      7.399     20.434      7.329        7.469
   5.000      9.523     35.089      9.402        9.644
   6.000     11.764     44.538     11.611       11.917
   7.000     14.126     52.170     13.946       14.306
   8.000     16.610     58.766     16.408       16.812
   8.900     18.942     83.236     18.655       19.229
   9.000     19.207     83.236     18.920       19.494
   9.500     20.556    448.796     19.011       22.101
  10.000     21.935   1159.965     17.941       25.929
```

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0	67.7	135.50	203.24	270.99	Depth (Ft.)
0.083	0.25	0.00	0.001	O	|	|	|	|	0.00
0.167	1.26	0.01	0.006	O	|	|	|	|	0.00
0.250	3.86	0.02	0.024	O	|	|	|	|	0.01
0.333	5.33	0.05	0.055	O	|	|	|	|	0.03
0.417	6.07	0.08	0.094	O	|	|	|	|	0.06
0.500	6.58	0.11	0.137	O	|	|	|	|	0.08
0.583	6.95	0.15	0.182	O	|	|	|	|	0.11
0.667	7.23	0.19	0.230	O	|	|	|	|	0.14
0.750	7.43	0.23	0.279	O	|	|	|	|	0.17
0.833	7.57	0.27	0.329	O	|	|	|	|	0.20
0.917	7.67	0.31	0.380	O	|	|	|	|	0.23
1.000	7.76	0.36	0.430	O	|	|	|	|	0.26
1.083	7.84	0.40	0.481	O	|	|	|	|	0.29
1.167	7.92	0.44	0.533	O	|	|	|	|	0.32
1.250	8.00	0.48	0.584	O	|	|	|	|	0.35
1.333	8.07	0.53	0.636	O	|	|	|	|	0.38
1.417	8.14	0.57	0.688	O	|	|	|	|	0.41
1.500	8.20	0.61	0.740	O	|	|	|	|	0.44
1.583	8.26	0.66	0.793	O	|	|	|	|	0.48
1.667	8.33	0.70	0.845	O	|	|	|	|	0.51
1.750	8.40	0.76	0.898	O	|	|	|	|	0.54
1.833	8.46	0.82	0.950	O	|	|	|	|	0.57
1.917	8.53	0.88	1.003	OI	|	|	|	|	0.60
2.000	8.60	0.94	1.056	OI	|	|	|	|	0.63
2.083	8.68	1.01	1.108	OI	|	|	|	|	0.66
2.167	8.75	1.07	1.161	OI	|	|	|	|	0.69
2.250	8.83	1.13	1.214	OI	|	|	|	|	0.72
2.333	8.90	1.19	1.267	OI	|	|	|	|	0.75
2.417	8.99	1.25	1.321	OI	|	|	|	|	0.78
2.500	9.07	1.31	1.374	OI	|	|	|	|	0.81
2.583	9.15	1.37	1.428	OI	|	|	|	|	0.85
2.667	9.23	1.43	1.481	OI	|	|	|	|	0.88
2.750	9.33	1.49	1.535	OI	|	|	|	|	0.91
2.833	9.41	1.55	1.589	OI	|	|	|	|	0.94
2.917	9.51	1.62	1.643	OI	|	|	|	|	0.97
3.000	9.60	1.68	1.698	OI	|	|	|	|	1.00
3.083	9.70	1.77	1.752	OI	|	|	|	|	1.03
3.167	9.79	1.85	1.807	OI	|	|	|	|	1.06
3.250	9.90	1.94	1.862	OI	|	|	|	|	1.10
3.333	10.00	2.02	1.917	OI	|	|	|	|	1.13
3.417	10.11	2.11	1.972	OI	|	|	|	|	1.16
3.500	10.22	2.20	2.027	OI	|	|	|	|	1.19
3.583	10.34	2.28	2.082	OI	|	|	|	|	1.22
3.667	10.45	2.37	2.138	OI	|	|	|	|	1.25
3.750	10.58	2.46	2.194	OI	|	|	|	|	1.28
3.833	10.70	2.55	2.250	OI	|	|	|	|	1.31
3.917	10.83	2.63	2.306	OI	|	|	|	|	1.35
4.000	10.96	2.72	2.363	OI	|	|	|	|	1.38
4.083	11.23	2.81	2.420	OI	|	|	|	|	1.41
4.167	11.87	2.91	2.480	OI	|	|	|	|	1.44
4.250	13.33	3.01	2.546	OI	|	|	|	|	1.48
4.333	14.21	3.14	2.620	OI	|	|	|	|	1.52
4.417	14.74	3.28	2.697	OI	|	|	|	|	1.57
4.500	15.14	3.43	2.777	OI	|	|	|	|	1.61
4.583	15.49	3.58	2.858	OI	|	|	|	|	1.65
4.667	15.78	3.74	2.941	OI	|	|	|	|	1.70
4.750	16.05	3.89	3.024	OI	|	|	|	|	1.75
4.833	16.29	4.05	3.108	OI	|	|	|	|	1.79
4.917	16.53	4.21	3.193	OI	|	|	|	|	1.84
5.000	16.75	4.37	3.278	OI	|	|	|	|	1.88
5.083	16.99	4.52	3.363	O I	|	|	|	|	1.93
5.167	17.22	4.69	3.449	O I	|	|	|	|	1.98
5.250	17.48	4.84	3.536	O I	|	|	|	|	2.03

5.333	17.73	4.98	3.624	O I	|	|	|	|	2.07
5.417	18.01	5.13	3.712	O I	|	|	|	|	2.12
5.500	18.27	5.28	3.801	O I	|	|	|	|	2.16
5.583	18.57	5.43	3.891	O I	|	|	|	|	2.21
5.667	18.86	5.58	3.982	O I	|	|	|	|	2.26
5.750	19.18	5.74	4.074	O I	|	|	|	|	2.31
5.833	19.50	5.89	4.167	O I	|	|	|	|	2.36
5.917	19.86	6.05	4.262	O I	|	|	|	|	2.41
6.000	20.22	6.21	4.357	O I	|	|	|	|	2.46
6.083	20.62	6.37	4.455	O I	|	|	|	|	2.51
6.167	21.00	6.54	4.553	O I	|	|	|	|	2.56
6.250	21.42	6.70	4.654	O I	|	|	|	|	2.61
6.333	21.84	6.87	4.756	O I	|	|	|	|	2.67
6.417	22.35	7.05	4.860	O I	|	|	|	|	2.72
6.500	22.85	7.23	4.967	O I	|	|	|	|	2.78
6.583	23.44	7.41	5.076	O I	|	|	|	|	2.84
6.667	24.02	7.60	5.188	O I	|	|	|	|	2.89
6.750	24.71	7.79	5.302	O I	|	|	|	|	2.95
6.833	25.40	8.13	5.420	O I	|	|	|	|	3.02
6.917	26.21	8.87	5.539	|O I	|	|	|	|	3.08
7.000	27.04	9.62	5.659	|O I	|	|	|	|	3.13
7.083	28.05	10.37	5.780	|O I	|	|	|	|	3.19
7.167	29.18	11.13	5.903	|O I	|	|	|	|	3.26
7.250	30.79	11.92	6.030	|O I	|	|	|	|	3.32
7.333	32.72	12.75	6.164	|O I	|	|	|	|	3.39
7.417	34.95	13.64	6.306	|O I	|	|	|	|	3.46
7.500	36.33	14.56	6.454	|O I	|	|	|	|	3.53
7.583	36.26	15.47	6.601	|O I	|	|	|	|	3.60
7.667	38.27	16.39	6.748	|O I	|	|	|	|	3.68
7.750	43.17	17.41	6.912	| O I	|	|	|	|	3.76
7.833	50.27	18.63	7.110	| O I	|	|	|	|	3.86
7.917	62.95	20.23	7.366	| O I|	|	|	|	3.98
8.000	80.06	22.58	7.711	| O |I	|	|	|	4.15
8.083	120.40	26.19	8.233	| O | I	|	|	|	4.39
8.167	185.66	32.08	9.086	| O |	| I	|	|	4.79
8.250	270.99	38.85	10.415	| O |	|	|	I	5.40
8.333	187.73	44.30	11.708	| O |	| I	|	|	5.97
8.417	122.97	46.80	12.464	| O |	I |	|	|	6.30
8.500	93.19	48.15	12.881	| O | I	|	|	|	6.47
8.583	75.88	48.95	13.129	| O I	|	|	|	6.58
8.667	62.00	49.39	13.265	| O I|	|	|	|	6.64
8.750	50.22	49.54	13.311	| O |	|	|	|	6.66
8.833	41.26	49.45	13.285	| IO |	|	|	|	6.64
8.917	34.58	49.20	13.207	| IO |	|	|	|	6.61
9.000	31.26	48.84	13.096	| I O |	|	|	|	6.56
9.083	28.61	48.43	12.967	| I O |	|	|	|	6.51
9.167	26.89	47.97	12.826	| I O |	|	|	|	6.45
9.250	25.15	47.49	12.677	| I O |	|	|	|	6.39
9.333	23.28	46.98	12.518	| I O |	|	|	|	6.32
9.417	21.81	46.44	12.352	| I O |	|	|	|	6.25
9.500	20.52	45.88	12.180	| I O |	|	|	|	6.18
9.583	19.71	45.31	12.004	| I O |	|	|	|	6.10
9.667	19.01	44.74	11.827	| I O |	|	|	|	6.03
9.750	18.39	44.06	11.650	| I O |	|	|	|	5.95
9.833	17.83	43.32	11.474	| I O |	|	|	|	5.87
9.917	17.32	42.58	11.299	| I O |	|	|	|	5.79
10.000	16.85	41.85	11.126	|I O |	|	|	|	5.72
10.083	16.29	41.13	10.955	|I O |	|	|	|	5.64
10.167	15.39	40.40	10.783	|I O |	|	|	|	5.56
10.250	13.72	39.66	10.608	|I O |	|	|	|	5.48
10.333	12.65	38.90	10.428	|I O |	|	|	|	5.40
10.417	11.99	38.14	10.247	|I O |	|	|	|	5.32
10.500	11.47	37.39	10.068	|I O |	|	|	|	5.24
10.583	11.04	36.64	9.891	|I O |	|	|	|	5.16
10.667	10.67	35.90	9.716	|I O |	|	|	|	5.09
10.750	10.36	35.17	9.543	|I O |	|	|	|	5.01
10.833	10.09	34.07	9.375	|I O |	|	|	|	4.93
10.917	9.86	32.95	9.213	|I O |	|	|	|	4.85
11.000	9.65	31.88	9.057	|I O |	|	|	|	4.78
11.083	9.45	30.84	8.907	|I O |	|	|	|	4.71
11.167	9.26	29.84	8.763	|I O |	|	|	|	4.64

11.250	9.08	28.88	8.624	|I O	|	|	|	4.58
11.333	8.91	27.96	8.490	|I O	|	|	|	4.51
11.417	8.76	27.07	8.361	|I O	|	|	|	4.45
11.500	8.61	26.22	8.237	|I O	|	|	|	4.39
11.583	8.47	25.40	8.118	I O	|	|	|	4.34
11.667	8.33	24.61	8.004	I O	|	|	|	4.28
11.750	8.20	23.85	7.894	I O	|	|	|	4.23
11.833	8.07	23.12	7.788	I O	|	|	|	4.18
11.917	7.95	22.42	7.687	I O	|	|	|	4.14
12.000	7.84	21.75	7.589	I O	|	|	|	4.09
12.083	7.47	21.09	7.494	I O	|	|	|	4.04
12.167	6.37	20.43	7.399	I O	|	|	|	4.00
12.250	3.70	19.79	7.295	I O	|	|	|	3.95
12.333	2.20	19.08	7.182	I O	|	|	|	3.89
12.417	1.47	18.36	7.065	I O	|	|	|	3.83
12.500	0.99	17.64	6.950	I O	|	|	|	3.78
12.583	0.65	16.94	6.836	IO	|	|	|	3.72
12.667	0.41	16.25	6.726	IO	|	|	|	3.67
12.750	0.25	15.58	6.619	IO	|	|	|	3.61
12.833	0.16	14.94	6.515	IO	|	|	|	3.56
12.917	0.12	14.32	6.415	IO	|	|	|	3.51
13.000	0.08	13.72	6.319	IO	|	|	|	3.46
13.083	0.06	13.15	6.227	IO	|	|	|	3.42
13.167	0.04	12.60	6.139	IO	|	|	|	3.37
13.250	0.02	12.07	6.054	IO	|	|	|	3.33
13.333	0.01	11.57	5.973	IO	|	|	|	3.29
13.417	0.00	11.08	5.895	IO	|	|	|	3.25
13.500	0.00	10.62	5.820	IO	|	|	|	3.21
13.583	0.00	10.17	5.749	IO	|	|	|	3.18
13.667	0.00	9.75	5.680	IO	|	|	|	3.15
13.750	0.00	9.34	5.614	IO	|	|	|	3.11
13.833	0.00	8.95	5.551	IO	|	|	|	3.08
13.917	0.00	8.57	5.491	IO	|	|	|	3.05
14.000	0.00	8.21	5.433	O	|	|	|	3.02
14.083	0.00	7.91	5.378	O	|	|	|	2.99
14.167	0.00	7.82	5.323	O	|	|	|	2.97
14.250	0.00	7.73	5.270	O	|	|	|	2.94
14.333	0.00	7.64	5.217	O	|	|	|	2.91
14.417	0.00	7.56	5.165	O	|	|	|	2.88
14.500	0.00	7.47	5.113	O	|	|	|	2.86
14.583	0.00	7.39	5.062	O	|	|	|	2.83
14.667	0.00	7.30	5.011	O	|	|	|	2.80
14.750	0.00	7.22	4.961	O	|	|	|	2.78
14.833	0.00	7.13	4.912	O	|	|	|	2.75
14.917	0.00	7.05	4.863	O	|	|	|	2.72
15.000	0.00	6.97	4.815	O	|	|	|	2.70
15.083	0.00	6.89	4.767	O	|	|	|	2.67
15.167	0.00	6.81	4.720	O	|	|	|	2.65
15.250	0.00	6.74	4.673	O	|	|	|	2.62
15.333	0.00	6.66	4.627	O	|	|	|	2.60
15.417	0.00	6.58	4.581	O	|	|	|	2.58
15.500	0.00	6.51	4.536	O	|	|	|	2.55
15.583	0.00	6.43	4.492	O	|	|	|	2.53
15.667	0.00	6.36	4.448	O	|	|	|	2.51
15.750	0.00	6.29	4.404	O	|	|	|	2.48
15.833	0.00	6.21	4.361	O	|	|	|	2.46
15.917	0.00	6.14	4.318	O	|	|	|	2.44
16.000	0.00	6.07	4.276	O	|	|	|	2.41
16.083	0.00	6.00	4.235	O	|	|	|	2.39
16.167	0.00	5.94	4.194	O	|	|	|	2.37
16.250	0.00	5.87	4.153	O	|	|	|	2.35
16.333	0.00	5.80	4.113	O	|	|	|	2.33
16.417	0.00	5.73	4.073	O	|	|	|	2.31
16.500	0.00	5.67	4.034	O	|	|	|	2.29
16.583	0.00	5.60	3.995	O	|	|	|	2.27
16.667	0.00	5.54	3.957	O	|	|	|	2.25
16.750	0.00	5.48	3.919	O	|	|	|	2.23
16.833	0.00	5.41	3.881	O	|	|	|	2.21
16.917	0.00	5.35	3.844	O	|	|	|	2.19
17.000	0.00	5.29	3.807	O	|	|	|	2.17
17.083	0.00	5.23	3.771	O	|	|	|	2.15

17.167	0.00	5.17	3.735	O	|	|	|	|	2.13
17.250	0.00	5.11	3.700	O	|	|	|	|	2.11
17.333	0.00	5.05	3.665	O	|	|	|	|	2.09
17.417	0.00	4.99	3.630	O	|	|	|	|	2.07
17.500	0.00	4.94	3.596	O	|	|	|	|	2.06
17.583	0.00	4.88	3.562	O	|	|	|	|	2.04
17.667	0.00	4.83	3.529	O	|	|	|	|	2.02
17.750	0.00	4.77	3.496	O	|	|	|	|	2.00
17.833	0.00	4.71	3.463	O	|	|	|	|	1.99
17.917	0.00	4.65	3.431	O	|	|	|	|	1.97
18.000	0.00	4.59	3.399	O	|	|	|	|	1.95
18.083	0.00	4.53	3.368	O	|	|	|	|	1.93
18.167	0.00	4.48	3.337	O	|	|	|	|	1.92
18.250	0.00	4.42	3.306	O	|	|	|	|	1.90
18.333	0.00	4.36	3.276	O	|	|	|	|	1.88
18.417	0.00	4.31	3.246	O	|	|	|	|	1.87
18.500	0.00	4.25	3.217	O	|	|	|	|	1.85
18.583	0.00	4.20	3.188	O	|	|	|	|	1.84
18.667	0.00	4.14	3.159	O	|	|	|	|	1.82
18.750	0.00	4.09	3.130	O	|	|	|	|	1.80
18.833	0.00	4.04	3.102	O	|	|	|	|	1.79
18.917	0.00	3.99	3.075	O	|	|	|	|	1.77
19.000	0.00	3.94	3.048	O	|	|	|	|	1.76
19.083	0.00	3.89	3.021	O	|	|	|	|	1.74
19.167	0.00	3.84	2.994	O	|	|	|	|	1.73
19.250	0.00	3.79	2.968	O	|	|	|	|	1.71
19.333	0.00	3.74	2.942	O	|	|	|	|	1.70
19.417	0.00	3.69	2.916	O	|	|	|	|	1.69
19.500	0.00	3.64	2.891	O	|	|	|	|	1.67
19.583	0.00	3.60	2.866	O	|	|	|	|	1.66
19.667	0.00	3.55	2.841	O	|	|	|	|	1.65
19.750	0.00	3.51	2.817	O	|	|	|	|	1.63
19.833	0.00	3.46	2.793	O	|	|	|	|	1.62
19.917	0.00	3.42	2.769	O	|	|	|	|	1.61
20.000	0.00	3.37	2.746	O	|	|	|	|	1.59
20.083	0.00	3.33	2.723	O	|	|	|	|	1.58
20.167	0.00	3.29	2.700	O	|	|	|	|	1.57
20.250	0.00	3.25	2.678	O	|	|	|	|	1.56
20.333	0.00	3.21	2.655	O	|	|	|	|	1.54
20.417	0.00	3.16	2.634	O	|	|	|	|	1.53
20.500	0.00	3.12	2.612	O	|	|	|	|	1.52
20.583	0.00	3.08	2.590	O	|	|	|	|	1.51
20.667	0.00	3.05	2.569	O	|	|	|	|	1.50
20.750	0.00	3.01	2.549	O	|	|	|	|	1.48
20.833	0.00	2.98	2.528	O	|	|	|	|	1.47
20.917	0.00	2.95	2.507	O	|	|	|	|	1.46
21.000	0.00	2.92	2.487	O	|	|	|	|	1.45
21.083	0.00	2.89	2.467	O	|	|	|	|	1.44
21.167	0.00	2.86	2.447	O	|	|	|	|	1.43
21.250	0.00	2.83	2.428	O	|	|	|	|	1.42
21.333	0.00	2.79	2.409	O	|	|	|	|	1.40
21.417	0.00	2.76	2.389	O	|	|	|	|	1.39
21.500	0.00	2.73	2.370	O	|	|	|	|	1.38
21.583	0.00	2.71	2.352	O	|	|	|	|	1.37
21.667	0.00	2.68	2.333	O	|	|	|	|	1.36
21.750	0.00	2.65	2.315	O	|	|	|	|	1.35
21.833	0.00	2.62	2.297	O	|	|	|	|	1.34
21.917	0.00	2.59	2.279	O	|	|	|	|	1.33
22.000	0.00	2.56	2.261	O	|	|	|	|	1.32
22.083	0.00	2.54	2.243	O	|	|	|	|	1.31
22.167	0.00	2.51	2.226	O	|	|	|	|	1.30
22.250	0.00	2.48	2.209	O	|	|	|	|	1.29
22.333	0.00	2.45	2.192	O	|	|	|	|	1.28
22.417	0.00	2.43	2.175	O	|	|	|	|	1.27
22.500	0.00	2.40	2.158	O	|	|	|	|	1.26
22.583	0.00	2.38	2.142	O	|	|	|	|	1.25
22.667	0.00	2.35	2.126	O	|	|	|	|	1.24
22.750	0.00	2.33	2.110	O	|	|	|	|	1.24
22.833	0.00	2.30	2.094	O	|	|	|	|	1.23
22.917	0.00	2.28	2.078	O	|	|	|	|	1.22
23.000	0.00	2.25	2.062	O	|	|	|	|	1.21

23.083	0.00	2.23	2.047	O	|	|	|	|	1.20
23.167	0.00	2.20	2.032	O	|	|	|	|	1.19
23.250	0.00	2.18	2.017	O	|	|	|	|	1.18
23.333	0.00	2.16	2.002	O	|	|	|	|	1.17
23.417	0.00	2.13	1.987	O	|	|	|	|	1.17
23.500	0.00	2.11	1.972	O	|	|	|	|	1.16
23.583	0.00	2.09	1.958	O	|	|	|	|	1.15
23.667	0.00	2.07	1.944	O	|	|	|	|	1.14
23.750	0.00	2.04	1.929	O	|	|	|	|	1.13
23.833	0.00	2.02	1.915	O	|	|	|	|	1.13
23.917	0.00	2.00	1.902	O	|	|	|	|	1.12
24.000	0.00	1.98	1.888	O	|	|	|	|	1.11
24.083	0.00	1.96	1.874	O	|	|	|	|	1.10
24.167	0.00	1.94	1.861	O	|	|	|	|	1.09
24.250	0.00	1.91	1.848	O	|	|	|	|	1.09
24.333	0.00	1.89	1.835	O	|	|	|	|	1.08
24.417	0.00	1.87	1.822	O	|	|	|	|	1.07
24.500	0.00	1.85	1.809	O	|	|	|	|	1.07
24.583	0.00	1.83	1.796	O	|	|	|	|	1.06
24.667	0.00	1.81	1.783	O	|	|	|	|	1.05
24.750	0.00	1.79	1.771	O	|	|	|	|	1.04
24.833	0.00	1.78	1.759	O	|	|	|	|	1.04
24.917	0.00	1.76	1.747	O	|	|	|	|	1.03
25.000	0.00	1.74	1.735	O	|	|	|	|	1.02
25.083	0.00	1.72	1.723	O	|	|	|	|	1.02
25.167	0.00	1.70	1.711	O	|	|	|	|	1.01
25.250	0.00	1.68	1.699	O	|	|	|	|	1.00
25.333	0.00	1.67	1.688	O	|	|	|	|	1.00
25.417	0.00	1.65	1.676	O	|	|	|	|	0.99
25.500	0.00	1.64	1.665	O	|	|	|	|	0.98
25.583	0.00	1.63	1.654	O	|	|	|	|	0.98
25.667	0.00	1.61	1.643	O	|	|	|	|	0.97
25.750	0.00	1.60	1.631	O	|	|	|	|	0.96
25.833	0.00	1.59	1.620	O	|	|	|	|	0.96
25.917	0.00	1.58	1.610	O	|	|	|	|	0.95
26.000	0.00	1.56	1.599	O	|	|	|	|	0.95
26.083	0.00	1.55	1.588	O	|	|	|	|	0.94
26.167	0.00	1.54	1.577	O	|	|	|	|	0.93
26.250	0.00	1.53	1.567	O	|	|	|	|	0.93
26.333	0.00	1.52	1.556	O	|	|	|	|	0.92
26.417	0.00	1.50	1.546	O	|	|	|	|	0.91
26.500	0.00	1.49	1.536	O	|	|	|	|	0.91
26.583	0.00	1.48	1.525	O	|	|	|	|	0.90
26.667	0.00	1.47	1.515	O	|	|	|	|	0.90
26.750	0.00	1.46	1.505	O	|	|	|	|	0.89
26.833	0.00	1.45	1.495	O	|	|	|	|	0.88
26.917	0.00	1.43	1.485	O	|	|	|	|	0.88
27.000	0.00	1.42	1.475	O	|	|	|	|	0.87
27.083	0.00	1.41	1.466	O	|	|	|	|	0.87
27.167	0.00	1.40	1.456	O	|	|	|	|	0.86
27.250	0.00	1.39	1.446	O	|	|	|	|	0.86
27.333	0.00	1.38	1.437	O	|	|	|	|	0.85
27.417	0.00	1.37	1.427	O	|	|	|	|	0.85
27.500	0.00	1.36	1.418	O	|	|	|	|	0.84
27.583	0.00	1.35	1.409	O	|	|	|	|	0.83
27.667	0.00	1.34	1.399	O	|	|	|	|	0.83
27.750	0.00	1.33	1.390	O	|	|	|	|	0.82
27.833	0.00	1.32	1.381	O	|	|	|	|	0.82
27.917	0.00	1.31	1.372	O	|	|	|	|	0.81
28.000	0.00	1.30	1.363	O	|	|	|	|	0.81
28.083	0.00	1.29	1.354	O	|	|	|	|	0.80
28.167	0.00	1.28	1.345	O	|	|	|	|	0.80
28.250	0.00	1.27	1.337	O	|	|	|	|	0.79
28.333	0.00	1.26	1.328	O	|	|	|	|	0.79
28.417	0.00	1.25	1.319	O	|	|	|	|	0.78
28.500	0.00	1.24	1.311	O	|	|	|	|	0.78
28.583	0.00	1.23	1.302	O	|	|	|	|	0.77
28.667	0.00	1.22	1.294	O	|	|	|	|	0.77
28.750	0.00	1.21	1.286	O	|	|	|	|	0.76
28.833	0.00	1.20	1.277	O	|	|	|	|	0.76
28.917	0.00	1.19	1.269	O	|	|	|	|	0.75

29.000	0.00	1.18	1.261	O	|	|	|	|	0.75
29.083	0.00	1.17	1.253	O	|	|	|	|	0.74
29.167	0.00	1.16	1.245	O	|	|	|	|	0.74
29.250	0.00	1.15	1.237	O	|	|	|	|	0.73
29.333	0.00	1.14	1.229	O	|	|	|	|	0.73
29.417	0.00	1.13	1.221	O	|	|	|	|	0.73
29.500	0.00	1.12	1.213	O	|	|	|	|	0.72
29.583	0.00	1.12	1.206	O	|	|	|	|	0.72
29.667	0.00	1.11	1.198	O	|	|	|	|	0.71
29.750	0.00	1.10	1.190	O	|	|	|	|	0.71
29.833	0.00	1.09	1.183	O	|	|	|	|	0.70
29.917	0.00	1.08	1.175	O	|	|	|	|	0.70
30.000	0.00	1.07	1.168	O	|	|	|	|	0.69
30.083	0.00	1.06	1.161	O	|	|	|	|	0.69
30.167	0.00	1.06	1.153	O	|	|	|	|	0.69
30.250	0.00	1.05	1.146	O	|	|	|	|	0.68
30.333	0.00	1.04	1.139	O	|	|	|	|	0.68
30.417	0.00	1.03	1.132	O	|	|	|	|	0.67
30.500	0.00	1.02	1.125	O	|	|	|	|	0.67
30.583	0.00	1.02	1.118	O	|	|	|	|	0.67
30.667	0.00	1.01	1.111	O	|	|	|	|	0.66
30.750	0.00	1.00	1.104	O	|	|	|	|	0.66
30.833	0.00	0.99	1.097	O	|	|	|	|	0.65
30.917	0.00	0.98	1.090	O	|	|	|	|	0.65
31.000	0.00	0.98	1.083	O	|	|	|	|	0.65
31.083	0.00	0.97	1.077	O	|	|	|	|	0.64
31.167	0.00	0.96	1.070	O	|	|	|	|	0.64
31.250	0.00	0.95	1.063	O	|	|	|	|	0.63
31.333	0.00	0.95	1.057	O	|	|	|	|	0.63
31.417	0.00	0.94	1.050	O	|	|	|	|	0.63
31.500	0.00	0.93	1.044	O	|	|	|	|	0.62
31.583	0.00	0.92	1.037	O	|	|	|	|	0.62
31.667	0.00	0.92	1.031	O	|	|	|	|	0.61
31.750	0.00	0.91	1.025	O	|	|	|	|	0.61
31.833	0.00	0.90	1.019	O	|	|	|	|	0.61
31.917	0.00	0.90	1.012	O	|	|	|	|	0.60
32.000	0.00	0.89	1.006	O	|	|	|	|	0.60
32.083	0.00	0.88	1.000	O	|	|	|	|	0.60
32.167	0.00	0.87	0.994	O	|	|	|	|	0.59
32.250	0.00	0.87	0.988	O	|	|	|	|	0.59
32.333	0.00	0.86	0.982	O	|	|	|	|	0.59
32.417	0.00	0.85	0.976	O	|	|	|	|	0.58
32.500	0.00	0.85	0.970	O	|	|	|	|	0.58
32.583	0.00	0.84	0.965	O	|	|	|	|	0.58
32.667	0.00	0.83	0.959	O	|	|	|	|	0.57
32.750	0.00	0.83	0.953	O	|	|	|	|	0.57
32.833	0.00	0.82	0.947	O	|	|	|	|	0.57
32.917	0.00	0.81	0.942	O	|	|	|	|	0.56
33.000	0.00	0.81	0.936	O	|	|	|	|	0.56
33.083	0.00	0.80	0.931	O	|	|	|	|	0.56
33.167	0.00	0.80	0.925	O	|	|	|	|	0.55
33.250	0.00	0.79	0.920	O	|	|	|	|	0.55
33.333	0.00	0.78	0.914	O	|	|	|	|	0.55
33.417	0.00	0.78	0.909	O	|	|	|	|	0.54
33.500	0.00	0.77	0.904	O	|	|	|	|	0.54
33.583	0.00	0.77	0.898	O	|	|	|	|	0.54
33.667	0.00	0.76	0.893	O	|	|	|	|	0.53
33.750	0.00	0.75	0.888	O	|	|	|	|	0.53
33.833	0.00	0.75	0.883	O	|	|	|	|	0.53
33.917	0.00	0.74	0.878	O	|	|	|	|	0.53
34.000	0.00	0.74	0.872	O	|	|	|	|	0.52
34.083	0.00	0.73	0.867	O	|	|	|	|	0.52
34.167	0.00	0.72	0.862	O	|	|	|	|	0.52
34.250	0.00	0.72	0.857	O	|	|	|	|	0.51
34.333	0.00	0.71	0.852	O	|	|	|	|	0.51
34.417	0.00	0.71	0.848	O	|	|	|	|	0.51
34.500	0.00	0.70	0.843	O	|	|	|	|	0.51
34.583	0.00	0.70	0.838	O	|	|	|	|	0.50
34.667	0.00	0.69	0.833	O	|	|	|	|	0.50
34.750	0.00	0.69	0.828	O	|	|	|	|	0.50
34.833	0.00	0.68	0.824	O	|	|	|	|	0.49

34.917	0.00	0.68	0.819	O	|	|	|	|	0.49
35.000	0.00	0.68	0.814	O	|	|	|	|	0.49
35.083	0.00	0.67	0.810	O	|	|	|	|	0.49
35.167	0.00	0.67	0.805	O	|	|	|	|	0.48
35.250	0.00	0.66	0.800	O	|	|	|	|	0.48
35.333	0.00	0.66	0.796	O	|	|	|	|	0.48
35.417	0.00	0.66	0.791	O	|	|	|	|	0.47
35.500	0.00	0.65	0.787	O	|	|	|	|	0.47
35.583	0.00	0.65	0.782	O	|	|	|	|	0.47
35.667	0.00	0.65	0.778	O	|	|	|	|	0.47
35.750	0.00	0.64	0.773	O	|	|	|	|	0.46
35.833	0.00	0.64	0.769	O	|	|	|	|	0.46
35.917	0.00	0.63	0.765	O	|	|	|	|	0.46
36.000	0.00	0.63	0.760	O	|	|	|	|	0.46
36.083	0.00	0.63	0.756	O	|	|	|	|	0.45
36.167	0.00	0.62	0.752	O	|	|	|	|	0.45
36.250	0.00	0.62	0.747	O	|	|	|	|	0.45
36.333	0.00	0.62	0.743	O	|	|	|	|	0.45
36.417	0.00	0.61	0.739	O	|	|	|	|	0.44
36.500	0.00	0.61	0.735	O	|	|	|	|	0.44
36.583	0.00	0.61	0.731	O	|	|	|	|	0.44
36.667	0.00	0.60	0.726	O	|	|	|	|	0.44
36.750	0.00	0.60	0.722	O	|	|	|	|	0.43
36.833	0.00	0.60	0.718	O	|	|	|	|	0.43
36.917	0.00	0.59	0.714	O	|	|	|	|	0.43
37.000	0.00	0.59	0.710	O	|	|	|	|	0.43
37.083	0.00	0.59	0.706	O	|	|	|	|	0.42
37.167	0.00	0.58	0.702	O	|	|	|	|	0.42
37.250	0.00	0.58	0.698	O	|	|	|	|	0.42
37.333	0.00	0.58	0.694	O	|	|	|	|	0.42
37.417	0.00	0.57	0.690	O	|	|	|	|	0.41
37.500	0.00	0.57	0.686	O	|	|	|	|	0.41
37.583	0.00	0.57	0.682	O	|	|	|	|	0.41
37.667	0.00	0.56	0.678	O	|	|	|	|	0.41
37.750	0.00	0.56	0.674	O	|	|	|	|	0.40
37.833	0.00	0.56	0.671	O	|	|	|	|	0.40
37.917	0.00	0.55	0.667	O	|	|	|	|	0.40
38.000	0.00	0.55	0.663	O	|	|	|	|	0.40
38.083	0.00	0.55	0.659	O	|	|	|	|	0.40
38.167	0.00	0.54	0.655	O	|	|	|	|	0.39
38.250	0.00	0.54	0.652	O	|	|	|	|	0.39
38.333	0.00	0.54	0.648	O	|	|	|	|	0.39
38.417	0.00	0.53	0.644	O	|	|	|	|	0.39
38.500	0.00	0.53	0.641	O	|	|	|	|	0.38
38.583	0.00	0.53	0.637	O	|	|	|	|	0.38
38.667	0.00	0.53	0.633	O	|	|	|	|	0.38
38.750	0.00	0.52	0.630	O	|	|	|	|	0.38
38.833	0.00	0.52	0.626	O	|	|	|	|	0.38
38.917	0.00	0.52	0.623	O	|	|	|	|	0.37
39.000	0.00	0.51	0.619	O	|	|	|	|	0.37
39.083	0.00	0.51	0.615	O	|	|	|	|	0.37
39.167	0.00	0.51	0.612	O	|	|	|	|	0.37
39.250	0.00	0.50	0.608	O	|	|	|	|	0.36
39.333	0.00	0.50	0.605	O	|	|	|	|	0.36
39.417	0.00	0.50	0.602	O	|	|	|	|	0.36
39.500	0.00	0.50	0.598	O	|	|	|	|	0.36
39.583	0.00	0.49	0.595	O	|	|	|	|	0.36
39.667	0.00	0.49	0.591	O	|	|	|	|	0.35
39.750	0.00	0.49	0.588	O	|	|	|	|	0.35
39.833	0.00	0.49	0.585	O	|	|	|	|	0.35
39.917	0.00	0.48	0.581	O	|	|	|	|	0.35
40.000	0.00	0.48	0.578	O	|	|	|	|	0.35
40.083	0.00	0.48	0.575	O	|	|	|	|	0.34
40.167	0.00	0.47	0.571	O	|	|	|	|	0.34
40.250	0.00	0.47	0.568	O	|	|	|	|	0.34
40.333	0.00	0.47	0.565	O	|	|	|	|	0.34
40.417	0.00	0.47	0.562	O	|	|	|	|	0.34
40.500	0.00	0.46	0.558	O	|	|	|	|	0.33
40.583	0.00	0.46	0.555	O	|	|	|	|	0.33
40.667	0.00	0.46	0.552	O	|	|	|	|	0.33
40.750	0.00	0.46	0.549	O	|	|	|	|	0.33

40.833	0.00	0.45	0.546	O	|	|	|	|	0.33
40.917	0.00	0.45	0.543	O	|	|	|	|	0.33
41.000	0.00	0.45	0.540	O	|	|	|	|	0.32
41.083	0.00	0.45	0.537	O	|	|	|	|	0.32
41.167	0.00	0.44	0.533	O	|	|	|	|	0.32
41.250	0.00	0.44	0.530	O	|	|	|	|	0.32
41.333	0.00	0.44	0.527	O	|	|	|	|	0.32
41.417	0.00	0.44	0.524	O	|	|	|	|	0.31
41.500	0.00	0.43	0.521	O	|	|	|	|	0.31
41.583	0.00	0.43	0.518	O	|	|	|	|	0.31
41.667	0.00	0.43	0.516	O	|	|	|	|	0.31
41.750	0.00	0.43	0.513	O	|	|	|	|	0.31
41.833	0.00	0.42	0.510	O	|	|	|	|	0.31
41.917	0.00	0.42	0.507	O	|	|	|	|	0.30
42.000	0.00	0.42	0.504	O	|	|	|	|	0.30
42.083	0.00	0.42	0.501	O	|	|	|	|	0.30
42.167	0.00	0.41	0.498	O	|	|	|	|	0.30
42.250	0.00	0.41	0.495	O	|	|	|	|	0.30
42.333	0.00	0.41	0.492	O	|	|	|	|	0.30
42.417	0.00	0.41	0.490	O	|	|	|	|	0.29
42.500	0.00	0.40	0.487	O	|	|	|	|	0.29
42.583	0.00	0.40	0.484	O	|	|	|	|	0.29
42.667	0.00	0.40	0.481	O	|	|	|	|	0.29
42.750	0.00	0.40	0.479	O	|	|	|	|	0.29
42.833	0.00	0.39	0.476	O	|	|	|	|	0.29
42.917	0.00	0.39	0.473	O	|	|	|	|	0.28
43.000	0.00	0.39	0.470	O	|	|	|	|	0.28
43.083	0.00	0.39	0.468	O	|	|	|	|	0.28
43.167	0.00	0.39	0.465	O	|	|	|	|	0.28
43.250	0.00	0.38	0.462	O	|	|	|	|	0.28
43.333	0.00	0.38	0.460	O	|	|	|	|	0.28
43.417	0.00	0.38	0.457	O	|	|	|	|	0.27
43.500	0.00	0.38	0.455	O	|	|	|	|	0.27
43.583	0.00	0.38	0.452	O	|	|	|	|	0.27
43.667	0.00	0.37	0.449	O	|	|	|	|	0.27
43.750	0.00	0.37	0.447	O	|	|	|	|	0.27
43.833	0.00	0.37	0.444	O	|	|	|	|	0.27
43.917	0.00	0.37	0.442	O	|	|	|	|	0.26
44.000	0.00	0.36	0.439	O	|	|	|	|	0.26
44.083	0.00	0.36	0.437	O	|	|	|	|	0.26
44.167	0.00	0.36	0.434	O	|	|	|	|	0.26
44.250	0.00	0.36	0.432	O	|	|	|	|	0.26
44.333	0.00	0.36	0.429	O	|	|	|	|	0.26
44.417	0.00	0.35	0.427	O	|	|	|	|	0.26
44.500	0.00	0.35	0.424	O	|	|	|	|	0.25
44.583	0.00	0.35	0.422	O	|	|	|	|	0.25
44.667	0.00	0.35	0.420	O	|	|	|	|	0.25
44.750	0.00	0.35	0.417	O	|	|	|	|	0.25
44.833	0.00	0.34	0.415	O	|	|	|	|	0.25
44.917	0.00	0.34	0.413	O	|	|	|	|	0.25
45.000	0.00	0.34	0.410	O	|	|	|	|	0.25
45.083	0.00	0.34	0.408	O	|	|	|	|	0.24
45.167	0.00	0.34	0.406	O	|	|	|	|	0.24
45.250	0.00	0.33	0.403	O	|	|	|	|	0.24
45.333	0.00	0.33	0.401	O	|	|	|	|	0.24
45.417	0.00	0.33	0.399	O	|	|	|	|	0.24
45.500	0.00	0.33	0.396	O	|	|	|	|	0.24
45.583	0.00	0.33	0.394	O	|	|	|	|	0.24
45.667	0.00	0.33	0.392	O	|	|	|	|	0.23
45.750	0.00	0.32	0.390	O	|	|	|	|	0.23
45.833	0.00	0.32	0.387	O	|	|	|	|	0.23
45.917	0.00	0.32	0.385	O	|	|	|	|	0.23
46.000	0.00	0.32	0.383	O	|	|	|	|	0.23
46.083	0.00	0.32	0.381	O	|	|	|	|	0.23
46.167	0.00	0.31	0.379	O	|	|	|	|	0.23
46.250	0.00	0.31	0.376	O	|	|	|	|	0.23
46.333	0.00	0.31	0.374	O	|	|	|	|	0.22
46.417	0.00	0.31	0.372	O	|	|	|	|	0.22
46.500	0.00	0.31	0.370	O	|	|	|	|	0.22
46.583	0.00	0.31	0.368	O	|	|	|	|	0.22
46.667	0.00	0.30	0.366	O	|	|	|	|	0.22

46.750	0.00	0.30	0.364	O	|	|	|	|	0.22
46.833	0.00	0.30	0.362	O	|	|	|	|	0.22
46.917	0.00	0.30	0.360	O	|	|	|	|	0.22
47.000	0.00	0.30	0.358	O	|	|	|	|	0.21
47.083	0.00	0.30	0.356	O	|	|	|	|	0.21
47.167	0.00	0.29	0.354	O	|	|	|	|	0.21
47.250	0.00	0.29	0.352	O	|	|	|	|	0.21
47.333	0.00	0.29	0.350	O	|	|	|	|	0.21
47.417	0.00	0.29	0.348	O	|	|	|	|	0.21
47.500	0.00	0.29	0.346	O	|	|	|	|	0.21
47.583	0.00	0.29	0.344	O	|	|	|	|	0.21
47.667	0.00	0.28	0.342	O	|	|	|	|	0.20
47.750	0.00	0.28	0.340	O	|	|	|	|	0.20
47.833	0.00	0.28	0.338	O	|	|	|	|	0.20
47.917	0.00	0.28	0.336	O	|	|	|	|	0.20
48.000	0.00	0.28	0.334	O	|	|	|	|	0.20
48.083	0.00	0.28	0.332	O	|	|	|	|	0.20
48.167	0.00	0.27	0.330	O	|	|	|	|	0.20
48.250	0.00	0.27	0.328	O	|	|	|	|	0.20
48.333	0.00	0.27	0.326	O	|	|	|	|	0.20
48.417	0.00	0.27	0.325	O	|	|	|	|	0.19
48.500	0.00	0.27	0.323	O	|	|	|	|	0.19
48.583	0.00	0.27	0.321	O	|	|	|	|	0.19
48.667	0.00	0.26	0.319	O	|	|	|	|	0.19
48.750	0.00	0.26	0.317	O	|	|	|	|	0.19
48.833	0.00	0.26	0.315	O	|	|	|	|	0.19
48.917	0.00	0.26	0.314	O	|	|	|	|	0.19
49.000	0.00	0.26	0.312	O	|	|	|	|	0.19
49.083	0.00	0.26	0.310	O	|	|	|	|	0.19
49.167	0.00	0.26	0.308	O	|	|	|	|	0.18
49.250	0.00	0.25	0.306	O	|	|	|	|	0.18
49.333	0.00	0.25	0.305	O	|	|	|	|	0.18
49.417	0.00	0.25	0.303	O	|	|	|	|	0.18
49.500	0.00	0.25	0.301	O	|	|	|	|	0.18
49.583	0.00	0.25	0.300	O	|	|	|	|	0.18
49.667	0.00	0.25	0.298	O	|	|	|	|	0.18
49.750	0.00	0.25	0.296	O	|	|	|	|	0.18
49.833	0.00	0.24	0.294	O	|	|	|	|	0.18
49.917	0.00	0.24	0.293	O	|	|	|	|	0.18
50.000	0.00	0.24	0.291	O	|	|	|	|	0.17
50.083	0.00	0.24	0.289	O	|	|	|	|	0.17
50.167	0.00	0.24	0.288	O	|	|	|	|	0.17
50.250	0.00	0.24	0.286	O	|	|	|	|	0.17
50.333	0.00	0.24	0.285	O	|	|	|	|	0.17
50.417	0.00	0.23	0.283	O	|	|	|	|	0.17
50.500	0.00	0.23	0.281	O	|	|	|	|	0.17
50.583	0.00	0.23	0.280	O	|	|	|	|	0.17
50.667	0.00	0.23	0.278	O	|	|	|	|	0.17
50.750	0.00	0.23	0.277	O	|	|	|	|	0.17
50.833	0.00	0.23	0.275	O	|	|	|	|	0.16
50.917	0.00	0.23	0.273	O	|	|	|	|	0.16
51.000	0.00	0.23	0.272	O	|	|	|	|	0.16
51.083	0.00	0.22	0.270	O	|	|	|	|	0.16
51.167	0.00	0.22	0.269	O	|	|	|	|	0.16
51.250	0.00	0.22	0.267	O	|	|	|	|	0.16
51.333	0.00	0.22	0.266	O	|	|	|	|	0.16
51.417	0.00	0.22	0.264	O	|	|	|	|	0.16
51.500	0.00	0.22	0.263	O	|	|	|	|	0.16
51.583	0.00	0.22	0.261	O	|	|	|	|	0.16
51.667	0.00	0.22	0.260	O	|	|	|	|	0.16
51.750	0.00	0.21	0.258	O	|	|	|	|	0.15
51.833	0.00	0.21	0.257	O	|	|	|	|	0.15
51.917	0.00	0.21	0.255	O	|	|	|	|	0.15
52.000	0.00	0.21	0.254	O	|	|	|	|	0.15
52.083	0.00	0.21	0.252	O	|	|	|	|	0.15
52.167	0.00	0.21	0.251	O	|	|	|	|	0.15
52.250	0.00	0.21	0.249	O	|	|	|	|	0.15
52.333	0.00	0.21	0.248	O	|	|	|	|	0.15
52.417	0.00	0.20	0.247	O	|	|	|	|	0.15
52.500	0.00	0.20	0.245	O	|	|	|	|	0.15
52.583	0.00	0.20	0.244	O	|	|	|	|	0.15

52.667	0.00	0.20	0.242	O	|	|	|	|	0.15
52.750	0.00	0.20	0.241	O	|	|	|	|	0.14
52.833	0.00	0.20	0.240	O	|	|	|	|	0.14
52.917	0.00	0.20	0.238	O	|	|	|	|	0.14
53.000	0.00	0.20	0.237	O	|	|	|	|	0.14
53.083	0.00	0.20	0.236	O	|	|	|	|	0.14
53.167	0.00	0.19	0.234	O	|	|	|	|	0.14
53.250	0.00	0.19	0.233	O	|	|	|	|	0.14
53.333	0.00	0.19	0.232	O	|	|	|	|	0.14
53.417	0.00	0.19	0.230	O	|	|	|	|	0.14
53.500	0.00	0.19	0.229	O	|	|	|	|	0.14
53.583	0.00	0.19	0.228	O	|	|	|	|	0.14
53.667	0.00	0.19	0.226	O	|	|	|	|	0.14
53.750	0.00	0.19	0.225	O	|	|	|	|	0.13
53.833	0.00	0.19	0.224	O	|	|	|	|	0.13
53.917	0.00	0.18	0.223	O	|	|	|	|	0.13
54.000	0.00	0.18	0.221	O	|	|	|	|	0.13
54.083	0.00	0.18	0.220	O	|	|	|	|	0.13
54.167	0.00	0.18	0.219	O	|	|	|	|	0.13
54.250	0.00	0.18	0.218	O	|	|	|	|	0.13
54.333	0.00	0.18	0.216	O	|	|	|	|	0.13
54.417	0.00	0.18	0.215	O	|	|	|	|	0.13
54.500	0.00	0.18	0.214	O	|	|	|	|	0.13
54.583	0.00	0.18	0.213	O	|	|	|	|	0.13
54.667	0.00	0.18	0.211	O	|	|	|	|	0.13
54.750	0.00	0.17	0.210	O	|	|	|	|	0.13
54.833	0.00	0.17	0.209	O	|	|	|	|	0.13
54.917	0.00	0.17	0.208	O	|	|	|	|	0.12
55.000	0.00	0.17	0.207	O	|	|	|	|	0.12
55.083	0.00	0.17	0.205	O	|	|	|	|	0.12
55.167	0.00	0.17	0.204	O	|	|	|	|	0.12
55.250	0.00	0.17	0.203	O	|	|	|	|	0.12
55.333	0.00	0.17	0.202	O	|	|	|	|	0.12
55.417	0.00	0.17	0.201	O	|	|	|	|	0.12
55.500	0.00	0.17	0.200	O	|	|	|	|	0.12
55.583	0.00	0.16	0.199	O	|	|	|	|	0.12
55.667	0.00	0.16	0.197	O	|	|	|	|	0.12
55.750	0.00	0.16	0.196	O	|	|	|	|	0.12
55.833	0.00	0.16	0.195	O	|	|	|	|	0.12
55.917	0.00	0.16	0.194	O	|	|	|	|	0.12
56.000	0.00	0.16	0.193	O	|	|	|	|	0.12
56.083	0.00	0.16	0.192	O	|	|	|	|	0.12
56.167	0.00	0.16	0.191	O	|	|	|	|	0.11
56.250	0.00	0.16	0.190	O	|	|	|	|	0.11
56.333	0.00	0.16	0.189	O	|	|	|	|	0.11
56.417	0.00	0.16	0.187	O	|	|	|	|	0.11
56.500	0.00	0.15	0.186	O	|	|	|	|	0.11
56.583	0.00	0.15	0.185	O	|	|	|	|	0.11
56.667	0.00	0.15	0.184	O	|	|	|	|	0.11
56.750	0.00	0.15	0.183	O	|	|	|	|	0.11
56.833	0.00	0.15	0.182	O	|	|	|	|	0.11
56.917	0.00	0.15	0.181	O	|	|	|	|	0.11
57.000	0.00	0.15	0.180	O	|	|	|	|	0.11
57.083	0.00	0.15	0.179	O	|	|	|	|	0.11
57.167	0.00	0.15	0.178	O	|	|	|	|	0.11
57.250	0.00	0.15	0.177	O	|	|	|	|	0.11
57.333	0.00	0.15	0.176	O	|	|	|	|	0.11
57.417	0.00	0.15	0.175	O	|	|	|	|	0.10
57.500	0.00	0.14	0.174	O	|	|	|	|	0.10
57.583	0.00	0.14	0.173	O	|	|	|	|	0.10
57.667	0.00	0.14	0.172	O	|	|	|	|	0.10
57.750	0.00	0.14	0.171	O	|	|	|	|	0.10
57.833	0.00	0.14	0.170	O	|	|	|	|	0.10
57.917	0.00	0.14	0.169	O	|	|	|	|	0.10
58.000	0.00	0.14	0.168	O	|	|	|	|	0.10
58.083	0.00	0.14	0.167	O	|	|	|	|	0.10
58.167	0.00	0.14	0.166	O	|	|	|	|	0.10
58.250	0.00	0.14	0.165	O	|	|	|	|	0.10
58.333	0.00	0.14	0.164	O	|	|	|	|	0.10
58.417	0.00	0.14	0.163	O	|	|	|	|	0.10
58.500	0.00	0.13	0.163	O	|	|	|	|	0.10

58.583	0.00	0.13	0.162	O	|	|	|	|	0.10
58.667	0.00	0.13	0.161	O	|	|	|	|	0.10
58.750	0.00	0.13	0.160	O	|	|	|	|	0.10
58.833	0.00	0.13	0.159	O	|	|	|	|	0.10
58.917	0.00	0.13	0.158	O	|	|	|	|	0.09
59.000	0.00	0.13	0.157	O	|	|	|	|	0.09
59.083	0.00	0.13	0.156	O	|	|	|	|	0.09
59.167	0.00	0.13	0.155	O	|	|	|	|	0.09
59.250	0.00	0.13	0.154	O	|	|	|	|	0.09
59.333	0.00	0.13	0.154	O	|	|	|	|	0.09
59.417	0.00	0.13	0.153	O	|	|	|	|	0.09
59.500	0.00	0.13	0.152	O	|	|	|	|	0.09
59.583	0.00	0.13	0.151	O	|	|	|	|	0.09
59.667	0.00	0.12	0.150	O	|	|	|	|	0.09
59.750	0.00	0.12	0.149	O	|	|	|	|	0.09
59.833	0.00	0.12	0.148	O	|	|	|	|	0.09
59.917	0.00	0.12	0.147	O	|	|	|	|	0.09
60.000	0.00	0.12	0.147	O	|	|	|	|	0.09
60.083	0.00	0.12	0.146	O	|	|	|	|	0.09
60.167	0.00	0.12	0.145	O	|	|	|	|	0.09
60.250	0.00	0.12	0.144	O	|	|	|	|	0.09
60.333	0.00	0.12	0.143	O	|	|	|	|	0.09
60.417	0.00	0.12	0.143	O	|	|	|	|	0.09
60.500	0.00	0.12	0.142	O	|	|	|	|	0.08
60.583	0.00	0.12	0.141	O	|	|	|	|	0.08
60.667	0.00	0.12	0.140	O	|	|	|	|	0.08
60.750	0.00	0.12	0.139	O	|	|	|	|	0.08
60.833	0.00	0.11	0.138	O	|	|	|	|	0.08
60.917	0.00	0.11	0.138	O	|	|	|	|	0.08
61.000	0.00	0.11	0.137	O	|	|	|	|	0.08
61.083	0.00	0.11	0.136	O	|	|	|	|	0.08
61.167	0.00	0.11	0.135	O	|	|	|	|	0.08
61.250	0.00	0.11	0.135	O	|	|	|	|	0.08
61.333	0.00	0.11	0.134	O	|	|	|	|	0.08
61.417	0.00	0.11	0.133	O	|	|	|	|	0.08
61.500	0.00	0.11	0.132	O	|	|	|	|	0.08
61.583	0.00	0.11	0.132	O	|	|	|	|	0.08
61.667	0.00	0.11	0.131	O	|	|	|	|	0.08
61.750	0.00	0.11	0.130	O	|	|	|	|	0.08
61.833	0.00	0.11	0.129	O	|	|	|	|	0.08
61.917	0.00	0.11	0.129	O	|	|	|	|	0.08
62.000	0.00	0.11	0.128	O	|	|	|	|	0.08
62.083	0.00	0.11	0.127	O	|	|	|	|	0.08
62.167	0.00	0.10	0.126	O	|	|	|	|	0.08
62.250	0.00	0.10	0.126	O	|	|	|	|	0.08
62.333	0.00	0.10	0.125	O	|	|	|	|	0.07
62.417	0.00	0.10	0.124	O	|	|	|	|	0.07
62.500	0.00	0.10	0.124	O	|	|	|	|	0.07
62.583	0.00	0.10	0.123	O	|	|	|	|	0.07
62.667	0.00	0.10	0.122	O	|	|	|	|	0.07
62.750	0.00	0.10	0.121	O	|	|	|	|	0.07
62.833	0.00	0.10	0.121	O	|	|	|	|	0.07
62.917	0.00	0.10	0.120	O	|	|	|	|	0.07
63.000	0.00	0.10	0.119	O	|	|	|	|	0.07
63.083	0.00	0.10	0.119	O	|	|	|	|	0.07
63.167	0.00	0.10	0.118	O	|	|	|	|	0.07
63.250	0.00	0.10	0.117	O	|	|	|	|	0.07
63.333	0.00	0.10	0.117	O	|	|	|	|	0.07
63.417	0.00	0.10	0.116	O	|	|	|	|	0.07
63.500	0.00	0.10	0.115	O	|	|	|	|	0.07
63.583	0.00	0.10	0.115	O	|	|	|	|	0.07
63.667	0.00	0.09	0.114	O	|	|	|	|	0.07
63.750	0.00	0.09	0.113	O	|	|	|	|	0.07
63.833	0.00	0.09	0.113	O	|	|	|	|	0.07
63.917	0.00	0.09	0.112	O	|	|	|	|	0.07
64.000	0.00	0.09	0.111	O	|	|	|	|	0.07
64.083	0.00	0.09	0.111	O	|	|	|	|	0.07
64.167	0.00	0.09	0.110	O	|	|	|	|	0.07
64.250	0.00	0.09	0.110	O	|	|	|	|	0.07
64.333	0.00	0.09	0.109	O	|	|	|	|	0.07
64.417	0.00	0.09	0.108	O	|	|	|	|	0.06

64.500	0.00	0.09	0.108	O	|	|	|	|	0.06
64.583	0.00	0.09	0.107	O	|	|	|	|	0.06
64.667	0.00	0.09	0.106	O	|	|	|	|	0.06
64.750	0.00	0.09	0.106	O	|	|	|	|	0.06
64.833	0.00	0.09	0.105	O	|	|	|	|	0.06
64.917	0.00	0.09	0.105	O	|	|	|	|	0.06
65.000	0.00	0.09	0.104	O	|	|	|	|	0.06
65.083	0.00	0.09	0.103	O	|	|	|	|	0.06
65.167	0.00	0.09	0.103	O	|	|	|	|	0.06
65.250	0.00	0.08	0.102	O	|	|	|	|	0.06
65.333	0.00	0.08	0.102	O	|	|	|	|	0.06
65.417	0.00	0.08	0.101	O	|	|	|	|	0.06
65.500	0.00	0.08	0.101	O	|	|	|	|	0.06
65.583	0.00	0.08	0.100	O	|	|	|	|	0.06
65.667	0.00	0.08	0.099	O	|	|	|	|	0.06
65.750	0.00	0.08	0.099	O	|	|	|	|	0.06
65.833	0.00	0.08	0.098	O	|	|	|	|	0.06
65.917	0.00	0.08	0.098	O	|	|	|	|	0.06
66.000	0.00	0.08	0.097	O	|	|	|	|	0.06
66.083	0.00	0.08	0.097	O	|	|	|	|	0.06
66.167	0.00	0.08	0.096	O	|	|	|	|	0.06
66.250	0.00	0.08	0.096	O	|	|	|	|	0.06
66.333	0.00	0.08	0.095	O	|	|	|	|	0.06
66.417	0.00	0.08	0.094	O	|	|	|	|	0.06
66.500	0.00	0.08	0.094	O	|	|	|	|	0.06
66.583	0.00	0.08	0.093	O	|	|	|	|	0.06
66.667	0.00	0.08	0.093	O	|	|	|	|	0.06
66.750	0.00	0.08	0.092	O	|	|	|	|	0.06
66.833	0.00	0.08	0.092	O	|	|	|	|	0.06
66.917	0.00	0.08	0.091	O	|	|	|	|	0.05
67.000	0.00	0.08	0.091	O	|	|	|	|	0.05
67.083	0.00	0.07	0.090	O	|	|	|	|	0.05
67.167	0.00	0.07	0.090	O	|	|	|	|	0.05
67.250	0.00	0.07	0.089	O	|	|	|	|	0.05
67.333	0.00	0.07	0.089	O	|	|	|	|	0.05
67.417	0.00	0.07	0.088	O	|	|	|	|	0.05
67.500	0.00	0.07	0.088	O	|	|	|	|	0.05
67.583	0.00	0.07	0.087	O	|	|	|	|	0.05
67.667	0.00	0.07	0.087	O	|	|	|	|	0.05
67.750	0.00	0.07	0.086	O	|	|	|	|	0.05
67.833	0.00	0.07	0.086	O	|	|	|	|	0.05
67.917	0.00	0.07	0.085	O	|	|	|	|	0.05
68.000	0.00	0.07	0.085	O	|	|	|	|	0.05
68.083	0.00	0.07	0.084	O	|	|	|	|	0.05
68.167	0.00	0.07	0.084	O	|	|	|	|	0.05
68.250	0.00	0.07	0.083	O	|	|	|	|	0.05
68.333	0.00	0.07	0.083	O	|	|	|	|	0.05
68.417	0.00	0.07	0.082	O	|	|	|	|	0.05
68.500	0.00	0.07	0.082	O	|	|	|	|	0.05
68.583	0.00	0.07	0.081	O	|	|	|	|	0.05
68.667	0.00	0.07	0.081	O	|	|	|	|	0.05
68.750	0.00	0.07	0.080	O	|	|	|	|	0.05
68.833	0.00	0.07	0.080	O	|	|	|	|	0.05
68.917	0.00	0.07	0.080	O	|	|	|	|	0.05
69.000	0.00	0.07	0.079	O	|	|	|	|	0.05
69.083	0.00	0.07	0.079	O	|	|	|	|	0.05
69.167	0.00	0.06	0.078	O	|	|	|	|	0.05
69.250	0.00	0.06	0.078	O	|	|	|	|	0.05
69.333	0.00	0.06	0.077	O	|	|	|	|	0.05
69.417	0.00	0.06	0.077	O	|	|	|	|	0.05
69.500	0.00	0.06	0.076	O	|	|	|	|	0.05
69.583	0.00	0.06	0.076	O	|	|	|	|	0.05
69.667	0.00	0.06	0.076	O	|	|	|	|	0.05
69.750	0.00	0.06	0.075	O	|	|	|	|	0.05
69.833	0.00	0.06	0.075	O	|	|	|	|	0.04
69.917	0.00	0.06	0.074	O	|	|	|	|	0.04
70.000	0.00	0.06	0.074	O	|	|	|	|	0.04
70.083	0.00	0.06	0.073	O	|	|	|	|	0.04
70.167	0.00	0.06	0.073	O	|	|	|	|	0.04
70.250	0.00	0.06	0.073	O	|	|	|	|	0.04
70.333	0.00	0.06	0.072	O	|	|	|	|	0.04

70.417	0.00	0.06	0.072	O	|	|	|	|	0.04
70.500	0.00	0.06	0.071	O	|	|	|	|	0.04
70.583	0.00	0.06	0.071	O	|	|	|	|	0.04
70.667	0.00	0.06	0.071	O	|	|	|	|	0.04
70.750	0.00	0.06	0.070	O	|	|	|	|	0.04
70.833	0.00	0.06	0.070	O	|	|	|	|	0.04
70.917	0.00	0.06	0.069	O	|	|	|	|	0.04
71.000	0.00	0.06	0.069	O	|	|	|	|	0.04
71.083	0.00	0.06	0.069	O	|	|	|	|	0.04
71.167	0.00	0.06	0.068	O	|	|	|	|	0.04
71.250	0.00	0.06	0.068	O	|	|	|	|	0.04
71.333	0.00	0.06	0.067	O	|	|	|	|	0.04
71.417	0.00	0.06	0.067	O	|	|	|	|	0.04
71.500	0.00	0.06	0.067	O	|	|	|	|	0.04
71.583	0.00	0.05	0.066	O	|	|	|	|	0.04
71.667	0.00	0.05	0.066	O	|	|	|	|	0.04
71.750	0.00	0.05	0.066	O	|	|	|	|	0.04
71.833	0.00	0.05	0.065	O	|	|	|	|	0.04
71.917	0.00	0.05	0.065	O	|	|	|	|	0.04
72.000	0.00	0.05	0.064	O	|	|	|	|	0.04
72.083	0.00	0.05	0.064	O	|	|	|	|	0.04
72.167	0.00	0.05	0.064	O	|	|	|	|	0.04
72.250	0.00	0.05	0.063	O	|	|	|	|	0.04
72.333	0.00	0.05	0.063	O	|	|	|	|	0.04
72.417	0.00	0.05	0.063	O	|	|	|	|	0.04
72.500	0.00	0.05	0.062	O	|	|	|	|	0.04
72.583	0.00	0.05	0.062	O	|	|	|	|	0.04
72.667	0.00	0.05	0.062	O	|	|	|	|	0.04
72.750	0.00	0.05	0.061	O	|	|	|	|	0.04
72.833	0.00	0.05	0.061	O	|	|	|	|	0.04
72.917	0.00	0.05	0.060	O	|	|	|	|	0.04
73.000	0.00	0.05	0.060	O	|	|	|	|	0.04
73.083	0.00	0.05	0.060	O	|	|	|	|	0.04
73.167	0.00	0.05	0.059	O	|	|	|	|	0.04
73.250	0.00	0.05	0.059	O	|	|	|	|	0.04
73.333	0.00	0.05	0.059	O	|	|	|	|	0.04
73.417	0.00	0.05	0.058	O	|	|	|	|	0.04
73.500	0.00	0.05	0.058	O	|	|	|	|	0.03
73.583	0.00	0.05	0.058	O	|	|	|	|	0.03
73.667	0.00	0.05	0.057	O	|	|	|	|	0.03
73.750	0.00	0.05	0.057	O	|	|	|	|	0.03
73.833	0.00	0.05	0.057	O	|	|	|	|	0.03
73.917	0.00	0.05	0.056	O	|	|	|	|	0.03
74.000	0.00	0.05	0.056	O	|	|	|	|	0.03
74.083	0.00	0.05	0.056	O	|	|	|	|	0.03
74.167	0.00	0.05	0.056	O	|	|	|	|	0.03
74.250	0.00	0.05	0.055	O	|	|	|	|	0.03
74.333	0.00	0.05	0.055	O	|	|	|	|	0.03
74.417	0.00	0.05	0.055	O	|	|	|	|	0.03
74.500	0.00	0.05	0.054	O	|	|	|	|	0.03
74.583	0.00	0.04	0.054	O	|	|	|	|	0.03
74.667	0.00	0.04	0.054	O	|	|	|	|	0.03
74.750	0.00	0.04	0.053	O	|	|	|	|	0.03
74.833	0.00	0.04	0.053	O	|	|	|	|	0.03
74.917	0.00	0.04	0.053	O	|	|	|	|	0.03
75.000	0.00	0.04	0.052	O	|	|	|	|	0.03
75.083	0.00	0.04	0.052	O	|	|	|	|	0.03
75.167	0.00	0.04	0.052	O	|	|	|	|	0.03
75.250	0.00	0.04	0.052	O	|	|	|	|	0.03
75.333	0.00	0.04	0.051	O	|	|	|	|	0.03
75.417	0.00	0.04	0.051	O	|	|	|	|	0.03
75.500	0.00	0.04	0.051	O	|	|	|	|	0.03
75.583	0.00	0.04	0.050	O	|	|	|	|	0.03
75.667	0.00	0.04	0.050	O	|	|	|	|	0.03
75.750	0.00	0.04	0.050	O	|	|	|	|	0.03
75.833	0.00	0.04	0.050	O	|	|	|	|	0.03
75.917	0.00	0.04	0.049	O	|	|	|	|	0.03
76.000	0.00	0.04	0.049	O	|	|	|	|	0.03
76.083	0.00	0.04	0.049	O	|	|	|	|	0.03
76.167	0.00	0.04	0.048	O	|	|	|	|	0.03
76.250	0.00	0.04	0.048	O	|	|	|	|	0.03

76.333	0.00	0.04	0.048	O	|	|	|	|	0.03
76.417	0.00	0.04	0.048	O	|	|	|	|	0.03
76.500	0.00	0.04	0.047	O	|	|	|	|	0.03
76.583	0.00	0.04	0.047	O	|	|	|	|	0.03
76.667	0.00	0.04	0.047	O	|	|	|	|	0.03
76.750	0.00	0.04	0.046	O	|	|	|	|	0.03
76.833	0.00	0.04	0.046	O	|	|	|	|	0.03
76.917	0.00	0.04	0.046	O	|	|	|	|	0.03
77.000	0.00	0.04	0.046	O	|	|	|	|	0.03
77.083	0.00	0.04	0.045	O	|	|	|	|	0.03
77.167	0.00	0.04	0.045	O	|	|	|	|	0.03
77.250	0.00	0.04	0.045	O	|	|	|	|	0.03
77.333	0.00	0.04	0.045	O	|	|	|	|	0.03
77.417	0.00	0.04	0.044	O	|	|	|	|	0.03
77.500	0.00	0.04	0.044	O	|	|	|	|	0.03
77.583	0.00	0.04	0.044	O	|	|	|	|	0.03
77.667	0.00	0.04	0.044	O	|	|	|	|	0.03
77.750	0.00	0.04	0.043	O	|	|	|	|	0.03
77.833	0.00	0.04	0.043	O	|	|	|	|	0.03
77.917	0.00	0.04	0.043	O	|	|	|	|	0.03
78.000	0.00	0.04	0.043	O	|	|	|	|	0.03
78.083	0.00	0.04	0.042	O	|	|	|	|	0.03
78.167	0.00	0.04	0.042	O	|	|	|	|	0.03
78.250	0.00	0.03	0.042	O	|	|	|	|	0.03
78.333	0.00	0.03	0.042	O	|	|	|	|	0.03
78.417	0.00	0.03	0.041	O	|	|	|	|	0.02
78.500	0.00	0.03	0.041	O	|	|	|	|	0.02
78.583	0.00	0.03	0.041	O	|	|	|	|	0.02
78.667	0.00	0.03	0.041	O	|	|	|	|	0.02
78.750	0.00	0.03	0.041	O	|	|	|	|	0.02
78.833	0.00	0.03	0.040	O	|	|	|	|	0.02
78.917	0.00	0.03	0.040	O	|	|	|	|	0.02
79.000	0.00	0.03	0.040	O	|	|	|	|	0.02
79.083	0.00	0.03	0.040	O	|	|	|	|	0.02
79.167	0.00	0.03	0.039	O	|	|	|	|	0.02
79.250	0.00	0.03	0.039	O	|	|	|	|	0.02
79.333	0.00	0.03	0.039	O	|	|	|	|	0.02
79.417	0.00	0.03	0.039	O	|	|	|	|	0.02
79.500	0.00	0.03	0.039	O	|	|	|	|	0.02
79.583	0.00	0.03	0.038	O	|	|	|	|	0.02
79.667	0.00	0.03	0.038	O	|	|	|	|	0.02
79.750	0.00	0.03	0.038	O	|	|	|	|	0.02
79.833	0.00	0.03	0.038	O	|	|	|	|	0.02
79.917	0.00	0.03	0.037	O	|	|	|	|	0.02
80.000	0.00	0.03	0.037	O	|	|	|	|	0.02
80.083	0.00	0.03	0.037	O	|	|	|	|	0.02
80.167	0.00	0.03	0.037	O	|	|	|	|	0.02
80.250	0.00	0.03	0.037	O	|	|	|	|	0.02
80.333	0.00	0.03	0.036	O	|	|	|	|	0.02
80.417	0.00	0.03	0.036	O	|	|	|	|	0.02
80.500	0.00	0.03	0.036	O	|	|	|	|	0.02
80.583	0.00	0.03	0.036	O	|	|	|	|	0.02
80.667	0.00	0.03	0.036	O	|	|	|	|	0.02
80.750	0.00	0.03	0.035	O	|	|	|	|	0.02
80.833	0.00	0.03	0.035	O	|	|	|	|	0.02
80.917	0.00	0.03	0.035	O	|	|	|	|	0.02
81.000	0.00	0.03	0.035	O	|	|	|	|	0.02
81.083	0.00	0.03	0.035	O	|	|	|	|	0.02
81.167	0.00	0.03	0.034	O	|	|	|	|	0.02
81.250	0.00	0.03	0.034	O	|	|	|	|	0.02
81.333	0.00	0.03	0.034	O	|	|	|	|	0.02
81.417	0.00	0.03	0.034	O	|	|	|	|	0.02
81.500	0.00	0.03	0.034	O	|	|	|	|	0.02
81.583	0.00	0.03	0.033	O	|	|	|	|	0.02
81.667	0.00	0.03	0.033	O	|	|	|	|	0.02
81.750	0.00	0.03	0.033	O	|	|	|	|	0.02
81.833	0.00	0.03	0.033	O	|	|	|	|	0.02
81.917	0.00	0.03	0.033	O	|	|	|	|	0.02
82.000	0.00	0.03	0.032	O	|	|	|	|	0.02
82.083	0.00	0.03	0.032	O	|	|	|	|	0.02
82.167	0.00	0.03	0.032	O	|	|	|	|	0.02

82.250	0.00	0.03	0.032	O	|	|	|	|	0.02
82.333	0.00	0.03	0.032	O	|	|	|	|	0.02
82.417	0.00	0.03	0.032	O	|	|	|	|	0.02
82.500	0.00	0.03	0.031	O	|	|	|	|	0.02
82.583	0.00	0.03	0.031	O	|	|	|	|	0.02
82.667	0.00	0.03	0.031	O	|	|	|	|	0.02
82.750	0.00	0.03	0.031	O	|	|	|	|	0.02
82.833	0.00	0.03	0.031	O	|	|	|	|	0.02
82.917	0.00	0.03	0.030	O	|	|	|	|	0.02
83.000	0.00	0.03	0.030	O	|	|	|	|	0.02
83.083	0.00	0.02	0.030	O	|	|	|	|	0.02
83.167	0.00	0.02	0.030	O	|	|	|	|	0.02
83.250	0.00	0.02	0.030	O	|	|	|	|	0.02
83.333	0.00	0.02	0.030	O	|	|	|	|	0.02
83.417	0.00	0.02	0.029	O	|	|	|	|	0.02
83.500	0.00	0.02	0.029	O	|	|	|	|	0.02
83.583	0.00	0.02	0.029	O	|	|	|	|	0.02
83.667	0.00	0.02	0.029	O	|	|	|	|	0.02
83.750	0.00	0.02	0.029	O	|	|	|	|	0.02
83.833	0.00	0.02	0.029	O	|	|	|	|	0.02
83.917	0.00	0.02	0.028	O	|	|	|	|	0.02
84.000	0.00	0.02	0.028	O	|	|	|	|	0.02
84.083	0.00	0.02	0.028	O	|	|	|	|	0.02
84.167	0.00	0.02	0.028	O	|	|	|	|	0.02
84.250	0.00	0.02	0.028	O	|	|	|	|	0.02
84.333	0.00	0.02	0.028	O	|	|	|	|	0.02
84.417	0.00	0.02	0.027	O	|	|	|	|	0.02
84.500	0.00	0.02	0.027	O	|	|	|	|	0.02
84.583	0.00	0.02	0.027	O	|	|	|	|	0.02
84.667	0.00	0.02	0.027	O	|	|	|	|	0.02
84.750	0.00	0.02	0.027	O	|	|	|	|	0.02
84.833	0.00	0.02	0.027	O	|	|	|	|	0.02
84.917	0.00	0.02	0.027	O	|	|	|	|	0.02
85.000	0.00	0.02	0.026	O	|	|	|	|	0.02
85.083	0.00	0.02	0.026	O	|	|	|	|	0.02
85.167	0.00	0.02	0.026	O	|	|	|	|	0.02
85.250	0.00	0.02	0.026	O	|	|	|	|	0.02
85.333	0.00	0.02	0.026	O	|	|	|	|	0.02
85.417	0.00	0.02	0.026	O	|	|	|	|	0.02
85.500	0.00	0.02	0.026	O	|	|	|	|	0.02
85.583	0.00	0.02	0.025	O	|	|	|	|	0.02
85.667	0.00	0.02	0.025	O	|	|	|	|	0.02
85.750	0.00	0.02	0.025	O	|	|	|	|	0.02
85.833	0.00	0.02	0.025	O	|	|	|	|	0.01
85.917	0.00	0.02	0.025	O	|	|	|	|	0.01
86.000	0.00	0.02	0.025	O	|	|	|	|	0.01
86.083	0.00	0.02	0.025	O	|	|	|	|	0.01
86.167	0.00	0.02	0.024	O	|	|	|	|	0.01
86.250	0.00	0.02	0.024	O	|	|	|	|	0.01
86.333	0.00	0.02	0.024	O	|	|	|	|	0.01
86.417	0.00	0.02	0.024	O	|	|	|	|	0.01
86.500	0.00	0.02	0.024	O	|	|	|	|	0.01
86.583	0.00	0.02	0.024	O	|	|	|	|	0.01
86.667	0.00	0.02	0.024	O	|	|	|	|	0.01
86.750	0.00	0.02	0.023	O	|	|	|	|	0.01
86.833	0.00	0.02	0.023	O	|	|	|	|	0.01
86.917	0.00	0.02	0.023	O	|	|	|	|	0.01
87.000	0.00	0.02	0.023	O	|	|	|	|	0.01
87.083	0.00	0.02	0.023	O	|	|	|	|	0.01
87.167	0.00	0.02	0.023	O	|	|	|	|	0.01
87.250	0.00	0.02	0.023	O	|	|	|	|	0.01
87.333	0.00	0.02	0.023	O	|	|	|	|	0.01
87.417	0.00	0.02	0.022	O	|	|	|	|	0.01
87.500	0.00	0.02	0.022	O	|	|	|	|	0.01
87.583	0.00	0.02	0.022	O	|	|	|	|	0.01
87.667	0.00	0.02	0.022	O	|	|	|	|	0.01
87.750	0.00	0.02	0.022	O	|	|	|	|	0.01
87.833	0.00	0.02	0.022	O	|	|	|	|	0.01
87.917	0.00	0.02	0.022	O	|	|	|	|	0.01
88.000	0.00	0.02	0.021	O	|	|	|	|	0.01
88.083	0.00	0.02	0.021	O	|	|	|	|	0.01

88.167	0.00	0.02	0.021	O					0.01
88.250	0.00	0.02	0.021	O					0.01
88.333	0.00	0.02	0.021	O					0.01
88.417	0.00	0.02	0.021	O					0.01
88.500	0.00	0.02	0.021	O					0.01
88.583	0.00	0.02	0.021	O					0.01
88.667	0.00	0.02	0.021	O					0.01
88.750	0.00	0.02	0.020	O					0.01
88.833	0.00	0.02	0.020	O					0.01
88.917	0.00	0.02	0.020	O					0.01
89.000	0.00	0.02	0.020	O					0.01
89.083	0.00	0.02	0.020	O					0.01
89.167	0.00	0.02	0.020	O					0.01
89.250	0.00	0.02	0.020	O					0.01
89.333	0.00	0.02	0.020	O					0.01
89.417	0.00	0.02	0.020	O					0.01
89.500	0.00	0.02	0.019	O					0.01
89.583	0.00	0.02	0.019	O					0.01
89.667	0.00	0.02	0.019	O					0.01
89.750	0.00	0.02	0.019	O					0.01
89.833	0.00	0.02	0.019	O					0.01
89.917	0.00	0.02	0.019	O					0.01
90.000	0.00	0.02	0.019	O					0.01
90.083	0.00	0.02	0.019	O					0.01
90.167	0.00	0.02	0.019	O					0.01
90.250	0.00	0.02	0.018	O					0.01
90.333	0.00	0.02	0.018	O					0.01
90.417	0.00	0.02	0.018	O					0.01
90.500	0.00	0.02	0.018	O					0.01
90.583	0.00	0.01	0.018	O					0.01
90.667	0.00	0.01	0.018	O					0.01
90.750	0.00	0.01	0.018	O					0.01
90.833	0.00	0.01	0.018	O					0.01
90.917	0.00	0.01	0.018	O					0.01
91.000	0.00	0.01	0.018	O					0.01
91.083	0.00	0.01	0.017	O					0.01
91.167	0.00	0.01	0.017	O					0.01
91.250	0.00	0.01	0.017	O					0.01
91.333	0.00	0.01	0.017	O					0.01
91.417	0.00	0.01	0.017	O					0.01
91.500	0.00	0.01	0.017	O					0.01
91.583	0.00	0.01	0.017	O					0.01
91.667	0.00	0.01	0.017	O					0.01
91.750	0.00	0.01	0.017	O					0.01
91.833	0.00	0.01	0.017	O					0.01
91.917	0.00	0.01	0.016	O					0.01
92.000	0.00	0.01	0.016	O					0.01
92.083	0.00	0.01	0.016	O					0.01
92.167	0.00	0.01	0.016	O					0.01
92.250	0.00	0.01	0.016	O					0.01
92.333	0.00	0.01	0.016	O					0.01
92.417	0.00	0.01	0.016	O					0.01
92.500	0.00	0.01	0.016	O					0.01
92.583	0.00	0.01	0.016	O					0.01
92.667	0.00	0.01	0.016	O					0.01
92.750	0.00	0.01	0.016	O					0.01
92.833	0.00	0.01	0.015	O					0.01
92.917	0.00	0.01	0.015	O					0.01
93.000	0.00	0.01	0.015	O					0.01
93.083	0.00	0.01	0.015	O					0.01
93.167	0.00	0.01	0.015	O					0.01
93.250	0.00	0.01	0.015	O					0.01
93.333	0.00	0.01	0.015	O					0.01
93.417	0.00	0.01	0.015	O					0.01
93.500	0.00	0.01	0.015	O					0.01
93.583	0.00	0.01	0.015	O					0.01
93.667	0.00	0.01	0.015	O					0.01
93.750	0.00	0.01	0.014	O					0.01
93.833	0.00	0.01	0.014	O					0.01
93.917	0.00	0.01	0.014	O					0.01
94.000	0.00	0.01	0.014	O					0.01

94.083	0.00	0.01	0.014	O	|	|	|	|	0.01
94.167	0.00	0.01	0.014	O	|	|	|	|	0.01
94.250	0.00	0.01	0.014	O	|	|	|	|	0.01
94.333	0.00	0.01	0.014	O	|	|	|	|	0.01
94.417	0.00	0.01	0.014	O	|	|	|	|	0.01
94.500	0.00	0.01	0.014	O	|	|	|	|	0.01
94.583	0.00	0.01	0.014	O	|	|	|	|	0.01
94.667	0.00	0.01	0.014	O	|	|	|	|	0.01
94.750	0.00	0.01	0.014	O	|	|	|	|	0.01
94.833	0.00	0.01	0.013	O	|	|	|	|	0.01
94.917	0.00	0.01	0.013	O	|	|	|	|	0.01
95.000	0.00	0.01	0.013	O	|	|	|	|	0.01
95.083	0.00	0.01	0.013	O	|	|	|	|	0.01
95.167	0.00	0.01	0.013	O	|	|	|	|	0.01
95.250	0.00	0.01	0.013	O	|	|	|	|	0.01
95.333	0.00	0.01	0.013	O	|	|	|	|	0.01
95.417	0.00	0.01	0.013	O	|	|	|	|	0.01
95.500	0.00	0.01	0.013	O	|	|	|	|	0.01
95.583	0.00	0.01	0.013	O	|	|	|	|	0.01
95.667	0.00	0.01	0.013	O	|	|	|	|	0.01
95.750	0.00	0.01	0.013	O	|	|	|	|	0.01
95.833	0.00	0.01	0.013	O	|	|	|	|	0.01
95.917	0.00	0.01	0.012	O	|	|	|	|	0.01
96.000	0.00	0.01	0.012	O	|	|	|	|	0.01
96.083	0.00	0.01	0.012	O	|	|	|	|	0.01
96.167	0.00	0.01	0.012	O	|	|	|	|	0.01
96.250	0.00	0.01	0.012	O	|	|	|	|	0.01
96.333	0.00	0.01	0.012	O	|	|	|	|	0.01
96.417	0.00	0.01	0.012	O	|	|	|	|	0.01
96.500	0.00	0.01	0.012	O	|	|	|	|	0.01
96.583	0.00	0.01	0.012	O	|	|	|	|	0.01
96.667	0.00	0.01	0.012	O	|	|	|	|	0.01
96.750	0.00	0.01	0.012	O	|	|	|	|	0.01
96.833	0.00	0.01	0.012	O	|	|	|	|	0.01
96.917	0.00	0.01	0.012	O	|	|	|	|	0.01
97.000	0.00	0.01	0.012	O	|	|	|	|	0.01
97.083	0.00	0.01	0.012	O	|	|	|	|	0.01
97.167	0.00	0.01	0.011	O	|	|	|	|	0.01
97.250	0.00	0.01	0.011	O	|	|	|	|	0.01
97.333	0.00	0.01	0.011	O	|	|	|	|	0.01
97.417	0.00	0.01	0.011	O	|	|	|	|	0.01
97.500	0.00	0.01	0.011	O	|	|	|	|	0.01
97.583	0.00	0.01	0.011	O	|	|	|	|	0.01
97.667	0.00	0.01	0.011	O	|	|	|	|	0.01
97.750	0.00	0.01	0.011	O	|	|	|	|	0.01
97.833	0.00	0.01	0.011	O	|	|	|	|	0.01
97.917	0.00	0.01	0.011	O	|	|	|	|	0.01
98.000	0.00	0.01	0.011	O	|	|	|	|	0.01
98.083	0.00	0.01	0.011	O	|	|	|	|	0.01
98.167	0.00	0.01	0.011	O	|	|	|	|	0.01
98.250	0.00	0.01	0.011	O	|	|	|	|	0.01
98.333	0.00	0.01	0.011	O	|	|	|	|	0.01
98.417	0.00	0.01	0.011	O	|	|	|	|	0.01
98.500	0.00	0.01	0.010	O	|	|	|	|	0.01
98.583	0.00	0.01	0.010	O	|	|	|	|	0.01
98.667	0.00	0.01	0.010	O	|	|	|	|	0.01
98.750	0.00	0.01	0.010	O	|	|	|	|	0.01
98.833	0.00	0.01	0.010	O	|	|	|	|	0.01
98.917	0.00	0.01	0.010	O	|	|	|	|	0.01
99.000	0.00	0.01	0.010	O	|	|	|	|	0.01
99.083	0.00	0.01	0.010	O	|	|	|	|	0.01
99.167	0.00	0.01	0.010	O	|	|	|	|	0.01
99.250	0.00	0.01	0.010	O	|	|	|	|	0.01
99.333	0.00	0.01	0.010	O	|	|	|	|	0.01
99.417	0.00	0.01	0.010	O	|	|	|	|	0.01
99.500	0.00	0.01	0.010	O	|	|	|	|	0.01
99.583	0.00	0.01	0.010	O	|	|	|	|	0.01
99.667	0.00	0.01	0.010	O	|	|	|	|	0.01
99.750	0.00	0.01	0.010	O	|	|	|	|	0.01
99.833	0.00	0.01	0.010	O	|	|	|	|	0.01
99.917	0.00	0.01	0.009	O	|	|	|	|	0.01

100.000	0.00	0.01	0.009	O					0.01
100.083	0.00	0.01	0.009	O					0.01
100.167	0.00	0.01	0.009	O					0.01
100.250	0.00	0.01	0.009	O					0.01
100.333	0.00	0.01	0.009	O					0.01
100.417	0.00	0.01	0.009	O					0.01
100.500	0.00	0.01	0.009	O					0.01
100.583	0.00	0.01	0.009	O					0.01
100.667	0.00	0.01	0.009	O					0.01
100.750	0.00	0.01	0.009	O					0.01
100.833	0.00	0.01	0.009	O					0.01
100.917	0.00	0.01	0.009	O					0.01
101.000	0.00	0.01	0.009	O					0.01
101.083	0.00	0.01	0.009	O					0.01
101.167	0.00	0.01	0.009	O					0.01
101.250	0.00	0.01	0.009	O					0.01
101.333	0.00	0.01	0.009	O					0.01
101.417	0.00	0.01	0.009	O					0.01
101.500	0.00	0.01	0.009	O					0.01
101.583	0.00	0.01	0.008	O					0.01
101.667	0.00	0.01	0.008	O					0.01
101.750	0.00	0.01	0.008	O					0.01
101.833	0.00	0.01	0.008	O					0.00
101.917	0.00	0.01	0.008	O					0.00
102.000	0.00	0.01	0.008	O					0.00
102.083	0.00	0.01	0.008	O					0.00
102.167	0.00	0.01	0.008	O					0.00
102.250	0.00	0.01	0.008	O					0.00
102.333	0.00	0.01	0.008	O					0.00
102.417	0.00	0.01	0.008	O					0.00
102.500	0.00	0.01	0.008	O					0.00
102.583	0.00	0.01	0.008	O					0.00
102.667	0.00	0.01	0.008	O					0.00
102.750	0.00	0.01	0.008	O					0.00
102.833	0.00	0.01	0.008	O					0.00
102.917	0.00	0.01	0.008	O					0.00
103.000	0.00	0.01	0.008	O					0.00
103.083	0.00	0.01	0.008	O					0.00
103.167	0.00	0.01	0.008	O					0.00
103.250	0.00	0.01	0.008	O					0.00
103.333	0.00	0.01	0.008	O					0.00
103.417	0.00	0.01	0.007	O					0.00
103.500	0.00	0.01	0.007	O					0.00
103.583	0.00	0.01	0.007	O					0.00
103.667	0.00	0.01	0.007	O					0.00
103.750	0.00	0.01	0.007	O					0.00
103.833	0.00	0.01	0.007	O					0.00
103.917	0.00	0.01	0.007	O					0.00
104.000	0.00	0.01	0.007	O					0.00
104.083	0.00	0.01	0.007	O					0.00
104.167	0.00	0.01	0.007	O					0.00
104.250	0.00	0.01	0.007	O					0.00
104.333	0.00	0.01	0.007	O					0.00
104.417	0.00	0.01	0.007	O					0.00
104.500	0.00	0.01	0.007	O					0.00
104.583	0.00	0.01	0.007	O					0.00
104.667	0.00	0.01	0.007	O					0.00
104.750	0.00	0.01	0.007	O					0.00
104.833	0.00	0.01	0.007	O					0.00
104.917	0.00	0.01	0.007	O					0.00
105.000	0.00	0.01	0.007	O					0.00
105.083	0.00	0.01	0.007	O					0.00
105.167	0.00	0.01	0.007	O					0.00
105.250	0.00	0.01	0.007	O					0.00
105.333	0.00	0.01	0.007	O					0.00
105.417	0.00	0.01	0.007	O					0.00
105.500	0.00	0.01	0.006	O					0.00
105.583	0.00	0.01	0.006	O					0.00
105.667	0.00	0.01	0.006	O					0.00
105.750	0.00	0.01	0.006	O					0.00
105.833	0.00	0.01	0.006	O					0.00

105.917	0.00	0.01	0.006	O	|	|	|	|	0.00
106.000	0.00	0.01	0.006	O	|	|	|	|	0.00
106.083	0.00	0.01	0.006	O	|	|	|	|	0.00
106.167	0.00	0.01	0.006	O	|	|	|	|	0.00
106.250	0.00	0.01	0.006	O	|	|	|	|	0.00
106.333	0.00	0.01	0.006	O	|	|	|	|	0.00
106.417	0.00	0.01	0.006	O	|	|	|	|	0.00
106.500	0.00	0.01	0.006	O	|	|	|	|	0.00
106.583	0.00	0.00	0.006	O	|	|	|	|	0.00
106.667	0.00	0.00	0.006	O	|	|	|	|	0.00
106.750	0.00	0.00	0.006	O	|	|	|	|	0.00
106.833	0.00	0.00	0.006	O	|	|	|	|	0.00
106.917	0.00	0.00	0.006	O	|	|	|	|	0.00
107.000	0.00	0.00	0.006	O	|	|	|	|	0.00
107.083	0.00	0.00	0.006	O	|	|	|	|	0.00
107.167	0.00	0.00	0.006	O	|	|	|	|	0.00
107.250	0.00	0.00	0.006	O	|	|	|	|	0.00
107.333	0.00	0.00	0.006	O	|	|	|	|	0.00
107.417	0.00	0.00	0.006	O	|	|	|	|	0.00
107.500	0.00	0.00	0.006	O	|	|	|	|	0.00
107.583	0.00	0.00	0.006	O	|	|	|	|	0.00
107.667	0.00	0.00	0.006	O	|	|	|	|	0.00
107.750	0.00	0.00	0.006	O	|	|	|	|	0.00
107.833	0.00	0.00	0.006	O	|	|	|	|	0.00
107.917	0.00	0.00	0.005	O	|	|	|	|	0.00
108.000	0.00	0.00	0.005	O	|	|	|	|	0.00
108.083	0.00	0.00	0.005	O	|	|	|	|	0.00
108.167	0.00	0.00	0.005	O	|	|	|	|	0.00
108.250	0.00	0.00	0.005	O	|	|	|	|	0.00
108.333	0.00	0.00	0.005	O	|	|	|	|	0.00
108.417	0.00	0.00	0.005	O	|	|	|	|	0.00
108.500	0.00	0.00	0.005	O	|	|	|	|	0.00
108.583	0.00	0.00	0.005	O	|	|	|	|	0.00
108.667	0.00	0.00	0.005	O	|	|	|	|	0.00
108.750	0.00	0.00	0.005	O	|	|	|	|	0.00
108.833	0.00	0.00	0.005	O	|	|	|	|	0.00
108.917	0.00	0.00	0.005	O	|	|	|	|	0.00
109.000	0.00	0.00	0.005	O	|	|	|	|	0.00
109.083	0.00	0.00	0.005	O	|	|	|	|	0.00
109.167	0.00	0.00	0.005	O	|	|	|	|	0.00
109.250	0.00	0.00	0.005	O	|	|	|	|	0.00
109.333	0.00	0.00	0.005	O	|	|	|	|	0.00
109.417	0.00	0.00	0.005	O	|	|	|	|	0.00
109.500	0.00	0.00	0.005	O	|	|	|	|	0.00
109.583	0.00	0.00	0.005	O	|	|	|	|	0.00
109.667	0.00	0.00	0.005	O	|	|	|	|	0.00
109.750	0.00	0.00	0.005	O	|	|	|	|	0.00
109.833	0.00	0.00	0.005	O	|	|	|	|	0.00
109.917	0.00	0.00	0.005	O	|	|	|	|	0.00
110.000	0.00	0.00	0.005	O	|	|	|	|	0.00
110.083	0.00	0.00	0.005	O	|	|	|	|	0.00
110.167	0.00	0.00	0.005	O	|	|	|	|	0.00
110.250	0.00	0.00	0.005	O	|	|	|	|	0.00
110.333	0.00	0.00	0.005	O	|	|	|	|	0.00
110.417	0.00	0.00	0.005	O	|	|	|	|	0.00
110.500	0.00	0.00	0.005	O	|	|	|	|	0.00
110.583	0.00	0.00	0.005	O	|	|	|	|	0.00
110.667	0.00	0.00	0.005	O	|	|	|	|	0.00
110.750	0.00	0.00	0.005	O	|	|	|	|	0.00
110.833	0.00	0.00	0.004	O	|	|	|	|	0.00
110.917	0.00	0.00	0.004	O	|	|	|	|	0.00
111.000	0.00	0.00	0.004	O	|	|	|	|	0.00
111.083	0.00	0.00	0.004	O	|	|	|	|	0.00
111.167	0.00	0.00	0.004	O	|	|	|	|	0.00
111.250	0.00	0.00	0.004	O	|	|	|	|	0.00
111.333	0.00	0.00	0.004	O	|	|	|	|	0.00
111.417	0.00	0.00	0.004	O	|	|	|	|	0.00
111.500	0.00	0.00	0.004	O	|	|	|	|	0.00
111.583	0.00	0.00	0.004	O	|	|	|	|	0.00
111.667	0.00	0.00	0.004	O	|	|	|	|	0.00
111.750	0.00	0.00	0.004	O	|	|	|	|	0.00

111.833	0.00	0.00	0.004	O	|	|	|	|	0.00
111.917	0.00	0.00	0.004	O	|	|	|	|	0.00
112.000	0.00	0.00	0.004	O	|	|	|	|	0.00
112.083	0.00	0.00	0.004	O	|	|	|	|	0.00
112.167	0.00	0.00	0.004	O	|	|	|	|	0.00
112.250	0.00	0.00	0.004	O	|	|	|	|	0.00
112.333	0.00	0.00	0.004	O	|	|	|	|	0.00
112.417	0.00	0.00	0.004	O	|	|	|	|	0.00
112.500	0.00	0.00	0.004	O	|	|	|	|	0.00
112.583	0.00	0.00	0.004	O	|	|	|	|	0.00
112.667	0.00	0.00	0.004	O	|	|	|	|	0.00
112.750	0.00	0.00	0.004	O	|	|	|	|	0.00
112.833	0.00	0.00	0.004	O	|	|	|	|	0.00
112.917	0.00	0.00	0.004	O	|	|	|	|	0.00
113.000	0.00	0.00	0.004	O	|	|	|	|	0.00
113.083	0.00	0.00	0.004	O	|	|	|	|	0.00
113.167	0.00	0.00	0.004	O	|	|	|	|	0.00
113.250	0.00	0.00	0.004	O	|	|	|	|	0.00
113.333	0.00	0.00	0.004	O	|	|	|	|	0.00
113.417	0.00	0.00	0.004	O	|	|	|	|	0.00
113.500	0.00	0.00	0.004	O	|	|	|	|	0.00
113.583	0.00	0.00	0.004	O	|	|	|	|	0.00
113.667	0.00	0.00	0.004	O	|	|	|	|	0.00
113.750	0.00	0.00	0.004	O	|	|	|	|	0.00
113.833	0.00	0.00	0.004	O	|	|	|	|	0.00
113.917	0.00	0.00	0.004	O	|	|	|	|	0.00
114.000	0.00	0.00	0.004	O	|	|	|	|	0.00
114.083	0.00	0.00	0.004	O	|	|	|	|	0.00
114.167	0.00	0.00	0.004	O	|	|	|	|	0.00
114.250	0.00	0.00	0.004	O	|	|	|	|	0.00
114.333	0.00	0.00	0.004	O	|	|	|	|	0.00
114.417	0.00	0.00	0.004	O	|	|	|	|	0.00
114.500	0.00	0.00	0.003	O	|	|	|	|	0.00
114.583	0.00	0.00	0.003	O	|	|	|	|	0.00
114.667	0.00	0.00	0.003	O	|	|	|	|	0.00
114.750	0.00	0.00	0.003	O	|	|	|	|	0.00
114.833	0.00	0.00	0.003	O	|	|	|	|	0.00
114.917	0.00	0.00	0.003	O	|	|	|	|	0.00
115.000	0.00	0.00	0.003	O	|	|	|	|	0.00
115.083	0.00	0.00	0.003	O	|	|	|	|	0.00
115.167	0.00	0.00	0.003	O	|	|	|	|	0.00
115.250	0.00	0.00	0.003	O	|	|	|	|	0.00
115.333	0.00	0.00	0.003	O	|	|	|	|	0.00
115.417	0.00	0.00	0.003	O	|	|	|	|	0.00
115.500	0.00	0.00	0.003	O	|	|	|	|	0.00
115.583	0.00	0.00	0.003	O	|	|	|	|	0.00
115.667	0.00	0.00	0.003	O	|	|	|	|	0.00
115.750	0.00	0.00	0.003	O	|	|	|	|	0.00
115.833	0.00	0.00	0.003	O	|	|	|	|	0.00
115.917	0.00	0.00	0.003	O	|	|	|	|	0.00
116.000	0.00	0.00	0.003	O	|	|	|	|	0.00
116.083	0.00	0.00	0.003	O	|	|	|	|	0.00
116.167	0.00	0.00	0.003	O	|	|	|	|	0.00
116.250	0.00	0.00	0.003	O	|	|	|	|	0.00
116.333	0.00	0.00	0.003	O	|	|	|	|	0.00
116.417	0.00	0.00	0.003	O	|	|	|	|	0.00
116.500	0.00	0.00	0.003	O	|	|	|	|	0.00
116.583	0.00	0.00	0.003	O	|	|	|	|	0.00
116.667	0.00	0.00	0.003	O	|	|	|	|	0.00
116.750	0.00	0.00	0.003	O	|	|	|	|	0.00
116.833	0.00	0.00	0.003	O	|	|	|	|	0.00
116.917	0.00	0.00	0.003	O	|	|	|	|	0.00
117.000	0.00	0.00	0.003	O	|	|	|	|	0.00
117.083	0.00	0.00	0.003	O	|	|	|	|	0.00
117.167	0.00	0.00	0.003	O	|	|	|	|	0.00
117.250	0.00	0.00	0.003	O	|	|	|	|	0.00
117.333	0.00	0.00	0.003	O	|	|	|	|	0.00
117.417	0.00	0.00	0.003	O	|	|	|	|	0.00
117.500	0.00	0.00	0.003	O	|	|	|	|	0.00
117.583	0.00	0.00	0.003	O	|	|	|	|	0.00
117.667	0.00	0.00	0.003	O	|	|	|	|	0.00

117.750	0.00	0.00	0.003	O	|	|	|	|	0.00
117.833	0.00	0.00	0.003	O	|	|	|	|	0.00
117.917	0.00	0.00	0.003	O	|	|	|	|	0.00
118.000	0.00	0.00	0.003	O	|	|	|	|	0.00
118.083	0.00	0.00	0.003	O	|	|	|	|	0.00
118.167	0.00	0.00	0.003	O	|	|	|	|	0.00
118.250	0.00	0.00	0.003	O	|	|	|	|	0.00
118.333	0.00	0.00	0.003	O	|	|	|	|	0.00
118.417	0.00	0.00	0.003	O	|	|	|	|	0.00
118.500	0.00	0.00	0.003	O	|	|	|	|	0.00
118.583	0.00	0.00	0.003	O	|	|	|	|	0.00
118.667	0.00	0.00	0.003	O	|	|	|	|	0.00
118.750	0.00	0.00	0.003	O	|	|	|	|	0.00
118.833	0.00	0.00	0.003	O	|	|	|	|	0.00
118.917	0.00	0.00	0.003	O	|	|	|	|	0.00
119.000	0.00	0.00	0.003	O	|	|	|	|	0.00
119.083	0.00	0.00	0.003	O	|	|	|	|	0.00
119.167	0.00	0.00	0.003	O	|	|	|	|	0.00
119.250	0.00	0.00	0.003	O	|	|	|	|	0.00
119.333	0.00	0.00	0.003	O	|	|	|	|	0.00
119.417	0.00	0.00	0.002	O	|	|	|	|	0.00
119.500	0.00	0.00	0.002	O	|	|	|	|	0.00
119.583	0.00	0.00	0.002	O	|	|	|	|	0.00
119.667	0.00	0.00	0.002	O	|	|	|	|	0.00
119.750	0.00	0.00	0.002	O	|	|	|	|	0.00
119.833	0.00	0.00	0.002	O	|	|	|	|	0.00
119.917	0.00	0.00	0.002	O	|	|	|	|	0.00
120.000	0.00	0.00	0.002	O	|	|	|	|	0.00
120.083	0.00	0.00	0.002	O	|	|	|	|	0.00
120.167	0.00	0.00	0.002	O	|	|	|	|	0.00
120.250	0.00	0.00	0.002	O	|	|	|	|	0.00
120.333	0.00	0.00	0.002	O	|	|	|	|	0.00
120.417	0.00	0.00	0.002	O	|	|	|	|	0.00
120.500	0.00	0.00	0.002	O	|	|	|	|	0.00
120.583	0.00	0.00	0.002	O	|	|	|	|	0.00
120.667	0.00	0.00	0.002	O	|	|	|	|	0.00
120.750	0.00	0.00	0.002	O	|	|	|	|	0.00
120.833	0.00	0.00	0.002	O	|	|	|	|	0.00
120.917	0.00	0.00	0.002	O	|	|	|	|	0.00
121.000	0.00	0.00	0.002	O	|	|	|	|	0.00
121.083	0.00	0.00	0.002	O	|	|	|	|	0.00
121.167	0.00	0.00	0.002	O	|	|	|	|	0.00
121.250	0.00	0.00	0.002	O	|	|	|	|	0.00
121.333	0.00	0.00	0.002	O	|	|	|	|	0.00
121.417	0.00	0.00	0.002	O	|	|	|	|	0.00
121.500	0.00	0.00	0.002	O	|	|	|	|	0.00
121.583	0.00	0.00	0.002	O	|	|	|	|	0.00
121.667	0.00	0.00	0.002	O	|	|	|	|	0.00
121.750	0.00	0.00	0.002	O	|	|	|	|	0.00
121.833	0.00	0.00	0.002	O	|	|	|	|	0.00
121.917	0.00	0.00	0.002	O	|	|	|	|	0.00
122.000	0.00	0.00	0.002	O	|	|	|	|	0.00
122.083	0.00	0.00	0.002	O	|	|	|	|	0.00
122.167	0.00	0.00	0.002	O	|	|	|	|	0.00
122.250	0.00	0.00	0.002	O	|	|	|	|	0.00
122.333	0.00	0.00	0.002	O	|	|	|	|	0.00
122.417	0.00	0.00	0.002	O	|	|	|	|	0.00
122.500	0.00	0.00	0.002	O	|	|	|	|	0.00
122.583	0.00	0.00	0.002	O	|	|	|	|	0.00
122.667	0.00	0.00	0.002	O	|	|	|	|	0.00
122.750	0.00	0.00	0.002	O	|	|	|	|	0.00
122.833	0.00	0.00	0.002	O	|	|	|	|	0.00
122.917	0.00	0.00	0.002	O	|	|	|	|	0.00
123.000	0.00	0.00	0.002	O	|	|	|	|	0.00
123.083	0.00	0.00	0.002	O	|	|	|	|	0.00
123.167	0.00	0.00	0.002	O	|	|	|	|	0.00
123.250	0.00	0.00	0.002	O	|	|	|	|	0.00
123.333	0.00	0.00	0.002	O	|	|	|	|	0.00
123.417	0.00	0.00	0.002	O	|	|	|	|	0.00
123.500	0.00	0.00	0.002	O	|	|	|	|	0.00
123.583	0.00	0.00	0.002	O	|	|	|	|	0.00

```
123.667    0.00    0.00      0.002  O       |       |       |       |      0.00
123.750    0.00    0.00      0.002  O       |       |       |       |      0.00
123.833    0.00    0.00      0.002  O       |       |       |       |      0.00
123.917    0.00    0.00      0.002  O       |       |       |       |      0.00
124.000    0.00    0.00      0.002  O       |       |       |       |      0.00
124.083    0.00    0.00      0.002  O       |       |       |       |      0.00
124.167    0.00    0.00      0.002  O       |       |       |       |      0.00
124.250    0.00    0.00      0.002  O       |       |       |       |      0.00
124.333    0.00    0.00      0.002  O       |       |       |       |      0.00
124.417    0.00    0.00      0.002  O       |       |       |       |      0.00
124.500    0.00    0.00      0.002  O       |       |       |       |      0.00
124.583    0.00    0.00      0.002  O       |       |       |       |      0.00
124.667    0.00    0.00      0.002  O       |       |       |       |      0.00
124.750    0.00    0.00      0.002  O       |       |       |       |      0.00
124.833    0.00    0.00      0.002  O       |       |       |       |      0.00
124.917    0.00    0.00      0.002  O       |       |       |       |      0.00
125.000    0.00    0.00      0.002  O       |       |       |       |      0.00
125.083    0.00    0.00      0.002  O       |       |       |       |      0.00
125.167    0.00    0.00      0.002  O       |       |       |       |      0.00
125.250    0.00    0.00      0.002  O       |       |       |       |      0.00
125.333    0.00    0.00      0.002  O       |       |       |       |      0.00

        Remaining water in basin =    0.00 (Ac.Ft)


        ****************************HYDROGRAPH DATA****************************
                      Number of intervals =  1504
                      Time interval =    5.0 (Min.)
                      Maximum/Peak flow rate =       49.537 (CFS)
                      Total volume =      23.308 (Ac.Ft)
               Status of hydrographs being held in storage
                         Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
               Peak (CFS)       0.000     0.000     0.000     0.000     0.000
               Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
        ***********************************************************************

        ---------------------------------------------------------------------
```

- Basin 'C' - 25 Year 24 Hour Storm Routing Analysis

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                    FLOOD HYDROGRAPH ROUTING PROGRAM
          Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012
                       Study date: 03/20/17

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WESTRIDGE HYDROLOGY STUDY
PROPOSED ROUTING - BASIN 'C' - 25 YEAR 24 HOUR STORM
HUNSAKER & ASSOCIATES, MARCH 20, 2017
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------


Program License Serial Number 4094

------------------------------------------------------------------------
******************** HYDROGRAPH INFORMATION **********************

               From study/file name: PRC02524.rte
*****************************HYDROGRAPH DATA*****************************
               Number of intervals =   304
               Time interval =    5.0 (Min.)
               Maximum/Peak flow rate =      270.991 (CFS)
               Total volume =      29.105 (Ac.Ft)
       Status of hydrographs being held in storage
                   Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
       Peak (CFS)      0.000     0.000     0.000     0.000     0.000
       Vol (Ac.Ft)     0.000     0.000     0.000     0.000     0.000
************************************************************************



++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      300.000 to Point/Station      301.000
**** RETARDING BASIN ROUTING ****
________________________________________________________________________

User entry of depth-outflow-storage data
------------------------------------------------------------------------
Total number of inflow hydrograph intervals = 304
Hydrograph time unit =  5.000 (Min.)
Initial depth in storage basin =   0.00(Ft.)
------------------------------------------------------------------------
------------------------------------------------------------------------
Initial basin depth =   0.00 (Ft.)
Initial basin storage =      0.00 (Ac.Ft)
Initial basin outflow =   0.00 (CFS)
------------------------------------------------------------------------
------------------------------------------------------------------------
Depth vs. Storage and Depth vs. Discharge data:
 Basin Depth  Storage    Outflow   (S-O*dt/2)   (S+O*dt/2)
     (Ft.)    (Ac.Ft)    (CFS)     (Ac.Ft)    (Ac.Ft)
------------------------------------------------------------------------
   0.000      0.000      0.000      0.000        0.000
   0.500      0.834      0.692      0.832        0.836
   1.000      1.693      1.672      1.687        1.699
   1.500      2.577      3.059      2.566        2.588
   2.000      3.488      4.757      3.472        3.504
   3.000      5.388      7.930      5.361        5.415
   4.000      7.399     20.434      7.329        7.469
   5.000      9.523     35.089      9.402        9.644
   6.000     11.764     44.538     11.611       11.917
   7.000     14.126     52.170     13.946       14.306
   8.000     16.610     58.766     16.408       16.812
   8.900     18.942     83.236     18.655       19.229
   9.000     19.207     83.236     18.920       19.494
   9.500     20.556    448.796     19.011       22.101
  10.000     21.935   1159.965     17.941       25.929
```

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0	67.7	135.50	203.24	270.99	Depth (Ft.)
0.083	0.16	0.00	0.001	O	|	|	|	|	0.00
0.167	0.81	0.00	0.004	O	|	|	|	|	0.00
0.250	2.48	0.01	0.015	O	|	|	|	|	0.01
0.333	3.42	0.03	0.035	O	|	|	|	|	0.02
0.417	3.88	0.05	0.060	O	|	|	|	|	0.04
0.500	4.20	0.07	0.088	O	|	|	|	|	0.05
0.583	4.42	0.10	0.117	O	|	|	|	|	0.07
0.667	4.58	0.12	0.147	O	|	|	|	|	0.09
0.750	4.70	0.15	0.178	O	|	|	|	|	0.11
0.833	4.77	0.17	0.209	O	|	|	|	|	0.13
0.917	4.81	0.20	0.241	O	|	|	|	|	0.14
1.000	4.85	0.23	0.273	O	|	|	|	|	0.16
1.083	4.88	0.25	0.305	O	|	|	|	|	0.18
1.167	4.91	0.28	0.337	O	|	|	|	|	0.20
1.250	4.94	0.31	0.369	O	|	|	|	|	0.22
1.333	4.97	0.33	0.401	O	|	|	|	|	0.24
1.417	4.99	0.36	0.432	O	|	|	|	|	0.26
1.500	5.01	0.39	0.464	O	|	|	|	|	0.28
1.583	5.02	0.41	0.496	O	|	|	|	|	0.30
1.667	5.04	0.44	0.528	O	|	|	|	|	0.32
1.750	5.06	0.46	0.560	O	|	|	|	|	0.34
1.833	5.08	0.49	0.591	O	|	|	|	|	0.35
1.917	5.10	0.52	0.623	O	|	|	|	|	0.37
2.000	5.12	0.54	0.654	O	|	|	|	|	0.39
2.083	5.14	0.57	0.686	O	|	|	|	|	0.41
2.167	5.15	0.60	0.717	O	|	|	|	|	0.43
2.250	5.17	0.62	0.749	O	|	|	|	|	0.45
2.333	5.19	0.65	0.780	O	|	|	|	|	0.47
2.417	5.21	0.67	0.811	O	|	|	|	|	0.49
2.500	5.23	0.70	0.842	O	|	|	|	|	0.50
2.583	5.25	0.74	0.874	O	|	|	|	|	0.52
2.667	5.27	0.77	0.905	O	|	|	|	|	0.54
2.750	5.30	0.81	0.936	O	|	|	|	|	0.56
2.833	5.32	0.84	0.966	O	|	|	|	|	0.58
2.917	5.34	0.88	0.997	O	|	|	|	|	0.60
3.000	5.36	0.91	1.028	O	|	|	|	|	0.61
3.083	5.38	0.95	1.058	O	|	|	|	|	0.63
3.167	5.40	0.98	1.089	O	|	|	|	|	0.65
3.250	5.42	1.02	1.119	O	|	|	|	|	0.67
3.333	5.44	1.05	1.150	O	|	|	|	|	0.68
3.417	5.47	1.09	1.180	O	|	|	|	|	0.70
3.500	5.49	1.12	1.210	O	|	|	|	|	0.72
3.583	5.51	1.16	1.240	O	|	|	|	|	0.74
3.667	5.54	1.19	1.270	O	|	|	|	|	0.75
3.750	5.56	1.22	1.300	O	|	|	|	|	0.77
3.833	5.58	1.26	1.330	O	|	|	|	|	0.79
3.917	5.61	1.29	1.359	O	|	|	|	|	0.81
4.000	5.63	1.33	1.389	O	|	|	|	|	0.82
4.083	5.65	1.36	1.419	O	|	|	|	|	0.84
4.167	5.68	1.39	1.448	O	|	|	|	|	0.86
4.250	5.70	1.43	1.478	O	|	|	|	|	0.87
4.333	5.73	1.46	1.507	O	|	|	|	|	0.89
4.417	5.76	1.49	1.537	O	|	|	|	|	0.91
4.500	5.78	1.53	1.566	O	|	|	|	|	0.93
4.583	5.81	1.56	1.595	O	|	|	|	|	0.94
4.667	5.83	1.59	1.624	O	|	|	|	|	0.96
4.750	5.86	1.63	1.654	O	|	|	|	|	0.98
4.833	5.89	1.66	1.683	O	|	|	|	|	0.99
4.917	5.91	1.70	1.712	O	|	|	|	|	1.01
5.000	5.94	1.75	1.741	O	|	|	|	|	1.03
5.083	5.97	1.79	1.770	O	|	|	|	|	1.04
5.167	6.00	1.84	1.798	O	|	|	|	|	1.06
5.250	6.03	1.88	1.827	O	|	|	|	|	1.08

5.333	6.05	1.93	1.855	O					1.09
5.417	6.09	1.97	1.884	O					1.11
5.500	6.11	2.02	1.912	O					1.12
5.583	6.14	2.06	1.940	O					1.14
5.667	6.17	2.10	1.968	O					1.16
5.750	6.21	2.15	1.996	O					1.17
5.833	6.24	2.19	2.024	O					1.19
5.917	6.27	2.24	2.052	O					1.20
6.000	6.30	2.28	2.080	O					1.22
6.083	6.33	2.32	2.107	O					1.23
6.167	6.37	2.37	2.135	O					1.25
6.250	6.40	2.41	2.162	O					1.27
6.333	6.43	2.45	2.190	O					1.28
6.417	6.47	2.49	2.217	O					1.30
6.500	6.50	2.54	2.245	O					1.31
6.583	6.54	2.58	2.272	O					1.33
6.667	6.57	2.62	2.299	O					1.34
6.750	6.61	2.67	2.326	O					1.36
6.833	6.65	2.71	2.353	O					1.37
6.917	6.69	2.75	2.381	O					1.39
7.000	6.72	2.79	2.408	O					1.40
7.083	6.76	2.84	2.435	O					1.42
7.167	6.80	2.88	2.462	O					1.43
7.250	6.84	2.92	2.489	O					1.45
7.333	6.88	2.96	2.516	O					1.47
7.417	6.92	3.01	2.543	O					1.48
7.500	6.96	3.05	2.570	O					1.50
7.583	7.01	3.10	2.597	O					1.51
7.667	7.05	3.15	2.624	O					1.53
7.750	7.09	3.20	2.650	O					1.54
7.833	7.13	3.25	2.677	O					1.55
7.917	7.18	3.30	2.704	O					1.57
8.000	7.22	3.35	2.731	O					1.58
8.083	7.27	3.40	2.757	O					1.60
8.167	7.32	3.44	2.784	O					1.61
8.250	7.37	3.49	2.811	O					1.63
8.333	7.41	3.54	2.837	O					1.64
8.417	7.47	3.59	2.864	O					1.66
8.500	7.51	3.64	2.891	O					1.67
8.583	7.57	3.69	2.917	O					1.69
8.667	7.62	3.74	2.944	O					1.70
8.750	7.67	3.79	2.971	O					1.72
8.833	7.73	3.84	2.998	O					1.73
8.917	7.78	3.89	3.024	O					1.75
9.000	7.84	3.94	3.051	O					1.76
9.083	7.90	3.99	3.078	O					1.77
9.167	7.95	4.04	3.105	O					1.79
9.250	8.01	4.09	3.132	O					1.80
9.333	8.07	4.14	3.159	O					1.82
9.417	8.14	4.19	3.186	O					1.83
9.500	8.20	4.24	3.213	O					1.85
9.583	8.26	4.30	3.240	O					1.86
9.667	8.33	4.35	3.268	O					1.88
9.750	8.40	4.40	3.295	O					1.89
9.833	8.46	4.45	3.323	O					1.91
9.917	8.53	4.50	3.351	OI					1.92
10.000	8.60	4.55	3.378	OI					1.94
10.083	8.68	4.60	3.406	OI					1.96
10.167	8.75	4.66	3.434	OI					1.97
10.250	8.83	4.71	3.463	OI					1.99
10.333	8.90	4.76	3.491	OI					2.00
10.417	8.99	4.81	3.520	OI					2.02
10.500	9.07	4.86	3.549	OI					2.03
10.583	9.15	4.91	3.578	OI					2.05
10.667	9.23	4.96	3.607	OI					2.06
10.750	9.33	5.01	3.637	OI					2.08
10.833	9.41	5.06	3.667	OI					2.09
10.917	9.51	5.11	3.697	OI					2.11
11.000	9.60	5.16	3.727	OI					2.13
11.083	9.70	5.21	3.758	OI					2.14
11.167	9.79	5.26	3.789	OI					2.16

11.250	9.90	5.31	3.821	OI	|	|	|	|	2.18
11.333	10.00	5.37	3.852	OI	|	|	|	|	2.19
11.417	10.11	5.42	3.884	OI	|	|	|	|	2.21
11.500	10.22	5.47	3.917	OI	|	|	|	|	2.23
11.583	10.34	5.53	3.950	OI	|	|	|	|	2.24
11.667	10.45	5.58	3.983	OI	|	|	|	|	2.26
11.750	10.58	5.64	4.017	OI	|	|	|	|	2.28
11.833	10.70	5.70	4.051	OI	|	|	|	|	2.30
11.917	10.83	5.76	4.086	OI	|	|	|	|	2.31
12.000	10.96	5.81	4.121	OI	|	|	|	|	2.33
12.083	11.23	5.87	4.157	OI	|	|	|	|	2.35
12.167	11.87	5.94	4.196	OI	|	|	|	|	2.37
12.250	13.33	6.02	4.242	OI	|	|	|	|	2.40
12.333	14.21	6.10	4.295	OI	|	|	|	|	2.42
12.417	14.74	6.20	4.352	OI	|	|	|	|	2.45
12.500	15.14	6.30	4.412	OI	|	|	|	|	2.49
12.583	15.49	6.40	4.474	OI	|	|	|	|	2.52
12.667	15.78	6.51	4.537	OI	|	|	|	|	2.55
12.750	16.05	6.62	4.601	OI	|	|	|	|	2.59
12.833	16.29	6.73	4.667	OI	|	|	|	|	2.62
12.917	16.53	6.84	4.733	OI	|	|	|	|	2.66
13.000	16.75	6.95	4.800	OI	|	|	|	|	2.69
13.083	16.99	7.06	4.868	O I	|	|	|	|	2.73
13.167	17.22	7.18	4.937	O I	|	|	|	|	2.76
13.250	17.48	7.29	5.006	O I	|	|	|	|	2.80
13.333	17.73	7.41	5.077	O I	|	|	|	|	2.84
13.417	18.01	7.53	5.149	O I	|	|	|	|	2.87
13.500	18.27	7.65	5.221	O I	|	|	|	|	2.91
13.583	18.57	7.77	5.295	O I	|	|	|	|	2.95
13.667	18.86	7.90	5.370	O I	|	|	|	|	2.99
13.750	19.18	8.29	5.445	O I	|	|	|	|	3.03
13.833	19.50	8.75	5.520	|OI	|	|	|	|	3.07
13.917	19.86	9.21	5.593	|OI	|	|	|	|	3.10
14.000	20.22	9.66	5.666	|OI	|	|	|	|	3.14
14.083	20.62	10.11	5.739	|OI	|	|	|	|	3.17
14.167	21.00	10.56	5.811	|OI	|	|	|	|	3.21
14.250	21.42	11.01	5.883	|OI	|	|	|	|	3.25
14.333	21.84	11.45	5.955	|OI	|	|	|	|	3.28
14.417	22.35	11.90	6.026	|OI	|	|	|	|	3.32
14.500	22.85	12.35	6.098	|OI	|	|	|	|	3.35
14.583	23.44	12.80	6.171	|OI	|	|	|	|	3.39
14.667	24.02	13.26	6.245	|OI	|	|	|	|	3.43
14.750	24.71	13.72	6.320	|OI	|	|	|	|	3.46
14.833	25.40	14.20	6.396	|OI	|	|	|	|	3.50
14.917	26.21	14.69	6.474	|O I	|	|	|	|	3.54
15.000	27.04	15.19	6.555	|O I	|	|	|	|	3.58
15.083	28.05	15.70	6.638	|O I	|	|	|	|	3.62
15.167	29.18	16.25	6.725	|O I	|	|	|	|	3.66
15.250	30.79	16.82	6.818	|O I	|	|	|	|	3.71
15.333	32.72	17.45	6.919	| OI	|	|	|	|	3.76
15.417	34.95	18.13	7.029	| O I	|	|	|	|	3.82
15.500	36.33	18.87	7.147	| O I	|	|	|	|	3.87
15.583	36.26	19.60	7.265	| O I	|	|	|	|	3.93
15.667	38.27	20.34	7.384	| O I	|	|	|	|	3.99
15.750	43.17	21.28	7.521	| O I	|	|	|	|	4.06
15.833	50.27	22.46	7.692	| O I	|	|	|	|	4.14
15.917	62.95	24.04	7.922	| O I|	|	|	|	|	4.25
16.000	80.06	26.25	8.241	| O |I	|	|	|	|	4.40
16.083	120.40	29.68	8.739	| O | I	|	|	|	|	4.63
16.167	185.66	35.28	9.569	| O |	| I	|	|	|	5.02
16.250	270.99	40.81	10.880	| O |	|	|	|	I	5.61
16.333	187.73	45.82	12.161	| O |	| I	|	|	|	6.17
16.417	122.97	48.23	12.907	| O | I	|	|	|	|	6.48
16.500	93.19	49.55	13.315	| O | I	|	|	|	|	6.66
16.583	75.88	50.32	13.553	| O I	|	|	|	|	6.76
16.667	62.00	50.73	13.680	| O I|	|	|	|	|	6.81
16.750	50.22	50.85	13.716	| IO |	|	|	|	|	6.83
16.833	41.26	50.73	13.682	| IO |	|	|	|	|	6.81
16.917	34.58	50.45	13.594	| IO |	|	|	|	|	6.77
17.000	31.26	50.07	13.475	| I O |	|	|	|	|	6.72
17.083	28.61	49.62	13.338	| I O |	|	|	|	|	6.67

17.167	26.89	49.14	13.189	| I O |	|	|	|	6.60
17.250	25.15	48.63	13.031	| I O |	|	|	|	6.54
17.333	23.28	48.10	12.865	| I O |	|	|	|	6.47
17.417	21.81	47.53	12.691	| I O |	|	|	|	6.39
17.500	20.52	46.95	12.511	| I O |	|	|	|	6.32
17.583	19.71	46.36	12.329	| I O |	|	|	|	6.24
17.667	19.01	45.77	12.145	| I O |	|	|	|	6.16
17.750	18.39	45.17	11.960	| I O |	|	|	|	6.08
17.833	17.83	44.58	11.776	| I O |	|	|	|	6.01
17.917	17.32	43.82	11.593	| I O |	|	|	|	5.92
18.000	16.85	43.05	11.411	|I O |	|	|	|	5.84
18.083	16.29	42.29	11.231	|I O |	|	|	|	5.76
18.167	15.39	41.53	11.052	|I O |	|	|	|	5.68
18.250	13.72	40.76	10.869	|I O |	|	|	|	5.60
18.333	12.65	39.97	10.681	|I O |	|	|	|	5.52
18.417	11.99	39.18	10.494	|I O |	|	|	|	5.43
18.500	11.47	38.40	10.307	|I O |	|	|	|	5.35
18.583	11.04	37.62	10.123	|I O |	|	|	|	5.27
18.667	10.67	36.85	9.941	|I O |	|	|	|	5.19
18.750	10.36	36.10	9.763	|I O |	|	|	|	5.11
18.833	10.09	35.36	9.587	|I O |	|	|	|	5.03
18.917	9.86	34.35	9.416	|I O |	|	|	|	4.95
19.000	9.65	33.21	9.250	|I O |	|	|	|	4.87
19.083	9.45	32.11	9.091	|I O |	|	|	|	4.80
19.167	9.26	31.05	8.938	|I O |	|	|	|	4.72
19.250	9.08	30.04	8.791	|I O |	|	|	|	4.66
19.333	8.91	29.06	8.649	|I O |	|	|	|	4.59
19.417	8.76	28.12	8.513	|I O |	|	|	|	4.52
19.500	8.61	27.22	8.382	|I O |	|	|	|	4.46
19.583	8.47	26.35	8.257	I O |	|	|	|	4.40
19.667	8.33	25.52	8.136	I O |	|	|	|	4.35
19.750	8.20	24.72	8.020	I O |	|	|	|	4.29
19.833	8.07	23.95	7.908	I O |	|	|	|	4.24
19.917	7.95	23.21	7.801	I O |	|	|	|	4.19
20.000	7.84	22.50	7.698	I O |	|	|	|	4.14
20.083	7.73	21.82	7.599	I O |	|	|	|	4.09
20.167	7.62	21.16	7.504	I O |	|	|	|	4.05
20.250	7.52	20.53	7.413	I O |	|	|	|	4.01
20.333	7.42	19.97	7.325	I O |	|	|	|	3.96
20.417	7.32	19.44	7.240	I O |	|	|	|	3.92
20.500	7.22	18.93	7.158	I O |	|	|	|	3.88
20.583	7.13	18.44	7.078	I O |	|	|	|	3.84
20.667	7.05	17.96	7.002	I O |	|	|	|	3.80
20.750	6.96	17.50	6.928	I O |	|	|	|	3.77
20.833	6.88	17.06	6.856	I O |	|	|	|	3.73
20.917	6.80	16.63	6.788	IO |	|	|	|	3.70
21.000	6.72	16.22	6.721	IO |	|	|	|	3.66
21.083	6.65	15.82	6.657	IO |	|	|	|	3.63
21.167	6.57	15.43	6.595	IO |	|	|	|	3.60
21.250	6.50	15.06	6.535	IO |	|	|	|	3.57
21.333	6.43	14.70	6.477	IO |	|	|	|	3.54
21.417	6.37	14.35	6.421	IO |	|	|	|	3.51
21.500	6.30	14.02	6.367	IO |	|	|	|	3.49
21.583	6.24	13.69	6.314	IO |	|	|	|	3.46
21.667	6.17	13.38	6.264	IO |	|	|	|	3.44
21.750	6.11	13.07	6.215	IO |	|	|	|	3.41
21.833	6.05	12.78	6.168	IO |	|	|	|	3.39
21.917	6.00	12.50	6.123	IO |	|	|	|	3.37
22.000	5.94	12.22	6.078	IO |	|	|	|	3.34
22.083	5.89	11.96	6.036	IO |	|	|	|	3.32
22.167	5.83	11.70	5.995	IO |	|	|	|	3.30
22.250	5.78	11.46	5.955	IO |	|	|	|	3.28
22.333	5.73	11.22	5.917	IO |	|	|	|	3.26
22.417	5.68	10.99	5.879	IO |	|	|	|	3.24
22.500	5.63	10.76	5.843	IO |	|	|	|	3.23
22.583	5.58	10.55	5.809	IO |	|	|	|	3.21
22.667	5.53	10.34	5.775	IO |	|	|	|	3.19
22.750	5.49	10.13	5.743	IO |	|	|	|	3.18
22.833	5.44	9.94	5.711	IO |	|	|	|	3.16
22.917	5.40	9.75	5.681	IO |	|	|	|	3.15
23.000	5.36	9.57	5.651	IO |	|	|	|	3.13

23.083	5.31	9.39	5.623	IO	|	|	|	|	3.12
23.167	5.27	9.22	5.595	IO	|	|	|	|	3.10
23.250	5.23	9.05	5.568	IO	|	|	|	|	3.09
23.333	5.19	8.89	5.542	IO	|	|	|	|	3.08
23.417	5.15	8.73	5.517	IO	|	|	|	|	3.06
23.500	5.12	8.58	5.493	IO	|	|	|	|	3.05
23.583	5.08	8.44	5.470	O	|	|	|	|	3.04
23.667	5.04	8.30	5.447	O	|	|	|	|	3.03
23.750	5.01	8.16	5.425	O	|	|	|	|	3.02
23.833	4.97	8.03	5.403	O	|	|	|	|	3.01
23.917	4.94	7.92	5.383	O	|	|	|	|	3.00
24.000	4.90	7.89	5.362	O	|	|	|	|	2.99
24.083	4.70	7.85	5.341	O	|	|	|	|	2.98
24.167	4.03	7.81	5.317	O	|	|	|	|	2.96
24.250	2.34	7.76	5.285	O	|	|	|	|	2.95
24.333	1.39	7.69	5.245	O	|	|	|	|	2.92
24.417	0.93	7.62	5.200	O	|	|	|	|	2.90
24.500	0.62	7.54	5.153	O	|	|	|	|	2.88
24.583	0.41	7.46	5.105	O	|	|	|	|	2.85
24.667	0.26	7.38	5.056	O	|	|	|	|	2.83
24.750	0.16	7.29	5.007	O	|	|	|	|	2.80
24.833	0.10	7.21	4.958	O	|	|	|	|	2.77
24.917	0.07	7.13	4.910	O	|	|	|	|	2.75
25.000	0.05	7.05	4.861	O	|	|	|	|	2.72
25.083	0.04	6.97	4.813	O	|	|	|	|	2.70
25.167	0.02	6.89	4.766	O	|	|	|	|	2.67
25.250	0.01	6.81	4.719	O	|	|	|	|	2.65
25.333	0.00	6.73	4.672	O	|	|	|	|	2.62
25.417	0.00	6.66	4.626	O	|	|	|	|	2.60
25.500	0.00	6.58	4.580	O	|	|	|	|	2.57
25.583	0.00	6.51	4.535	O	|	|	|	|	2.55
25.667	0.00	6.43	4.491	O	|	|	|	|	2.53
25.750	0.00	6.36	4.447	O	|	|	|	|	2.50
25.833	0.00	6.29	4.403	O	|	|	|	|	2.48
25.917	0.00	6.21	4.360	O	|	|	|	|	2.46
26.000	0.00	6.14	4.318	O	|	|	|	|	2.44
26.083	0.00	6.07	4.276	O	|	|	|	|	2.41
26.167	0.00	6.00	4.234	O	|	|	|	|	2.39
26.250	0.00	5.93	4.193	O	|	|	|	|	2.37
26.333	0.00	5.87	4.152	O	|	|	|	|	2.35
26.417	0.00	5.80	4.112	O	|	|	|	|	2.33
26.500	0.00	5.73	4.072	O	|	|	|	|	2.31
26.583	0.00	5.67	4.033	O	|	|	|	|	2.29
26.667	0.00	5.60	3.994	O	|	|	|	|	2.27
26.750	0.00	5.54	3.956	O	|	|	|	|	2.25
26.833	0.00	5.48	3.918	O	|	|	|	|	2.23
26.917	0.00	5.41	3.880	O	|	|	|	|	2.21
27.000	0.00	5.35	3.843	O	|	|	|	|	2.19
27.083	0.00	5.29	3.807	O	|	|	|	|	2.17
27.167	0.00	5.23	3.771	O	|	|	|	|	2.15
27.250	0.00	5.17	3.735	O	|	|	|	|	2.13
27.333	0.00	5.11	3.699	O	|	|	|	|	2.11
27.417	0.00	5.05	3.664	O	|	|	|	|	2.09
27.500	0.00	4.99	3.630	O	|	|	|	|	2.07
27.583	0.00	4.94	3.596	O	|	|	|	|	2.06
27.667	0.00	4.88	3.562	O	|	|	|	|	2.04
27.750	0.00	4.82	3.528	O	|	|	|	|	2.02
27.833	0.00	4.77	3.495	O	|	|	|	|	2.00
27.917	0.00	4.71	3.463	O	|	|	|	|	1.99
28.000	0.00	4.65	3.430	O	|	|	|	|	1.97
28.083	0.00	4.59	3.399	O	|	|	|	|	1.95
28.167	0.00	4.53	3.367	O	|	|	|	|	1.93
28.250	0.00	4.47	3.336	O	|	|	|	|	1.92
28.333	0.00	4.42	3.306	O	|	|	|	|	1.90
28.417	0.00	4.36	3.275	O	|	|	|	|	1.88
28.500	0.00	4.31	3.246	O	|	|	|	|	1.87
28.583	0.00	4.25	3.216	O	|	|	|	|	1.85
28.667	0.00	4.20	3.187	O	|	|	|	|	1.83
28.750	0.00	4.14	3.158	O	|	|	|	|	1.82
28.833	0.00	4.09	3.130	O	|	|	|	|	1.80
28.917	0.00	4.04	3.102	O	|	|	|	|	1.79

29.000	0.00	3.99	3.074	O	|	|	|	|	1.77
29.083	0.00	3.94	3.047	O	|	|	|	|	1.76
29.167	0.00	3.88	3.020	O	|	|	|	|	1.74
29.250	0.00	3.84	2.993	O	|	|	|	|	1.73
29.333	0.00	3.79	2.967	O	|	|	|	|	1.71
29.417	0.00	3.74	2.941	O	|	|	|	|	1.70
29.500	0.00	3.69	2.916	O	|	|	|	|	1.69
29.583	0.00	3.64	2.891	O	|	|	|	|	1.67
29.667	0.00	3.60	2.866	O	|	|	|	|	1.66
29.750	0.00	3.55	2.841	O	|	|	|	|	1.64
29.833	0.00	3.51	2.817	O	|	|	|	|	1.63
29.917	0.00	3.46	2.793	O	|	|	|	|	1.62
30.000	0.00	3.42	2.769	O	|	|	|	|	1.61
30.083	0.00	3.37	2.746	O	|	|	|	|	1.59
30.167	0.00	3.33	2.723	O	|	|	|	|	1.58
30.250	0.00	3.29	2.700	O	|	|	|	|	1.57
30.333	0.00	3.25	2.677	O	|	|	|	|	1.56
30.417	0.00	3.20	2.655	O	|	|	|	|	1.54
30.500	0.00	3.16	2.633	O	|	|	|	|	1.53
30.583	0.00	3.12	2.611	O	|	|	|	|	1.52
30.667	0.00	3.08	2.590	O	|	|	|	|	1.51
30.750	0.00	3.05	2.569	O	|	|	|	|	1.50
30.833	0.00	3.01	2.548	O	|	|	|	|	1.48
30.917	0.00	2.98	2.527	O	|	|	|	|	1.47
31.000	0.00	2.95	2.507	O	|	|	|	|	1.46
31.083	0.00	2.92	2.487	O	|	|	|	|	1.45
31.167	0.00	2.89	2.467	O	|	|	|	|	1.44
31.250	0.00	2.86	2.447	O	|	|	|	|	1.43
31.333	0.00	2.82	2.428	O	|	|	|	|	1.42
31.417	0.00	2.79	2.408	O	|	|	|	|	1.40
31.500	0.00	2.76	2.389	O	|	|	|	|	1.39
31.583	0.00	2.73	2.370	O	|	|	|	|	1.38
31.667	0.00	2.70	2.351	O	|	|	|	|	1.37
31.750	0.00	2.68	2.333	O	|	|	|	|	1.36
31.833	0.00	2.65	2.315	O	|	|	|	|	1.35
31.917	0.00	2.62	2.296	O	|	|	|	|	1.34
32.000	0.00	2.59	2.278	O	|	|	|	|	1.33
32.083	0.00	2.56	2.261	O	|	|	|	|	1.32
32.167	0.00	2.54	2.243	O	|	|	|	|	1.31
32.250	0.00	2.51	2.226	O	|	|	|	|	1.30
32.333	0.00	2.48	2.209	O	|	|	|	|	1.29
32.417	0.00	2.45	2.192	O	|	|	|	|	1.28
32.500	0.00	2.43	2.175	O	|	|	|	|	1.27
32.583	0.00	2.40	2.158	O	|	|	|	|	1.26
32.667	0.00	2.38	2.142	O	|	|	|	|	1.25
32.750	0.00	2.35	2.125	O	|	|	|	|	1.24
32.833	0.00	2.33	2.109	O	|	|	|	|	1.24
32.917	0.00	2.30	2.093	O	|	|	|	|	1.23
33.000	0.00	2.28	2.078	O	|	|	|	|	1.22
33.083	0.00	2.25	2.062	O	|	|	|	|	1.21
33.167	0.00	2.23	2.047	O	|	|	|	|	1.20
33.250	0.00	2.20	2.031	O	|	|	|	|	1.19
33.333	0.00	2.18	2.016	O	|	|	|	|	1.18
33.417	0.00	2.16	2.001	O	|	|	|	|	1.17
33.500	0.00	2.13	1.987	O	|	|	|	|	1.17
33.583	0.00	2.11	1.972	O	|	|	|	|	1.16
33.667	0.00	2.09	1.958	O	|	|	|	|	1.15
33.750	0.00	2.06	1.943	O	|	|	|	|	1.14
33.833	0.00	2.04	1.929	O	|	|	|	|	1.13
33.917	0.00	2.02	1.915	O	|	|	|	|	1.13
34.000	0.00	2.00	1.901	O	|	|	|	|	1.12
34.083	0.00	1.98	1.888	O	|	|	|	|	1.11
34.167	0.00	1.96	1.874	O	|	|	|	|	1.10
34.250	0.00	1.94	1.861	O	|	|	|	|	1.09
34.333	0.00	1.91	1.847	O	|	|	|	|	1.09
34.417	0.00	1.89	1.834	O	|	|	|	|	1.08
34.500	0.00	1.87	1.821	O	|	|	|	|	1.07
34.583	0.00	1.85	1.808	O	|	|	|	|	1.07
34.667	0.00	1.83	1.796	O	|	|	|	|	1.06
34.750	0.00	1.81	1.783	O	|	|	|	|	1.05
34.833	0.00	1.79	1.771	O	|	|	|	|	1.04

34.917	0.00	1.77	1.758	O	|	|	|	|	1.04
35.000	0.00	1.76	1.746	O	|	|	|	|	1.03
35.083	0.00	1.74	1.734	O	|	|	|	|	1.02
35.167	0.00	1.72	1.722	O	|	|	|	|	1.02
35.250	0.00	1.70	1.711	O	|	|	|	|	1.01
35.333	0.00	1.68	1.699	O	|	|	|	|	1.00
35.417	0.00	1.67	1.687	O	|	|	|	|	1.00
35.500	0.00	1.65	1.676	O	|	|	|	|	0.99
35.583	0.00	1.64	1.665	O	|	|	|	|	0.98
35.667	0.00	1.63	1.653	O	|	|	|	|	0.98
35.750	0.00	1.61	1.642	O	|	|	|	|	0.97
35.833	0.00	1.60	1.631	O	|	|	|	|	0.96
35.917	0.00	1.59	1.620	O	|	|	|	|	0.96
36.000	0.00	1.58	1.609	O	|	|	|	|	0.95
36.083	0.00	1.56	1.599	O	|	|	|	|	0.95
36.167	0.00	1.55	1.588	O	|	|	|	|	0.94
36.250	0.00	1.54	1.577	O	|	|	|	|	0.93
36.333	0.00	1.53	1.567	O	|	|	|	|	0.93
36.417	0.00	1.52	1.556	O	|	|	|	|	0.92
36.500	0.00	1.50	1.546	O	|	|	|	|	0.91
36.583	0.00	1.49	1.535	O	|	|	|	|	0.91
36.667	0.00	1.48	1.525	O	|	|	|	|	0.90
36.750	0.00	1.47	1.515	O	|	|	|	|	0.90
36.833	0.00	1.46	1.505	O	|	|	|	|	0.89
36.917	0.00	1.45	1.495	O	|	|	|	|	0.88
37.000	0.00	1.43	1.485	O	|	|	|	|	0.88
37.083	0.00	1.42	1.475	O	|	|	|	|	0.87
37.167	0.00	1.41	1.465	O	|	|	|	|	0.87
37.250	0.00	1.40	1.456	O	|	|	|	|	0.86
37.333	0.00	1.39	1.446	O	|	|	|	|	0.86
37.417	0.00	1.38	1.437	O	|	|	|	|	0.85
37.500	0.00	1.37	1.427	O	|	|	|	|	0.85
37.583	0.00	1.36	1.418	O	|	|	|	|	0.84
37.667	0.00	1.35	1.408	O	|	|	|	|	0.83
37.750	0.00	1.34	1.399	O	|	|	|	|	0.83
37.833	0.00	1.33	1.390	O	|	|	|	|	0.82
37.917	0.00	1.32	1.381	O	|	|	|	|	0.82
38.000	0.00	1.31	1.372	O	|	|	|	|	0.81
38.083	0.00	1.30	1.363	O	|	|	|	|	0.81
38.167	0.00	1.29	1.354	O	|	|	|	|	0.80
38.250	0.00	1.28	1.345	O	|	|	|	|	0.80
38.333	0.00	1.27	1.336	O	|	|	|	|	0.79
38.417	0.00	1.26	1.328	O	|	|	|	|	0.79
38.500	0.00	1.25	1.319	O	|	|	|	|	0.78
38.583	0.00	1.24	1.311	O	|	|	|	|	0.78
38.667	0.00	1.23	1.302	O	|	|	|	|	0.77
38.750	0.00	1.22	1.294	O	|	|	|	|	0.77
38.833	0.00	1.21	1.285	O	|	|	|	|	0.76
38.917	0.00	1.20	1.277	O	|	|	|	|	0.76
39.000	0.00	1.19	1.269	O	|	|	|	|	0.75
39.083	0.00	1.18	1.261	O	|	|	|	|	0.75
39.167	0.00	1.17	1.253	O	|	|	|	|	0.74
39.250	0.00	1.16	1.245	O	|	|	|	|	0.74
39.333	0.00	1.15	1.237	O	|	|	|	|	0.73
39.417	0.00	1.14	1.229	O	|	|	|	|	0.73
39.500	0.00	1.13	1.221	O	|	|	|	|	0.73
39.583	0.00	1.12	1.213	O	|	|	|	|	0.72
39.667	0.00	1.12	1.205	O	|	|	|	|	0.72
39.750	0.00	1.11	1.198	O	|	|	|	|	0.71
39.833	0.00	1.10	1.190	O	|	|	|	|	0.71
39.917	0.00	1.09	1.183	O	|	|	|	|	0.70
40.000	0.00	1.08	1.175	O	|	|	|	|	0.70
40.083	0.00	1.07	1.168	O	|	|	|	|	0.69
40.167	0.00	1.06	1.160	O	|	|	|	|	0.69
40.250	0.00	1.06	1.153	O	|	|	|	|	0.69
40.333	0.00	1.05	1.146	O	|	|	|	|	0.68
40.417	0.00	1.04	1.139	O	|	|	|	|	0.68
40.500	0.00	1.03	1.132	O	|	|	|	|	0.67
40.583	0.00	1.02	1.124	O	|	|	|	|	0.67
40.667	0.00	1.02	1.117	O	|	|	|	|	0.66
40.750	0.00	1.01	1.110	O	|	|	|	|	0.66

40.833	0.00	1.00	1.104	O	|	|	|	|	0.66
40.917	0.00	0.99	1.097	O	|	|	|	|	0.65
41.000	0.00	0.98	1.090	O	|	|	|	|	0.65
41.083	0.00	0.98	1.083	O	|	|	|	|	0.65
41.167	0.00	0.97	1.076	O	|	|	|	|	0.64
41.250	0.00	0.96	1.070	O	|	|	|	|	0.64
41.333	0.00	0.95	1.063	O	|	|	|	|	0.63
41.417	0.00	0.95	1.057	O	|	|	|	|	0.63
41.500	0.00	0.94	1.050	O	|	|	|	|	0.63
41.583	0.00	0.93	1.044	O	|	|	|	|	0.62
41.667	0.00	0.92	1.037	O	|	|	|	|	0.62
41.750	0.00	0.92	1.031	O	|	|	|	|	0.61
41.833	0.00	0.91	1.025	O	|	|	|	|	0.61
41.917	0.00	0.90	1.018	O	|	|	|	|	0.61
42.000	0.00	0.90	1.012	O	|	|	|	|	0.60
42.083	0.00	0.89	1.006	O	|	|	|	|	0.60
42.167	0.00	0.88	1.000	O	|	|	|	|	0.60
42.250	0.00	0.87	0.994	O	|	|	|	|	0.59
42.333	0.00	0.87	0.988	O	|	|	|	|	0.59
42.417	0.00	0.86	0.982	O	|	|	|	|	0.59
42.500	0.00	0.85	0.976	O	|	|	|	|	0.58
42.583	0.00	0.85	0.970	O	|	|	|	|	0.58
42.667	0.00	0.84	0.964	O	|	|	|	|	0.58
42.750	0.00	0.83	0.959	O	|	|	|	|	0.57
42.833	0.00	0.83	0.953	O	|	|	|	|	0.57
42.917	0.00	0.82	0.947	O	|	|	|	|	0.57
43.000	0.00	0.81	0.942	O	|	|	|	|	0.56
43.083	0.00	0.81	0.936	O	|	|	|	|	0.56
43.167	0.00	0.80	0.931	O	|	|	|	|	0.56
43.250	0.00	0.80	0.925	O	|	|	|	|	0.55
43.333	0.00	0.79	0.920	O	|	|	|	|	0.55
43.417	0.00	0.78	0.914	O	|	|	|	|	0.55
43.500	0.00	0.78	0.909	O	|	|	|	|	0.54
43.583	0.00	0.77	0.903	O	|	|	|	|	0.54
43.667	0.00	0.77	0.898	O	|	|	|	|	0.54
43.750	0.00	0.76	0.893	O	|	|	|	|	0.53
43.833	0.00	0.75	0.888	O	|	|	|	|	0.53
43.917	0.00	0.75	0.883	O	|	|	|	|	0.53
44.000	0.00	0.74	0.877	O	|	|	|	|	0.53
44.083	0.00	0.74	0.872	O	|	|	|	|	0.52
44.167	0.00	0.73	0.867	O	|	|	|	|	0.52
44.250	0.00	0.72	0.862	O	|	|	|	|	0.52
44.333	0.00	0.72	0.857	O	|	|	|	|	0.51
44.417	0.00	0.71	0.852	O	|	|	|	|	0.51
44.500	0.00	0.71	0.847	O	|	|	|	|	0.51
44.583	0.00	0.70	0.843	O	|	|	|	|	0.51
44.667	0.00	0.70	0.838	O	|	|	|	|	0.50
44.750	0.00	0.69	0.833	O	|	|	|	|	0.50
44.833	0.00	0.69	0.828	O	|	|	|	|	0.50
44.917	0.00	0.68	0.824	O	|	|	|	|	0.49
45.000	0.00	0.68	0.819	O	|	|	|	|	0.49
45.083	0.00	0.68	0.814	O	|	|	|	|	0.49
45.167	0.00	0.67	0.810	O	|	|	|	|	0.49
45.250	0.00	0.67	0.805	O	|	|	|	|	0.48
45.333	0.00	0.66	0.800	O	|	|	|	|	0.48
45.417	0.00	0.66	0.796	O	|	|	|	|	0.48
45.500	0.00	0.66	0.791	O	|	|	|	|	0.47
45.583	0.00	0.65	0.787	O	|	|	|	|	0.47
45.667	0.00	0.65	0.782	O	|	|	|	|	0.47
45.750	0.00	0.65	0.778	O	|	|	|	|	0.47
45.833	0.00	0.64	0.773	O	|	|	|	|	0.46
45.917	0.00	0.64	0.769	O	|	|	|	|	0.46
46.000	0.00	0.63	0.765	O	|	|	|	|	0.46
46.083	0.00	0.63	0.760	O	|	|	|	|	0.46
46.167	0.00	0.63	0.756	O	|	|	|	|	0.45
46.250	0.00	0.62	0.752	O	|	|	|	|	0.45
46.333	0.00	0.62	0.747	O	|	|	|	|	0.45
46.417	0.00	0.62	0.743	O	|	|	|	|	0.45
46.500	0.00	0.61	0.739	O	|	|	|	|	0.44
46.583	0.00	0.61	0.735	O	|	|	|	|	0.44
46.667	0.00	0.61	0.730	O	|	|	|	|	0.44

46.750	0.00	0.60	0.726	O	|	|	|	|	0.44
46.833	0.00	0.60	0.722	O	|	|	|	|	0.43
46.917	0.00	0.60	0.718	O	|	|	|	|	0.43
47.000	0.00	0.59	0.714	O	|	|	|	|	0.43
47.083	0.00	0.59	0.710	O	|	|	|	|	0.43
47.167	0.00	0.59	0.706	O	|	|	|	|	0.42
47.250	0.00	0.58	0.702	O	|	|	|	|	0.42
47.333	0.00	0.58	0.698	O	|	|	|	|	0.42
47.417	0.00	0.58	0.694	O	|	|	|	|	0.42
47.500	0.00	0.57	0.690	O	|	|	|	|	0.41
47.583	0.00	0.57	0.686	O	|	|	|	|	0.41
47.667	0.00	0.57	0.682	O	|	|	|	|	0.41
47.750	0.00	0.56	0.678	O	|	|	|	|	0.41
47.833	0.00	0.56	0.674	O	|	|	|	|	0.40
47.917	0.00	0.56	0.670	O	|	|	|	|	0.40
48.000	0.00	0.55	0.667	O	|	|	|	|	0.40
48.083	0.00	0.55	0.663	O	|	|	|	|	0.40
48.167	0.00	0.55	0.659	O	|	|	|	|	0.40
48.250	0.00	0.54	0.655	O	|	|	|	|	0.39
48.333	0.00	0.54	0.652	O	|	|	|	|	0.39
48.417	0.00	0.54	0.648	O	|	|	|	|	0.39
48.500	0.00	0.53	0.644	O	|	|	|	|	0.39
48.583	0.00	0.53	0.640	O	|	|	|	|	0.38
48.667	0.00	0.53	0.637	O	|	|	|	|	0.38
48.750	0.00	0.53	0.633	O	|	|	|	|	0.38
48.833	0.00	0.52	0.630	O	|	|	|	|	0.38
48.917	0.00	0.52	0.626	O	|	|	|	|	0.38
49.000	0.00	0.52	0.622	O	|	|	|	|	0.37
49.083	0.00	0.51	0.619	O	|	|	|	|	0.37
49.167	0.00	0.51	0.615	O	|	|	|	|	0.37
49.250	0.00	0.51	0.612	O	|	|	|	|	0.37
49.333	0.00	0.50	0.608	O	|	|	|	|	0.36
49.417	0.00	0.50	0.605	O	|	|	|	|	0.36
49.500	0.00	0.50	0.601	O	|	|	|	|	0.36
49.583	0.00	0.50	0.598	O	|	|	|	|	0.36
49.667	0.00	0.49	0.595	O	|	|	|	|	0.36
49.750	0.00	0.49	0.591	O	|	|	|	|	0.35
49.833	0.00	0.49	0.588	O	|	|	|	|	0.35
49.917	0.00	0.48	0.585	O	|	|	|	|	0.35
50.000	0.00	0.48	0.581	O	|	|	|	|	0.35
50.083	0.00	0.48	0.578	O	|	|	|	|	0.35
50.167	0.00	0.48	0.575	O	|	|	|	|	0.34
50.250	0.00	0.47	0.571	O	|	|	|	|	0.34
50.333	0.00	0.47	0.568	O	|	|	|	|	0.34
50.417	0.00	0.47	0.565	O	|	|	|	|	0.34
50.500	0.00	0.47	0.562	O	|	|	|	|	0.34
50.583	0.00	0.46	0.558	O	|	|	|	|	0.33
50.667	0.00	0.46	0.555	O	|	|	|	|	0.33
50.750	0.00	0.46	0.552	O	|	|	|	|	0.33
50.833	0.00	0.46	0.549	O	|	|	|	|	0.33
50.917	0.00	0.45	0.546	O	|	|	|	|	0.33
51.000	0.00	0.45	0.543	O	|	|	|	|	0.33
51.083	0.00	0.45	0.540	O	|	|	|	|	0.32
51.167	0.00	0.45	0.536	O	|	|	|	|	0.32
51.250	0.00	0.44	0.533	O	|	|	|	|	0.32
51.333	0.00	0.44	0.530	O	|	|	|	|	0.32
51.417	0.00	0.44	0.527	O	|	|	|	|	0.32
51.500	0.00	0.44	0.524	O	|	|	|	|	0.31
51.583	0.00	0.43	0.521	O	|	|	|	|	0.31
51.667	0.00	0.43	0.518	O	|	|	|	|	0.31
51.750	0.00	0.43	0.515	O	|	|	|	|	0.31
51.833	0.00	0.43	0.513	O	|	|	|	|	0.31
51.917	0.00	0.42	0.510	O	|	|	|	|	0.31
52.000	0.00	0.42	0.507	O	|	|	|	|	0.30
52.083	0.00	0.42	0.504	O	|	|	|	|	0.30
52.167	0.00	0.42	0.501	O	|	|	|	|	0.30
52.250	0.00	0.41	0.498	O	|	|	|	|	0.30
52.333	0.00	0.41	0.495	O	|	|	|	|	0.30
52.417	0.00	0.41	0.492	O	|	|	|	|	0.30
52.500	0.00	0.41	0.490	O	|	|	|	|	0.29
52.583	0.00	0.40	0.487	O	|	|	|	|	0.29

52.667	0.00	0.40	0.484	O	|	|	|	|	0.29
52.750	0.00	0.40	0.481	O	|	|	|	|	0.29
52.833	0.00	0.40	0.479	O	|	|	|	|	0.29
52.917	0.00	0.39	0.476	O	|	|	|	|	0.29
53.000	0.00	0.39	0.473	O	|	|	|	|	0.28
53.083	0.00	0.39	0.470	O	|	|	|	|	0.28
53.167	0.00	0.39	0.468	O	|	|	|	|	0.28
53.250	0.00	0.39	0.465	O	|	|	|	|	0.28
53.333	0.00	0.38	0.462	O	|	|	|	|	0.28
53.417	0.00	0.38	0.460	O	|	|	|	|	0.28
53.500	0.00	0.38	0.457	O	|	|	|	|	0.27
53.583	0.00	0.38	0.455	O	|	|	|	|	0.27
53.667	0.00	0.38	0.452	O	|	|	|	|	0.27
53.750	0.00	0.37	0.449	O	|	|	|	|	0.27
53.833	0.00	0.37	0.447	O	|	|	|	|	0.27
53.917	0.00	0.37	0.444	O	|	|	|	|	0.27
54.000	0.00	0.37	0.442	O	|	|	|	|	0.26
54.083	0.00	0.36	0.439	O	|	|	|	|	0.26
54.167	0.00	0.36	0.437	O	|	|	|	|	0.26
54.250	0.00	0.36	0.434	O	|	|	|	|	0.26
54.333	0.00	0.36	0.432	O	|	|	|	|	0.26
54.417	0.00	0.36	0.429	O	|	|	|	|	0.26
54.500	0.00	0.35	0.427	O	|	|	|	|	0.26
54.583	0.00	0.35	0.424	O	|	|	|	|	0.25
54.667	0.00	0.35	0.422	O	|	|	|	|	0.25
54.750	0.00	0.35	0.420	O	|	|	|	|	0.25
54.833	0.00	0.35	0.417	O	|	|	|	|	0.25
54.917	0.00	0.34	0.415	O	|	|	|	|	0.25
55.000	0.00	0.34	0.412	O	|	|	|	|	0.25
55.083	0.00	0.34	0.410	O	|	|	|	|	0.25
55.167	0.00	0.34	0.408	O	|	|	|	|	0.24
55.250	0.00	0.34	0.405	O	|	|	|	|	0.24
55.333	0.00	0.33	0.403	O	|	|	|	|	0.24
55.417	0.00	0.33	0.401	O	|	|	|	|	0.24
55.500	0.00	0.33	0.399	O	|	|	|	|	0.24
55.583	0.00	0.33	0.396	O	|	|	|	|	0.24
55.667	0.00	0.33	0.394	O	|	|	|	|	0.24
55.750	0.00	0.33	0.392	O	|	|	|	|	0.23
55.833	0.00	0.32	0.390	O	|	|	|	|	0.23
55.917	0.00	0.32	0.387	O	|	|	|	|	0.23
56.000	0.00	0.32	0.385	O	|	|	|	|	0.23
56.083	0.00	0.32	0.383	O	|	|	|	|	0.23
56.167	0.00	0.32	0.381	O	|	|	|	|	0.23
56.250	0.00	0.31	0.379	O	|	|	|	|	0.23
56.333	0.00	0.31	0.376	O	|	|	|	|	0.23
56.417	0.00	0.31	0.374	O	|	|	|	|	0.22
56.500	0.00	0.31	0.372	O	|	|	|	|	0.22
56.583	0.00	0.31	0.370	O	|	|	|	|	0.22
56.667	0.00	0.31	0.368	O	|	|	|	|	0.22
56.750	0.00	0.30	0.366	O	|	|	|	|	0.22
56.833	0.00	0.30	0.364	O	|	|	|	|	0.22
56.917	0.00	0.30	0.362	O	|	|	|	|	0.22
57.000	0.00	0.30	0.360	O	|	|	|	|	0.22
57.083	0.00	0.30	0.358	O	|	|	|	|	0.21
57.167	0.00	0.29	0.356	O	|	|	|	|	0.21
57.250	0.00	0.29	0.354	O	|	|	|	|	0.21
57.333	0.00	0.29	0.351	O	|	|	|	|	0.21
57.417	0.00	0.29	0.349	O	|	|	|	|	0.21
57.500	0.00	0.29	0.347	O	|	|	|	|	0.21
57.583	0.00	0.29	0.346	O	|	|	|	|	0.21
57.667	0.00	0.29	0.344	O	|	|	|	|	0.21
57.750	0.00	0.28	0.342	O	|	|	|	|	0.20
57.833	0.00	0.28	0.340	O	|	|	|	|	0.20
57.917	0.00	0.28	0.338	O	|	|	|	|	0.20
58.000	0.00	0.28	0.336	O	|	|	|	|	0.20
58.083	0.00	0.28	0.334	O	|	|	|	|	0.20
58.167	0.00	0.28	0.332	O	|	|	|	|	0.20
58.250	0.00	0.27	0.330	O	|	|	|	|	0.20
58.333	0.00	0.27	0.328	O	|	|	|	|	0.20
58.417	0.00	0.27	0.326	O	|	|	|	|	0.20
58.500	0.00	0.27	0.324	O	|	|	|	|	0.19

58.583	0.00	0.27	0.323	O	|	|	|	|	0.19
58.667	0.00	0.27	0.321	O	|	|	|	|	0.19
58.750	0.00	0.26	0.319	O	|	|	|	|	0.19
58.833	0.00	0.26	0.317	O	|	|	|	|	0.19
58.917	0.00	0.26	0.315	O	|	|	|	|	0.19
59.000	0.00	0.26	0.314	O	|	|	|	|	0.19
59.083	0.00	0.26	0.312	O	|	|	|	|	0.19
59.167	0.00	0.26	0.310	O	|	|	|	|	0.19
59.250	0.00	0.26	0.308	O	|	|	|	|	0.18
59.333	0.00	0.25	0.306	O	|	|	|	|	0.18
59.417	0.00	0.25	0.305	O	|	|	|	|	0.18
59.500	0.00	0.25	0.303	O	|	|	|	|	0.18
59.583	0.00	0.25	0.301	O	|	|	|	|	0.18
59.667	0.00	0.25	0.300	O	|	|	|	|	0.18
59.750	0.00	0.25	0.298	O	|	|	|	|	0.18
59.833	0.00	0.25	0.296	O	|	|	|	|	0.18
59.917	0.00	0.24	0.294	O	|	|	|	|	0.18
60.000	0.00	0.24	0.293	O	|	|	|	|	0.18
60.083	0.00	0.24	0.291	O	|	|	|	|	0.17
60.167	0.00	0.24	0.289	O	|	|	|	|	0.17
60.250	0.00	0.24	0.288	O	|	|	|	|	0.17
60.333	0.00	0.24	0.286	O	|	|	|	|	0.17
60.417	0.00	0.24	0.285	O	|	|	|	|	0.17
60.500	0.00	0.23	0.283	O	|	|	|	|	0.17
60.583	0.00	0.23	0.281	O	|	|	|	|	0.17
60.667	0.00	0.23	0.280	O	|	|	|	|	0.17
60.750	0.00	0.23	0.278	O	|	|	|	|	0.17
60.833	0.00	0.23	0.276	O	|	|	|	|	0.17
60.917	0.00	0.23	0.275	O	|	|	|	|	0.16
61.000	0.00	0.23	0.273	O	|	|	|	|	0.16
61.083	0.00	0.23	0.272	O	|	|	|	|	0.16
61.167	0.00	0.22	0.270	O	|	|	|	|	0.16
61.250	0.00	0.22	0.269	O	|	|	|	|	0.16
61.333	0.00	0.22	0.267	O	|	|	|	|	0.16
61.417	0.00	0.22	0.266	O	|	|	|	|	0.16
61.500	0.00	0.22	0.264	O	|	|	|	|	0.16
61.583	0.00	0.22	0.263	O	|	|	|	|	0.16
61.667	0.00	0.22	0.261	O	|	|	|	|	0.16
61.750	0.00	0.22	0.260	O	|	|	|	|	0.16
61.833	0.00	0.21	0.258	O	|	|	|	|	0.15
61.917	0.00	0.21	0.257	O	|	|	|	|	0.15
62.000	0.00	0.21	0.255	O	|	|	|	|	0.15
62.083	0.00	0.21	0.254	O	|	|	|	|	0.15
62.167	0.00	0.21	0.252	O	|	|	|	|	0.15
62.250	0.00	0.21	0.251	O	|	|	|	|	0.15
62.333	0.00	0.21	0.249	O	|	|	|	|	0.15
62.417	0.00	0.21	0.248	O	|	|	|	|	0.15
62.500	0.00	0.20	0.247	O	|	|	|	|	0.15
62.583	0.00	0.20	0.245	O	|	|	|	|	0.15
62.667	0.00	0.20	0.244	O	|	|	|	|	0.15
62.750	0.00	0.20	0.242	O	|	|	|	|	0.15
62.833	0.00	0.20	0.241	O	|	|	|	|	0.14
62.917	0.00	0.20	0.240	O	|	|	|	|	0.14
63.000	0.00	0.20	0.238	O	|	|	|	|	0.14
63.083	0.00	0.20	0.237	O	|	|	|	|	0.14
63.167	0.00	0.20	0.236	O	|	|	|	|	0.14
63.250	0.00	0.19	0.234	O	|	|	|	|	0.14
63.333	0.00	0.19	0.233	O	|	|	|	|	0.14
63.417	0.00	0.19	0.232	O	|	|	|	|	0.14
63.500	0.00	0.19	0.230	O	|	|	|	|	0.14
63.583	0.00	0.19	0.229	O	|	|	|	|	0.14
63.667	0.00	0.19	0.228	O	|	|	|	|	0.14
63.750	0.00	0.19	0.226	O	|	|	|	|	0.14
63.833	0.00	0.19	0.225	O	|	|	|	|	0.13
63.917	0.00	0.19	0.224	O	|	|	|	|	0.13
64.000	0.00	0.18	0.223	O	|	|	|	|	0.13
64.083	0.00	0.18	0.221	O	|	|	|	|	0.13
64.167	0.00	0.18	0.220	O	|	|	|	|	0.13
64.250	0.00	0.18	0.219	O	|	|	|	|	0.13
64.333	0.00	0.18	0.217	O	|	|	|	|	0.13
64.417	0.00	0.18	0.216	O	|	|	|	|	0.13

64.500	0.00	0.18	0.215	O	|	|	|	|	0.13
64.583	0.00	0.18	0.214	O	|	|	|	|	0.13
64.667	0.00	0.18	0.213	O	|	|	|	|	0.13
64.750	0.00	0.18	0.211	O	|	|	|	|	0.13
64.833	0.00	0.17	0.210	O	|	|	|	|	0.13
64.917	0.00	0.17	0.209	O	|	|	|	|	0.13
65.000	0.00	0.17	0.208	O	|	|	|	|	0.12
65.083	0.00	0.17	0.207	O	|	|	|	|	0.12
65.167	0.00	0.17	0.205	O	|	|	|	|	0.12
65.250	0.00	0.17	0.204	O	|	|	|	|	0.12
65.333	0.00	0.17	0.203	O	|	|	|	|	0.12
65.417	0.00	0.17	0.202	O	|	|	|	|	0.12
65.500	0.00	0.17	0.201	O	|	|	|	|	0.12
65.583	0.00	0.17	0.200	O	|	|	|	|	0.12
65.667	0.00	0.16	0.198	O	|	|	|	|	0.12
65.750	0.00	0.16	0.197	O	|	|	|	|	0.12
65.833	0.00	0.16	0.196	O	|	|	|	|	0.12
65.917	0.00	0.16	0.195	O	|	|	|	|	0.12
66.000	0.00	0.16	0.194	O	|	|	|	|	0.12
66.083	0.00	0.16	0.193	O	|	|	|	|	0.12
66.167	0.00	0.16	0.192	O	|	|	|	|	0.11
66.250	0.00	0.16	0.191	O	|	|	|	|	0.11
66.333	0.00	0.16	0.190	O	|	|	|	|	0.11
66.417	0.00	0.16	0.189	O	|	|	|	|	0.11
66.500	0.00	0.16	0.187	O	|	|	|	|	0.11
66.583	0.00	0.15	0.186	O	|	|	|	|	0.11
66.667	0.00	0.15	0.185	O	|	|	|	|	0.11
66.750	0.00	0.15	0.184	O	|	|	|	|	0.11
66.833	0.00	0.15	0.183	O	|	|	|	|	0.11
66.917	0.00	0.15	0.182	O	|	|	|	|	0.11
67.000	0.00	0.15	0.181	O	|	|	|	|	0.11
67.083	0.00	0.15	0.180	O	|	|	|	|	0.11
67.167	0.00	0.15	0.179	O	|	|	|	|	0.11
67.250	0.00	0.15	0.178	O	|	|	|	|	0.11
67.333	0.00	0.15	0.177	O	|	|	|	|	0.11
67.417	0.00	0.15	0.176	O	|	|	|	|	0.11
67.500	0.00	0.15	0.175	O	|	|	|	|	0.10
67.583	0.00	0.14	0.174	O	|	|	|	|	0.10
67.667	0.00	0.14	0.173	O	|	|	|	|	0.10
67.750	0.00	0.14	0.172	O	|	|	|	|	0.10
67.833	0.00	0.14	0.171	O	|	|	|	|	0.10
67.917	0.00	0.14	0.170	O	|	|	|	|	0.10
68.000	0.00	0.14	0.169	O	|	|	|	|	0.10
68.083	0.00	0.14	0.168	O	|	|	|	|	0.10
68.167	0.00	0.14	0.167	O	|	|	|	|	0.10
68.250	0.00	0.14	0.166	O	|	|	|	|	0.10
68.333	0.00	0.14	0.165	O	|	|	|	|	0.10
68.417	0.00	0.14	0.164	O	|	|	|	|	0.10
68.500	0.00	0.14	0.163	O	|	|	|	|	0.10
68.583	0.00	0.13	0.163	O	|	|	|	|	0.10
68.667	0.00	0.13	0.162	O	|	|	|	|	0.10
68.750	0.00	0.13	0.161	O	|	|	|	|	0.10
68.833	0.00	0.13	0.160	O	|	|	|	|	0.10
68.917	0.00	0.13	0.159	O	|	|	|	|	0.10
69.000	0.00	0.13	0.158	O	|	|	|	|	0.09
69.083	0.00	0.13	0.157	O	|	|	|	|	0.09
69.167	0.00	0.13	0.156	O	|	|	|	|	0.09
69.250	0.00	0.13	0.155	O	|	|	|	|	0.09
69.333	0.00	0.13	0.154	O	|	|	|	|	0.09
69.417	0.00	0.13	0.153	O	|	|	|	|	0.09
69.500	0.00	0.13	0.153	O	|	|	|	|	0.09
69.583	0.00	0.13	0.152	O	|	|	|	|	0.09
69.667	0.00	0.13	0.151	O	|	|	|	|	0.09
69.750	0.00	0.12	0.150	O	|	|	|	|	0.09
69.833	0.00	0.12	0.149	O	|	|	|	|	0.09
69.917	0.00	0.12	0.148	O	|	|	|	|	0.09
70.000	0.00	0.12	0.147	O	|	|	|	|	0.09
70.083	0.00	0.12	0.147	O	|	|	|	|	0.09
70.167	0.00	0.12	0.146	O	|	|	|	|	0.09
70.250	0.00	0.12	0.145	O	|	|	|	|	0.09
70.333	0.00	0.12	0.144	O	|	|	|	|	0.09

70.417	0.00	0.12	0.143	O	|	|	|	|	0.09
70.500	0.00	0.12	0.142	O	|	|	|	|	0.09
70.583	0.00	0.12	0.142	O	|	|	|	|	0.08
70.667	0.00	0.12	0.141	O	|	|	|	|	0.08
70.750	0.00	0.12	0.140	O	|	|	|	|	0.08
70.833	0.00	0.12	0.139	O	|	|	|	|	0.08
70.917	0.00	0.11	0.138	O	|	|	|	|	0.08
71.000	0.00	0.11	0.138	O	|	|	|	|	0.08
71.083	0.00	0.11	0.137	O	|	|	|	|	0.08
71.167	0.00	0.11	0.136	O	|	|	|	|	0.08
71.250	0.00	0.11	0.135	O	|	|	|	|	0.08
71.333	0.00	0.11	0.135	O	|	|	|	|	0.08
71.417	0.00	0.11	0.134	O	|	|	|	|	0.08
71.500	0.00	0.11	0.133	O	|	|	|	|	0.08
71.583	0.00	0.11	0.132	O	|	|	|	|	0.08
71.667	0.00	0.11	0.132	O	|	|	|	|	0.08
71.750	0.00	0.11	0.131	O	|	|	|	|	0.08
71.833	0.00	0.11	0.130	O	|	|	|	|	0.08
71.917	0.00	0.11	0.129	O	|	|	|	|	0.08
72.000	0.00	0.11	0.129	O	|	|	|	|	0.08
72.083	0.00	0.11	0.128	O	|	|	|	|	0.08
72.167	0.00	0.11	0.127	O	|	|	|	|	0.08
72.250	0.00	0.10	0.126	O	|	|	|	|	0.08
72.333	0.00	0.10	0.126	O	|	|	|	|	0.08
72.417	0.00	0.10	0.125	O	|	|	|	|	0.07
72.500	0.00	0.10	0.124	O	|	|	|	|	0.07
72.583	0.00	0.10	0.124	O	|	|	|	|	0.07
72.667	0.00	0.10	0.123	O	|	|	|	|	0.07
72.750	0.00	0.10	0.122	O	|	|	|	|	0.07
72.833	0.00	0.10	0.121	O	|	|	|	|	0.07
72.917	0.00	0.10	0.121	O	|	|	|	|	0.07
73.000	0.00	0.10	0.120	O	|	|	|	|	0.07
73.083	0.00	0.10	0.119	O	|	|	|	|	0.07
73.167	0.00	0.10	0.119	O	|	|	|	|	0.07
73.250	0.00	0.10	0.118	O	|	|	|	|	0.07
73.333	0.00	0.10	0.117	O	|	|	|	|	0.07
73.417	0.00	0.10	0.117	O	|	|	|	|	0.07
73.500	0.00	0.10	0.116	O	|	|	|	|	0.07
73.583	0.00	0.10	0.115	O	|	|	|	|	0.07
73.667	0.00	0.10	0.115	O	|	|	|	|	0.07
73.750	0.00	0.09	0.114	O	|	|	|	|	0.07
73.833	0.00	0.09	0.113	O	|	|	|	|	0.07
73.917	0.00	0.09	0.113	O	|	|	|	|	0.07
74.000	0.00	0.09	0.112	O	|	|	|	|	0.07
74.083	0.00	0.09	0.111	O	|	|	|	|	0.07
74.167	0.00	0.09	0.111	O	|	|	|	|	0.07
74.250	0.00	0.09	0.110	O	|	|	|	|	0.07
74.333	0.00	0.09	0.110	O	|	|	|	|	0.07
74.417	0.00	0.09	0.109	O	|	|	|	|	0.07
74.500	0.00	0.09	0.108	O	|	|	|	|	0.06
74.583	0.00	0.09	0.108	O	|	|	|	|	0.06
74.667	0.00	0.09	0.107	O	|	|	|	|	0.06
74.750	0.00	0.09	0.106	O	|	|	|	|	0.06
74.833	0.00	0.09	0.106	O	|	|	|	|	0.06
74.917	0.00	0.09	0.105	O	|	|	|	|	0.06
75.000	0.00	0.09	0.105	O	|	|	|	|	0.06
75.083	0.00	0.09	0.104	O	|	|	|	|	0.06
75.167	0.00	0.09	0.103	O	|	|	|	|	0.06
75.250	0.00	0.09	0.103	O	|	|	|	|	0.06
75.333	0.00	0.08	0.102	O	|	|	|	|	0.06
75.417	0.00	0.08	0.102	O	|	|	|	|	0.06
75.500	0.00	0.08	0.101	O	|	|	|	|	0.06
75.583	0.00	0.08	0.101	O	|	|	|	|	0.06
75.667	0.00	0.08	0.100	O	|	|	|	|	0.06
75.750	0.00	0.08	0.099	O	|	|	|	|	0.06
75.833	0.00	0.08	0.099	O	|	|	|	|	0.06
75.917	0.00	0.08	0.098	O	|	|	|	|	0.06
76.000	0.00	0.08	0.098	O	|	|	|	|	0.06
76.083	0.00	0.08	0.097	O	|	|	|	|	0.06
76.167	0.00	0.08	0.097	O	|	|	|	|	0.06
76.250	0.00	0.08	0.096	O	|	|	|	|	0.06

76.333	0.00	0.08	0.096	O	|	|	|	|	0.06
76.417	0.00	0.08	0.095	O	|	|	|	|	0.06
76.500	0.00	0.08	0.094	O	|	|	|	|	0.06
76.583	0.00	0.08	0.094	O	|	|	|	|	0.06
76.667	0.00	0.08	0.093	O	|	|	|	|	0.06
76.750	0.00	0.08	0.093	O	|	|	|	|	0.06
76.833	0.00	0.08	0.092	O	|	|	|	|	0.06
76.917	0.00	0.08	0.092	O	|	|	|	|	0.06
77.000	0.00	0.08	0.091	O	|	|	|	|	0.05
77.083	0.00	0.08	0.091	O	|	|	|	|	0.05
77.167	0.00	0.07	0.090	O	|	|	|	|	0.05
77.250	0.00	0.07	0.090	O	|	|	|	|	0.05
77.333	0.00	0.07	0.089	O	|	|	|	|	0.05
77.417	0.00	0.07	0.089	O	|	|	|	|	0.05
77.500	0.00	0.07	0.088	O	|	|	|	|	0.05
77.583	0.00	0.07	0.088	O	|	|	|	|	0.05
77.667	0.00	0.07	0.087	O	|	|	|	|	0.05
77.750	0.00	0.07	0.087	O	|	|	|	|	0.05
77.833	0.00	0.07	0.086	O	|	|	|	|	0.05
77.917	0.00	0.07	0.086	O	|	|	|	|	0.05
78.000	0.00	0.07	0.085	O	|	|	|	|	0.05
78.083	0.00	0.07	0.085	O	|	|	|	|	0.05
78.167	0.00	0.07	0.084	O	|	|	|	|	0.05
78.250	0.00	0.07	0.084	O	|	|	|	|	0.05
78.333	0.00	0.07	0.083	O	|	|	|	|	0.05
78.417	0.00	0.07	0.083	O	|	|	|	|	0.05
78.500	0.00	0.07	0.082	O	|	|	|	|	0.05
78.583	0.00	0.07	0.082	O	|	|	|	|	0.05
78.667	0.00	0.07	0.081	O	|	|	|	|	0.05
78.750	0.00	0.07	0.081	O	|	|	|	|	0.05
78.833	0.00	0.07	0.080	O	|	|	|	|	0.05
78.917	0.00	0.07	0.080	O	|	|	|	|	0.05
79.000	0.00	0.07	0.080	O	|	|	|	|	0.05
79.083	0.00	0.07	0.079	O	|	|	|	|	0.05
79.167	0.00	0.07	0.079	O	|	|	|	|	0.05
79.250	0.00	0.06	0.078	O	|	|	|	|	0.05
79.333	0.00	0.06	0.078	O	|	|	|	|	0.05
79.417	0.00	0.06	0.077	O	|	|	|	|	0.05
79.500	0.00	0.06	0.077	O	|	|	|	|	0.05
79.583	0.00	0.06	0.076	O	|	|	|	|	0.05
79.667	0.00	0.06	0.076	O	|	|	|	|	0.05
79.750	0.00	0.06	0.076	O	|	|	|	|	0.05
79.833	0.00	0.06	0.075	O	|	|	|	|	0.05
79.917	0.00	0.06	0.075	O	|	|	|	|	0.04
80.000	0.00	0.06	0.074	O	|	|	|	|	0.04
80.083	0.00	0.06	0.074	O	|	|	|	|	0.04
80.167	0.00	0.06	0.073	O	|	|	|	|	0.04
80.250	0.00	0.06	0.073	O	|	|	|	|	0.04
80.333	0.00	0.06	0.073	O	|	|	|	|	0.04
80.417	0.00	0.06	0.072	O	|	|	|	|	0.04
80.500	0.00	0.06	0.072	O	|	|	|	|	0.04
80.583	0.00	0.06	0.071	O	|	|	|	|	0.04
80.667	0.00	0.06	0.071	O	|	|	|	|	0.04
80.750	0.00	0.06	0.071	O	|	|	|	|	0.04
80.833	0.00	0.06	0.070	O	|	|	|	|	0.04
80.917	0.00	0.06	0.070	O	|	|	|	|	0.04
81.000	0.00	0.06	0.069	O	|	|	|	|	0.04
81.083	0.00	0.06	0.069	O	|	|	|	|	0.04
81.167	0.00	0.06	0.069	O	|	|	|	|	0.04
81.250	0.00	0.06	0.068	O	|	|	|	|	0.04
81.333	0.00	0.06	0.068	O	|	|	|	|	0.04
81.417	0.00	0.06	0.067	O	|	|	|	|	0.04
81.500	0.00	0.06	0.067	O	|	|	|	|	0.04
81.583	0.00	0.06	0.067	O	|	|	|	|	0.04
81.667	0.00	0.05	0.066	O	|	|	|	|	0.04
81.750	0.00	0.05	0.066	O	|	|	|	|	0.04
81.833	0.00	0.05	0.066	O	|	|	|	|	0.04
81.917	0.00	0.05	0.065	O	|	|	|	|	0.04
82.000	0.00	0.05	0.065	O	|	|	|	|	0.04
82.083	0.00	0.05	0.064	O	|	|	|	|	0.04
82.167	0.00	0.05	0.064	O	|	|	|	|	0.04

82.250	0.00	0.05	0.064	O	|	|	|	|	0.04
82.333	0.00	0.05	0.063	O	|	|	|	|	0.04
82.417	0.00	0.05	0.063	O	|	|	|	|	0.04
82.500	0.00	0.05	0.063	O	|	|	|	|	0.04
82.583	0.00	0.05	0.062	O	|	|	|	|	0.04
82.667	0.00	0.05	0.062	O	|	|	|	|	0.04
82.750	0.00	0.05	0.062	O	|	|	|	|	0.04
82.833	0.00	0.05	0.061	O	|	|	|	|	0.04
82.917	0.00	0.05	0.061	O	|	|	|	|	0.04
83.000	0.00	0.05	0.060	O	|	|	|	|	0.04
83.083	0.00	0.05	0.060	O	|	|	|	|	0.04
83.167	0.00	0.05	0.060	O	|	|	|	|	0.04
83.250	0.00	0.05	0.059	O	|	|	|	|	0.04
83.333	0.00	0.05	0.059	O	|	|	|	|	0.04
83.417	0.00	0.05	0.059	O	|	|	|	|	0.04
83.500	0.00	0.05	0.058	O	|	|	|	|	0.04
83.583	0.00	0.05	0.058	O	|	|	|	|	0.03
83.667	0.00	0.05	0.058	O	|	|	|	|	0.03
83.750	0.00	0.05	0.057	O	|	|	|	|	0.03
83.833	0.00	0.05	0.057	O	|	|	|	|	0.03
83.917	0.00	0.05	0.057	O	|	|	|	|	0.03
84.000	0.00	0.05	0.056	O	|	|	|	|	0.03
84.083	0.00	0.05	0.056	O	|	|	|	|	0.03
84.167	0.00	0.05	0.056	O	|	|	|	|	0.03
84.250	0.00	0.05	0.056	O	|	|	|	|	0.03
84.333	0.00	0.05	0.055	O	|	|	|	|	0.03
84.417	0.00	0.05	0.055	O	|	|	|	|	0.03
84.500	0.00	0.05	0.055	O	|	|	|	|	0.03
84.583	0.00	0.05	0.054	O	|	|	|	|	0.03
84.667	0.00	0.04	0.054	O	|	|	|	|	0.03
84.750	0.00	0.04	0.054	O	|	|	|	|	0.03
84.833	0.00	0.04	0.053	O	|	|	|	|	0.03
84.917	0.00	0.04	0.053	O	|	|	|	|	0.03
85.000	0.00	0.04	0.053	O	|	|	|	|	0.03
85.083	0.00	0.04	0.052	O	|	|	|	|	0.03
85.167	0.00	0.04	0.052	O	|	|	|	|	0.03
85.250	0.00	0.04	0.052	O	|	|	|	|	0.03
85.333	0.00	0.04	0.052	O	|	|	|	|	0.03
85.417	0.00	0.04	0.051	O	|	|	|	|	0.03
85.500	0.00	0.04	0.051	O	|	|	|	|	0.03
85.583	0.00	0.04	0.051	O	|	|	|	|	0.03
85.667	0.00	0.04	0.050	O	|	|	|	|	0.03
85.750	0.00	0.04	0.050	O	|	|	|	|	0.03
85.833	0.00	0.04	0.050	O	|	|	|	|	0.03
85.917	0.00	0.04	0.050	O	|	|	|	|	0.03
86.000	0.00	0.04	0.049	O	|	|	|	|	0.03
86.083	0.00	0.04	0.049	O	|	|	|	|	0.03
86.167	0.00	0.04	0.049	O	|	|	|	|	0.03
86.250	0.00	0.04	0.048	O	|	|	|	|	0.03
86.333	0.00	0.04	0.048	O	|	|	|	|	0.03
86.417	0.00	0.04	0.048	O	|	|	|	|	0.03
86.500	0.00	0.04	0.048	O	|	|	|	|	0.03
86.583	0.00	0.04	0.047	O	|	|	|	|	0.03
86.667	0.00	0.04	0.047	O	|	|	|	|	0.03
86.750	0.00	0.04	0.047	O	|	|	|	|	0.03
86.833	0.00	0.04	0.046	O	|	|	|	|	0.03
86.917	0.00	0.04	0.046	O	|	|	|	|	0.03
87.000	0.00	0.04	0.046	O	|	|	|	|	0.03
87.083	0.00	0.04	0.046	O	|	|	|	|	0.03
87.167	0.00	0.04	0.045	O	|	|	|	|	0.03
87.250	0.00	0.04	0.045	O	|	|	|	|	0.03
87.333	0.00	0.04	0.045	O	|	|	|	|	0.03
87.417	0.00	0.04	0.045	O	|	|	|	|	0.03
87.500	0.00	0.04	0.044	O	|	|	|	|	0.03
87.583	0.00	0.04	0.044	O	|	|	|	|	0.03
87.667	0.00	0.04	0.044	O	|	|	|	|	0.03
87.750	0.00	0.04	0.044	O	|	|	|	|	0.03
87.833	0.00	0.04	0.043	O	|	|	|	|	0.03
87.917	0.00	0.04	0.043	O	|	|	|	|	0.03
88.000	0.00	0.04	0.043	O	|	|	|	|	0.03
88.083	0.00	0.04	0.043	O	|	|	|	|	0.03

88.167	0.00	0.04	0.042	O	|	|	|	|	0.03
88.250	0.00	0.04	0.042	O	|	|	|	|	0.03
88.333	0.00	0.03	0.042	O	|	|	|	|	0.03
88.417	0.00	0.03	0.042	O	|	|	|	|	0.03
88.500	0.00	0.03	0.041	O	|	|	|	|	0.02
88.583	0.00	0.03	0.041	O	|	|	|	|	0.02
88.667	0.00	0.03	0.041	O	|	|	|	|	0.02
88.750	0.00	0.03	0.041	O	|	|	|	|	0.02
88.833	0.00	0.03	0.041	O	|	|	|	|	0.02
88.917	0.00	0.03	0.040	O	|	|	|	|	0.02
89.000	0.00	0.03	0.040	O	|	|	|	|	0.02
89.083	0.00	0.03	0.040	O	|	|	|	|	0.02
89.167	0.00	0.03	0.040	O	|	|	|	|	0.02
89.250	0.00	0.03	0.039	O	|	|	|	|	0.02
89.333	0.00	0.03	0.039	O	|	|	|	|	0.02
89.417	0.00	0.03	0.039	O	|	|	|	|	0.02
89.500	0.00	0.03	0.039	O	|	|	|	|	0.02
89.583	0.00	0.03	0.039	O	|	|	|	|	0.02
89.667	0.00	0.03	0.038	O	|	|	|	|	0.02
89.750	0.00	0.03	0.038	O	|	|	|	|	0.02
89.833	0.00	0.03	0.038	O	|	|	|	|	0.02
89.917	0.00	0.03	0.038	O	|	|	|	|	0.02
90.000	0.00	0.03	0.037	O	|	|	|	|	0.02
90.083	0.00	0.03	0.037	O	|	|	|	|	0.02
90.167	0.00	0.03	0.037	O	|	|	|	|	0.02
90.250	0.00	0.03	0.037	O	|	|	|	|	0.02
90.333	0.00	0.03	0.037	O	|	|	|	|	0.02
90.417	0.00	0.03	0.036	O	|	|	|	|	0.02
90.500	0.00	0.03	0.036	O	|	|	|	|	0.02
90.583	0.00	0.03	0.036	O	|	|	|	|	0.02
90.667	0.00	0.03	0.036	O	|	|	|	|	0.02
90.750	0.00	0.03	0.036	O	|	|	|	|	0.02
90.833	0.00	0.03	0.035	O	|	|	|	|	0.02
90.917	0.00	0.03	0.035	O	|	|	|	|	0.02
91.000	0.00	0.03	0.035	O	|	|	|	|	0.02
91.083	0.00	0.03	0.035	O	|	|	|	|	0.02
91.167	0.00	0.03	0.035	O	|	|	|	|	0.02
91.250	0.00	0.03	0.034	O	|	|	|	|	0.02
91.333	0.00	0.03	0.034	O	|	|	|	|	0.02
91.417	0.00	0.03	0.034	O	|	|	|	|	0.02
91.500	0.00	0.03	0.034	O	|	|	|	|	0.02
91.583	0.00	0.03	0.034	O	|	|	|	|	0.02
91.667	0.00	0.03	0.033	O	|	|	|	|	0.02
91.750	0.00	0.03	0.033	O	|	|	|	|	0.02
91.833	0.00	0.03	0.033	O	|	|	|	|	0.02
91.917	0.00	0.03	0.033	O	|	|	|	|	0.02
92.000	0.00	0.03	0.033	O	|	|	|	|	0.02
92.083	0.00	0.03	0.032	O	|	|	|	|	0.02
92.167	0.00	0.03	0.032	O	|	|	|	|	0.02
92.250	0.00	0.03	0.032	O	|	|	|	|	0.02
92.333	0.00	0.03	0.032	O	|	|	|	|	0.02
92.417	0.00	0.03	0.032	O	|	|	|	|	0.02
92.500	0.00	0.03	0.032	O	|	|	|	|	0.02
92.583	0.00	0.03	0.031	O	|	|	|	|	0.02
92.667	0.00	0.03	0.031	O	|	|	|	|	0.02
92.750	0.00	0.03	0.031	O	|	|	|	|	0.02
92.833	0.00	0.03	0.031	O	|	|	|	|	0.02
92.917	0.00	0.03	0.031	O	|	|	|	|	0.02
93.000	0.00	0.03	0.030	O	|	|	|	|	0.02
93.083	0.00	0.03	0.030	O	|	|	|	|	0.02
93.167	0.00	0.02	0.030	O	|	|	|	|	0.02
93.250	0.00	0.02	0.030	O	|	|	|	|	0.02
93.333	0.00	0.02	0.030	O	|	|	|	|	0.02
93.417	0.00	0.02	0.030	O	|	|	|	|	0.02
93.500	0.00	0.02	0.029	O	|	|	|	|	0.02
93.583	0.00	0.02	0.029	O	|	|	|	|	0.02
93.667	0.00	0.02	0.029	O	|	|	|	|	0.02
93.750	0.00	0.02	0.029	O	|	|	|	|	0.02
93.833	0.00	0.02	0.029	O	|	|	|	|	0.02
93.917	0.00	0.02	0.029	O	|	|	|	|	0.02
94.000	0.00	0.02	0.028	O	|	|	|	|	0.02

94.083	0.00	0.02	0.028	O					0.02
94.167	0.00	0.02	0.028	O					0.02
94.250	0.00	0.02	0.028	O					0.02
94.333	0.00	0.02	0.028	O					0.02
94.417	0.00	0.02	0.028	O					0.02
94.500	0.00	0.02	0.027	O					0.02
94.583	0.00	0.02	0.027	O					0.02
94.667	0.00	0.02	0.027	O					0.02
94.750	0.00	0.02	0.027	O					0.02
94.833	0.00	0.02	0.027	O					0.02
94.917	0.00	0.02	0.027	O					0.02
95.000	0.00	0.02	0.027	O					0.02
95.083	0.00	0.02	0.026	O					0.02
95.167	0.00	0.02	0.026	O					0.02
95.250	0.00	0.02	0.026	O					0.02
95.333	0.00	0.02	0.026	O					0.02
95.417	0.00	0.02	0.026	O					0.02
95.500	0.00	0.02	0.026	O					0.02
95.583	0.00	0.02	0.026	O					0.02
95.667	0.00	0.02	0.025	O					0.02
95.750	0.00	0.02	0.025	O					0.02
95.833	0.00	0.02	0.025	O					0.02
95.917	0.00	0.02	0.025	O					0.01
96.000	0.00	0.02	0.025	O					0.01
96.083	0.00	0.02	0.025	O					0.01
96.167	0.00	0.02	0.025	O					0.01
96.250	0.00	0.02	0.024	O					0.01
96.333	0.00	0.02	0.024	O					0.01
96.417	0.00	0.02	0.024	O					0.01
96.500	0.00	0.02	0.024	O					0.01
96.583	0.00	0.02	0.024	O					0.01
96.667	0.00	0.02	0.024	O					0.01
96.750	0.00	0.02	0.024	O					0.01
96.833	0.00	0.02	0.023	O					0.01
96.917	0.00	0.02	0.023	O					0.01
97.000	0.00	0.02	0.023	O					0.01
97.083	0.00	0.02	0.023	O					0.01
97.167	0.00	0.02	0.023	O					0.01
97.250	0.00	0.02	0.023	O					0.01
97.333	0.00	0.02	0.023	O					0.01
97.417	0.00	0.02	0.023	O					0.01
97.500	0.00	0.02	0.022	O					0.01
97.583	0.00	0.02	0.022	O					0.01
97.667	0.00	0.02	0.022	O					0.01
97.750	0.00	0.02	0.022	O					0.01
97.833	0.00	0.02	0.022	O					0.01
97.917	0.00	0.02	0.022	O					0.01
98.000	0.00	0.02	0.022	O					0.01
98.083	0.00	0.02	0.021	O					0.01
98.167	0.00	0.02	0.021	O					0.01
98.250	0.00	0.02	0.021	O					0.01
98.333	0.00	0.02	0.021	O					0.01
98.417	0.00	0.02	0.021	O					0.01
98.500	0.00	0.02	0.021	O					0.01
98.583	0.00	0.02	0.021	O					0.01
98.667	0.00	0.02	0.021	O					0.01
98.750	0.00	0.02	0.021	O					0.01
98.833	0.00	0.02	0.020	O					0.01
98.917	0.00	0.02	0.020	O					0.01
99.000	0.00	0.02	0.020	O					0.01
99.083	0.00	0.02	0.020	O					0.01
99.167	0.00	0.02	0.020	O					0.01
99.250	0.00	0.02	0.020	O					0.01
99.333	0.00	0.02	0.020	O					0.01
99.417	0.00	0.02	0.020	O					0.01
99.500	0.00	0.02	0.020	O					0.01
99.583	0.00	0.02	0.019	O					0.01
99.667	0.00	0.02	0.019	O					0.01
99.750	0.00	0.02	0.019	O					0.01
99.833	0.00	0.02	0.019	O					0.01
99.917	0.00	0.02	0.019	O					0.01

100.000	0.00	0.02	0.019	O	|	|	|	|	0.01
100.083	0.00	0.02	0.019	O	|	|	|	|	0.01
100.167	0.00	0.02	0.019	O	|	|	|	|	0.01
100.250	0.00	0.02	0.019	O	|	|	|	|	0.01
100.333	0.00	0.02	0.018	O	|	|	|	|	0.01
100.417	0.00	0.02	0.018	O	|	|	|	|	0.01
100.500	0.00	0.02	0.018	O	|	|	|	|	0.01
100.583	0.00	0.02	0.018	O	|	|	|	|	0.01
100.667	0.00	0.01	0.018	O	|	|	|	|	0.01
100.750	0.00	0.01	0.018	O	|	|	|	|	0.01
100.833	0.00	0.01	0.018	O	|	|	|	|	0.01
100.917	0.00	0.01	0.018	O	|	|	|	|	0.01
101.000	0.00	0.01	0.018	O	|	|	|	|	0.01
101.083	0.00	0.01	0.017	O	|	|	|	|	0.01
101.167	0.00	0.01	0.017	O	|	|	|	|	0.01
101.250	0.00	0.01	0.017	O	|	|	|	|	0.01
101.333	0.00	0.01	0.017	O	|	|	|	|	0.01
101.417	0.00	0.01	0.017	O	|	|	|	|	0.01
101.500	0.00	0.01	0.017	O	|	|	|	|	0.01
101.583	0.00	0.01	0.017	O	|	|	|	|	0.01
101.667	0.00	0.01	0.017	O	|	|	|	|	0.01
101.750	0.00	0.01	0.017	O	|	|	|	|	0.01
101.833	0.00	0.01	0.017	O	|	|	|	|	0.01
101.917	0.00	0.01	0.017	O	|	|	|	|	0.01
102.000	0.00	0.01	0.016	O	|	|	|	|	0.01
102.083	0.00	0.01	0.016	O	|	|	|	|	0.01
102.167	0.00	0.01	0.016	O	|	|	|	|	0.01
102.250	0.00	0.01	0.016	O	|	|	|	|	0.01
102.333	0.00	0.01	0.016	O	|	|	|	|	0.01
102.417	0.00	0.01	0.016	O	|	|	|	|	0.01
102.500	0.00	0.01	0.016	O	|	|	|	|	0.01
102.583	0.00	0.01	0.016	O	|	|	|	|	0.01
102.667	0.00	0.01	0.016	O	|	|	|	|	0.01
102.750	0.00	0.01	0.016	O	|	|	|	|	0.01
102.833	0.00	0.01	0.016	O	|	|	|	|	0.01
102.917	0.00	0.01	0.015	O	|	|	|	|	0.01
103.000	0.00	0.01	0.015	O	|	|	|	|	0.01
103.083	0.00	0.01	0.015	O	|	|	|	|	0.01
103.167	0.00	0.01	0.015	O	|	|	|	|	0.01
103.250	0.00	0.01	0.015	O	|	|	|	|	0.01
103.333	0.00	0.01	0.015	O	|	|	|	|	0.01
103.417	0.00	0.01	0.015	O	|	|	|	|	0.01
103.500	0.00	0.01	0.015	O	|	|	|	|	0.01
103.583	0.00	0.01	0.015	O	|	|	|	|	0.01
103.667	0.00	0.01	0.015	O	|	|	|	|	0.01
103.750	0.00	0.01	0.015	O	|	|	|	|	0.01
103.833	0.00	0.01	0.014	O	|	|	|	|	0.01
103.917	0.00	0.01	0.014	O	|	|	|	|	0.01
104.000	0.00	0.01	0.014	O	|	|	|	|	0.01
104.083	0.00	0.01	0.014	O	|	|	|	|	0.01
104.167	0.00	0.01	0.014	O	|	|	|	|	0.01
104.250	0.00	0.01	0.014	O	|	|	|	|	0.01
104.333	0.00	0.01	0.014	O	|	|	|	|	0.01
104.417	0.00	0.01	0.014	O	|	|	|	|	0.01
104.500	0.00	0.01	0.014	O	|	|	|	|	0.01
104.583	0.00	0.01	0.014	O	|	|	|	|	0.01
104.667	0.00	0.01	0.014	O	|	|	|	|	0.01
104.750	0.00	0.01	0.014	O	|	|	|	|	0.01
104.833	0.00	0.01	0.014	O	|	|	|	|	0.01
104.917	0.00	0.01	0.013	O	|	|	|	|	0.01
105.000	0.00	0.01	0.013	O	|	|	|	|	0.01
105.083	0.00	0.01	0.013	O	|	|	|	|	0.01
105.167	0.00	0.01	0.013	O	|	|	|	|	0.01
105.250	0.00	0.01	0.013	O	|	|	|	|	0.01
105.333	0.00	0.01	0.013	O	|	|	|	|	0.01
105.417	0.00	0.01	0.013	O	|	|	|	|	0.01
105.500	0.00	0.01	0.013	O	|	|	|	|	0.01
105.583	0.00	0.01	0.013	O	|	|	|	|	0.01
105.667	0.00	0.01	0.013	O	|	|	|	|	0.01
105.750	0.00	0.01	0.013	O	|	|	|	|	0.01
105.833	0.00	0.01	0.013	O	|	|	|	|	0.01

105.917	0.00	0.01	0.013	O	|	|	|	|	0.01
106.000	0.00	0.01	0.012	O	|	|	|	|	0.01
106.083	0.00	0.01	0.012	O	|	|	|	|	0.01
106.167	0.00	0.01	0.012	O	|	|	|	|	0.01
106.250	0.00	0.01	0.012	O	|	|	|	|	0.01
106.333	0.00	0.01	0.012	O	|	|	|	|	0.01
106.417	0.00	0.01	0.012	O	|	|	|	|	0.01
106.500	0.00	0.01	0.012	O	|	|	|	|	0.01
106.583	0.00	0.01	0.012	O	|	|	|	|	0.01
106.667	0.00	0.01	0.012	O	|	|	|	|	0.01
106.750	0.00	0.01	0.012	O	|	|	|	|	0.01
106.833	0.00	0.01	0.012	O	|	|	|	|	0.01
106.917	0.00	0.01	0.012	O	|	|	|	|	0.01
107.000	0.00	0.01	0.012	O	|	|	|	|	0.01
107.083	0.00	0.01	0.012	O	|	|	|	|	0.01
107.167	0.00	0.01	0.012	O	|	|	|	|	0.01
107.250	0.00	0.01	0.011	O	|	|	|	|	0.01
107.333	0.00	0.01	0.011	O	|	|	|	|	0.01
107.417	0.00	0.01	0.011	O	|	|	|	|	0.01
107.500	0.00	0.01	0.011	O	|	|	|	|	0.01
107.583	0.00	0.01	0.011	O	|	|	|	|	0.01
107.667	0.00	0.01	0.011	O	|	|	|	|	0.01
107.750	0.00	0.01	0.011	O	|	|	|	|	0.01
107.833	0.00	0.01	0.011	O	|	|	|	|	0.01
107.917	0.00	0.01	0.011	O	|	|	|	|	0.01
108.000	0.00	0.01	0.011	O	|	|	|	|	0.01
108.083	0.00	0.01	0.011	O	|	|	|	|	0.01
108.167	0.00	0.01	0.011	O	|	|	|	|	0.01
108.250	0.00	0.01	0.011	O	|	|	|	|	0.01
108.333	0.00	0.01	0.011	O	|	|	|	|	0.01
108.417	0.00	0.01	0.011	O	|	|	|	|	0.01
108.500	0.00	0.01	0.011	O	|	|	|	|	0.01
108.583	0.00	0.01	0.010	O	|	|	|	|	0.01
108.667	0.00	0.01	0.010	O	|	|	|	|	0.01
108.750	0.00	0.01	0.010	O	|	|	|	|	0.01
108.833	0.00	0.01	0.010	O	|	|	|	|	0.01
108.917	0.00	0.01	0.010	O	|	|	|	|	0.01
109.000	0.00	0.01	0.010	O	|	|	|	|	0.01
109.083	0.00	0.01	0.010	O	|	|	|	|	0.01
109.167	0.00	0.01	0.010	O	|	|	|	|	0.01
109.250	0.00	0.01	0.010	O	|	|	|	|	0.01
109.333	0.00	0.01	0.010	O	|	|	|	|	0.01
109.417	0.00	0.01	0.010	O	|	|	|	|	0.01
109.500	0.00	0.01	0.010	O	|	|	|	|	0.01
109.583	0.00	0.01	0.010	O	|	|	|	|	0.01
109.667	0.00	0.01	0.010	O	|	|	|	|	0.01
109.750	0.00	0.01	0.010	O	|	|	|	|	0.01
109.833	0.00	0.01	0.010	O	|	|	|	|	0.01
109.917	0.00	0.01	0.010	O	|	|	|	|	0.01
110.000	0.00	0.01	0.009	O	|	|	|	|	0.01
110.083	0.00	0.01	0.009	O	|	|	|	|	0.01
110.167	0.00	0.01	0.009	O	|	|	|	|	0.01
110.250	0.00	0.01	0.009	O	|	|	|	|	0.01
110.333	0.00	0.01	0.009	O	|	|	|	|	0.01
110.417	0.00	0.01	0.009	O	|	|	|	|	0.01
110.500	0.00	0.01	0.009	O	|	|	|	|	0.01
110.583	0.00	0.01	0.009	O	|	|	|	|	0.01
110.667	0.00	0.01	0.009	O	|	|	|	|	0.01
110.750	0.00	0.01	0.009	O	|	|	|	|	0.01
110.833	0.00	0.01	0.009	O	|	|	|	|	0.01
110.917	0.00	0.01	0.009	O	|	|	|	|	0.01
111.000	0.00	0.01	0.009	O	|	|	|	|	0.01
111.083	0.00	0.01	0.009	O	|	|	|	|	0.01
111.167	0.00	0.01	0.009	O	|	|	|	|	0.01
111.250	0.00	0.01	0.009	O	|	|	|	|	0.01
111.333	0.00	0.01	0.009	O	|	|	|	|	0.01
111.417	0.00	0.01	0.009	O	|	|	|	|	0.01
111.500	0.00	0.01	0.009	O	|	|	|	|	0.01
111.583	0.00	0.01	0.009	O	|	|	|	|	0.01
111.667	0.00	0.01	0.008	O	|	|	|	|	0.01
111.750	0.00	0.01	0.008	O	|	|	|	|	0.01

111.833	0.00	0.01	0.008	O	|	|	|	|	0.01
111.917	0.00	0.01	0.008	O	|	|	|	|	0.00
112.000	0.00	0.01	0.008	O	|	|	|	|	0.00
112.083	0.00	0.01	0.008	O	|	|	|	|	0.00
112.167	0.00	0.01	0.008	O	|	|	|	|	0.00
112.250	0.00	0.01	0.008	O	|	|	|	|	0.00
112.333	0.00	0.01	0.008	O	|	|	|	|	0.00
112.417	0.00	0.01	0.008	O	|	|	|	|	0.00
112.500	0.00	0.01	0.008	O	|	|	|	|	0.00
112.583	0.00	0.01	0.008	O	|	|	|	|	0.00
112.667	0.00	0.01	0.008	O	|	|	|	|	0.00
112.750	0.00	0.01	0.008	O	|	|	|	|	0.00
112.833	0.00	0.01	0.008	O	|	|	|	|	0.00
112.917	0.00	0.01	0.008	O	|	|	|	|	0.00
113.000	0.00	0.01	0.008	O	|	|	|	|	0.00
113.083	0.00	0.01	0.008	O	|	|	|	|	0.00
113.167	0.00	0.01	0.008	O	|	|	|	|	0.00
113.250	0.00	0.01	0.008	O	|	|	|	|	0.00
113.333	0.00	0.01	0.008	O	|	|	|	|	0.00
113.417	0.00	0.01	0.008	O	|	|	|	|	0.00
113.500	0.00	0.01	0.007	O	|	|	|	|	0.00
113.583	0.00	0.01	0.007	O	|	|	|	|	0.00
113.667	0.00	0.01	0.007	O	|	|	|	|	0.00
113.750	0.00	0.01	0.007	O	|	|	|	|	0.00
113.833	0.00	0.01	0.007	O	|	|	|	|	0.00
113.917	0.00	0.01	0.007	O	|	|	|	|	0.00
114.000	0.00	0.01	0.007	O	|	|	|	|	0.00
114.083	0.00	0.01	0.007	O	|	|	|	|	0.00
114.167	0.00	0.01	0.007	O	|	|	|	|	0.00
114.250	0.00	0.01	0.007	O	|	|	|	|	0.00
114.333	0.00	0.01	0.007	O	|	|	|	|	0.00
114.417	0.00	0.01	0.007	O	|	|	|	|	0.00
114.500	0.00	0.01	0.007	O	|	|	|	|	0.00
114.583	0.00	0.01	0.007	O	|	|	|	|	0.00
114.667	0.00	0.01	0.007	O	|	|	|	|	0.00
114.750	0.00	0.01	0.007	O	|	|	|	|	0.00
114.833	0.00	0.01	0.007	O	|	|	|	|	0.00
114.917	0.00	0.01	0.007	O	|	|	|	|	0.00
115.000	0.00	0.01	0.007	O	|	|	|	|	0.00
115.083	0.00	0.01	0.007	O	|	|	|	|	0.00
115.167	0.00	0.01	0.007	O	|	|	|	|	0.00
115.250	0.00	0.01	0.007	O	|	|	|	|	0.00
115.333	0.00	0.01	0.007	O	|	|	|	|	0.00
115.417	0.00	0.01	0.007	O	|	|	|	|	0.00
115.500	0.00	0.01	0.007	O	|	|	|	|	0.00
115.583	0.00	0.01	0.006	O	|	|	|	|	0.00
115.667	0.00	0.01	0.006	O	|	|	|	|	0.00
115.750	0.00	0.01	0.006	O	|	|	|	|	0.00
115.833	0.00	0.01	0.006	O	|	|	|	|	0.00
115.917	0.00	0.01	0.006	O	|	|	|	|	0.00
116.000	0.00	0.01	0.006	O	|	|	|	|	0.00
116.083	0.00	0.01	0.006	O	|	|	|	|	0.00
116.167	0.00	0.01	0.006	O	|	|	|	|	0.00
116.250	0.00	0.01	0.006	O	|	|	|	|	0.00
116.333	0.00	0.01	0.006	O	|	|	|	|	0.00
116.417	0.00	0.01	0.006	O	|	|	|	|	0.00
116.500	0.00	0.01	0.006	O	|	|	|	|	0.00
116.583	0.00	0.01	0.006	O	|	|	|	|	0.00
116.667	0.00	0.00	0.006	O	|	|	|	|	0.00
116.750	0.00	0.00	0.006	O	|	|	|	|	0.00
116.833	0.00	0.00	0.006	O	|	|	|	|	0.00
116.917	0.00	0.00	0.006	O	|	|	|	|	0.00
117.000	0.00	0.00	0.006	O	|	|	|	|	0.00
117.083	0.00	0.00	0.006	O	|	|	|	|	0.00
117.167	0.00	0.00	0.006	O	|	|	|	|	0.00
117.250	0.00	0.00	0.006	O	|	|	|	|	0.00
117.333	0.00	0.00	0.006	O	|	|	|	|	0.00
117.417	0.00	0.00	0.006	O	|	|	|	|	0.00
117.500	0.00	0.00	0.006	O	|	|	|	|	0.00
117.583	0.00	0.00	0.006	O	|	|	|	|	0.00
117.667	0.00	0.00	0.006	O	|	|	|	|	0.00

117.750	0.00	0.00	0.006	O	|	|	|	|	0.00
117.833	0.00	0.00	0.006	O	|	|	|	|	0.00
117.917	0.00	0.00	0.006	O	|	|	|	|	0.00
118.000	0.00	0.00	0.005	O	|	|	|	|	0.00
118.083	0.00	0.00	0.005	O	|	|	|	|	0.00
118.167	0.00	0.00	0.005	O	|	|	|	|	0.00
118.250	0.00	0.00	0.005	O	|	|	|	|	0.00
118.333	0.00	0.00	0.005	O	|	|	|	|	0.00
118.417	0.00	0.00	0.005	O	|	|	|	|	0.00
118.500	0.00	0.00	0.005	O	|	|	|	|	0.00
118.583	0.00	0.00	0.005	O	|	|	|	|	0.00
118.667	0.00	0.00	0.005	O	|	|	|	|	0.00
118.750	0.00	0.00	0.005	O	|	|	|	|	0.00
118.833	0.00	0.00	0.005	O	|	|	|	|	0.00
118.917	0.00	0.00	0.005	O	|	|	|	|	0.00
119.000	0.00	0.00	0.005	O	|	|	|	|	0.00
119.083	0.00	0.00	0.005	O	|	|	|	|	0.00
119.167	0.00	0.00	0.005	O	|	|	|	|	0.00
119.250	0.00	0.00	0.005	O	|	|	|	|	0.00
119.333	0.00	0.00	0.005	O	|	|	|	|	0.00
119.417	0.00	0.00	0.005	O	|	|	|	|	0.00
119.500	0.00	0.00	0.005	O	|	|	|	|	0.00
119.583	0.00	0.00	0.005	O	|	|	|	|	0.00
119.667	0.00	0.00	0.005	O	|	|	|	|	0.00
119.750	0.00	0.00	0.005	O	|	|	|	|	0.00
119.833	0.00	0.00	0.005	O	|	|	|	|	0.00
119.917	0.00	0.00	0.005	O	|	|	|	|	0.00
120.000	0.00	0.00	0.005	O	|	|	|	|	0.00
120.083	0.00	0.00	0.005	O	|	|	|	|	0.00
120.167	0.00	0.00	0.005	O	|	|	|	|	0.00
120.250	0.00	0.00	0.005	O	|	|	|	|	0.00
120.333	0.00	0.00	0.005	O	|	|	|	|	0.00
120.417	0.00	0.00	0.005	O	|	|	|	|	0.00
120.500	0.00	0.00	0.005	O	|	|	|	|	0.00
120.583	0.00	0.00	0.005	O	|	|	|	|	0.00
120.667	0.00	0.00	0.005	O	|	|	|	|	0.00
120.750	0.00	0.00	0.005	O	|	|	|	|	0.00
120.833	0.00	0.00	0.005	O	|	|	|	|	0.00
120.917	0.00	0.00	0.004	O	|	|	|	|	0.00
121.000	0.00	0.00	0.004	O	|	|	|	|	0.00
121.083	0.00	0.00	0.004	O	|	|	|	|	0.00
121.167	0.00	0.00	0.004	O	|	|	|	|	0.00
121.250	0.00	0.00	0.004	O	|	|	|	|	0.00
121.333	0.00	0.00	0.004	O	|	|	|	|	0.00
121.417	0.00	0.00	0.004	O	|	|	|	|	0.00
121.500	0.00	0.00	0.004	O	|	|	|	|	0.00
121.583	0.00	0.00	0.004	O	|	|	|	|	0.00
121.667	0.00	0.00	0.004	O	|	|	|	|	0.00
121.750	0.00	0.00	0.004	O	|	|	|	|	0.00
121.833	0.00	0.00	0.004	O	|	|	|	|	0.00
121.917	0.00	0.00	0.004	O	|	|	|	|	0.00
122.000	0.00	0.00	0.004	O	|	|	|	|	0.00
122.083	0.00	0.00	0.004	O	|	|	|	|	0.00
122.167	0.00	0.00	0.004	O	|	|	|	|	0.00
122.250	0.00	0.00	0.004	O	|	|	|	|	0.00
122.333	0.00	0.00	0.004	O	|	|	|	|	0.00
122.417	0.00	0.00	0.004	O	|	|	|	|	0.00
122.500	0.00	0.00	0.004	O	|	|	|	|	0.00
122.583	0.00	0.00	0.004	O	|	|	|	|	0.00
122.667	0.00	0.00	0.004	O	|	|	|	|	0.00
122.750	0.00	0.00	0.004	O	|	|	|	|	0.00
122.833	0.00	0.00	0.004	O	|	|	|	|	0.00
122.917	0.00	0.00	0.004	O	|	|	|	|	0.00
123.000	0.00	0.00	0.004	O	|	|	|	|	0.00
123.083	0.00	0.00	0.004	O	|	|	|	|	0.00
123.167	0.00	0.00	0.004	O	|	|	|	|	0.00
123.250	0.00	0.00	0.004	O	|	|	|	|	0.00
123.333	0.00	0.00	0.004	O	|	|	|	|	0.00
123.417	0.00	0.00	0.004	O	|	|	|	|	0.00
123.500	0.00	0.00	0.004	O	|	|	|	|	0.00
123.583	0.00	0.00	0.004	O	|	|	|	|	0.00

123.667	0.00	0.00	0.004	O	|	|	|	0.00
123.750	0.00	0.00	0.004	O	|	|	|	0.00
123.833	0.00	0.00	0.004	O	|	|	|	0.00
123.917	0.00	0.00	0.004	O	|	|	|	0.00
124.000	0.00	0.00	0.004	O	|	|	|	0.00
124.083	0.00	0.00	0.004	O	|	|	|	0.00
124.167	0.00	0.00	0.004	O	|	|	|	0.00
124.250	0.00	0.00	0.004	O	|	|	|	0.00
124.333	0.00	0.00	0.004	O	|	|	|	0.00
124.417	0.00	0.00	0.004	O	|	|	|	0.00
124.500	0.00	0.00	0.004	O	|	|	|	0.00
124.583	0.00	0.00	0.003	O	|	|	|	0.00
124.667	0.00	0.00	0.003	O	|	|	|	0.00
124.750	0.00	0.00	0.003	O	|	|	|	0.00
124.833	0.00	0.00	0.003	O	|	|	|	0.00
124.917	0.00	0.00	0.003	O	|	|	|	0.00
125.000	0.00	0.00	0.003	O	|	|	|	0.00
125.083	0.00	0.00	0.003	O	|	|	|	0.00
125.167	0.00	0.00	0.003	O	|	|	|	0.00
125.250	0.00	0.00	0.003	O	|	|	|	0.00
125.333	0.00	0.00	0.003	O	|	|	|	0.00
125.417	0.00	0.00	0.003	O	|	|	|	0.00
125.500	0.00	0.00	0.003	O	|	|	|	0.00
125.583	0.00	0.00	0.003	O	|	|	|	0.00
125.667	0.00	0.00	0.003	O	|	|	|	0.00
125.750	0.00	0.00	0.003	O	|	|	|	0.00
125.833	0.00	0.00	0.003	O	|	|	|	0.00
125.917	0.00	0.00	0.003	O	|	|	|	0.00
126.000	0.00	0.00	0.003	O	|	|	|	0.00
126.083	0.00	0.00	0.003	O	|	|	|	0.00
126.167	0.00	0.00	0.003	O	|	|	|	0.00
126.250	0.00	0.00	0.003	O	|	|	|	0.00
126.333	0.00	0.00	0.003	O	|	|	|	0.00
126.417	0.00	0.00	0.003	O	|	|	|	0.00
126.500	0.00	0.00	0.003	O	|	|	|	0.00
126.583	0.00	0.00	0.003	O	|	|	|	0.00
126.667	0.00	0.00	0.003	O	|	|	|	0.00
126.750	0.00	0.00	0.003	O	|	|	|	0.00
126.833	0.00	0.00	0.003	O	|	|	|	0.00
126.917	0.00	0.00	0.003	O	|	|	|	0.00
127.000	0.00	0.00	0.003	O	|	|	|	0.00
127.083	0.00	0.00	0.003	O	|	|	|	0.00
127.167	0.00	0.00	0.003	O	|	|	|	0.00
127.250	0.00	0.00	0.003	O	|	|	|	0.00
127.333	0.00	0.00	0.003	O	|	|	|	0.00
127.417	0.00	0.00	0.003	O	|	|	|	0.00
127.500	0.00	0.00	0.003	O	|	|	|	0.00
127.583	0.00	0.00	0.003	O	|	|	|	0.00
127.667	0.00	0.00	0.003	O	|	|	|	0.00
127.750	0.00	0.00	0.003	O	|	|	|	0.00
127.833	0.00	0.00	0.003	O	|	|	|	0.00
127.917	0.00	0.00	0.003	O	|	|	|	0.00
128.000	0.00	0.00	0.003	O	|	|	|	0.00
128.083	0.00	0.00	0.003	O	|	|	|	0.00
128.167	0.00	0.00	0.003	O	|	|	|	0.00
128.250	0.00	0.00	0.003	O	|	|	|	0.00
128.333	0.00	0.00	0.003	O	|	|	|	0.00
128.417	0.00	0.00	0.003	O	|	|	|	0.00
128.500	0.00	0.00	0.003	O	|	|	|	0.00
128.583	0.00	0.00	0.003	O	|	|	|	0.00
128.667	0.00	0.00	0.003	O	|	|	|	0.00
128.750	0.00	0.00	0.003	O	|	|	|	0.00
128.833	0.00	0.00	0.003	O	|	|	|	0.00
128.917	0.00	0.00	0.003	O	|	|	|	0.00
129.000	0.00	0.00	0.003	O	|	|	|	0.00
129.083	0.00	0.00	0.003	O	|	|	|	0.00
129.167	0.00	0.00	0.003	O	|	|	|	0.00
129.250	0.00	0.00	0.003	O	|	|	|	0.00
129.333	0.00	0.00	0.003	O	|	|	|	0.00
129.417	0.00	0.00	0.003	O	|	|	|	0.00
129.500	0.00	0.00	0.002	O	|	|	|	0.00

129.583	0.00	0.00	0.002	O					0.00
129.667	0.00	0.00	0.002	O					0.00
129.750	0.00	0.00	0.002	O					0.00
129.833	0.00	0.00	0.002	O					0.00
129.917	0.00	0.00	0.002	O					0.00
130.000	0.00	0.00	0.002	O					0.00
130.083	0.00	0.00	0.002	O					0.00
130.167	0.00	0.00	0.002	O					0.00
130.250	0.00	0.00	0.002	O					0.00
130.333	0.00	0.00	0.002	O					0.00
130.417	0.00	0.00	0.002	O					0.00
130.500	0.00	0.00	0.002	O					0.00
130.583	0.00	0.00	0.002	O					0.00
130.667	0.00	0.00	0.002	O					0.00
130.750	0.00	0.00	0.002	O					0.00
130.833	0.00	0.00	0.002	O					0.00
130.917	0.00	0.00	0.002	O					0.00
131.000	0.00	0.00	0.002	O					0.00
131.083	0.00	0.00	0.002	O					0.00
131.167	0.00	0.00	0.002	O					0.00
131.250	0.00	0.00	0.002	O					0.00
131.333	0.00	0.00	0.002	O					0.00
131.417	0.00	0.00	0.002	O					0.00
131.500	0.00	0.00	0.002	O					0.00
131.583	0.00	0.00	0.002	O					0.00
131.667	0.00	0.00	0.002	O					0.00
131.750	0.00	0.00	0.002	O					0.00
131.833	0.00	0.00	0.002	O					0.00
131.917	0.00	0.00	0.002	O					0.00
132.000	0.00	0.00	0.002	O					0.00
132.083	0.00	0.00	0.002	O					0.00
132.167	0.00	0.00	0.002	O					0.00
132.250	0.00	0.00	0.002	O					0.00
132.333	0.00	0.00	0.002	O					0.00
132.417	0.00	0.00	0.002	O					0.00
132.500	0.00	0.00	0.002	O					0.00
132.583	0.00	0.00	0.002	O					0.00
132.667	0.00	0.00	0.002	O					0.00
132.750	0.00	0.00	0.002	O					0.00
132.833	0.00	0.00	0.002	O					0.00
132.917	0.00	0.00	0.002	O					0.00
133.000	0.00	0.00	0.002	O					0.00
133.083	0.00	0.00	0.002	O					0.00
133.167	0.00	0.00	0.002	O					0.00
133.250	0.00	0.00	0.002	O					0.00
133.333	0.00	0.00	0.002	O					0.00
133.417	0.00	0.00	0.002	O					0.00
133.500	0.00	0.00	0.002	O					0.00
133.583	0.00	0.00	0.002	O					0.00
133.667	0.00	0.00	0.002	O					0.00
133.750	0.00	0.00	0.002	O					0.00
133.833	0.00	0.00	0.002	O					0.00
133.917	0.00	0.00	0.002	O					0.00
134.000	0.00	0.00	0.002	O					0.00
134.083	0.00	0.00	0.002	O					0.00
134.167	0.00	0.00	0.002	O					0.00
134.250	0.00	0.00	0.002	O					0.00
134.333	0.00	0.00	0.002	O					0.00
134.417	0.00	0.00	0.002	O					0.00
134.500	0.00	0.00	0.002	O					0.00
134.583	0.00	0.00	0.002	O					0.00
134.667	0.00	0.00	0.002	O					0.00
134.750	0.00	0.00	0.002	O					0.00
134.833	0.00	0.00	0.002	O					0.00
134.917	0.00	0.00	0.002	O					0.00
135.000	0.00	0.00	0.002	O					0.00
135.083	0.00	0.00	0.002	O					0.00
135.167	0.00	0.00	0.002	O					0.00
135.250	0.00	0.00	0.002	O					0.00
135.333	0.00	0.00	0.002	O					0.00
135.417	0.00	0.00	0.002	O					0.00

```
Remaining water in basin =    0.00 (Ac.Ft)


**************************HYDROGRAPH DATA**************************
               Number of intervals =  1625
               Time interval =    5.0 (Min.)
               Maximum/Peak flow rate =       50.846 (CFS)
               Total volume =      29.103 (Ac.Ft)
       Status of hydrographs being held in storage
                  Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
       Peak (CFS)       0.000     0.000     0.000     0.000     0.000
       Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
*******************************************************************

-------------------------------------------------------------------
```

- Basin 'C' - 100 Year 3 Hour Storm Routing Analysis

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                  FLOOD HYDROGRAPH ROUTING PROGRAM
            Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012
                        Study date: 03/20/17

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WESTRIDGE HYDROLOGY STUDY
PROPOSED ROUTING - BASIN 'C' - 100 YEAR 3 HOUR STORM
HUNSAKER & ASSOCIATES, MARCH 20, 2017
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------


Program License Serial Number 4094

------------------------------------------------------------------------
******************** HYDROGRAPH INFORMATION **********************

               From study/file name: PRC10003.rte
*****************************HYDROGRAPH DATA*****************************
               Number of intervals =    51
               Time interval =    5.0 (Min.)
               Maximum/Peak flow rate =      360.058 (CFS)
               Total volume =      21.520 (Ac.Ft)
       Status of hydrographs being held in storage
                   Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
       Peak (CFS)      0.000     0.000     0.000     0.000     0.000
       Vol (Ac.Ft)     0.000     0.000     0.000     0.000     0.000
************************************************************************



++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      300.000 to Point/Station      301.000
**** RETARDING BASIN ROUTING ****
________________________________________________________________________

User entry of depth-outflow-storage data
------------------------------------------------------------------------
Total number of inflow hydrograph intervals = 51
Hydrograph time unit =  5.000 (Min.)
Initial depth in storage basin =   0.00(Ft.)
------------------------------------------------------------------------
------------------------------------------------------------------------
Initial basin depth =   0.00 (Ft.)
Initial basin storage =      0.00 (Ac.Ft)
Initial basin outflow =   0.00 (CFS)
------------------------------------------------------------------------
------------------------------------------------------------------------
Depth vs. Storage and Depth vs. Discharge data:
 Basin Depth  Storage    Outflow   (S-O*dt/2)   (S+O*dt/2)
     (Ft.)    (Ac.Ft)    (CFS)     (Ac.Ft)    (Ac.Ft)
------------------------------------------------------------------------
   0.000      0.000      0.000      0.000        0.000
   0.500      0.834      0.692      0.832        0.836
   1.000      1.693      1.672      1.687        1.699
   1.500      2.577      3.059      2.566        2.588
   2.000      3.488      4.757      3.472        3.504
   3.000      5.388      7.930      5.361        5.415
   4.000      7.399     20.434      7.329        7.469
   5.000      9.523     35.089      9.402        9.644
   6.000     11.764     44.538     11.611       11.917
   7.000     14.126     52.170     13.946       14.306
   8.000     16.610     58.766     16.408       16.812
   8.900     18.942     83.236     18.655       19.229
   9.000     19.207     83.236     18.920       19.494
   9.500     20.556    448.796     19.011       22.101
  10.000     21.935   1159.965     17.941       25.929
```

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0	90.0	180.03	270.04	360.06	Depth (Ft.)
0.083	1.42	0.00	0.005	O	|	|	|	|	0.00
0.167	7.14	0.03	0.034	O	|	|	|	|	0.02
0.250	21.71	0.11	0.133	OI	|	|	|	|	0.08
0.333	29.53	0.26	0.308	O I	|	|	|	|	0.18
0.417	33.98	0.44	0.525	O I	|	|	|	|	0.31
0.500	37.22	0.64	0.766	O I	|	|	|	|	0.46
0.583	39.94	0.91	1.027	O I	|	|	|	|	0.61
0.667	42.15	1.23	1.302	O I	|	|	|	|	0.77
0.750	44.17	1.55	1.589	O I	|	|	|	|	0.94
0.833	45.84	1.98	1.887	O I	|	|	|	|	1.11
0.917	47.55	2.46	2.194	O I	|	|	|	|	1.28
1.000	49.24	2.95	2.508	O I	|	|	|	|	1.46
1.083	51.20	3.53	2.832	O I	|	|	|	|	1.64
1.167	53.20	4.15	3.165	O I	|	|	|	|	1.82
1.250	55.60	4.79	3.509	O I	|	|	|	|	2.01
1.333	58.06	5.39	3.865	O I	|	|	|	|	2.20
1.417	60.74	6.00	4.235	O I	|	|	|	|	2.39
1.500	62.59	6.64	4.616	O I	|	|	|	|	2.59
1.583	63.34	7.28	5.002	O I	|	|	|	|	2.80
1.667	66.13	7.97	5.395	O I	|	|	|	|	3.00
1.750	71.52	10.52	5.805	O I	|	|	|	|	3.21
1.833	78.46	13.23	6.240	|O I	|	|	|	|	3.42
1.917	90.16	16.21	6.719	|O I	|	|	|	|	3.66
2.000	108.57	19.69	7.280	|O |I	|	|	|	|	3.94
2.083	159.23	24.92	8.049	| O | I	|	|	|	|	4.31
2.167	246.24	33.17	9.245	| O | I	|	|	|	|	4.87
2.250	360.06	41.63	11.075	| O |	|	|	|	| I	5.69
2.333	239.16	47.98	12.830	| O | I	|	|	|	|	6.45
2.417	164.23	51.36	13.877	| O | I	|	|	|	|	6.89
2.500	129.82	53.24	14.529	| O | I	|	|	|	|	7.16
2.583	108.85	54.44	14.980	| O |I	|	|	|	|	7.34
2.667	91.96	55.27	15.294	| O I	|	|	|	|	7.47
2.750	77.90	55.81	15.496	| O I |	|	|	|	|	7.55
2.833	66.28	56.10	15.607	| OI |	|	|	|	|	7.60
2.917	58.19	56.21	15.649	| OI |	|	|	|	|	7.61
3.000	53.66	56.21	15.647	| O |	|	|	|	|	7.61
3.083	48.36	56.12	15.612	| O |	|	|	|	|	7.60
3.167	40.20	55.90	15.531	| IO |	|	|	|	|	7.57
3.250	23.10	55.46	15.366	| I O |	|	|	|	|	7.50
3.333	14.04	54.79	15.114	|I O |	|	|	|	|	7.40
3.417	8.60	54.01	14.817	I O |	|	|	|	|	7.28
3.500	5.64	53.16	14.497	I O |	|	|	|	|	7.15
3.583	3.63	52.28	14.166	I O |	|	|	|	|	7.02
3.667	2.26	51.21	13.830	I O |	|	|	|	|	6.87
3.750	1.37	50.13	13.493	I O |	|	|	|	|	6.73
3.833	0.88	49.05	13.160	I O |	|	|	|	|	6.59
3.917	0.63	47.98	12.831	I O |	|	|	|	|	6.45
4.000	0.44	46.94	12.508	I O |	|	|	|	|	6.31
4.083	0.30	45.92	12.190	I O |	|	|	|	|	6.18
4.167	0.16	44.91	11.879	I O |	|	|	|	|	6.05
4.250	0.07	43.74	11.575	I O |	|	|	|	|	5.92
4.333	0.00	42.49	11.278	I O |	|	|	|	|	5.78
4.417	0.00	41.27	10.990	I O |	|	|	|	|	5.65
4.500	0.00	40.09	10.709	I O |	|	|	|	|	5.53
4.583	0.00	38.94	10.437	I O |	|	|	|	|	5.41
4.667	0.00	37.83	10.173	I O |	|	|	|	|	5.29
4.750	0.00	36.75	9.916	I O |	|	|	|	|	5.18
4.833	0.00	35.69	9.667	I O |	|	|	|	|	5.06
4.917	0.00	34.41	9.425	I O |	|	|	|	|	4.95
5.000	0.00	32.82	9.194	I O |	|	|	|	|	4.84
5.083	0.00	31.29	8.973	I O |	|	|	|	|	4.74
5.167	0.00	29.84	8.762	I O |	|	|	|	|	4.64
5.250	0.00	28.46	8.562	I O |	|	|	|	|	4.55

5.333	0.00	27.14	8.370	I O	|	|	|	|	4.46
5.417	0.00	25.88	8.188	I O	|	|	|	|	4.37
5.500	0.00	24.67	8.014	I O	|	|	|	|	4.29
5.583	0.00	23.53	7.848	I O	|	|	|	|	4.21
5.667	0.00	22.44	7.689	IO	|	|	|	|	4.14
5.750	0.00	21.40	7.538	IO	|	|	|	|	4.07
5.833	0.00	20.41	7.394	IO	|	|	|	|	4.00
5.917	0.00	19.55	7.257	IO	|	|	|	|	3.93
6.000	0.00	18.73	7.125	IO	|	|	|	|	3.86
6.083	0.00	17.95	6.999	IO	|	|	|	|	3.80
6.167	0.00	17.19	6.878	IO	|	|	|	|	3.74
6.250	0.00	16.47	6.762	IO	|	|	|	|	3.68
6.333	0.00	15.78	6.651	IO	|	|	|	|	3.63
6.417	0.00	15.12	6.544	IO	|	|	|	|	3.58
6.500	0.00	14.49	6.442	IO	|	|	|	|	3.52
6.583	0.00	13.88	6.345	IO	|	|	|	|	3.48
6.667	0.00	13.30	6.251	IO	|	|	|	|	3.43
6.750	0.00	12.74	6.161	IO	|	|	|	|	3.38
6.833	0.00	12.21	6.076	IO	|	|	|	|	3.34
6.917	0.00	11.69	5.993	IO	|	|	|	|	3.30
7.000	0.00	11.20	5.914	O	|	|	|	|	3.26
7.083	0.00	10.73	5.839	O	|	|	|	|	3.22
7.167	0.00	10.28	5.767	O	|	|	|	|	3.19
7.250	0.00	9.85	5.697	O	|	|	|	|	3.15
7.333	0.00	9.44	5.631	O	|	|	|	|	3.12
7.417	0.00	9.04	5.567	O	|	|	|	|	3.09
7.500	0.00	8.66	5.506	O	|	|	|	|	3.06
7.583	0.00	8.30	5.448	O	|	|	|	|	3.03
7.667	0.00	7.95	5.392	O	|	|	|	|	3.00
7.750	0.00	7.85	5.337	O	|	|	|	|	2.97
7.833	0.00	7.76	5.284	O	|	|	|	|	2.95
7.917	0.00	7.67	5.231	O	|	|	|	|	2.92
8.000	0.00	7.58	5.178	O	|	|	|	|	2.89
8.083	0.00	7.49	5.126	O	|	|	|	|	2.86
8.167	0.00	7.41	5.075	O	|	|	|	|	2.84
8.250	0.00	7.32	5.024	O	|	|	|	|	2.81
8.333	0.00	7.24	4.974	O	|	|	|	|	2.78
8.417	0.00	7.16	4.924	O	|	|	|	|	2.76
8.500	0.00	7.07	4.875	O	|	|	|	|	2.73
8.583	0.00	6.99	4.827	O	|	|	|	|	2.70
8.667	0.00	6.91	4.779	O	|	|	|	|	2.68
8.750	0.00	6.83	4.732	O	|	|	|	|	2.65
8.833	0.00	6.76	4.685	O	|	|	|	|	2.63
8.917	0.00	6.68	4.639	O	|	|	|	|	2.61
9.000	0.00	6.60	4.593	O	|	|	|	|	2.58
9.083	0.00	6.53	4.548	O	|	|	|	|	2.56
9.167	0.00	6.45	4.503	O	|	|	|	|	2.53
9.250	0.00	6.38	4.459	O	|	|	|	|	2.51
9.333	0.00	6.31	4.415	O	|	|	|	|	2.49
9.417	0.00	6.23	4.372	O	|	|	|	|	2.47
9.500	0.00	6.16	4.329	O	|	|	|	|	2.44
9.583	0.00	6.09	4.287	O	|	|	|	|	2.42
9.667	0.00	6.02	4.245	O	|	|	|	|	2.40
9.750	0.00	5.95	4.204	O	|	|	|	|	2.38
9.833	0.00	5.88	4.163	O	|	|	|	|	2.36
9.917	0.00	5.82	4.123	O	|	|	|	|	2.33
10.000	0.00	5.75	4.083	O	|	|	|	|	2.31
10.083	0.00	5.69	4.044	O	|	|	|	|	2.29
10.167	0.00	5.62	4.005	O	|	|	|	|	2.27
10.250	0.00	5.56	3.966	O	|	|	|	|	2.25
10.333	0.00	5.49	3.928	O	|	|	|	|	2.23
10.417	0.00	5.43	3.891	O	|	|	|	|	2.21
10.500	0.00	5.37	3.854	O	|	|	|	|	2.19
10.583	0.00	5.31	3.817	O	|	|	|	|	2.17
10.667	0.00	5.25	3.781	O	|	|	|	|	2.15
10.750	0.00	5.19	3.745	O	|	|	|	|	2.14
10.833	0.00	5.13	3.709	O	|	|	|	|	2.12
10.917	0.00	5.07	3.674	O	|	|	|	|	2.10
11.000	0.00	5.01	3.639	O	|	|	|	|	2.08
11.083	0.00	4.95	3.605	O	|	|	|	|	2.06
11.167	0.00	4.90	3.571	O	|	|	|	|	2.04

11.250	0.00	4.84	3.538	O					2.03
11.333	0.00	4.78	3.504	O					2.01
11.417	0.00	4.73	3.472	O					1.99
11.500	0.00	4.67	3.439	O					1.97
11.583	0.00	4.61	3.407	O					1.96
11.667	0.00	4.55	3.376	O					1.94
11.750	0.00	4.49	3.345	O					1.92
11.833	0.00	4.43	3.314	O					1.90
11.917	0.00	4.38	3.284	O					1.89
12.000	0.00	4.32	3.254	O					1.87
12.083	0.00	4.27	3.224	O					1.86
12.167	0.00	4.21	3.195	O					1.84
12.250	0.00	4.16	3.166	O					1.82
12.333	0.00	4.10	3.138	O					1.81
12.417	0.00	4.05	3.110	O					1.79
12.500	0.00	4.00	3.082	O					1.78
12.583	0.00	3.95	3.055	O					1.76
12.667	0.00	3.90	3.028	O					1.75
12.750	0.00	3.85	3.001	O					1.73
12.833	0.00	3.80	2.974	O					1.72
12.917	0.00	3.75	2.948	O					1.70
13.000	0.00	3.70	2.923	O					1.69
13.083	0.00	3.66	2.897	O					1.68
13.167	0.00	3.61	2.872	O					1.66
13.250	0.00	3.56	2.848	O					1.65
13.333	0.00	3.52	2.823	O					1.64
13.417	0.00	3.47	2.799	O					1.62
13.500	0.00	3.43	2.776	O					1.61
13.583	0.00	3.39	2.752	O					1.60
13.667	0.00	3.34	2.729	O					1.58
13.750	0.00	3.30	2.706	O					1.57
13.833	0.00	3.26	2.683	O					1.56
13.917	0.00	3.22	2.661	O					1.55
14.000	0.00	3.17	2.639	O					1.53
14.083	0.00	3.13	2.617	O					1.52
14.167	0.00	3.09	2.596	O					1.51
14.250	0.00	3.06	2.575	O					1.50
14.333	0.00	3.02	2.554	O					1.49
14.417	0.00	2.99	2.533	O					1.48
14.500	0.00	2.96	2.513	O					1.46
14.583	0.00	2.93	2.492	O					1.45
14.667	0.00	2.89	2.472	O					1.44
14.750	0.00	2.86	2.453	O					1.43
14.833	0.00	2.83	2.433	O					1.42
14.917	0.00	2.80	2.414	O					1.41
15.000	0.00	2.77	2.394	O					1.40
15.083	0.00	2.74	2.375	O					1.39
15.167	0.00	2.71	2.357	O					1.38
15.250	0.00	2.68	2.338	O					1.36
15.333	0.00	2.66	2.320	O					1.35
15.417	0.00	2.63	2.301	O					1.34
15.500	0.00	2.60	2.283	O					1.33
15.583	0.00	2.57	2.266	O					1.32
15.667	0.00	2.54	2.248	O					1.31
15.750	0.00	2.52	2.231	O					1.30
15.833	0.00	2.49	2.213	O					1.29
15.917	0.00	2.46	2.196	O					1.28
16.000	0.00	2.44	2.179	O					1.28
16.083	0.00	2.41	2.163	O					1.27
16.167	0.00	2.38	2.146	O					1.26
16.250	0.00	2.36	2.130	O					1.25
16.333	0.00	2.33	2.114	O					1.24
16.417	0.00	2.31	2.098	O					1.23
16.500	0.00	2.28	2.082	O					1.22
16.583	0.00	2.26	2.066	O					1.21
16.667	0.00	2.23	2.051	O					1.20
16.750	0.00	2.21	2.036	O					1.19
16.833	0.00	2.19	2.020	O					1.19
16.917	0.00	2.16	2.005	O					1.18
17.000	0.00	2.14	1.991	O					1.17
17.083	0.00	2.12	1.976	O					1.16

17.167	0.00	2.09	1.962	O	|	|	|	|	1.15
17.250	0.00	2.07	1.947	O	|	|	|	|	1.14
17.333	0.00	2.05	1.933	O	|	|	|	|	1.14
17.417	0.00	2.03	1.919	O	|	|	|	|	1.13
17.500	0.00	2.00	1.905	O	|	|	|	|	1.12
17.583	0.00	1.98	1.891	O	|	|	|	|	1.11
17.667	0.00	1.96	1.878	O	|	|	|	|	1.10
17.750	0.00	1.94	1.864	O	|	|	|	|	1.10
17.833	0.00	1.92	1.851	O	|	|	|	|	1.09
17.917	0.00	1.90	1.838	O	|	|	|	|	1.08
18.000	0.00	1.88	1.825	O	|	|	|	|	1.07
18.083	0.00	1.86	1.812	O	|	|	|	|	1.07
18.167	0.00	1.84	1.799	O	|	|	|	|	1.06
18.250	0.00	1.82	1.787	O	|	|	|	|	1.05
18.333	0.00	1.80	1.774	O	|	|	|	|	1.05
18.417	0.00	1.78	1.762	O	|	|	|	|	1.04
18.500	0.00	1.76	1.750	O	|	|	|	|	1.03
18.583	0.00	1.74	1.738	O	|	|	|	|	1.03
18.667	0.00	1.72	1.726	O	|	|	|	|	1.02
18.750	0.00	1.70	1.714	O	|	|	|	|	1.01
18.833	0.00	1.69	1.702	O	|	|	|	|	1.01
18.917	0.00	1.67	1.691	O	|	|	|	|	1.00
19.000	0.00	1.66	1.679	O	|	|	|	|	0.99
19.083	0.00	1.64	1.668	O	|	|	|	|	0.99
19.167	0.00	1.63	1.657	O	|	|	|	|	0.98
19.250	0.00	1.62	1.645	O	|	|	|	|	0.97
19.333	0.00	1.61	1.634	O	|	|	|	|	0.97
19.417	0.00	1.59	1.623	O	|	|	|	|	0.96
19.500	0.00	1.58	1.612	O	|	|	|	|	0.95
19.583	0.00	1.57	1.602	O	|	|	|	|	0.95
19.667	0.00	1.56	1.591	O	|	|	|	|	0.94
19.750	0.00	1.54	1.580	O	|	|	|	|	0.93
19.833	0.00	1.53	1.570	O	|	|	|	|	0.93
19.917	0.00	1.52	1.559	O	|	|	|	|	0.92
20.000	0.00	1.51	1.549	O	|	|	|	|	0.92
20.083	0.00	1.50	1.538	O	|	|	|	|	0.91
20.167	0.00	1.48	1.528	O	|	|	|	|	0.90
20.250	0.00	1.47	1.518	O	|	|	|	|	0.90
20.333	0.00	1.46	1.508	O	|	|	|	|	0.89
20.417	0.00	1.45	1.498	O	|	|	|	|	0.89
20.500	0.00	1.44	1.488	O	|	|	|	|	0.88
20.583	0.00	1.43	1.478	O	|	|	|	|	0.87
20.667	0.00	1.42	1.468	O	|	|	|	|	0.87
20.750	0.00	1.40	1.458	O	|	|	|	|	0.86
20.833	0.00	1.39	1.449	O	|	|	|	|	0.86
20.917	0.00	1.38	1.439	O	|	|	|	|	0.85
21.000	0.00	1.37	1.430	O	|	|	|	|	0.85
21.083	0.00	1.36	1.420	O	|	|	|	|	0.84
21.167	0.00	1.35	1.411	O	|	|	|	|	0.84
21.250	0.00	1.34	1.402	O	|	|	|	|	0.83
21.333	0.00	1.33	1.393	O	|	|	|	|	0.83
21.417	0.00	1.32	1.383	O	|	|	|	|	0.82
21.500	0.00	1.31	1.374	O	|	|	|	|	0.81
21.583	0.00	1.30	1.365	O	|	|	|	|	0.81
21.667	0.00	1.29	1.356	O	|	|	|	|	0.80
21.750	0.00	1.28	1.348	O	|	|	|	|	0.80
21.833	0.00	1.27	1.339	O	|	|	|	|	0.79
21.917	0.00	1.26	1.330	O	|	|	|	|	0.79
22.000	0.00	1.25	1.322	O	|	|	|	|	0.78
22.083	0.00	1.24	1.313	O	|	|	|	|	0.78
22.167	0.00	1.23	1.304	O	|	|	|	|	0.77
22.250	0.00	1.22	1.296	O	|	|	|	|	0.77
22.333	0.00	1.21	1.288	O	|	|	|	|	0.76
22.417	0.00	1.20	1.279	O	|	|	|	|	0.76
22.500	0.00	1.19	1.271	O	|	|	|	|	0.75
22.583	0.00	1.18	1.263	O	|	|	|	|	0.75
22.667	0.00	1.17	1.255	O	|	|	|	|	0.74
22.750	0.00	1.16	1.247	O	|	|	|	|	0.74
22.833	0.00	1.15	1.239	O	|	|	|	|	0.74
22.917	0.00	1.14	1.231	O	|	|	|	|	0.73
23.000	0.00	1.14	1.223	O	|	|	|	|	0.73

23.083	0.00	1.13	1.215	O	|	|	|	|	0.72
23.167	0.00	1.12	1.208	O	|	|	|	|	0.72
23.250	0.00	1.11	1.200	O	|	|	|	|	0.71
23.333	0.00	1.10	1.192	O	|	|	|	|	0.71
23.417	0.00	1.09	1.185	O	|	|	|	|	0.70
23.500	0.00	1.08	1.177	O	|	|	|	|	0.70
23.583	0.00	1.08	1.170	O	|	|	|	|	0.70
23.667	0.00	1.07	1.162	O	|	|	|	|	0.69
23.750	0.00	1.06	1.155	O	|	|	|	|	0.69
23.833	0.00	1.05	1.148	O	|	|	|	|	0.68
23.917	0.00	1.04	1.141	O	|	|	|	|	0.68
24.000	0.00	1.03	1.133	O	|	|	|	|	0.67
24.083	0.00	1.03	1.126	O	|	|	|	|	0.67
24.167	0.00	1.02	1.119	O	|	|	|	|	0.67
24.250	0.00	1.01	1.112	O	|	|	|	|	0.66
24.333	0.00	1.00	1.105	O	|	|	|	|	0.66
24.417	0.00	0.99	1.099	O	|	|	|	|	0.65
24.500	0.00	0.99	1.092	O	|	|	|	|	0.65
24.583	0.00	0.98	1.085	O	|	|	|	|	0.65
24.667	0.00	0.97	1.078	O	|	|	|	|	0.64
24.750	0.00	0.96	1.072	O	|	|	|	|	0.64
24.833	0.00	0.96	1.065	O	|	|	|	|	0.63
24.917	0.00	0.95	1.058	O	|	|	|	|	0.63
25.000	0.00	0.94	1.052	O	|	|	|	|	0.63
25.083	0.00	0.93	1.046	O	|	|	|	|	0.62
25.167	0.00	0.93	1.039	O	|	|	|	|	0.62
25.250	0.00	0.92	1.033	O	|	|	|	|	0.62
25.333	0.00	0.91	1.026	O	|	|	|	|	0.61
25.417	0.00	0.90	1.020	O	|	|	|	|	0.61
25.500	0.00	0.90	1.014	O	|	|	|	|	0.60
25.583	0.00	0.89	1.008	O	|	|	|	|	0.60
25.667	0.00	0.88	1.002	O	|	|	|	|	0.60
25.750	0.00	0.88	0.996	O	|	|	|	|	0.59
25.833	0.00	0.87	0.990	O	|	|	|	|	0.59
25.917	0.00	0.86	0.984	O	|	|	|	|	0.59
26.000	0.00	0.86	0.978	O	|	|	|	|	0.58
26.083	0.00	0.85	0.972	O	|	|	|	|	0.58
26.167	0.00	0.84	0.966	O	|	|	|	|	0.58
26.250	0.00	0.84	0.960	O	|	|	|	|	0.57
26.333	0.00	0.83	0.955	O	|	|	|	|	0.57
26.417	0.00	0.82	0.949	O	|	|	|	|	0.57
26.500	0.00	0.82	0.943	O	|	|	|	|	0.56
26.583	0.00	0.81	0.938	O	|	|	|	|	0.56
26.667	0.00	0.80	0.932	O	|	|	|	|	0.56
26.750	0.00	0.80	0.927	O	|	|	|	|	0.55
26.833	0.00	0.79	0.921	O	|	|	|	|	0.55
26.917	0.00	0.79	0.916	O	|	|	|	|	0.55
27.000	0.00	0.78	0.910	O	|	|	|	|	0.54
27.083	0.00	0.77	0.905	O	|	|	|	|	0.54
27.167	0.00	0.77	0.900	O	|	|	|	|	0.54
27.250	0.00	0.76	0.894	O	|	|	|	|	0.54
27.333	0.00	0.75	0.889	O	|	|	|	|	0.53
27.417	0.00	0.75	0.884	O	|	|	|	|	0.53
27.500	0.00	0.74	0.879	O	|	|	|	|	0.53
27.583	0.00	0.74	0.874	O	|	|	|	|	0.52
27.667	0.00	0.73	0.869	O	|	|	|	|	0.52
27.750	0.00	0.73	0.864	O	|	|	|	|	0.52
27.833	0.00	0.72	0.859	O	|	|	|	|	0.51
27.917	0.00	0.71	0.854	O	|	|	|	|	0.51
28.000	0.00	0.71	0.849	O	|	|	|	|	0.51
28.083	0.00	0.70	0.844	O	|	|	|	|	0.51
28.167	0.00	0.70	0.839	O	|	|	|	|	0.50
28.250	0.00	0.69	0.834	O	|	|	|	|	0.50
28.333	0.00	0.69	0.830	O	|	|	|	|	0.50
28.417	0.00	0.68	0.825	O	|	|	|	|	0.49
28.500	0.00	0.68	0.820	O	|	|	|	|	0.49
28.583	0.00	0.68	0.815	O	|	|	|	|	0.49
28.667	0.00	0.67	0.811	O	|	|	|	|	0.49
28.750	0.00	0.67	0.806	O	|	|	|	|	0.48
28.833	0.00	0.67	0.802	O	|	|	|	|	0.48
28.917	0.00	0.66	0.797	O	|	|	|	|	0.48

29.000	0.00	0.66	0.793	O	|	|	|	|	0.48
29.083	0.00	0.65	0.788	O	|	|	|	|	0.47
29.167	0.00	0.65	0.784	O	|	|	|	|	0.47
29.250	0.00	0.65	0.779	O	|	|	|	|	0.47
29.333	0.00	0.64	0.775	O	|	|	|	|	0.46
29.417	0.00	0.64	0.770	O	|	|	|	|	0.46
29.500	0.00	0.64	0.766	O	|	|	|	|	0.46
29.583	0.00	0.63	0.761	O	|	|	|	|	0.46
29.667	0.00	0.63	0.757	O	|	|	|	|	0.45
29.750	0.00	0.62	0.753	O	|	|	|	|	0.45
29.833	0.00	0.62	0.749	O	|	|	|	|	0.45
29.917	0.00	0.62	0.744	O	|	|	|	|	0.45
30.000	0.00	0.61	0.740	O	|	|	|	|	0.44
30.083	0.00	0.61	0.736	O	|	|	|	|	0.44
30.167	0.00	0.61	0.732	O	|	|	|	|	0.44
30.250	0.00	0.60	0.727	O	|	|	|	|	0.44
30.333	0.00	0.60	0.723	O	|	|	|	|	0.43
30.417	0.00	0.60	0.719	O	|	|	|	|	0.43
30.500	0.00	0.59	0.715	O	|	|	|	|	0.43
30.583	0.00	0.59	0.711	O	|	|	|	|	0.43
30.667	0.00	0.59	0.707	O	|	|	|	|	0.42
30.750	0.00	0.58	0.703	O	|	|	|	|	0.42
30.833	0.00	0.58	0.699	O	|	|	|	|	0.42
30.917	0.00	0.58	0.695	O	|	|	|	|	0.42
31.000	0.00	0.57	0.691	O	|	|	|	|	0.41
31.083	0.00	0.57	0.687	O	|	|	|	|	0.41
31.167	0.00	0.57	0.683	O	|	|	|	|	0.41
31.250	0.00	0.56	0.679	O	|	|	|	|	0.41
31.333	0.00	0.56	0.675	O	|	|	|	|	0.40
31.417	0.00	0.56	0.671	O	|	|	|	|	0.40
31.500	0.00	0.55	0.668	O	|	|	|	|	0.40
31.583	0.00	0.55	0.664	O	|	|	|	|	0.40
31.667	0.00	0.55	0.660	O	|	|	|	|	0.40
31.750	0.00	0.54	0.656	O	|	|	|	|	0.39
31.833	0.00	0.54	0.653	O	|	|	|	|	0.39
31.917	0.00	0.54	0.649	O	|	|	|	|	0.39
32.000	0.00	0.54	0.645	O	|	|	|	|	0.39
32.083	0.00	0.53	0.641	O	|	|	|	|	0.38
32.167	0.00	0.53	0.638	O	|	|	|	|	0.38
32.250	0.00	0.53	0.634	O	|	|	|	|	0.38
32.333	0.00	0.52	0.631	O	|	|	|	|	0.38
32.417	0.00	0.52	0.627	O	|	|	|	|	0.38
32.500	0.00	0.52	0.623	O	|	|	|	|	0.37
32.583	0.00	0.51	0.620	O	|	|	|	|	0.37
32.667	0.00	0.51	0.616	O	|	|	|	|	0.37
32.750	0.00	0.51	0.613	O	|	|	|	|	0.37
32.833	0.00	0.51	0.609	O	|	|	|	|	0.37
32.917	0.00	0.50	0.606	O	|	|	|	|	0.36
33.000	0.00	0.50	0.602	O	|	|	|	|	0.36
33.083	0.00	0.50	0.599	O	|	|	|	|	0.36
33.167	0.00	0.49	0.596	O	|	|	|	|	0.36
33.250	0.00	0.49	0.592	O	|	|	|	|	0.36
33.333	0.00	0.49	0.589	O	|	|	|	|	0.35
33.417	0.00	0.49	0.585	O	|	|	|	|	0.35
33.500	0.00	0.48	0.582	O	|	|	|	|	0.35
33.583	0.00	0.48	0.579	O	|	|	|	|	0.35
33.667	0.00	0.48	0.575	O	|	|	|	|	0.35
33.750	0.00	0.47	0.572	O	|	|	|	|	0.34
33.833	0.00	0.47	0.569	O	|	|	|	|	0.34
33.917	0.00	0.47	0.566	O	|	|	|	|	0.34
34.000	0.00	0.47	0.562	O	|	|	|	|	0.34
34.083	0.00	0.46	0.559	O	|	|	|	|	0.34
34.167	0.00	0.46	0.556	O	|	|	|	|	0.33
34.250	0.00	0.46	0.553	O	|	|	|	|	0.33
34.333	0.00	0.46	0.550	O	|	|	|	|	0.33
34.417	0.00	0.45	0.547	O	|	|	|	|	0.33
34.500	0.00	0.45	0.544	O	|	|	|	|	0.33
34.583	0.00	0.45	0.540	O	|	|	|	|	0.32
34.667	0.00	0.45	0.537	O	|	|	|	|	0.32
34.750	0.00	0.44	0.534	O	|	|	|	|	0.32
34.833	0.00	0.44	0.531	O	|	|	|	|	0.32

34.917	0.00	0.44	0.528	O	|	|	|	|	0.32
35.000	0.00	0.44	0.525	O	|	|	|	|	0.31
35.083	0.00	0.43	0.522	O	|	|	|	|	0.31
35.167	0.00	0.43	0.519	O	|	|	|	|	0.31
35.250	0.00	0.43	0.516	O	|	|	|	|	0.31
35.333	0.00	0.43	0.513	O	|	|	|	|	0.31
35.417	0.00	0.42	0.510	O	|	|	|	|	0.31
35.500	0.00	0.42	0.508	O	|	|	|	|	0.30
35.583	0.00	0.42	0.505	O	|	|	|	|	0.30
35.667	0.00	0.42	0.502	O	|	|	|	|	0.30
35.750	0.00	0.41	0.499	O	|	|	|	|	0.30
35.833	0.00	0.41	0.496	O	|	|	|	|	0.30
35.917	0.00	0.41	0.493	O	|	|	|	|	0.30
36.000	0.00	0.41	0.490	O	|	|	|	|	0.29
36.083	0.00	0.40	0.488	O	|	|	|	|	0.29
36.167	0.00	0.40	0.485	O	|	|	|	|	0.29
36.250	0.00	0.40	0.482	O	|	|	|	|	0.29
36.333	0.00	0.40	0.479	O	|	|	|	|	0.29
36.417	0.00	0.40	0.477	O	|	|	|	|	0.29
36.500	0.00	0.39	0.474	O	|	|	|	|	0.28
36.583	0.00	0.39	0.471	O	|	|	|	|	0.28
36.667	0.00	0.39	0.468	O	|	|	|	|	0.28
36.750	0.00	0.39	0.466	O	|	|	|	|	0.28
36.833	0.00	0.38	0.463	O	|	|	|	|	0.28
36.917	0.00	0.38	0.461	O	|	|	|	|	0.28
37.000	0.00	0.38	0.458	O	|	|	|	|	0.27
37.083	0.00	0.38	0.455	O	|	|	|	|	0.27
37.167	0.00	0.38	0.453	O	|	|	|	|	0.27
37.250	0.00	0.37	0.450	O	|	|	|	|	0.27
37.333	0.00	0.37	0.448	O	|	|	|	|	0.27
37.417	0.00	0.37	0.445	O	|	|	|	|	0.27
37.500	0.00	0.37	0.442	O	|	|	|	|	0.27
37.583	0.00	0.37	0.440	O	|	|	|	|	0.26
37.667	0.00	0.36	0.437	O	|	|	|	|	0.26
37.750	0.00	0.36	0.435	O	|	|	|	|	0.26
37.833	0.00	0.36	0.432	O	|	|	|	|	0.26
37.917	0.00	0.36	0.430	O	|	|	|	|	0.26
38.000	0.00	0.35	0.428	O	|	|	|	|	0.26
38.083	0.00	0.35	0.425	O	|	|	|	|	0.25
38.167	0.00	0.35	0.423	O	|	|	|	|	0.25
38.250	0.00	0.35	0.420	O	|	|	|	|	0.25
38.333	0.00	0.35	0.418	O	|	|	|	|	0.25
38.417	0.00	0.34	0.416	O	|	|	|	|	0.25
38.500	0.00	0.34	0.413	O	|	|	|	|	0.25
38.583	0.00	0.34	0.411	O	|	|	|	|	0.25
38.667	0.00	0.34	0.408	O	|	|	|	|	0.24
38.750	0.00	0.34	0.406	O	|	|	|	|	0.24
38.833	0.00	0.34	0.404	O	|	|	|	|	0.24
38.917	0.00	0.33	0.401	O	|	|	|	|	0.24
39.000	0.00	0.33	0.399	O	|	|	|	|	0.24
39.083	0.00	0.33	0.397	O	|	|	|	|	0.24
39.167	0.00	0.33	0.395	O	|	|	|	|	0.24
39.250	0.00	0.33	0.392	O	|	|	|	|	0.24
39.333	0.00	0.32	0.390	O	|	|	|	|	0.23
39.417	0.00	0.32	0.388	O	|	|	|	|	0.23
39.500	0.00	0.32	0.386	O	|	|	|	|	0.23
39.583	0.00	0.32	0.384	O	|	|	|	|	0.23
39.667	0.00	0.32	0.381	O	|	|	|	|	0.23
39.750	0.00	0.31	0.379	O	|	|	|	|	0.23
39.833	0.00	0.31	0.377	O	|	|	|	|	0.23
39.917	0.00	0.31	0.375	O	|	|	|	|	0.22
40.000	0.00	0.31	0.373	O	|	|	|	|	0.22
40.083	0.00	0.31	0.371	O	|	|	|	|	0.22
40.167	0.00	0.31	0.369	O	|	|	|	|	0.22
40.250	0.00	0.30	0.366	O	|	|	|	|	0.22
40.333	0.00	0.30	0.364	O	|	|	|	|	0.22
40.417	0.00	0.30	0.362	O	|	|	|	|	0.22
40.500	0.00	0.30	0.360	O	|	|	|	|	0.22
40.583	0.00	0.30	0.358	O	|	|	|	|	0.21
40.667	0.00	0.30	0.356	O	|	|	|	|	0.21
40.750	0.00	0.29	0.354	O	|	|	|	|	0.21

40.833	0.00	0.29	0.352	O	|	|	|	|	0.21
40.917	0.00	0.29	0.350	O	|	|	|	|	0.21
41.000	0.00	0.29	0.348	O	|	|	|	|	0.21
41.083	0.00	0.29	0.346	O	|	|	|	|	0.21
41.167	0.00	0.29	0.344	O	|	|	|	|	0.21
41.250	0.00	0.28	0.342	O	|	|	|	|	0.21
41.333	0.00	0.28	0.340	O	|	|	|	|	0.20
41.417	0.00	0.28	0.338	O	|	|	|	|	0.20
41.500	0.00	0.28	0.336	O	|	|	|	|	0.20
41.583	0.00	0.28	0.334	O	|	|	|	|	0.20
41.667	0.00	0.28	0.332	O	|	|	|	|	0.20
41.750	0.00	0.27	0.331	O	|	|	|	|	0.20
41.833	0.00	0.27	0.329	O	|	|	|	|	0.20
41.917	0.00	0.27	0.327	O	|	|	|	|	0.20
42.000	0.00	0.27	0.325	O	|	|	|	|	0.19
42.083	0.00	0.27	0.323	O	|	|	|	|	0.19
42.167	0.00	0.27	0.321	O	|	|	|	|	0.19
42.250	0.00	0.27	0.319	O	|	|	|	|	0.19
42.333	0.00	0.26	0.318	O	|	|	|	|	0.19
42.417	0.00	0.26	0.316	O	|	|	|	|	0.19
42.500	0.00	0.26	0.314	O	|	|	|	|	0.19
42.583	0.00	0.26	0.312	O	|	|	|	|	0.19
42.667	0.00	0.26	0.310	O	|	|	|	|	0.19
42.750	0.00	0.26	0.309	O	|	|	|	|	0.19
42.833	0.00	0.25	0.307	O	|	|	|	|	0.18
42.917	0.00	0.25	0.305	O	|	|	|	|	0.18
43.000	0.00	0.25	0.303	O	|	|	|	|	0.18
43.083	0.00	0.25	0.302	O	|	|	|	|	0.18
43.167	0.00	0.25	0.300	O	|	|	|	|	0.18
43.250	0.00	0.25	0.298	O	|	|	|	|	0.18
43.333	0.00	0.25	0.297	O	|	|	|	|	0.18
43.417	0.00	0.24	0.295	O	|	|	|	|	0.18
43.500	0.00	0.24	0.293	O	|	|	|	|	0.18
43.583	0.00	0.24	0.292	O	|	|	|	|	0.17
43.667	0.00	0.24	0.290	O	|	|	|	|	0.17
43.750	0.00	0.24	0.288	O	|	|	|	|	0.17
43.833	0.00	0.24	0.287	O	|	|	|	|	0.17
43.917	0.00	0.24	0.285	O	|	|	|	|	0.17
44.000	0.00	0.24	0.283	O	|	|	|	|	0.17
44.083	0.00	0.23	0.282	O	|	|	|	|	0.17
44.167	0.00	0.23	0.280	O	|	|	|	|	0.17
44.250	0.00	0.23	0.279	O	|	|	|	|	0.17
44.333	0.00	0.23	0.277	O	|	|	|	|	0.17
44.417	0.00	0.23	0.275	O	|	|	|	|	0.17
44.500	0.00	0.23	0.274	O	|	|	|	|	0.16
44.583	0.00	0.23	0.272	O	|	|	|	|	0.16
44.667	0.00	0.22	0.271	O	|	|	|	|	0.16
44.750	0.00	0.22	0.269	O	|	|	|	|	0.16
44.833	0.00	0.22	0.268	O	|	|	|	|	0.16
44.917	0.00	0.22	0.266	O	|	|	|	|	0.16
45.000	0.00	0.22	0.265	O	|	|	|	|	0.16
45.083	0.00	0.22	0.263	O	|	|	|	|	0.16
45.167	0.00	0.22	0.262	O	|	|	|	|	0.16
45.250	0.00	0.22	0.260	O	|	|	|	|	0.16
45.333	0.00	0.21	0.259	O	|	|	|	|	0.16
45.417	0.00	0.21	0.257	O	|	|	|	|	0.15
45.500	0.00	0.21	0.256	O	|	|	|	|	0.15
45.583	0.00	0.21	0.254	O	|	|	|	|	0.15
45.667	0.00	0.21	0.253	O	|	|	|	|	0.15
45.750	0.00	0.21	0.251	O	|	|	|	|	0.15
45.833	0.00	0.21	0.250	O	|	|	|	|	0.15
45.917	0.00	0.21	0.248	O	|	|	|	|	0.15
46.000	0.00	0.20	0.247	O	|	|	|	|	0.15
46.083	0.00	0.20	0.246	O	|	|	|	|	0.15
46.167	0.00	0.20	0.244	O	|	|	|	|	0.15
46.250	0.00	0.20	0.243	O	|	|	|	|	0.15
46.333	0.00	0.20	0.241	O	|	|	|	|	0.14
46.417	0.00	0.20	0.240	O	|	|	|	|	0.14
46.500	0.00	0.20	0.239	O	|	|	|	|	0.14
46.583	0.00	0.20	0.237	O	|	|	|	|	0.14
46.667	0.00	0.20	0.236	O	|	|	|	|	0.14

46.750	0.00	0.19	0.235	O	|	|	|	|	0.14
46.833	0.00	0.19	0.233	O	|	|	|	|	0.14
46.917	0.00	0.19	0.232	O	|	|	|	|	0.14
47.000	0.00	0.19	0.231	O	|	|	|	|	0.14
47.083	0.00	0.19	0.229	O	|	|	|	|	0.14
47.167	0.00	0.19	0.228	O	|	|	|	|	0.14
47.250	0.00	0.19	0.227	O	|	|	|	|	0.14
47.333	0.00	0.19	0.225	O	|	|	|	|	0.14
47.417	0.00	0.19	0.224	O	|	|	|	|	0.13
47.500	0.00	0.18	0.223	O	|	|	|	|	0.13
47.583	0.00	0.18	0.222	O	|	|	|	|	0.13
47.667	0.00	0.18	0.220	O	|	|	|	|	0.13
47.750	0.00	0.18	0.219	O	|	|	|	|	0.13
47.833	0.00	0.18	0.218	O	|	|	|	|	0.13
47.917	0.00	0.18	0.217	O	|	|	|	|	0.13
48.000	0.00	0.18	0.215	O	|	|	|	|	0.13
48.083	0.00	0.18	0.214	O	|	|	|	|	0.13
48.167	0.00	0.18	0.213	O	|	|	|	|	0.13
48.250	0.00	0.18	0.212	O	|	|	|	|	0.13
48.333	0.00	0.17	0.210	O	|	|	|	|	0.13
48.417	0.00	0.17	0.209	O	|	|	|	|	0.13
48.500	0.00	0.17	0.208	O	|	|	|	|	0.12
48.583	0.00	0.17	0.207	O	|	|	|	|	0.12
48.667	0.00	0.17	0.206	O	|	|	|	|	0.12
48.750	0.00	0.17	0.205	O	|	|	|	|	0.12
48.833	0.00	0.17	0.203	O	|	|	|	|	0.12
48.917	0.00	0.17	0.202	O	|	|	|	|	0.12
49.000	0.00	0.17	0.201	O	|	|	|	|	0.12
49.083	0.00	0.17	0.200	O	|	|	|	|	0.12
49.167	0.00	0.16	0.199	O	|	|	|	|	0.12
49.250	0.00	0.16	0.198	O	|	|	|	|	0.12
49.333	0.00	0.16	0.197	O	|	|	|	|	0.12
49.417	0.00	0.16	0.195	O	|	|	|	|	0.12
49.500	0.00	0.16	0.194	O	|	|	|	|	0.12
49.583	0.00	0.16	0.193	O	|	|	|	|	0.12
49.667	0.00	0.16	0.192	O	|	|	|	|	0.12
49.750	0.00	0.16	0.191	O	|	|	|	|	0.11
49.833	0.00	0.16	0.190	O	|	|	|	|	0.11
49.917	0.00	0.16	0.189	O	|	|	|	|	0.11
50.000	0.00	0.16	0.188	O	|	|	|	|	0.11
50.083	0.00	0.15	0.187	O	|	|	|	|	0.11
50.167	0.00	0.15	0.186	O	|	|	|	|	0.11
50.250	0.00	0.15	0.185	O	|	|	|	|	0.11
50.333	0.00	0.15	0.184	O	|	|	|	|	0.11
50.417	0.00	0.15	0.182	O	|	|	|	|	0.11
50.500	0.00	0.15	0.181	O	|	|	|	|	0.11
50.583	0.00	0.15	0.180	O	|	|	|	|	0.11
50.667	0.00	0.15	0.179	O	|	|	|	|	0.11
50.750	0.00	0.15	0.178	O	|	|	|	|	0.11
50.833	0.00	0.15	0.177	O	|	|	|	|	0.11
50.917	0.00	0.15	0.176	O	|	|	|	|	0.11
51.000	0.00	0.15	0.175	O	|	|	|	|	0.11
51.083	0.00	0.14	0.174	O	|	|	|	|	0.10
51.167	0.00	0.14	0.173	O	|	|	|	|	0.10
51.250	0.00	0.14	0.172	O	|	|	|	|	0.10
51.333	0.00	0.14	0.171	O	|	|	|	|	0.10
51.417	0.00	0.14	0.170	O	|	|	|	|	0.10
51.500	0.00	0.14	0.169	O	|	|	|	|	0.10
51.583	0.00	0.14	0.168	O	|	|	|	|	0.10
51.667	0.00	0.14	0.167	O	|	|	|	|	0.10
51.750	0.00	0.14	0.167	O	|	|	|	|	0.10
51.833	0.00	0.14	0.166	O	|	|	|	|	0.10
51.917	0.00	0.14	0.165	O	|	|	|	|	0.10
52.000	0.00	0.14	0.164	O	|	|	|	|	0.10
52.083	0.00	0.14	0.163	O	|	|	|	|	0.10
52.167	0.00	0.13	0.162	O	|	|	|	|	0.10
52.250	0.00	0.13	0.161	O	|	|	|	|	0.10
52.333	0.00	0.13	0.160	O	|	|	|	|	0.10
52.417	0.00	0.13	0.159	O	|	|	|	|	0.10
52.500	0.00	0.13	0.158	O	|	|	|	|	0.09
52.583	0.00	0.13	0.157	O	|	|	|	|	0.09

52.667	0.00	0.13	0.156	O	|	|	|	|	0.09
52.750	0.00	0.13	0.155	O	|	|	|	|	0.09
52.833	0.00	0.13	0.155	O	|	|	|	|	0.09
52.917	0.00	0.13	0.154	O	|	|	|	|	0.09
53.000	0.00	0.13	0.153	O	|	|	|	|	0.09
53.083	0.00	0.13	0.152	O	|	|	|	|	0.09
53.167	0.00	0.13	0.151	O	|	|	|	|	0.09
53.250	0.00	0.12	0.150	O	|	|	|	|	0.09
53.333	0.00	0.12	0.149	O	|	|	|	|	0.09
53.417	0.00	0.12	0.149	O	|	|	|	|	0.09
53.500	0.00	0.12	0.148	O	|	|	|	|	0.09
53.583	0.00	0.12	0.147	O	|	|	|	|	0.09
53.667	0.00	0.12	0.146	O	|	|	|	|	0.09
53.750	0.00	0.12	0.145	O	|	|	|	|	0.09
53.833	0.00	0.12	0.144	O	|	|	|	|	0.09
53.917	0.00	0.12	0.144	O	|	|	|	|	0.09
54.000	0.00	0.12	0.143	O	|	|	|	|	0.09
54.083	0.00	0.12	0.142	O	|	|	|	|	0.09
54.167	0.00	0.12	0.141	O	|	|	|	|	0.08
54.250	0.00	0.12	0.140	O	|	|	|	|	0.08
54.333	0.00	0.12	0.139	O	|	|	|	|	0.08
54.417	0.00	0.12	0.139	O	|	|	|	|	0.08
54.500	0.00	0.11	0.138	O	|	|	|	|	0.08
54.583	0.00	0.11	0.137	O	|	|	|	|	0.08
54.667	0.00	0.11	0.136	O	|	|	|	|	0.08
54.750	0.00	0.11	0.136	O	|	|	|	|	0.08
54.833	0.00	0.11	0.135	O	|	|	|	|	0.08
54.917	0.00	0.11	0.134	O	|	|	|	|	0.08
55.000	0.00	0.11	0.133	O	|	|	|	|	0.08
55.083	0.00	0.11	0.133	O	|	|	|	|	0.08
55.167	0.00	0.11	0.132	O	|	|	|	|	0.08
55.250	0.00	0.11	0.131	O	|	|	|	|	0.08
55.333	0.00	0.11	0.130	O	|	|	|	|	0.08
55.417	0.00	0.11	0.130	O	|	|	|	|	0.08
55.500	0.00	0.11	0.129	O	|	|	|	|	0.08
55.583	0.00	0.11	0.128	O	|	|	|	|	0.08
55.667	0.00	0.11	0.127	O	|	|	|	|	0.08
55.750	0.00	0.11	0.127	O	|	|	|	|	0.08
55.833	0.00	0.10	0.126	O	|	|	|	|	0.08
55.917	0.00	0.10	0.125	O	|	|	|	|	0.08
56.000	0.00	0.10	0.124	O	|	|	|	|	0.07
56.083	0.00	0.10	0.124	O	|	|	|	|	0.07
56.167	0.00	0.10	0.123	O	|	|	|	|	0.07
56.250	0.00	0.10	0.122	O	|	|	|	|	0.07
56.333	0.00	0.10	0.122	O	|	|	|	|	0.07
56.417	0.00	0.10	0.121	O	|	|	|	|	0.07
56.500	0.00	0.10	0.120	O	|	|	|	|	0.07
56.583	0.00	0.10	0.120	O	|	|	|	|	0.07
56.667	0.00	0.10	0.119	O	|	|	|	|	0.07
56.750	0.00	0.10	0.118	O	|	|	|	|	0.07
56.833	0.00	0.10	0.118	O	|	|	|	|	0.07
56.917	0.00	0.10	0.117	O	|	|	|	|	0.07
57.000	0.00	0.10	0.116	O	|	|	|	|	0.07
57.083	0.00	0.10	0.116	O	|	|	|	|	0.07
57.167	0.00	0.10	0.115	O	|	|	|	|	0.07
57.250	0.00	0.09	0.114	O	|	|	|	|	0.07
57.333	0.00	0.09	0.114	O	|	|	|	|	0.07
57.417	0.00	0.09	0.113	O	|	|	|	|	0.07
57.500	0.00	0.09	0.112	O	|	|	|	|	0.07
57.583	0.00	0.09	0.112	O	|	|	|	|	0.07
57.667	0.00	0.09	0.111	O	|	|	|	|	0.07
57.750	0.00	0.09	0.110	O	|	|	|	|	0.07
57.833	0.00	0.09	0.110	O	|	|	|	|	0.07
57.917	0.00	0.09	0.109	O	|	|	|	|	0.07
58.000	0.00	0.09	0.108	O	|	|	|	|	0.07
58.083	0.00	0.09	0.108	O	|	|	|	|	0.06
58.167	0.00	0.09	0.107	O	|	|	|	|	0.06
58.250	0.00	0.09	0.107	O	|	|	|	|	0.06
58.333	0.00	0.09	0.106	O	|	|	|	|	0.06
58.417	0.00	0.09	0.105	O	|	|	|	|	0.06
58.500	0.00	0.09	0.105	O	|	|	|	|	0.06

58.583	0.00	0.09	0.104	O					0.06
58.667	0.00	0.09	0.104	O					0.06
58.750	0.00	0.09	0.103	O					0.06
58.833	0.00	0.09	0.102	O					0.06
58.917	0.00	0.08	0.102	O					0.06
59.000	0.00	0.08	0.101	O					0.06
59.083	0.00	0.08	0.101	O					0.06
59.167	0.00	0.08	0.100	O					0.06
59.250	0.00	0.08	0.100	O					0.06
59.333	0.00	0.08	0.099	O					0.06
59.417	0.00	0.08	0.098	O					0.06
59.500	0.00	0.08	0.098	O					0.06
59.583	0.00	0.08	0.097	O					0.06
59.667	0.00	0.08	0.097	O					0.06
59.750	0.00	0.08	0.096	O					0.06
59.833	0.00	0.08	0.096	O					0.06
59.917	0.00	0.08	0.095	O					0.06
60.000	0.00	0.08	0.095	O					0.06
60.083	0.00	0.08	0.094	O					0.06
60.167	0.00	0.08	0.094	O					0.06
60.250	0.00	0.08	0.093	O					0.06
60.333	0.00	0.08	0.092	O					0.06
60.417	0.00	0.08	0.092	O					0.06
60.500	0.00	0.08	0.091	O					0.05
60.583	0.00	0.08	0.091	O					0.05
60.667	0.00	0.07	0.090	O					0.05
60.750	0.00	0.07	0.090	O					0.05
60.833	0.00	0.07	0.089	O					0.05
60.917	0.00	0.07	0.089	O					0.05
61.000	0.00	0.07	0.088	O					0.05
61.083	0.00	0.07	0.088	O					0.05
61.167	0.00	0.07	0.087	O					0.05
61.250	0.00	0.07	0.087	O					0.05
61.333	0.00	0.07	0.086	O					0.05
61.417	0.00	0.07	0.086	O					0.05
61.500	0.00	0.07	0.085	O					0.05
61.583	0.00	0.07	0.085	O					0.05
61.667	0.00	0.07	0.084	O					0.05
61.750	0.00	0.07	0.084	O					0.05
61.833	0.00	0.07	0.083	O					0.05
61.917	0.00	0.07	0.083	O					0.05
62.000	0.00	0.07	0.082	O					0.05
62.083	0.00	0.07	0.082	O					0.05
62.167	0.00	0.07	0.082	O					0.05
62.250	0.00	0.07	0.081	O					0.05
62.333	0.00	0.07	0.081	O					0.05
62.417	0.00	0.07	0.080	O					0.05
62.500	0.00	0.07	0.080	O					0.05
62.583	0.00	0.07	0.079	O					0.05
62.667	0.00	0.07	0.079	O					0.05
62.750	0.00	0.06	0.078	O					0.05
62.833	0.00	0.06	0.078	O					0.05
62.917	0.00	0.06	0.077	O					0.05
63.000	0.00	0.06	0.077	O					0.05
63.083	0.00	0.06	0.077	O					0.05
63.167	0.00	0.06	0.076	O					0.05
63.250	0.00	0.06	0.076	O					0.05
63.333	0.00	0.06	0.075	O					0.05
63.417	0.00	0.06	0.075	O					0.04
63.500	0.00	0.06	0.074	O					0.04
63.583	0.00	0.06	0.074	O					0.04
63.667	0.00	0.06	0.074	O					0.04
63.750	0.00	0.06	0.073	O					0.04
63.833	0.00	0.06	0.073	O					0.04
63.917	0.00	0.06	0.072	O					0.04
64.000	0.00	0.06	0.072	O					0.04
64.083	0.00	0.06	0.071	O					0.04
64.167	0.00	0.06	0.071	O					0.04
64.250	0.00	0.06	0.071	O					0.04
64.333	0.00	0.06	0.070	O					0.04
64.417	0.00	0.06	0.070	O					0.04

64.500	0.00	0.06	0.069	O	|	|	|	|	0.04
64.583	0.00	0.06	0.069	O	|	|	|	|	0.04
64.667	0.00	0.06	0.069	O	|	|	|	|	0.04
64.750	0.00	0.06	0.068	O	|	|	|	|	0.04
64.833	0.00	0.06	0.068	O	|	|	|	|	0.04
64.917	0.00	0.06	0.068	O	|	|	|	|	0.04
65.000	0.00	0.06	0.067	O	|	|	|	|	0.04
65.083	0.00	0.06	0.067	O	|	|	|	|	0.04
65.167	0.00	0.06	0.066	O	|	|	|	|	0.04
65.250	0.00	0.05	0.066	O	|	|	|	|	0.04
65.333	0.00	0.05	0.066	O	|	|	|	|	0.04
65.417	0.00	0.05	0.065	O	|	|	|	|	0.04
65.500	0.00	0.05	0.065	O	|	|	|	|	0.04
65.583	0.00	0.05	0.064	O	|	|	|	|	0.04
65.667	0.00	0.05	0.064	O	|	|	|	|	0.04
65.750	0.00	0.05	0.064	O	|	|	|	|	0.04
65.833	0.00	0.05	0.063	O	|	|	|	|	0.04
65.917	0.00	0.05	0.063	O	|	|	|	|	0.04
66.000	0.00	0.05	0.063	O	|	|	|	|	0.04
66.083	0.00	0.05	0.062	O	|	|	|	|	0.04
66.167	0.00	0.05	0.062	O	|	|	|	|	0.04
66.250	0.00	0.05	0.062	O	|	|	|	|	0.04
66.333	0.00	0.05	0.061	O	|	|	|	|	0.04
66.417	0.00	0.05	0.061	O	|	|	|	|	0.04
66.500	0.00	0.05	0.061	O	|	|	|	|	0.04
66.583	0.00	0.05	0.060	O	|	|	|	|	0.04
66.667	0.00	0.05	0.060	O	|	|	|	|	0.04
66.750	0.00	0.05	0.060	O	|	|	|	|	0.04
66.833	0.00	0.05	0.059	O	|	|	|	|	0.04
66.917	0.00	0.05	0.059	O	|	|	|	|	0.04
67.000	0.00	0.05	0.059	O	|	|	|	|	0.04
67.083	0.00	0.05	0.058	O	|	|	|	|	0.03
67.167	0.00	0.05	0.058	O	|	|	|	|	0.03
67.250	0.00	0.05	0.058	O	|	|	|	|	0.03
67.333	0.00	0.05	0.057	O	|	|	|	|	0.03
67.417	0.00	0.05	0.057	O	|	|	|	|	0.03
67.500	0.00	0.05	0.057	O	|	|	|	|	0.03
67.583	0.00	0.05	0.056	O	|	|	|	|	0.03
67.667	0.00	0.05	0.056	O	|	|	|	|	0.03
67.750	0.00	0.05	0.056	O	|	|	|	|	0.03
67.833	0.00	0.05	0.055	O	|	|	|	|	0.03
67.917	0.00	0.05	0.055	O	|	|	|	|	0.03
68.000	0.00	0.05	0.055	O	|	|	|	|	0.03
68.083	0.00	0.05	0.054	O	|	|	|	|	0.03
68.167	0.00	0.04	0.054	O	|	|	|	|	0.03
68.250	0.00	0.04	0.054	O	|	|	|	|	0.03
68.333	0.00	0.04	0.053	O	|	|	|	|	0.03
68.417	0.00	0.04	0.053	O	|	|	|	|	0.03
68.500	0.00	0.04	0.053	O	|	|	|	|	0.03
68.583	0.00	0.04	0.053	O	|	|	|	|	0.03
68.667	0.00	0.04	0.052	O	|	|	|	|	0.03
68.750	0.00	0.04	0.052	O	|	|	|	|	0.03
68.833	0.00	0.04	0.052	O	|	|	|	|	0.03
68.917	0.00	0.04	0.051	O	|	|	|	|	0.03
69.000	0.00	0.04	0.051	O	|	|	|	|	0.03
69.083	0.00	0.04	0.051	O	|	|	|	|	0.03
69.167	0.00	0.04	0.050	O	|	|	|	|	0.03
69.250	0.00	0.04	0.050	O	|	|	|	|	0.03
69.333	0.00	0.04	0.050	O	|	|	|	|	0.03
69.417	0.00	0.04	0.050	O	|	|	|	|	0.03
69.500	0.00	0.04	0.049	O	|	|	|	|	0.03
69.583	0.00	0.04	0.049	O	|	|	|	|	0.03
69.667	0.00	0.04	0.049	O	|	|	|	|	0.03
69.750	0.00	0.04	0.048	O	|	|	|	|	0.03
69.833	0.00	0.04	0.048	O	|	|	|	|	0.03
69.917	0.00	0.04	0.048	O	|	|	|	|	0.03
70.000	0.00	0.04	0.048	O	|	|	|	|	0.03
70.083	0.00	0.04	0.047	O	|	|	|	|	0.03
70.167	0.00	0.04	0.047	O	|	|	|	|	0.03
70.250	0.00	0.04	0.047	O	|	|	|	|	0.03
70.333	0.00	0.04	0.047	O	|	|	|	|	0.03

70.417	0.00	0.04	0.046	O	|	|	|	|	0.03
70.500	0.00	0.04	0.046	O	|	|	|	|	0.03
70.583	0.00	0.04	0.046	O	|	|	|	|	0.03
70.667	0.00	0.04	0.046	O	|	|	|	|	0.03
70.750	0.00	0.04	0.045	O	|	|	|	|	0.03
70.833	0.00	0.04	0.045	O	|	|	|	|	0.03
70.917	0.00	0.04	0.045	O	|	|	|	|	0.03
71.000	0.00	0.04	0.044	O	|	|	|	|	0.03
71.083	0.00	0.04	0.044	O	|	|	|	|	0.03
71.167	0.00	0.04	0.044	O	|	|	|	|	0.03
71.250	0.00	0.04	0.044	O	|	|	|	|	0.03
71.333	0.00	0.04	0.043	O	|	|	|	|	0.03
71.417	0.00	0.04	0.043	O	|	|	|	|	0.03
71.500	0.00	0.04	0.043	O	|	|	|	|	0.03
71.583	0.00	0.04	0.043	O	|	|	|	|	0.03
71.667	0.00	0.04	0.042	O	|	|	|	|	0.03
71.750	0.00	0.04	0.042	O	|	|	|	|	0.03
71.833	0.00	0.03	0.042	O	|	|	|	|	0.03
71.917	0.00	0.03	0.042	O	|	|	|	|	0.03
72.000	0.00	0.03	0.042	O	|	|	|	|	0.02
72.083	0.00	0.03	0.041	O	|	|	|	|	0.02
72.167	0.00	0.03	0.041	O	|	|	|	|	0.02
72.250	0.00	0.03	0.041	O	|	|	|	|	0.02
72.333	0.00	0.03	0.041	O	|	|	|	|	0.02
72.417	0.00	0.03	0.040	O	|	|	|	|	0.02
72.500	0.00	0.03	0.040	O	|	|	|	|	0.02
72.583	0.00	0.03	0.040	O	|	|	|	|	0.02
72.667	0.00	0.03	0.040	O	|	|	|	|	0.02
72.750	0.00	0.03	0.039	O	|	|	|	|	0.02
72.833	0.00	0.03	0.039	O	|	|	|	|	0.02
72.917	0.00	0.03	0.039	O	|	|	|	|	0.02
73.000	0.00	0.03	0.039	O	|	|	|	|	0.02
73.083	0.00	0.03	0.039	O	|	|	|	|	0.02
73.167	0.00	0.03	0.038	O	|	|	|	|	0.02
73.250	0.00	0.03	0.038	O	|	|	|	|	0.02
73.333	0.00	0.03	0.038	O	|	|	|	|	0.02
73.417	0.00	0.03	0.038	O	|	|	|	|	0.02
73.500	0.00	0.03	0.037	O	|	|	|	|	0.02
73.583	0.00	0.03	0.037	O	|	|	|	|	0.02
73.667	0.00	0.03	0.037	O	|	|	|	|	0.02
73.750	0.00	0.03	0.037	O	|	|	|	|	0.02
73.833	0.00	0.03	0.037	O	|	|	|	|	0.02
73.917	0.00	0.03	0.036	O	|	|	|	|	0.02
74.000	0.00	0.03	0.036	O	|	|	|	|	0.02
74.083	0.00	0.03	0.036	O	|	|	|	|	0.02
74.167	0.00	0.03	0.036	O	|	|	|	|	0.02
74.250	0.00	0.03	0.036	O	|	|	|	|	0.02
74.333	0.00	0.03	0.035	O	|	|	|	|	0.02
74.417	0.00	0.03	0.035	O	|	|	|	|	0.02
74.500	0.00	0.03	0.035	O	|	|	|	|	0.02
74.583	0.00	0.03	0.035	O	|	|	|	|	0.02
74.667	0.00	0.03	0.035	O	|	|	|	|	0.02
74.750	0.00	0.03	0.034	O	|	|	|	|	0.02
74.833	0.00	0.03	0.034	O	|	|	|	|	0.02
74.917	0.00	0.03	0.034	O	|	|	|	|	0.02
75.000	0.00	0.03	0.034	O	|	|	|	|	0.02
75.083	0.00	0.03	0.034	O	|	|	|	|	0.02
75.167	0.00	0.03	0.033	O	|	|	|	|	0.02
75.250	0.00	0.03	0.033	O	|	|	|	|	0.02
75.333	0.00	0.03	0.033	O	|	|	|	|	0.02
75.417	0.00	0.03	0.033	O	|	|	|	|	0.02
75.500	0.00	0.03	0.033	O	|	|	|	|	0.02
75.583	0.00	0.03	0.032	O	|	|	|	|	0.02
75.667	0.00	0.03	0.032	O	|	|	|	|	0.02
75.750	0.00	0.03	0.032	O	|	|	|	|	0.02
75.833	0.00	0.03	0.032	O	|	|	|	|	0.02
75.917	0.00	0.03	0.032	O	|	|	|	|	0.02
76.000	0.00	0.03	0.032	O	|	|	|	|	0.02
76.083	0.00	0.03	0.031	O	|	|	|	|	0.02
76.167	0.00	0.03	0.031	O	|	|	|	|	0.02
76.250	0.00	0.03	0.031	O	|	|	|	|	0.02

76.333	0.00	0.03	0.031	O					0.02
76.417	0.00	0.03	0.031	O					0.02
76.500	0.00	0.03	0.031	O					0.02
76.583	0.00	0.03	0.030	O					0.02
76.667	0.00	0.03	0.030	O					0.02
76.750	0.00	0.02	0.030	O					0.02
76.833	0.00	0.02	0.030	O					0.02
76.917	0.00	0.02	0.030	O					0.02
77.000	0.00	0.02	0.029	O					0.02
77.083	0.00	0.02	0.029	O					0.02
77.167	0.00	0.02	0.029	O					0.02
77.250	0.00	0.02	0.029	O					0.02
77.333	0.00	0.02	0.029	O					0.02
77.417	0.00	0.02	0.029	O					0.02
77.500	0.00	0.02	0.028	O					0.02
77.583	0.00	0.02	0.028	O					0.02
77.667	0.00	0.02	0.028	O					0.02
77.750	0.00	0.02	0.028	O					0.02
77.833	0.00	0.02	0.028	O					0.02
77.917	0.00	0.02	0.028	O					0.02
78.000	0.00	0.02	0.028	O					0.02
78.083	0.00	0.02	0.027	O					0.02
78.167	0.00	0.02	0.027	O					0.02
78.250	0.00	0.02	0.027	O					0.02
78.333	0.00	0.02	0.027	O					0.02
78.417	0.00	0.02	0.027	O					0.02
78.500	0.00	0.02	0.027	O					0.02
78.583	0.00	0.02	0.026	O					0.02
78.667	0.00	0.02	0.026	O					0.02
78.750	0.00	0.02	0.026	O					0.02
78.833	0.00	0.02	0.026	O					0.02
78.917	0.00	0.02	0.026	O					0.02
79.000	0.00	0.02	0.026	O					0.02
79.083	0.00	0.02	0.026	O					0.02
79.167	0.00	0.02	0.025	O					0.02
79.250	0.00	0.02	0.025	O					0.02
79.333	0.00	0.02	0.025	O					0.02
79.417	0.00	0.02	0.025	O					0.01
79.500	0.00	0.02	0.025	O					0.01
79.583	0.00	0.02	0.025	O					0.01
79.667	0.00	0.02	0.025	O					0.01
79.750	0.00	0.02	0.024	O					0.01
79.833	0.00	0.02	0.024	O					0.01
79.917	0.00	0.02	0.024	O					0.01
80.000	0.00	0.02	0.024	O					0.01
80.083	0.00	0.02	0.024	O					0.01
80.167	0.00	0.02	0.024	O					0.01
80.250	0.00	0.02	0.024	O					0.01
80.333	0.00	0.02	0.023	O					0.01
80.417	0.00	0.02	0.023	O					0.01
80.500	0.00	0.02	0.023	O					0.01
80.583	0.00	0.02	0.023	O					0.01
80.667	0.00	0.02	0.023	O					0.01
80.750	0.00	0.02	0.023	O					0.01
80.833	0.00	0.02	0.023	O					0.01
80.917	0.00	0.02	0.023	O					0.01
81.000	0.00	0.02	0.022	O					0.01
81.083	0.00	0.02	0.022	O					0.01
81.167	0.00	0.02	0.022	O					0.01
81.250	0.00	0.02	0.022	O					0.01
81.333	0.00	0.02	0.022	O					0.01
81.417	0.00	0.02	0.022	O					0.01
81.500	0.00	0.02	0.022	O					0.01
81.583	0.00	0.02	0.022	O					0.01
81.667	0.00	0.02	0.021	O					0.01
81.750	0.00	0.02	0.021	O					0.01
81.833	0.00	0.02	0.021	O					0.01
81.917	0.00	0.02	0.021	O					0.01
82.000	0.00	0.02	0.021	O					0.01
82.083	0.00	0.02	0.021	O					0.01
82.167	0.00	0.02	0.021	O					0.01

82.250	0.00	0.02	0.021	O	|	|	|	|	0.01
82.333	0.00	0.02	0.020	O	|	|	|	|	0.01
82.417	0.00	0.02	0.020	O	|	|	|	|	0.01
82.500	0.00	0.02	0.020	O	|	|	|	|	0.01
82.583	0.00	0.02	0.020	O	|	|	|	|	0.01
82.667	0.00	0.02	0.020	O	|	|	|	|	0.01
82.750	0.00	0.02	0.020	O	|	|	|	|	0.01
82.833	0.00	0.02	0.020	O	|	|	|	|	0.01
82.917	0.00	0.02	0.020	O	|	|	|	|	0.01
83.000	0.00	0.02	0.020	O	|	|	|	|	0.01
83.083	0.00	0.02	0.019	O	|	|	|	|	0.01
83.167	0.00	0.02	0.019	O	|	|	|	|	0.01
83.250	0.00	0.02	0.019	O	|	|	|	|	0.01
83.333	0.00	0.02	0.019	O	|	|	|	|	0.01
83.417	0.00	0.02	0.019	O	|	|	|	|	0.01
83.500	0.00	0.02	0.019	O	|	|	|	|	0.01
83.583	0.00	0.02	0.019	O	|	|	|	|	0.01
83.667	0.00	0.02	0.019	O	|	|	|	|	0.01
83.750	0.00	0.02	0.019	O	|	|	|	|	0.01
83.833	0.00	0.02	0.018	O	|	|	|	|	0.01
83.917	0.00	0.02	0.018	O	|	|	|	|	0.01
84.000	0.00	0.02	0.018	O	|	|	|	|	0.01
84.083	0.00	0.02	0.018	O	|	|	|	|	0.01
84.167	0.00	0.01	0.018	O	|	|	|	|	0.01
84.250	0.00	0.01	0.018	O	|	|	|	|	0.01
84.333	0.00	0.01	0.018	O	|	|	|	|	0.01
84.417	0.00	0.01	0.018	O	|	|	|	|	0.01
84.500	0.00	0.01	0.018	O	|	|	|	|	0.01
84.583	0.00	0.01	0.018	O	|	|	|	|	0.01
84.667	0.00	0.01	0.017	O	|	|	|	|	0.01
84.750	0.00	0.01	0.017	O	|	|	|	|	0.01
84.833	0.00	0.01	0.017	O	|	|	|	|	0.01
84.917	0.00	0.01	0.017	O	|	|	|	|	0.01
85.000	0.00	0.01	0.017	O	|	|	|	|	0.01
85.083	0.00	0.01	0.017	O	|	|	|	|	0.01
85.167	0.00	0.01	0.017	O	|	|	|	|	0.01
85.250	0.00	0.01	0.017	O	|	|	|	|	0.01
85.333	0.00	0.01	0.017	O	|	|	|	|	0.01
85.417	0.00	0.01	0.017	O	|	|	|	|	0.01
85.500	0.00	0.01	0.016	O	|	|	|	|	0.01
85.583	0.00	0.01	0.016	O	|	|	|	|	0.01
85.667	0.00	0.01	0.016	O	|	|	|	|	0.01
85.750	0.00	0.01	0.016	O	|	|	|	|	0.01
85.833	0.00	0.01	0.016	O	|	|	|	|	0.01
85.917	0.00	0.01	0.016	O	|	|	|	|	0.01
86.000	0.00	0.01	0.016	O	|	|	|	|	0.01
86.083	0.00	0.01	0.016	O	|	|	|	|	0.01
86.167	0.00	0.01	0.016	O	|	|	|	|	0.01
86.250	0.00	0.01	0.016	O	|	|	|	|	0.01
86.333	0.00	0.01	0.016	O	|	|	|	|	0.01
86.417	0.00	0.01	0.015	O	|	|	|	|	0.01
86.500	0.00	0.01	0.015	O	|	|	|	|	0.01
86.583	0.00	0.01	0.015	O	|	|	|	|	0.01
86.667	0.00	0.01	0.015	O	|	|	|	|	0.01
86.750	0.00	0.01	0.015	O	|	|	|	|	0.01
86.833	0.00	0.01	0.015	O	|	|	|	|	0.01
86.917	0.00	0.01	0.015	O	|	|	|	|	0.01
87.000	0.00	0.01	0.015	O	|	|	|	|	0.01
87.083	0.00	0.01	0.015	O	|	|	|	|	0.01
87.167	0.00	0.01	0.015	O	|	|	|	|	0.01
87.250	0.00	0.01	0.015	O	|	|	|	|	0.01
87.333	0.00	0.01	0.015	O	|	|	|	|	0.01
87.417	0.00	0.01	0.014	O	|	|	|	|	0.01
87.500	0.00	0.01	0.014	O	|	|	|	|	0.01
87.583	0.00	0.01	0.014	O	|	|	|	|	0.01
87.667	0.00	0.01	0.014	O	|	|	|	|	0.01
87.750	0.00	0.01	0.014	O	|	|	|	|	0.01
87.833	0.00	0.01	0.014	O	|	|	|	|	0.01
87.917	0.00	0.01	0.014	O	|	|	|	|	0.01
88.000	0.00	0.01	0.014	O	|	|	|	|	0.01
88.083	0.00	0.01	0.014	O	|	|	|	|	0.01

88.167	0.00	0.01	0.014	O					0.01
88.250	0.00	0.01	0.014	O					0.01
88.333	0.00	0.01	0.014	O					0.01
88.417	0.00	0.01	0.013	O					0.01
88.500	0.00	0.01	0.013	O					0.01
88.583	0.00	0.01	0.013	O					0.01
88.667	0.00	0.01	0.013	O					0.01
88.750	0.00	0.01	0.013	O					0.01
88.833	0.00	0.01	0.013	O					0.01
88.917	0.00	0.01	0.013	O					0.01
89.000	0.00	0.01	0.013	O					0.01
89.083	0.00	0.01	0.013	O					0.01
89.167	0.00	0.01	0.013	O					0.01
89.250	0.00	0.01	0.013	O					0.01
89.333	0.00	0.01	0.013	O					0.01
89.417	0.00	0.01	0.013	O					0.01
89.500	0.00	0.01	0.013	O					0.01
89.583	0.00	0.01	0.012	O					0.01
89.667	0.00	0.01	0.012	O					0.01
89.750	0.00	0.01	0.012	O					0.01
89.833	0.00	0.01	0.012	O					0.01
89.917	0.00	0.01	0.012	O					0.01
90.000	0.00	0.01	0.012	O					0.01
90.083	0.00	0.01	0.012	O					0.01
90.167	0.00	0.01	0.012	O					0.01
90.250	0.00	0.01	0.012	O					0.01
90.333	0.00	0.01	0.012	O					0.01
90.417	0.00	0.01	0.012	O					0.01
90.500	0.00	0.01	0.012	O					0.01
90.583	0.00	0.01	0.012	O					0.01
90.667	0.00	0.01	0.012	O					0.01
90.750	0.00	0.01	0.011	O					0.01
90.833	0.00	0.01	0.011	O					0.01
90.917	0.00	0.01	0.011	O					0.01
91.000	0.00	0.01	0.011	O					0.01
91.083	0.00	0.01	0.011	O					0.01
91.167	0.00	0.01	0.011	O					0.01
91.250	0.00	0.01	0.011	O					0.01
91.333	0.00	0.01	0.011	O					0.01
91.417	0.00	0.01	0.011	O					0.01
91.500	0.00	0.01	0.011	O					0.01
91.583	0.00	0.01	0.011	O					0.01
91.667	0.00	0.01	0.011	O					0.01
91.750	0.00	0.01	0.011	O					0.01
91.833	0.00	0.01	0.011	O					0.01
91.917	0.00	0.01	0.011	O					0.01
92.000	0.00	0.01	0.011	O					0.01
92.083	0.00	0.01	0.010	O					0.01
92.167	0.00	0.01	0.010	O					0.01
92.250	0.00	0.01	0.010	O					0.01
92.333	0.00	0.01	0.010	O					0.01
92.417	0.00	0.01	0.010	O					0.01
92.500	0.00	0.01	0.010	O					0.01
92.583	0.00	0.01	0.010	O					0.01
92.667	0.00	0.01	0.010	O					0.01
92.750	0.00	0.01	0.010	O					0.01
92.833	0.00	0.01	0.010	O					0.01
92.917	0.00	0.01	0.010	O					0.01
93.000	0.00	0.01	0.010	O					0.01
93.083	0.00	0.01	0.010	O					0.01
93.167	0.00	0.01	0.010	O					0.01
93.250	0.00	0.01	0.010	O					0.01
93.333	0.00	0.01	0.010	O					0.01
93.417	0.00	0.01	0.010	O					0.01
93.500	0.00	0.01	0.010	O					0.01
93.583	0.00	0.01	0.009	O					0.01
93.667	0.00	0.01	0.009	O					0.01
93.750	0.00	0.01	0.009	O					0.01
93.833	0.00	0.01	0.009	O					0.01
93.917	0.00	0.01	0.009	O					0.01
94.000	0.00	0.01	0.009	O					0.01

94.083	0.00	0.01	0.009	O	|	|	|	|	0.01
94.167	0.00	0.01	0.009	O	|	|	|	|	0.01
94.250	0.00	0.01	0.009	O	|	|	|	|	0.01
94.333	0.00	0.01	0.009	O	|	|	|	|	0.01
94.417	0.00	0.01	0.009	O	|	|	|	|	0.01
94.500	0.00	0.01	0.009	O	|	|	|	|	0.01
94.583	0.00	0.01	0.009	O	|	|	|	|	0.01
94.667	0.00	0.01	0.009	O	|	|	|	|	0.01
94.750	0.00	0.01	0.009	O	|	|	|	|	0.01
94.833	0.00	0.01	0.009	O	|	|	|	|	0.01
94.917	0.00	0.01	0.009	O	|	|	|	|	0.01
95.000	0.00	0.01	0.009	O	|	|	|	|	0.01
95.083	0.00	0.01	0.009	O	|	|	|	|	0.01
95.167	0.00	0.01	0.008	O	|	|	|	|	0.01
95.250	0.00	0.01	0.008	O	|	|	|	|	0.01
95.333	0.00	0.01	0.008	O	|	|	|	|	0.01
95.417	0.00	0.01	0.008	O	|	|	|	|	0.00
95.500	0.00	0.01	0.008	O	|	|	|	|	0.00
95.583	0.00	0.01	0.008	O	|	|	|	|	0.00
95.667	0.00	0.01	0.008	O	|	|	|	|	0.00
95.750	0.00	0.01	0.008	O	|	|	|	|	0.00
95.833	0.00	0.01	0.008	O	|	|	|	|	0.00
95.917	0.00	0.01	0.008	O	|	|	|	|	0.00
96.000	0.00	0.01	0.008	O	|	|	|	|	0.00
96.083	0.00	0.01	0.008	O	|	|	|	|	0.00
96.167	0.00	0.01	0.008	O	|	|	|	|	0.00
96.250	0.00	0.01	0.008	O	|	|	|	|	0.00
96.333	0.00	0.01	0.008	O	|	|	|	|	0.00
96.417	0.00	0.01	0.008	O	|	|	|	|	0.00
96.500	0.00	0.01	0.008	O	|	|	|	|	0.00
96.583	0.00	0.01	0.008	O	|	|	|	|	0.00
96.667	0.00	0.01	0.008	O	|	|	|	|	0.00
96.750	0.00	0.01	0.008	O	|	|	|	|	0.00
96.833	0.00	0.01	0.008	O	|	|	|	|	0.00
96.917	0.00	0.01	0.008	O	|	|	|	|	0.00
97.000	0.00	0.01	0.007	O	|	|	|	|	0.00
97.083	0.00	0.01	0.007	O	|	|	|	|	0.00
97.167	0.00	0.01	0.007	O	|	|	|	|	0.00
97.250	0.00	0.01	0.007	O	|	|	|	|	0.00
97.333	0.00	0.01	0.007	O	|	|	|	|	0.00
97.417	0.00	0.01	0.007	O	|	|	|	|	0.00
97.500	0.00	0.01	0.007	O	|	|	|	|	0.00
97.583	0.00	0.01	0.007	O	|	|	|	|	0.00
97.667	0.00	0.01	0.007	O	|	|	|	|	0.00
97.750	0.00	0.01	0.007	O	|	|	|	|	0.00
97.833	0.00	0.01	0.007	O	|	|	|	|	0.00
97.917	0.00	0.01	0.007	O	|	|	|	|	0.00
98.000	0.00	0.01	0.007	O	|	|	|	|	0.00
98.083	0.00	0.01	0.007	O	|	|	|	|	0.00
98.167	0.00	0.01	0.007	O	|	|	|	|	0.00
98.250	0.00	0.01	0.007	O	|	|	|	|	0.00
98.333	0.00	0.01	0.007	O	|	|	|	|	0.00
98.417	0.00	0.01	0.007	O	|	|	|	|	0.00
98.500	0.00	0.01	0.007	O	|	|	|	|	0.00
98.583	0.00	0.01	0.007	O	|	|	|	|	0.00
98.667	0.00	0.01	0.007	O	|	|	|	|	0.00
98.750	0.00	0.01	0.007	O	|	|	|	|	0.00
98.833	0.00	0.01	0.007	O	|	|	|	|	0.00
98.917	0.00	0.01	0.007	O	|	|	|	|	0.00
99.000	0.00	0.01	0.007	O	|	|	|	|	0.00
99.083	0.00	0.01	0.006	O	|	|	|	|	0.00
99.167	0.00	0.01	0.006	O	|	|	|	|	0.00
99.250	0.00	0.01	0.006	O	|	|	|	|	0.00
99.333	0.00	0.01	0.006	O	|	|	|	|	0.00
99.417	0.00	0.01	0.006	O	|	|	|	|	0.00
99.500	0.00	0.01	0.006	O	|	|	|	|	0.00
99.583	0.00	0.01	0.006	O	|	|	|	|	0.00
99.667	0.00	0.01	0.006	O	|	|	|	|	0.00
99.750	0.00	0.01	0.006	O	|	|	|	|	0.00
99.833	0.00	0.01	0.006	O	|	|	|	|	0.00
99.917	0.00	0.01	0.006	O	|	|	|	|	0.00

100.000	0.00	0.01	0.006	O					0.00
100.083	0.00	0.01	0.006	O					0.00
100.167	0.00	0.00	0.006	O					0.00
100.250	0.00	0.00	0.006	O					0.00
100.333	0.00	0.00	0.006	O					0.00
100.417	0.00	0.00	0.006	O					0.00
100.500	0.00	0.00	0.006	O					0.00
100.583	0.00	0.00	0.006	O					0.00
100.667	0.00	0.00	0.006	O					0.00
100.750	0.00	0.00	0.006	O					0.00
100.833	0.00	0.00	0.006	O					0.00
100.917	0.00	0.00	0.006	O					0.00
101.000	0.00	0.00	0.006	O					0.00
101.083	0.00	0.00	0.006	O					0.00
101.167	0.00	0.00	0.006	O					0.00
101.250	0.00	0.00	0.006	O					0.00
101.333	0.00	0.00	0.006	O					0.00
101.417	0.00	0.00	0.006	O					0.00
101.500	0.00	0.00	0.005	O					0.00
101.583	0.00	0.00	0.005	O					0.00
101.667	0.00	0.00	0.005	O					0.00
101.750	0.00	0.00	0.005	O					0.00
101.833	0.00	0.00	0.005	O					0.00
101.917	0.00	0.00	0.005	O					0.00
102.000	0.00	0.00	0.005	O					0.00
102.083	0.00	0.00	0.005	O					0.00
102.167	0.00	0.00	0.005	O					0.00
102.250	0.00	0.00	0.005	O					0.00
102.333	0.00	0.00	0.005	O					0.00
102.417	0.00	0.00	0.005	O					0.00
102.500	0.00	0.00	0.005	O					0.00
102.583	0.00	0.00	0.005	O					0.00
102.667	0.00	0.00	0.005	O					0.00
102.750	0.00	0.00	0.005	O					0.00
102.833	0.00	0.00	0.005	O					0.00
102.917	0.00	0.00	0.005	O					0.00
103.000	0.00	0.00	0.005	O					0.00
103.083	0.00	0.00	0.005	O					0.00
103.167	0.00	0.00	0.005	O					0.00
103.250	0.00	0.00	0.005	O					0.00
103.333	0.00	0.00	0.005	O					0.00
103.417	0.00	0.00	0.005	O					0.00
103.500	0.00	0.00	0.005	O					0.00
103.583	0.00	0.00	0.005	O					0.00
103.667	0.00	0.00	0.005	O					0.00
103.750	0.00	0.00	0.005	O					0.00
103.833	0.00	0.00	0.005	O					0.00
103.917	0.00	0.00	0.005	O					0.00
104.000	0.00	0.00	0.005	O					0.00
104.083	0.00	0.00	0.005	O					0.00
104.167	0.00	0.00	0.005	O					0.00
104.250	0.00	0.00	0.005	O					0.00
104.333	0.00	0.00	0.005	O					0.00
104.417	0.00	0.00	0.004	O					0.00
104.500	0.00	0.00	0.004	O					0.00
104.583	0.00	0.00	0.004	O					0.00
104.667	0.00	0.00	0.004	O					0.00
104.750	0.00	0.00	0.004	O					0.00
104.833	0.00	0.00	0.004	O					0.00
104.917	0.00	0.00	0.004	O					0.00
105.000	0.00	0.00	0.004	O					0.00
105.083	0.00	0.00	0.004	O					0.00
105.167	0.00	0.00	0.004	O					0.00
105.250	0.00	0.00	0.004	O					0.00
105.333	0.00	0.00	0.004	O					0.00
105.417	0.00	0.00	0.004	O					0.00
105.500	0.00	0.00	0.004	O					0.00
105.583	0.00	0.00	0.004	O					0.00
105.667	0.00	0.00	0.004	O					0.00
105.750	0.00	0.00	0.004	O					0.00
105.833	0.00	0.00	0.004	O					0.00

105.917	0.00	0.00	0.004	O	|	|	|	|	0.00
106.000	0.00	0.00	0.004	O	|	|	|	|	0.00
106.083	0.00	0.00	0.004	O	|	|	|	|	0.00
106.167	0.00	0.00	0.004	O	|	|	|	|	0.00
106.250	0.00	0.00	0.004	O	|	|	|	|	0.00
106.333	0.00	0.00	0.004	O	|	|	|	|	0.00
106.417	0.00	0.00	0.004	O	|	|	|	|	0.00
106.500	0.00	0.00	0.004	O	|	|	|	|	0.00
106.583	0.00	0.00	0.004	O	|	|	|	|	0.00
106.667	0.00	0.00	0.004	O	|	|	|	|	0.00
106.750	0.00	0.00	0.004	O	|	|	|	|	0.00
106.833	0.00	0.00	0.004	O	|	|	|	|	0.00
106.917	0.00	0.00	0.004	O	|	|	|	|	0.00
107.000	0.00	0.00	0.004	O	|	|	|	|	0.00
107.083	0.00	0.00	0.004	O	|	|	|	|	0.00
107.167	0.00	0.00	0.004	O	|	|	|	|	0.00
107.250	0.00	0.00	0.004	O	|	|	|	|	0.00
107.333	0.00	0.00	0.004	O	|	|	|	|	0.00
107.417	0.00	0.00	0.004	O	|	|	|	|	0.00
107.500	0.00	0.00	0.004	O	|	|	|	|	0.00
107.583	0.00	0.00	0.004	O	|	|	|	|	0.00
107.667	0.00	0.00	0.004	O	|	|	|	|	0.00
107.750	0.00	0.00	0.004	O	|	|	|	|	0.00
107.833	0.00	0.00	0.004	O	|	|	|	|	0.00
107.917	0.00	0.00	0.004	O	|	|	|	|	0.00
108.000	0.00	0.00	0.004	O	|	|	|	|	0.00
108.083	0.00	0.00	0.003	O	|	|	|	|	0.00
108.167	0.00	0.00	0.003	O	|	|	|	|	0.00
108.250	0.00	0.00	0.003	O	|	|	|	|	0.00
108.333	0.00	0.00	0.003	O	|	|	|	|	0.00
108.417	0.00	0.00	0.003	O	|	|	|	|	0.00
108.500	0.00	0.00	0.003	O	|	|	|	|	0.00
108.583	0.00	0.00	0.003	O	|	|	|	|	0.00
108.667	0.00	0.00	0.003	O	|	|	|	|	0.00
108.750	0.00	0.00	0.003	O	|	|	|	|	0.00
108.833	0.00	0.00	0.003	O	|	|	|	|	0.00
108.917	0.00	0.00	0.003	O	|	|	|	|	0.00
109.000	0.00	0.00	0.003	O	|	|	|	|	0.00
109.083	0.00	0.00	0.003	O	|	|	|	|	0.00
109.167	0.00	0.00	0.003	O	|	|	|	|	0.00
109.250	0.00	0.00	0.003	O	|	|	|	|	0.00
109.333	0.00	0.00	0.003	O	|	|	|	|	0.00
109.417	0.00	0.00	0.003	O	|	|	|	|	0.00
109.500	0.00	0.00	0.003	O	|	|	|	|	0.00
109.583	0.00	0.00	0.003	O	|	|	|	|	0.00
109.667	0.00	0.00	0.003	O	|	|	|	|	0.00
109.750	0.00	0.00	0.003	O	|	|	|	|	0.00
109.833	0.00	0.00	0.003	O	|	|	|	|	0.00
109.917	0.00	0.00	0.003	O	|	|	|	|	0.00
110.000	0.00	0.00	0.003	O	|	|	|	|	0.00
110.083	0.00	0.00	0.003	O	|	|	|	|	0.00
110.167	0.00	0.00	0.003	O	|	|	|	|	0.00
110.250	0.00	0.00	0.003	O	|	|	|	|	0.00
110.333	0.00	0.00	0.003	O	|	|	|	|	0.00
110.417	0.00	0.00	0.003	O	|	|	|	|	0.00
110.500	0.00	0.00	0.003	O	|	|	|	|	0.00
110.583	0.00	0.00	0.003	O	|	|	|	|	0.00
110.667	0.00	0.00	0.003	O	|	|	|	|	0.00
110.750	0.00	0.00	0.003	O	|	|	|	|	0.00
110.833	0.00	0.00	0.003	O	|	|	|	|	0.00
110.917	0.00	0.00	0.003	O	|	|	|	|	0.00
111.000	0.00	0.00	0.003	O	|	|	|	|	0.00
111.083	0.00	0.00	0.003	O	|	|	|	|	0.00
111.167	0.00	0.00	0.003	O	|	|	|	|	0.00
111.250	0.00	0.00	0.003	O	|	|	|	|	0.00
111.333	0.00	0.00	0.003	O	|	|	|	|	0.00
111.417	0.00	0.00	0.003	O	|	|	|	|	0.00
111.500	0.00	0.00	0.003	O	|	|	|	|	0.00
111.583	0.00	0.00	0.003	O	|	|	|	|	0.00
111.667	0.00	0.00	0.003	O	|	|	|	|	0.00
111.750	0.00	0.00	0.003	O	|	|	|	|	0.00

111.833	0.00	0.00	0.003	O	|	|	|	|	0.00
111.917	0.00	0.00	0.003	O	|	|	|	|	0.00
112.000	0.00	0.00	0.003	O	|	|	|	|	0.00
112.083	0.00	0.00	0.003	O	|	|	|	|	0.00
112.167	0.00	0.00	0.003	O	|	|	|	|	0.00
112.250	0.00	0.00	0.003	O	|	|	|	|	0.00
112.333	0.00	0.00	0.003	O	|	|	|	|	0.00
112.417	0.00	0.00	0.003	O	|	|	|	|	0.00
112.500	0.00	0.00	0.003	O	|	|	|	|	0.00
112.583	0.00	0.00	0.003	O	|	|	|	|	0.00
112.667	0.00	0.00	0.003	O	|	|	|	|	0.00
112.750	0.00	0.00	0.003	O	|	|	|	|	0.00
112.833	0.00	0.00	0.003	O	|	|	|	|	0.00
112.917	0.00	0.00	0.003	O	|	|	|	|	0.00
113.000	0.00	0.00	0.002	O	|	|	|	|	0.00
113.083	0.00	0.00	0.002	O	|	|	|	|	0.00
113.167	0.00	0.00	0.002	O	|	|	|	|	0.00
113.250	0.00	0.00	0.002	O	|	|	|	|	0.00
113.333	0.00	0.00	0.002	O	|	|	|	|	0.00
113.417	0.00	0.00	0.002	O	|	|	|	|	0.00
113.500	0.00	0.00	0.002	O	|	|	|	|	0.00
113.583	0.00	0.00	0.002	O	|	|	|	|	0.00
113.667	0.00	0.00	0.002	O	|	|	|	|	0.00
113.750	0.00	0.00	0.002	O	|	|	|	|	0.00
113.833	0.00	0.00	0.002	O	|	|	|	|	0.00
113.917	0.00	0.00	0.002	O	|	|	|	|	0.00
114.000	0.00	0.00	0.002	O	|	|	|	|	0.00
114.083	0.00	0.00	0.002	O	|	|	|	|	0.00
114.167	0.00	0.00	0.002	O	|	|	|	|	0.00
114.250	0.00	0.00	0.002	O	|	|	|	|	0.00
114.333	0.00	0.00	0.002	O	|	|	|	|	0.00
114.417	0.00	0.00	0.002	O	|	|	|	|	0.00
114.500	0.00	0.00	0.002	O	|	|	|	|	0.00
114.583	0.00	0.00	0.002	O	|	|	|	|	0.00
114.667	0.00	0.00	0.002	O	|	|	|	|	0.00
114.750	0.00	0.00	0.002	O	|	|	|	|	0.00
114.833	0.00	0.00	0.002	O	|	|	|	|	0.00
114.917	0.00	0.00	0.002	O	|	|	|	|	0.00
115.000	0.00	0.00	0.002	O	|	|	|	|	0.00
115.083	0.00	0.00	0.002	O	|	|	|	|	0.00
115.167	0.00	0.00	0.002	O	|	|	|	|	0.00
115.250	0.00	0.00	0.002	O	|	|	|	|	0.00
115.333	0.00	0.00	0.002	O	|	|	|	|	0.00
115.417	0.00	0.00	0.002	O	|	|	|	|	0.00
115.500	0.00	0.00	0.002	O	|	|	|	|	0.00
115.583	0.00	0.00	0.002	O	|	|	|	|	0.00
115.667	0.00	0.00	0.002	O	|	|	|	|	0.00
115.750	0.00	0.00	0.002	O	|	|	|	|	0.00
115.833	0.00	0.00	0.002	O	|	|	|	|	0.00
115.917	0.00	0.00	0.002	O	|	|	|	|	0.00
116.000	0.00	0.00	0.002	O	|	|	|	|	0.00
116.083	0.00	0.00	0.002	O	|	|	|	|	0.00
116.167	0.00	0.00	0.002	O	|	|	|	|	0.00
116.250	0.00	0.00	0.002	O	|	|	|	|	0.00
116.333	0.00	0.00	0.002	O	|	|	|	|	0.00
116.417	0.00	0.00	0.002	O	|	|	|	|	0.00
116.500	0.00	0.00	0.002	O	|	|	|	|	0.00
116.583	0.00	0.00	0.002	O	|	|	|	|	0.00
116.667	0.00	0.00	0.002	O	|	|	|	|	0.00
116.750	0.00	0.00	0.002	O	|	|	|	|	0.00
116.833	0.00	0.00	0.002	O	|	|	|	|	0.00
116.917	0.00	0.00	0.002	O	|	|	|	|	0.00
117.000	0.00	0.00	0.002	O	|	|	|	|	0.00
117.083	0.00	0.00	0.002	O	|	|	|	|	0.00
117.167	0.00	0.00	0.002	O	|	|	|	|	0.00
117.250	0.00	0.00	0.002	O	|	|	|	|	0.00
117.333	0.00	0.00	0.002	O	|	|	|	|	0.00
117.417	0.00	0.00	0.002	O	|	|	|	|	0.00
117.500	0.00	0.00	0.002	O	|	|	|	|	0.00
117.583	0.00	0.00	0.002	O	|	|	|	|	0.00
117.667	0.00	0.00	0.002	O	|	|	|	|	0.00

```
117.750    0.00    0.00      0.002  O       |       |       |       |      0.00
117.833    0.00    0.00      0.002  O       |       |       |       |      0.00
117.917    0.00    0.00      0.002  O       |       |       |       |      0.00
118.000    0.00    0.00      0.002  O       |       |       |       |      0.00
118.083    0.00    0.00      0.002  O       |       |       |       |      0.00
118.167    0.00    0.00      0.002  O       |       |       |       |      0.00
118.250    0.00    0.00      0.002  O       |       |       |       |      0.00
118.333    0.00    0.00      0.002  O       |       |       |       |      0.00
118.417    0.00    0.00      0.002  O       |       |       |       |      0.00
118.500    0.00    0.00      0.002  O       |       |       |       |      0.00
118.583    0.00    0.00      0.002  O       |       |       |       |      0.00
118.667    0.00    0.00      0.002  O       |       |       |       |      0.00
118.750    0.00    0.00      0.002  O       |       |       |       |      0.00
118.833    0.00    0.00      0.002  O       |       |       |       |      0.00
118.917    0.00    0.00      0.002  O       |       |       |       |      0.00

        Remaining water in basin =    0.00 (Ac.Ft)


        ****************************HYDROGRAPH DATA****************************
                       Number of intervals =  1427
                       Time interval =    5.0 (Min.)
                       Maximum/Peak flow rate =       56.215 (CFS)
                       Total volume =      21.518 (Ac.Ft)
               Status of hydrographs being held in storage
                           Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
               Peak (CFS)      0.000     0.000     0.000     0.000     0.000
               Vol (Ac.Ft)     0.000     0.000     0.000     0.000     0.000
        ***********************************************************************

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- Basin 'C' - 100 Year 6 Hour Storm Routing Analysis

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                    FLOOD HYDROGRAPH ROUTING PROGRAM
          Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012
                       Study date: 03/20/17

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WESTRIDGE HYDROLOGY STUDY
PROPOSED ROUTING - BASIN 'C' - 100 YEAR 6 HOUR STORM
HUNSAKER & ASSOCIATES, MARCH 20, 2017
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------


Program License Serial Number 4094

------------------------------------------------------------------------
******************** HYDROGRAPH INFORMATION **********************

               From study/file name: PRC10006.rte
*****************************HYDROGRAPH DATA*****************************
               Number of intervals =    87
               Time interval =    5.0 (Min.)
               Maximum/Peak flow rate =      360.058 (CFS)
               Total volume =      29.466 (Ac.Ft)
       Status of hydrographs being held in storage
                   Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
       Peak (CFS)      0.000     0.000     0.000     0.000     0.000
       Vol (Ac.Ft)     0.000     0.000     0.000     0.000     0.000
************************************************************************



++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      300.000 to Point/Station      301.000
**** RETARDING BASIN ROUTING ****
________________________________________________________________________

User entry of depth-outflow-storage data
------------------------------------------------------------------------
Total number of inflow hydrograph intervals = 87
Hydrograph time unit =  5.000 (Min.)
Initial depth in storage basin =   0.00(Ft.)
------------------------------------------------------------------------
------------------------------------------------------------------------
Initial basin depth =   0.00 (Ft.)
Initial basin storage =      0.00 (Ac.Ft)
Initial basin outflow =   0.00 (CFS)
------------------------------------------------------------------------
------------------------------------------------------------------------
Depth vs. Storage and Depth vs. Discharge data:
 Basin Depth  Storage    Outflow   (S-O*dt/2)   (S+O*dt/2)
     (Ft.)    (Ac.Ft)    (CFS)     (Ac.Ft)    (Ac.Ft)
------------------------------------------------------------------------
   0.000      0.000      0.000      0.000        0.000
   0.500      0.834      0.692      0.832        0.836
   1.000      1.693      1.672      1.687        1.699
   1.500      2.577      3.059      2.566        2.588
   2.000      3.488      4.757      3.472        3.504
   3.000      5.388      7.930      5.361        5.415
   4.000      7.399     20.434      7.329        7.469
   5.000      9.523     35.089      9.402        9.644
   6.000     11.764     44.538     11.611       11.917
   7.000     14.126     52.170     13.946       14.306
   8.000     16.610     58.766     16.408       16.812
   8.900     18.942     83.236     18.655       19.229
   9.000     19.207     83.236     18.920       19.494
   9.500     20.556    448.796     19.011       22.101
  10.000     21.935   1159.965     17.941       25.929
```

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0	90.0	180.03	270.04	360.06	Depth (Ft.)
0.083	0.97	0.00	0.003	O	|	|	|	|	0.00
0.167	4.85	0.02	0.023	O	|	|	|	|	0.01
0.250	14.70	0.07	0.090	OI	|	|	|	|	0.05
0.333	19.87	0.17	0.208	OI	|	|	|	|	0.12
0.417	22.63	0.29	0.353	O I	|	|	|	|	0.21
0.500	24.55	0.43	0.513	O I	|	|	|	|	0.31
0.583	26.02	0.57	0.684	O I	|	|	|	|	0.41
0.667	27.13	0.72	0.862	O I	|	|	|	|	0.52
0.750	28.01	0.93	1.047	O I	|	|	|	|	0.62
0.833	28.63	1.15	1.234	O I	|	|	|	|	0.73
0.917	29.16	1.37	1.425	O I	|	|	|	|	0.84
1.000	29.64	1.59	1.617	O I	|	|	|	|	0.96
1.083	30.14	1.86	1.811	O I	|	|	|	|	1.07
1.167	30.64	2.16	2.007	O I	|	|	|	|	1.18
1.250	31.16	2.47	2.203	O I	|	|	|	|	1.29
1.333	31.64	2.78	2.402	O I	|	|	|	|	1.40
1.417	32.15	3.10	2.601	O I	|	|	|	|	1.51
1.500	32.63	3.48	2.801	O I	|	|	|	|	1.62
1.583	33.18	3.85	3.003	O I	|	|	|	|	1.73
1.667	33.71	4.23	3.205	O I	|	|	|	|	1.84
1.750	34.31	4.61	3.409	O I	|	|	|	|	1.96
1.833	34.90	4.97	3.614	O I	|	|	|	|	2.07
1.917	35.57	5.31	3.822	O I	|	|	|	|	2.18
2.000	36.22	5.66	4.031	O I	|	|	|	|	2.29
2.083	36.99	6.02	4.243	O I	|	|	|	|	2.40
2.167	37.79	6.38	4.458	O I	|	|	|	|	2.51
2.250	38.83	6.74	4.676	O I	|	|	|	|	2.63
2.333	39.75	7.11	4.899	O I	|	|	|	|	2.74
2.417	40.76	7.49	5.126	O I	|	|	|	|	2.86
2.500	41.74	7.88	5.357	O I	|	|	|	|	2.98
2.583	42.86	9.19	5.590	O I	|	|	|	|	3.10
2.667	43.96	10.62	5.821	O I	|	|	|	|	3.22
2.750	45.26	12.05	6.050	|O I	|	|	|	|	3.33
2.833	46.54	13.47	6.278	|O I	|	|	|	|	3.44
2.917	48.07	14.88	6.506	|O I	|	|	|	|	3.56
3.000	49.61	16.31	6.735	|O I	|	|	|	|	3.67
3.083	51.46	17.74	6.966	|O I	|	|	|	|	3.78
3.167	53.35	19.20	7.200	|O I	|	|	|	|	3.90
3.250	55.66	20.70	7.438	|O I	|	|	|	|	4.02
3.333	58.06	22.38	7.681	|O I	|	|	|	|	4.13
3.417	60.74	24.10	7.930	| O I	|	|	|	|	4.25
3.500	62.59	25.84	8.183	| O I	|	|	|	|	4.37
3.583	63.34	27.57	8.433	| O I	|	|	|	|	4.49
3.667	66.13	29.29	8.683	| O I	|	|	|	|	4.60
3.750	71.52	31.13	8.949	| O I	|	|	|	|	4.73
3.833	78.46	33.16	9.244	| O I	|	|	|	|	4.87
3.917	90.16	35.36	9.588	| O I	|	|	|	|	5.03
4.000	108.57	37.20	10.023	| O |I	|	|	|	|	5.22
4.083	159.23	39.96	10.679	| O | I	|	|	|	|	5.52
4.167	246.24	44.60	11.784	| O |	| I	|	|	|	6.01
4.250	360.06	50.29	13.545	| O |	|	|	|	I	6.75
4.333	239.16	55.14	15.246	| O |	| I	|	|	|	7.45
4.417	164.23	57.80	16.246	| O | I	|	|	|	|	7.85
4.500	129.82	61.27	16.848	| O | I	|	|	|	|	8.09
4.583	108.85	65.32	17.234	| O |I	|	|	|	|	8.24
4.667	91.96	67.76	17.468	| O I	|	|	|	|	8.33
4.750	77.90	68.96	17.582	| O |	|	|	|	|	8.38
4.833	66.28	69.18	17.603	| IO |	|	|	|	|	8.38
4.917	58.19	68.70	17.556	| IO |	|	|	|	|	8.37
5.000	53.66	67.81	17.471	| I O |	|	|	|	|	8.33
5.083	49.74	66.68	17.364	| IO |	|	|	|	|	8.29
5.167	47.07	65.41	17.243	| IO |	|	|	|	|	8.24
5.250	43.71	64.01	17.110	| I O |	|	|	|	|	8.19

5.333	41.01	62.50	16.966	| I O |	|	|	|	8.14
5.417	38.15	60.90	16.814	| I O |	|	|	|	8.08
5.500	36.51	59.26	16.657	| I O |	|	|	|	8.02
5.583	35.10	58.47	16.498	| I O |	|	|	|	7.95
5.667	33.85	58.03	16.334	| I O |	|	|	|	7.89
5.750	32.72	57.59	16.165	| I O |	|	|	|	7.82
5.833	31.70	57.13	15.992	| I O |	|	|	|	7.75
5.917	30.77	56.66	15.816	| I O |	|	|	|	7.68
6.000	29.92	56.18	15.636	| I O |	|	|	|	7.61
6.083	28.18	55.69	15.451	| I O |	|	|	|	7.53
6.167	23.63	55.15	15.248	| I O |	|	|	|	7.45
6.250	13.32	54.48	14.997	|I O |	|	|	|	7.35
6.333	8.00	53.69	14.698	I O |	|	|	|	7.23
6.417	5.30	52.84	14.377	I O |	|	|	|	7.10
6.500	3.51	51.91	14.047	I O |	|	|	|	6.97
6.583	2.27	50.84	13.713	I O |	|	|	|	6.83
6.667	1.41	49.76	13.379	I O |	|	|	|	6.68
6.750	0.86	48.69	13.048	I O |	|	|	|	6.54
6.833	0.55	47.63	12.721	I O |	|	|	|	6.41
6.917	0.40	46.59	12.400	I O |	|	|	|	6.27
7.000	0.28	45.58	12.085	I O |	|	|	|	6.14
7.083	0.20	44.58	11.776	I O |	|	|	|	6.01
7.167	0.11	43.32	11.475	I O |	|	|	|	5.87
7.250	0.04	42.08	11.181	I O |	|	|	|	5.74
7.333	0.00	40.88	10.896	I O |	|	|	|	5.61
7.417	0.00	39.71	10.618	I O |	|	|	|	5.49
7.500	0.00	38.57	10.349	I O |	|	|	|	5.37
7.583	0.00	37.47	10.087	I O |	|	|	|	5.25
7.667	0.00	36.39	9.832	I O |	|	|	|	5.14
7.750	0.00	35.35	9.585	I O |	|	|	|	5.03
7.833	0.00	33.87	9.347	I O |	|	|	|	4.92
7.917	0.00	32.30	9.119	I O |	|	|	|	4.81
8.000	0.00	30.80	8.902	I O |	|	|	|	4.71
8.083	0.00	29.37	8.695	I O |	|	|	|	4.61
8.167	0.00	28.01	8.497	I O |	|	|	|	4.52
8.250	0.00	26.71	8.309	I O |	|	|	|	4.43
8.333	0.00	25.47	8.129	I O |	|	|	|	4.34
8.417	0.00	24.29	7.958	I O |	|	|	|	4.26
8.500	0.00	23.16	7.794	I O |	|	|	|	4.19
8.583	0.00	22.09	7.638	IO |	|	|	|	4.11
8.667	0.00	21.06	7.490	IO |	|	|	|	4.04
8.750	0.00	20.12	7.348	IO |	|	|	|	3.97
8.833	0.00	19.27	7.212	IO |	|	|	|	3.91
8.917	0.00	18.47	7.082	IO |	|	|	|	3.84
9.000	0.00	17.69	6.958	IO |	|	|	|	3.78
9.083	0.00	16.95	6.839	IO |	|	|	|	3.72
9.167	0.00	16.24	6.724	IO |	|	|	|	3.66
9.250	0.00	15.56	6.615	IO |	|	|	|	3.61
9.333	0.00	14.91	6.510	IO |	|	|	|	3.56
9.417	0.00	14.28	6.409	IO |	|	|	|	3.51
9.500	0.00	13.68	6.313	IO |	|	|	|	3.46
9.583	0.00	13.11	6.221	IO |	|	|	|	3.41
9.667	0.00	12.56	6.132	IO |	|	|	|	3.37
9.750	0.00	12.03	6.048	IO |	|	|	|	3.33
9.833	0.00	11.53	5.967	IO |	|	|	|	3.29
9.917	0.00	11.04	5.889	O |	|	|	|	3.25
10.000	0.00	10.58	5.814	O |	|	|	|	3.21
10.083	0.00	10.14	5.743	O |	|	|	|	3.18
10.167	0.00	9.71	5.675	O |	|	|	|	3.14
10.250	0.00	9.31	5.609	O |	|	|	|	3.11
10.333	0.00	8.92	5.547	O |	|	|	|	3.08
10.417	0.00	8.54	5.486	O |	|	|	|	3.05
10.500	0.00	8.18	5.429	O |	|	|	|	3.02
10.583	0.00	7.91	5.373	O |	|	|	|	2.99
10.667	0.00	7.82	5.319	O |	|	|	|	2.96
10.750	0.00	7.73	5.266	O |	|	|	|	2.94
10.833	0.00	7.64	5.213	O |	|	|	|	2.91
10.917	0.00	7.55	5.161	O |	|	|	|	2.88
11.000	0.00	7.46	5.109	O |	|	|	|	2.85
11.083	0.00	7.38	5.058	O |	|	|	|	2.83
11.167	0.00	7.29	5.007	O |	|	|	|	2.80

11.250	0.00	7.21	4.957	O	|	|	|	|	2.77
11.333	0.00	7.13	4.908	O	|	|	|	|	2.75
11.417	0.00	7.05	4.859	O	|	|	|	|	2.72
11.500	0.00	6.97	4.811	O	|	|	|	|	2.70
11.583	0.00	6.89	4.763	O	|	|	|	|	2.67
11.667	0.00	6.81	4.716	O	|	|	|	|	2.65
11.750	0.00	6.73	4.669	O	|	|	|	|	2.62
11.833	0.00	6.65	4.623	O	|	|	|	|	2.60
11.917	0.00	6.58	4.578	O	|	|	|	|	2.57
12.000	0.00	6.50	4.533	O	|	|	|	|	2.55
12.083	0.00	6.43	4.488	O	|	|	|	|	2.53
12.167	0.00	6.35	4.444	O	|	|	|	|	2.50
12.250	0.00	6.28	4.401	O	|	|	|	|	2.48
12.333	0.00	6.21	4.358	O	|	|	|	|	2.46
12.417	0.00	6.14	4.315	O	|	|	|	|	2.44
12.500	0.00	6.07	4.273	O	|	|	|	|	2.41
12.583	0.00	6.00	4.232	O	|	|	|	|	2.39
12.667	0.00	5.93	4.190	O	|	|	|	|	2.37
12.750	0.00	5.86	4.150	O	|	|	|	|	2.35
12.833	0.00	5.80	4.110	O	|	|	|	|	2.33
12.917	0.00	5.73	4.070	O	|	|	|	|	2.31
13.000	0.00	5.66	4.031	O	|	|	|	|	2.29
13.083	0.00	5.60	3.992	O	|	|	|	|	2.27
13.167	0.00	5.53	3.954	O	|	|	|	|	2.25
13.250	0.00	5.47	3.916	O	|	|	|	|	2.23
13.333	0.00	5.41	3.878	O	|	|	|	|	2.21
13.417	0.00	5.35	3.841	O	|	|	|	|	2.19
13.500	0.00	5.29	3.805	O	|	|	|	|	2.17
13.583	0.00	5.23	3.768	O	|	|	|	|	2.15
13.667	0.00	5.17	3.733	O	|	|	|	|	2.13
13.750	0.00	5.11	3.697	O	|	|	|	|	2.11
13.833	0.00	5.05	3.662	O	|	|	|	|	2.09
13.917	0.00	4.99	3.628	O	|	|	|	|	2.07
14.000	0.00	4.93	3.594	O	|	|	|	|	2.06
14.083	0.00	4.88	3.560	O	|	|	|	|	2.04
14.167	0.00	4.82	3.526	O	|	|	|	|	2.02
14.250	0.00	4.77	3.493	O	|	|	|	|	2.00
14.333	0.00	4.71	3.461	O	|	|	|	|	1.99
14.417	0.00	4.65	3.429	O	|	|	|	|	1.97
14.500	0.00	4.59	3.397	O	|	|	|	|	1.95
14.583	0.00	4.53	3.365	O	|	|	|	|	1.93
14.667	0.00	4.47	3.334	O	|	|	|	|	1.92
14.750	0.00	4.41	3.304	O	|	|	|	|	1.90
14.833	0.00	4.36	3.274	O	|	|	|	|	1.88
14.917	0.00	4.30	3.244	O	|	|	|	|	1.87
15.000	0.00	4.25	3.214	O	|	|	|	|	1.85
15.083	0.00	4.19	3.185	O	|	|	|	|	1.83
15.167	0.00	4.14	3.157	O	|	|	|	|	1.82
15.250	0.00	4.09	3.128	O	|	|	|	|	1.80
15.333	0.00	4.03	3.100	O	|	|	|	|	1.79
15.417	0.00	3.98	3.073	O	|	|	|	|	1.77
15.500	0.00	3.93	3.045	O	|	|	|	|	1.76
15.583	0.00	3.88	3.019	O	|	|	|	|	1.74
15.667	0.00	3.83	2.992	O	|	|	|	|	1.73
15.750	0.00	3.78	2.966	O	|	|	|	|	1.71
15.833	0.00	3.74	2.940	O	|	|	|	|	1.70
15.917	0.00	3.69	2.914	O	|	|	|	|	1.69
16.000	0.00	3.64	2.889	O	|	|	|	|	1.67
16.083	0.00	3.59	2.864	O	|	|	|	|	1.66
16.167	0.00	3.55	2.840	O	|	|	|	|	1.64
16.250	0.00	3.50	2.815	O	|	|	|	|	1.63
16.333	0.00	3.46	2.791	O	|	|	|	|	1.62
16.417	0.00	3.41	2.768	O	|	|	|	|	1.60
16.500	0.00	3.37	2.744	O	|	|	|	|	1.59
16.583	0.00	3.33	2.721	O	|	|	|	|	1.58
16.667	0.00	3.29	2.698	O	|	|	|	|	1.57
16.750	0.00	3.24	2.676	O	|	|	|	|	1.55
16.833	0.00	3.20	2.654	O	|	|	|	|	1.54
16.917	0.00	3.16	2.632	O	|	|	|	|	1.53
17.000	0.00	3.12	2.610	O	|	|	|	|	1.52
17.083	0.00	3.08	2.589	O	|	|	|	|	1.51

17.167	0.00	3.04	2.568	O	|	|	|	|	1.49
17.250	0.00	3.01	2.547	O	|	|	|	|	1.48
17.333	0.00	2.98	2.526	O	|	|	|	|	1.47
17.417	0.00	2.95	2.506	O	|	|	|	|	1.46
17.500	0.00	2.92	2.486	O	|	|	|	|	1.45
17.583	0.00	2.88	2.466	O	|	|	|	|	1.44
17.667	0.00	2.85	2.446	O	|	|	|	|	1.43
17.750	0.00	2.82	2.426	O	|	|	|	|	1.41
17.833	0.00	2.79	2.407	O	|	|	|	|	1.40
17.917	0.00	2.76	2.388	O	|	|	|	|	1.39
18.000	0.00	2.73	2.369	O	|	|	|	|	1.38
18.083	0.00	2.70	2.350	O	|	|	|	|	1.37
18.167	0.00	2.67	2.332	O	|	|	|	|	1.36
18.250	0.00	2.65	2.313	O	|	|	|	|	1.35
18.333	0.00	2.62	2.295	O	|	|	|	|	1.34
18.417	0.00	2.59	2.277	O	|	|	|	|	1.33
18.500	0.00	2.56	2.260	O	|	|	|	|	1.32
18.583	0.00	2.53	2.242	O	|	|	|	|	1.31
18.667	0.00	2.51	2.225	O	|	|	|	|	1.30
18.750	0.00	2.48	2.208	O	|	|	|	|	1.29
18.833	0.00	2.45	2.191	O	|	|	|	|	1.28
18.917	0.00	2.43	2.174	O	|	|	|	|	1.27
19.000	0.00	2.40	2.157	O	|	|	|	|	1.26
19.083	0.00	2.37	2.141	O	|	|	|	|	1.25
19.167	0.00	2.35	2.124	O	|	|	|	|	1.24
19.250	0.00	2.32	2.108	O	|	|	|	|	1.23
19.333	0.00	2.30	2.092	O	|	|	|	|	1.23
19.417	0.00	2.27	2.077	O	|	|	|	|	1.22
19.500	0.00	2.25	2.061	O	|	|	|	|	1.21
19.583	0.00	2.23	2.046	O	|	|	|	|	1.20
19.667	0.00	2.20	2.030	O	|	|	|	|	1.19
19.750	0.00	2.18	2.015	O	|	|	|	|	1.18
19.833	0.00	2.15	2.000	O	|	|	|	|	1.17
19.917	0.00	2.13	1.986	O	|	|	|	|	1.17
20.000	0.00	2.11	1.971	O	|	|	|	|	1.16
20.083	0.00	2.09	1.957	O	|	|	|	|	1.15
20.167	0.00	2.06	1.942	O	|	|	|	|	1.14
20.250	0.00	2.04	1.928	O	|	|	|	|	1.13
20.333	0.00	2.02	1.914	O	|	|	|	|	1.13
20.417	0.00	2.00	1.900	O	|	|	|	|	1.12
20.500	0.00	1.98	1.887	O	|	|	|	|	1.11
20.583	0.00	1.95	1.873	O	|	|	|	|	1.10
20.667	0.00	1.93	1.860	O	|	|	|	|	1.09
20.750	0.00	1.91	1.847	O	|	|	|	|	1.09
20.833	0.00	1.89	1.833	O	|	|	|	|	1.08
20.917	0.00	1.87	1.821	O	|	|	|	|	1.07
21.000	0.00	1.85	1.808	O	|	|	|	|	1.06
21.083	0.00	1.83	1.795	O	|	|	|	|	1.06
21.167	0.00	1.81	1.782	O	|	|	|	|	1.05
21.250	0.00	1.79	1.770	O	|	|	|	|	1.04
21.333	0.00	1.77	1.758	O	|	|	|	|	1.04
21.417	0.00	1.75	1.746	O	|	|	|	|	1.03
21.500	0.00	1.74	1.734	O	|	|	|	|	1.02
21.583	0.00	1.72	1.722	O	|	|	|	|	1.02
21.667	0.00	1.70	1.710	O	|	|	|	|	1.01
21.750	0.00	1.68	1.698	O	|	|	|	|	1.00
21.833	0.00	1.66	1.687	O	|	|	|	|	1.00
21.917	0.00	1.65	1.675	O	|	|	|	|	0.99
22.000	0.00	1.64	1.664	O	|	|	|	|	0.98
22.083	0.00	1.63	1.653	O	|	|	|	|	0.98
22.167	0.00	1.61	1.642	O	|	|	|	|	0.97
22.250	0.00	1.60	1.631	O	|	|	|	|	0.96
22.333	0.00	1.59	1.620	O	|	|	|	|	0.96
22.417	0.00	1.58	1.609	O	|	|	|	|	0.95
22.500	0.00	1.56	1.598	O	|	|	|	|	0.94
22.583	0.00	1.55	1.587	O	|	|	|	|	0.94
22.667	0.00	1.54	1.577	O	|	|	|	|	0.93
22.750	0.00	1.53	1.566	O	|	|	|	|	0.93
22.833	0.00	1.52	1.555	O	|	|	|	|	0.92
22.917	0.00	1.50	1.545	O	|	|	|	|	0.91
23.000	0.00	1.49	1.535	O	|	|	|	|	0.91

23.083	0.00	1.48	1.525	O	|	|	|	|	0.90
23.167	0.00	1.47	1.514	O	|	|	|	|	0.90
23.250	0.00	1.46	1.504	O	|	|	|	|	0.89
23.333	0.00	1.45	1.494	O	|	|	|	|	0.88
23.417	0.00	1.43	1.484	O	|	|	|	|	0.88
23.500	0.00	1.42	1.475	O	|	|	|	|	0.87
23.583	0.00	1.41	1.465	O	|	|	|	|	0.87
23.667	0.00	1.40	1.455	O	|	|	|	|	0.86
23.750	0.00	1.39	1.446	O	|	|	|	|	0.86
23.833	0.00	1.38	1.436	O	|	|	|	|	0.85
23.917	0.00	1.37	1.427	O	|	|	|	|	0.84
24.000	0.00	1.36	1.417	O	|	|	|	|	0.84
24.083	0.00	1.35	1.408	O	|	|	|	|	0.83
24.167	0.00	1.34	1.399	O	|	|	|	|	0.83
24.250	0.00	1.33	1.389	O	|	|	|	|	0.82
24.333	0.00	1.32	1.380	O	|	|	|	|	0.82
24.417	0.00	1.31	1.371	O	|	|	|	|	0.81
24.500	0.00	1.29	1.362	O	|	|	|	|	0.81
24.583	0.00	1.28	1.353	O	|	|	|	|	0.80
24.667	0.00	1.27	1.345	O	|	|	|	|	0.80
24.750	0.00	1.26	1.336	O	|	|	|	|	0.79
24.833	0.00	1.25	1.327	O	|	|	|	|	0.79
24.917	0.00	1.24	1.319	O	|	|	|	|	0.78
25.000	0.00	1.24	1.310	O	|	|	|	|	0.78
25.083	0.00	1.23	1.302	O	|	|	|	|	0.77
25.167	0.00	1.22	1.293	O	|	|	|	|	0.77
25.250	0.00	1.21	1.285	O	|	|	|	|	0.76
25.333	0.00	1.20	1.277	O	|	|	|	|	0.76
25.417	0.00	1.19	1.268	O	|	|	|	|	0.75
25.500	0.00	1.18	1.260	O	|	|	|	|	0.75
25.583	0.00	1.17	1.252	O	|	|	|	|	0.74
25.667	0.00	1.16	1.244	O	|	|	|	|	0.74
25.750	0.00	1.15	1.236	O	|	|	|	|	0.73
25.833	0.00	1.14	1.228	O	|	|	|	|	0.73
25.917	0.00	1.13	1.220	O	|	|	|	|	0.72
26.000	0.00	1.12	1.213	O	|	|	|	|	0.72
26.083	0.00	1.12	1.205	O	|	|	|	|	0.72
26.167	0.00	1.11	1.197	O	|	|	|	|	0.71
26.250	0.00	1.10	1.190	O	|	|	|	|	0.71
26.333	0.00	1.09	1.182	O	|	|	|	|	0.70
26.417	0.00	1.08	1.175	O	|	|	|	|	0.70
26.500	0.00	1.07	1.167	O	|	|	|	|	0.69
26.583	0.00	1.06	1.160	O	|	|	|	|	0.69
26.667	0.00	1.06	1.153	O	|	|	|	|	0.69
26.750	0.00	1.05	1.145	O	|	|	|	|	0.68
26.833	0.00	1.04	1.138	O	|	|	|	|	0.68
26.917	0.00	1.03	1.131	O	|	|	|	|	0.67
27.000	0.00	1.02	1.124	O	|	|	|	|	0.67
27.083	0.00	1.01	1.117	O	|	|	|	|	0.66
27.167	0.00	1.01	1.110	O	|	|	|	|	0.66
27.250	0.00	1.00	1.103	O	|	|	|	|	0.66
27.333	0.00	0.99	1.096	O	|	|	|	|	0.65
27.417	0.00	0.98	1.089	O	|	|	|	|	0.65
27.500	0.00	0.98	1.083	O	|	|	|	|	0.64
27.583	0.00	0.97	1.076	O	|	|	|	|	0.64
27.667	0.00	0.96	1.069	O	|	|	|	|	0.64
27.750	0.00	0.95	1.063	O	|	|	|	|	0.63
27.833	0.00	0.95	1.056	O	|	|	|	|	0.63
27.917	0.00	0.94	1.050	O	|	|	|	|	0.63
28.000	0.00	0.93	1.043	O	|	|	|	|	0.62
28.083	0.00	0.92	1.037	O	|	|	|	|	0.62
28.167	0.00	0.92	1.031	O	|	|	|	|	0.61
28.250	0.00	0.91	1.024	O	|	|	|	|	0.61
28.333	0.00	0.90	1.018	O	|	|	|	|	0.61
28.417	0.00	0.89	1.012	O	|	|	|	|	0.60
28.500	0.00	0.89	1.006	O	|	|	|	|	0.60
28.583	0.00	0.88	1.000	O	|	|	|	|	0.60
28.667	0.00	0.87	0.994	O	|	|	|	|	0.59
28.750	0.00	0.87	0.988	O	|	|	|	|	0.59
28.833	0.00	0.86	0.982	O	|	|	|	|	0.59
28.917	0.00	0.85	0.976	O	|	|	|	|	0.58

29.000	0.00	0.85	0.970	O	|	|	|	|	0.58
29.083	0.00	0.84	0.964	O	|	|	|	|	0.58
29.167	0.00	0.83	0.958	O	|	|	|	|	0.57
29.250	0.00	0.83	0.953	O	|	|	|	|	0.57
29.333	0.00	0.82	0.947	O	|	|	|	|	0.57
29.417	0.00	0.81	0.941	O	|	|	|	|	0.56
29.500	0.00	0.81	0.936	O	|	|	|	|	0.56
29.583	0.00	0.80	0.930	O	|	|	|	|	0.56
29.667	0.00	0.80	0.925	O	|	|	|	|	0.55
29.750	0.00	0.79	0.919	O	|	|	|	|	0.55
29.833	0.00	0.78	0.914	O	|	|	|	|	0.55
29.917	0.00	0.78	0.908	O	|	|	|	|	0.54
30.000	0.00	0.77	0.903	O	|	|	|	|	0.54
30.083	0.00	0.76	0.898	O	|	|	|	|	0.54
30.167	0.00	0.76	0.893	O	|	|	|	|	0.53
30.250	0.00	0.75	0.887	O	|	|	|	|	0.53
30.333	0.00	0.75	0.882	O	|	|	|	|	0.53
30.417	0.00	0.74	0.877	O	|	|	|	|	0.53
30.500	0.00	0.74	0.872	O	|	|	|	|	0.52
30.583	0.00	0.73	0.867	O	|	|	|	|	0.52
30.667	0.00	0.72	0.862	O	|	|	|	|	0.52
30.750	0.00	0.72	0.857	O	|	|	|	|	0.51
30.833	0.00	0.71	0.852	O	|	|	|	|	0.51
30.917	0.00	0.71	0.847	O	|	|	|	|	0.51
31.000	0.00	0.70	0.842	O	|	|	|	|	0.50
31.083	0.00	0.70	0.838	O	|	|	|	|	0.50
31.167	0.00	0.69	0.833	O	|	|	|	|	0.50
31.250	0.00	0.69	0.828	O	|	|	|	|	0.50
31.333	0.00	0.68	0.823	O	|	|	|	|	0.49
31.417	0.00	0.68	0.819	O	|	|	|	|	0.49
31.500	0.00	0.68	0.814	O	|	|	|	|	0.49
31.583	0.00	0.67	0.809	O	|	|	|	|	0.49
31.667	0.00	0.67	0.805	O	|	|	|	|	0.48
31.750	0.00	0.66	0.800	O	|	|	|	|	0.48
31.833	0.00	0.66	0.796	O	|	|	|	|	0.48
31.917	0.00	0.66	0.791	O	|	|	|	|	0.47
32.000	0.00	0.65	0.786	O	|	|	|	|	0.47
32.083	0.00	0.65	0.782	O	|	|	|	|	0.47
32.167	0.00	0.65	0.778	O	|	|	|	|	0.47
32.250	0.00	0.64	0.773	O	|	|	|	|	0.46
32.333	0.00	0.64	0.769	O	|	|	|	|	0.46
32.417	0.00	0.63	0.764	O	|	|	|	|	0.46
32.500	0.00	0.63	0.760	O	|	|	|	|	0.46
32.583	0.00	0.63	0.756	O	|	|	|	|	0.45
32.667	0.00	0.62	0.751	O	|	|	|	|	0.45
32.750	0.00	0.62	0.747	O	|	|	|	|	0.45
32.833	0.00	0.62	0.743	O	|	|	|	|	0.45
32.917	0.00	0.61	0.739	O	|	|	|	|	0.44
33.000	0.00	0.61	0.734	O	|	|	|	|	0.44
33.083	0.00	0.61	0.730	O	|	|	|	|	0.44
33.167	0.00	0.60	0.726	O	|	|	|	|	0.44
33.250	0.00	0.60	0.722	O	|	|	|	|	0.43
33.333	0.00	0.60	0.718	O	|	|	|	|	0.43
33.417	0.00	0.59	0.714	O	|	|	|	|	0.43
33.500	0.00	0.59	0.710	O	|	|	|	|	0.43
33.583	0.00	0.59	0.706	O	|	|	|	|	0.42
33.667	0.00	0.58	0.702	O	|	|	|	|	0.42
33.750	0.00	0.58	0.698	O	|	|	|	|	0.42
33.833	0.00	0.58	0.694	O	|	|	|	|	0.42
33.917	0.00	0.57	0.690	O	|	|	|	|	0.41
34.000	0.00	0.57	0.686	O	|	|	|	|	0.41
34.083	0.00	0.57	0.682	O	|	|	|	|	0.41
34.167	0.00	0.56	0.678	O	|	|	|	|	0.41
34.250	0.00	0.56	0.674	O	|	|	|	|	0.40
34.333	0.00	0.56	0.670	O	|	|	|	|	0.40
34.417	0.00	0.55	0.666	O	|	|	|	|	0.40
34.500	0.00	0.55	0.663	O	|	|	|	|	0.40
34.583	0.00	0.55	0.659	O	|	|	|	|	0.39
34.667	0.00	0.54	0.655	O	|	|	|	|	0.39
34.750	0.00	0.54	0.651	O	|	|	|	|	0.39
34.833	0.00	0.54	0.648	O	|	|	|	|	0.39

34.917	0.00	0.53	0.644	O	|	|	|	|	0.39
35.000	0.00	0.53	0.640	O	|	|	|	|	0.38
35.083	0.00	0.53	0.637	O	|	|	|	|	0.38
35.167	0.00	0.53	0.633	O	|	|	|	|	0.38
35.250	0.00	0.52	0.629	O	|	|	|	|	0.38
35.333	0.00	0.52	0.626	O	|	|	|	|	0.38
35.417	0.00	0.52	0.622	O	|	|	|	|	0.37
35.500	0.00	0.51	0.619	O	|	|	|	|	0.37
35.583	0.00	0.51	0.615	O	|	|	|	|	0.37
35.667	0.00	0.51	0.612	O	|	|	|	|	0.37
35.750	0.00	0.50	0.608	O	|	|	|	|	0.36
35.833	0.00	0.50	0.605	O	|	|	|	|	0.36
35.917	0.00	0.50	0.601	O	|	|	|	|	0.36
36.000	0.00	0.50	0.598	O	|	|	|	|	0.36
36.083	0.00	0.49	0.594	O	|	|	|	|	0.36
36.167	0.00	0.49	0.591	O	|	|	|	|	0.35
36.250	0.00	0.49	0.588	O	|	|	|	|	0.35
36.333	0.00	0.48	0.584	O	|	|	|	|	0.35
36.417	0.00	0.48	0.581	O	|	|	|	|	0.35
36.500	0.00	0.48	0.578	O	|	|	|	|	0.35
36.583	0.00	0.48	0.574	O	|	|	|	|	0.34
36.667	0.00	0.47	0.571	O	|	|	|	|	0.34
36.750	0.00	0.47	0.568	O	|	|	|	|	0.34
36.833	0.00	0.47	0.565	O	|	|	|	|	0.34
36.917	0.00	0.47	0.561	O	|	|	|	|	0.34
37.000	0.00	0.46	0.558	O	|	|	|	|	0.33
37.083	0.00	0.46	0.555	O	|	|	|	|	0.33
37.167	0.00	0.46	0.552	O	|	|	|	|	0.33
37.250	0.00	0.46	0.549	O	|	|	|	|	0.33
37.333	0.00	0.45	0.546	O	|	|	|	|	0.33
37.417	0.00	0.45	0.542	O	|	|	|	|	0.33
37.500	0.00	0.45	0.539	O	|	|	|	|	0.32
37.583	0.00	0.45	0.536	O	|	|	|	|	0.32
37.667	0.00	0.44	0.533	O	|	|	|	|	0.32
37.750	0.00	0.44	0.530	O	|	|	|	|	0.32
37.833	0.00	0.44	0.527	O	|	|	|	|	0.32
37.917	0.00	0.43	0.524	O	|	|	|	|	0.31
38.000	0.00	0.43	0.521	O	|	|	|	|	0.31
38.083	0.00	0.43	0.518	O	|	|	|	|	0.31
38.167	0.00	0.43	0.515	O	|	|	|	|	0.31
38.250	0.00	0.43	0.512	O	|	|	|	|	0.31
38.333	0.00	0.42	0.509	O	|	|	|	|	0.31
38.417	0.00	0.42	0.507	O	|	|	|	|	0.30
38.500	0.00	0.42	0.504	O	|	|	|	|	0.30
38.583	0.00	0.42	0.501	O	|	|	|	|	0.30
38.667	0.00	0.41	0.498	O	|	|	|	|	0.30
38.750	0.00	0.41	0.495	O	|	|	|	|	0.30
38.833	0.00	0.41	0.492	O	|	|	|	|	0.30
38.917	0.00	0.41	0.489	O	|	|	|	|	0.29
39.000	0.00	0.40	0.487	O	|	|	|	|	0.29
39.083	0.00	0.40	0.484	O	|	|	|	|	0.29
39.167	0.00	0.40	0.481	O	|	|	|	|	0.29
39.250	0.00	0.40	0.478	O	|	|	|	|	0.29
39.333	0.00	0.39	0.476	O	|	|	|	|	0.29
39.417	0.00	0.39	0.473	O	|	|	|	|	0.28
39.500	0.00	0.39	0.470	O	|	|	|	|	0.28
39.583	0.00	0.39	0.468	O	|	|	|	|	0.28
39.667	0.00	0.39	0.465	O	|	|	|	|	0.28
39.750	0.00	0.38	0.462	O	|	|	|	|	0.28
39.833	0.00	0.38	0.460	O	|	|	|	|	0.28
39.917	0.00	0.38	0.457	O	|	|	|	|	0.27
40.000	0.00	0.38	0.454	O	|	|	|	|	0.27
40.083	0.00	0.37	0.452	O	|	|	|	|	0.27
40.167	0.00	0.37	0.449	O	|	|	|	|	0.27
40.250	0.00	0.37	0.447	O	|	|	|	|	0.27
40.333	0.00	0.37	0.444	O	|	|	|	|	0.27
40.417	0.00	0.37	0.442	O	|	|	|	|	0.26
40.500	0.00	0.36	0.439	O	|	|	|	|	0.26
40.583	0.00	0.36	0.437	O	|	|	|	|	0.26
40.667	0.00	0.36	0.434	O	|	|	|	|	0.26
40.750	0.00	0.36	0.432	O	|	|	|	|	0.26

40.833	0.00	0.36	0.429	O	|	|	|	|	0.26
40.917	0.00	0.35	0.427	O	|	|	|	|	0.26
41.000	0.00	0.35	0.424	O	|	|	|	|	0.25
41.083	0.00	0.35	0.422	O	|	|	|	|	0.25
41.167	0.00	0.35	0.419	O	|	|	|	|	0.25
41.250	0.00	0.35	0.417	O	|	|	|	|	0.25
41.333	0.00	0.34	0.415	O	|	|	|	|	0.25
41.417	0.00	0.34	0.412	O	|	|	|	|	0.25
41.500	0.00	0.34	0.410	O	|	|	|	|	0.25
41.583	0.00	0.34	0.408	O	|	|	|	|	0.24
41.667	0.00	0.34	0.405	O	|	|	|	|	0.24
41.750	0.00	0.33	0.403	O	|	|	|	|	0.24
41.833	0.00	0.33	0.401	O	|	|	|	|	0.24
41.917	0.00	0.33	0.398	O	|	|	|	|	0.24
42.000	0.00	0.33	0.396	O	|	|	|	|	0.24
42.083	0.00	0.33	0.394	O	|	|	|	|	0.24
42.167	0.00	0.32	0.392	O	|	|	|	|	0.23
42.250	0.00	0.32	0.389	O	|	|	|	|	0.23
42.333	0.00	0.32	0.387	O	|	|	|	|	0.23
42.417	0.00	0.32	0.385	O	|	|	|	|	0.23
42.500	0.00	0.32	0.383	O	|	|	|	|	0.23
42.583	0.00	0.32	0.381	O	|	|	|	|	0.23
42.667	0.00	0.31	0.378	O	|	|	|	|	0.23
42.750	0.00	0.31	0.376	O	|	|	|	|	0.23
42.833	0.00	0.31	0.374	O	|	|	|	|	0.22
42.917	0.00	0.31	0.372	O	|	|	|	|	0.22
43.000	0.00	0.31	0.370	O	|	|	|	|	0.22
43.083	0.00	0.31	0.368	O	|	|	|	|	0.22
43.167	0.00	0.30	0.366	O	|	|	|	|	0.22
43.250	0.00	0.30	0.364	O	|	|	|	|	0.22
43.333	0.00	0.30	0.362	O	|	|	|	|	0.22
43.417	0.00	0.30	0.359	O	|	|	|	|	0.22
43.500	0.00	0.30	0.357	O	|	|	|	|	0.21
43.583	0.00	0.29	0.355	O	|	|	|	|	0.21
43.667	0.00	0.29	0.353	O	|	|	|	|	0.21
43.750	0.00	0.29	0.351	O	|	|	|	|	0.21
43.833	0.00	0.29	0.349	O	|	|	|	|	0.21
43.917	0.00	0.29	0.347	O	|	|	|	|	0.21
44.000	0.00	0.29	0.345	O	|	|	|	|	0.21
44.083	0.00	0.28	0.343	O	|	|	|	|	0.21
44.167	0.00	0.28	0.341	O	|	|	|	|	0.20
44.250	0.00	0.28	0.340	O	|	|	|	|	0.20
44.333	0.00	0.28	0.338	O	|	|	|	|	0.20
44.417	0.00	0.28	0.336	O	|	|	|	|	0.20
44.500	0.00	0.28	0.334	O	|	|	|	|	0.20
44.583	0.00	0.28	0.332	O	|	|	|	|	0.20
44.667	0.00	0.27	0.330	O	|	|	|	|	0.20
44.750	0.00	0.27	0.328	O	|	|	|	|	0.20
44.833	0.00	0.27	0.326	O	|	|	|	|	0.20
44.917	0.00	0.27	0.324	O	|	|	|	|	0.19
45.000	0.00	0.27	0.323	O	|	|	|	|	0.19
45.083	0.00	0.27	0.321	O	|	|	|	|	0.19
45.167	0.00	0.26	0.319	O	|	|	|	|	0.19
45.250	0.00	0.26	0.317	O	|	|	|	|	0.19
45.333	0.00	0.26	0.315	O	|	|	|	|	0.19
45.417	0.00	0.26	0.313	O	|	|	|	|	0.19
45.500	0.00	0.26	0.312	O	|	|	|	|	0.19
45.583	0.00	0.26	0.310	O	|	|	|	|	0.19
45.667	0.00	0.26	0.308	O	|	|	|	|	0.18
45.750	0.00	0.25	0.306	O	|	|	|	|	0.18
45.833	0.00	0.25	0.305	O	|	|	|	|	0.18
45.917	0.00	0.25	0.303	O	|	|	|	|	0.18
46.000	0.00	0.25	0.301	O	|	|	|	|	0.18
46.083	0.00	0.25	0.299	O	|	|	|	|	0.18
46.167	0.00	0.25	0.298	O	|	|	|	|	0.18
46.250	0.00	0.25	0.296	O	|	|	|	|	0.18
46.333	0.00	0.24	0.294	O	|	|	|	|	0.18
46.417	0.00	0.24	0.293	O	|	|	|	|	0.18
46.500	0.00	0.24	0.291	O	|	|	|	|	0.17
46.583	0.00	0.24	0.289	O	|	|	|	|	0.17
46.667	0.00	0.24	0.288	O	|	|	|	|	0.17

46.750	0.00	0.24	0.286	O	|	|	|	|	0.17
46.833	0.00	0.24	0.284	O	|	|	|	|	0.17
46.917	0.00	0.23	0.283	O	|	|	|	|	0.17
47.000	0.00	0.23	0.281	O	|	|	|	|	0.17
47.083	0.00	0.23	0.280	O	|	|	|	|	0.17
47.167	0.00	0.23	0.278	O	|	|	|	|	0.17
47.250	0.00	0.23	0.276	O	|	|	|	|	0.17
47.333	0.00	0.23	0.275	O	|	|	|	|	0.16
47.417	0.00	0.23	0.273	O	|	|	|	|	0.16
47.500	0.00	0.23	0.272	O	|	|	|	|	0.16
47.583	0.00	0.22	0.270	O	|	|	|	|	0.16
47.667	0.00	0.22	0.269	O	|	|	|	|	0.16
47.750	0.00	0.22	0.267	O	|	|	|	|	0.16
47.833	0.00	0.22	0.266	O	|	|	|	|	0.16
47.917	0.00	0.22	0.264	O	|	|	|	|	0.16
48.000	0.00	0.22	0.263	O	|	|	|	|	0.16
48.083	0.00	0.22	0.261	O	|	|	|	|	0.16
48.167	0.00	0.22	0.260	O	|	|	|	|	0.16
48.250	0.00	0.21	0.258	O	|	|	|	|	0.15
48.333	0.00	0.21	0.257	O	|	|	|	|	0.15
48.417	0.00	0.21	0.255	O	|	|	|	|	0.15
48.500	0.00	0.21	0.254	O	|	|	|	|	0.15
48.583	0.00	0.21	0.252	O	|	|	|	|	0.15
48.667	0.00	0.21	0.251	O	|	|	|	|	0.15
48.750	0.00	0.21	0.249	O	|	|	|	|	0.15
48.833	0.00	0.21	0.248	O	|	|	|	|	0.15
48.917	0.00	0.20	0.247	O	|	|	|	|	0.15
49.000	0.00	0.20	0.245	O	|	|	|	|	0.15
49.083	0.00	0.20	0.244	O	|	|	|	|	0.15
49.167	0.00	0.20	0.242	O	|	|	|	|	0.15
49.250	0.00	0.20	0.241	O	|	|	|	|	0.14
49.333	0.00	0.20	0.240	O	|	|	|	|	0.14
49.417	0.00	0.20	0.238	O	|	|	|	|	0.14
49.500	0.00	0.20	0.237	O	|	|	|	|	0.14
49.583	0.00	0.20	0.236	O	|	|	|	|	0.14
49.667	0.00	0.19	0.234	O	|	|	|	|	0.14
49.750	0.00	0.19	0.233	O	|	|	|	|	0.14
49.833	0.00	0.19	0.232	O	|	|	|	|	0.14
49.917	0.00	0.19	0.230	O	|	|	|	|	0.14
50.000	0.00	0.19	0.229	O	|	|	|	|	0.14
50.083	0.00	0.19	0.228	O	|	|	|	|	0.14
50.167	0.00	0.19	0.226	O	|	|	|	|	0.14
50.250	0.00	0.19	0.225	O	|	|	|	|	0.13
50.333	0.00	0.19	0.224	O	|	|	|	|	0.13
50.417	0.00	0.18	0.222	O	|	|	|	|	0.13
50.500	0.00	0.18	0.221	O	|	|	|	|	0.13
50.583	0.00	0.18	0.220	O	|	|	|	|	0.13
50.667	0.00	0.18	0.219	O	|	|	|	|	0.13
50.750	0.00	0.18	0.217	O	|	|	|	|	0.13
50.833	0.00	0.18	0.216	O	|	|	|	|	0.13
50.917	0.00	0.18	0.215	O	|	|	|	|	0.13
51.000	0.00	0.18	0.214	O	|	|	|	|	0.13
51.083	0.00	0.18	0.213	O	|	|	|	|	0.13
51.167	0.00	0.18	0.211	O	|	|	|	|	0.13
51.250	0.00	0.17	0.210	O	|	|	|	|	0.13
51.333	0.00	0.17	0.209	O	|	|	|	|	0.13
51.417	0.00	0.17	0.208	O	|	|	|	|	0.12
51.500	0.00	0.17	0.207	O	|	|	|	|	0.12
51.583	0.00	0.17	0.205	O	|	|	|	|	0.12
51.667	0.00	0.17	0.204	O	|	|	|	|	0.12
51.750	0.00	0.17	0.203	O	|	|	|	|	0.12
51.833	0.00	0.17	0.202	O	|	|	|	|	0.12
51.917	0.00	0.17	0.201	O	|	|	|	|	0.12
52.000	0.00	0.17	0.200	O	|	|	|	|	0.12
52.083	0.00	0.16	0.198	O	|	|	|	|	0.12
52.167	0.00	0.16	0.197	O	|	|	|	|	0.12
52.250	0.00	0.16	0.196	O	|	|	|	|	0.12
52.333	0.00	0.16	0.195	O	|	|	|	|	0.12
52.417	0.00	0.16	0.194	O	|	|	|	|	0.12
52.500	0.00	0.16	0.193	O	|	|	|	|	0.12
52.583	0.00	0.16	0.192	O	|	|	|	|	0.11

52.667	0.00	0.16	0.191	O	|	|	|	|	0.11
52.750	0.00	0.16	0.190	O	|	|	|	|	0.11
52.833	0.00	0.16	0.188	O	|	|	|	|	0.11
52.917	0.00	0.16	0.187	O	|	|	|	|	0.11
53.000	0.00	0.15	0.186	O	|	|	|	|	0.11
53.083	0.00	0.15	0.185	O	|	|	|	|	0.11
53.167	0.00	0.15	0.184	O	|	|	|	|	0.11
53.250	0.00	0.15	0.183	O	|	|	|	|	0.11
53.333	0.00	0.15	0.182	O	|	|	|	|	0.11
53.417	0.00	0.15	0.181	O	|	|	|	|	0.11
53.500	0.00	0.15	0.180	O	|	|	|	|	0.11
53.583	0.00	0.15	0.179	O	|	|	|	|	0.11
53.667	0.00	0.15	0.178	O	|	|	|	|	0.11
53.750	0.00	0.15	0.177	O	|	|	|	|	0.11
53.833	0.00	0.15	0.176	O	|	|	|	|	0.11
53.917	0.00	0.15	0.175	O	|	|	|	|	0.10
54.000	0.00	0.14	0.174	O	|	|	|	|	0.10
54.083	0.00	0.14	0.173	O	|	|	|	|	0.10
54.167	0.00	0.14	0.172	O	|	|	|	|	0.10
54.250	0.00	0.14	0.171	O	|	|	|	|	0.10
54.333	0.00	0.14	0.170	O	|	|	|	|	0.10
54.417	0.00	0.14	0.169	O	|	|	|	|	0.10
54.500	0.00	0.14	0.168	O	|	|	|	|	0.10
54.583	0.00	0.14	0.167	O	|	|	|	|	0.10
54.667	0.00	0.14	0.166	O	|	|	|	|	0.10
54.750	0.00	0.14	0.165	O	|	|	|	|	0.10
54.833	0.00	0.14	0.164	O	|	|	|	|	0.10
54.917	0.00	0.14	0.163	O	|	|	|	|	0.10
55.000	0.00	0.13	0.162	O	|	|	|	|	0.10
55.083	0.00	0.13	0.162	O	|	|	|	|	0.10
55.167	0.00	0.13	0.161	O	|	|	|	|	0.10
55.250	0.00	0.13	0.160	O	|	|	|	|	0.10
55.333	0.00	0.13	0.159	O	|	|	|	|	0.10
55.417	0.00	0.13	0.158	O	|	|	|	|	0.09
55.500	0.00	0.13	0.157	O	|	|	|	|	0.09
55.583	0.00	0.13	0.156	O	|	|	|	|	0.09
55.667	0.00	0.13	0.155	O	|	|	|	|	0.09
55.750	0.00	0.13	0.154	O	|	|	|	|	0.09
55.833	0.00	0.13	0.153	O	|	|	|	|	0.09
55.917	0.00	0.13	0.153	O	|	|	|	|	0.09
56.000	0.00	0.13	0.152	O	|	|	|	|	0.09
56.083	0.00	0.13	0.151	O	|	|	|	|	0.09
56.167	0.00	0.12	0.150	O	|	|	|	|	0.09
56.250	0.00	0.12	0.149	O	|	|	|	|	0.09
56.333	0.00	0.12	0.148	O	|	|	|	|	0.09
56.417	0.00	0.12	0.147	O	|	|	|	|	0.09
56.500	0.00	0.12	0.147	O	|	|	|	|	0.09
56.583	0.00	0.12	0.146	O	|	|	|	|	0.09
56.667	0.00	0.12	0.145	O	|	|	|	|	0.09
56.750	0.00	0.12	0.144	O	|	|	|	|	0.09
56.833	0.00	0.12	0.143	O	|	|	|	|	0.09
56.917	0.00	0.12	0.142	O	|	|	|	|	0.09
57.000	0.00	0.12	0.142	O	|	|	|	|	0.08
57.083	0.00	0.12	0.141	O	|	|	|	|	0.08
57.167	0.00	0.12	0.140	O	|	|	|	|	0.08
57.250	0.00	0.12	0.139	O	|	|	|	|	0.08
57.333	0.00	0.11	0.138	O	|	|	|	|	0.08
57.417	0.00	0.11	0.138	O	|	|	|	|	0.08
57.500	0.00	0.11	0.137	O	|	|	|	|	0.08
57.583	0.00	0.11	0.136	O	|	|	|	|	0.08
57.667	0.00	0.11	0.135	O	|	|	|	|	0.08
57.750	0.00	0.11	0.135	O	|	|	|	|	0.08
57.833	0.00	0.11	0.134	O	|	|	|	|	0.08
57.917	0.00	0.11	0.133	O	|	|	|	|	0.08
58.000	0.00	0.11	0.132	O	|	|	|	|	0.08
58.083	0.00	0.11	0.131	O	|	|	|	|	0.08
58.167	0.00	0.11	0.131	O	|	|	|	|	0.08
58.250	0.00	0.11	0.130	O	|	|	|	|	0.08
58.333	0.00	0.11	0.129	O	|	|	|	|	0.08
58.417	0.00	0.11	0.129	O	|	|	|	|	0.08
58.500	0.00	0.11	0.128	O	|	|	|	|	0.08

58.583	0.00	0.11	0.127	O	|	|	|	|	0.08
58.667	0.00	0.10	0.126	O	|	|	|	|	0.08
58.750	0.00	0.10	0.126	O	|	|	|	|	0.08
58.833	0.00	0.10	0.125	O	|	|	|	|	0.07
58.917	0.00	0.10	0.124	O	|	|	|	|	0.07
59.000	0.00	0.10	0.123	O	|	|	|	|	0.07
59.083	0.00	0.10	0.123	O	|	|	|	|	0.07
59.167	0.00	0.10	0.122	O	|	|	|	|	0.07
59.250	0.00	0.10	0.121	O	|	|	|	|	0.07
59.333	0.00	0.10	0.121	O	|	|	|	|	0.07
59.417	0.00	0.10	0.120	O	|	|	|	|	0.07
59.500	0.00	0.10	0.119	O	|	|	|	|	0.07
59.583	0.00	0.10	0.119	O	|	|	|	|	0.07
59.667	0.00	0.10	0.118	O	|	|	|	|	0.07
59.750	0.00	0.10	0.117	O	|	|	|	|	0.07
59.833	0.00	0.10	0.117	O	|	|	|	|	0.07
59.917	0.00	0.10	0.116	O	|	|	|	|	0.07
60.000	0.00	0.10	0.115	O	|	|	|	|	0.07
60.083	0.00	0.10	0.115	O	|	|	|	|	0.07
60.167	0.00	0.09	0.114	O	|	|	|	|	0.07
60.250	0.00	0.09	0.113	O	|	|	|	|	0.07
60.333	0.00	0.09	0.113	O	|	|	|	|	0.07
60.417	0.00	0.09	0.112	O	|	|	|	|	0.07
60.500	0.00	0.09	0.111	O	|	|	|	|	0.07
60.583	0.00	0.09	0.111	O	|	|	|	|	0.07
60.667	0.00	0.09	0.110	O	|	|	|	|	0.07
60.750	0.00	0.09	0.110	O	|	|	|	|	0.07
60.833	0.00	0.09	0.109	O	|	|	|	|	0.07
60.917	0.00	0.09	0.108	O	|	|	|	|	0.06
61.000	0.00	0.09	0.108	O	|	|	|	|	0.06
61.083	0.00	0.09	0.107	O	|	|	|	|	0.06
61.167	0.00	0.09	0.106	O	|	|	|	|	0.06
61.250	0.00	0.09	0.106	O	|	|	|	|	0.06
61.333	0.00	0.09	0.105	O	|	|	|	|	0.06
61.417	0.00	0.09	0.105	O	|	|	|	|	0.06
61.500	0.00	0.09	0.104	O	|	|	|	|	0.06
61.583	0.00	0.09	0.103	O	|	|	|	|	0.06
61.667	0.00	0.09	0.103	O	|	|	|	|	0.06
61.750	0.00	0.08	0.102	O	|	|	|	|	0.06
61.833	0.00	0.08	0.102	O	|	|	|	|	0.06
61.917	0.00	0.08	0.101	O	|	|	|	|	0.06
62.000	0.00	0.08	0.101	O	|	|	|	|	0.06
62.083	0.00	0.08	0.100	O	|	|	|	|	0.06
62.167	0.00	0.08	0.099	O	|	|	|	|	0.06
62.250	0.00	0.08	0.099	O	|	|	|	|	0.06
62.333	0.00	0.08	0.098	O	|	|	|	|	0.06
62.417	0.00	0.08	0.098	O	|	|	|	|	0.06
62.500	0.00	0.08	0.097	O	|	|	|	|	0.06
62.583	0.00	0.08	0.097	O	|	|	|	|	0.06
62.667	0.00	0.08	0.096	O	|	|	|	|	0.06
62.750	0.00	0.08	0.095	O	|	|	|	|	0.06
62.833	0.00	0.08	0.095	O	|	|	|	|	0.06
62.917	0.00	0.08	0.094	O	|	|	|	|	0.06
63.000	0.00	0.08	0.094	O	|	|	|	|	0.06
63.083	0.00	0.08	0.093	O	|	|	|	|	0.06
63.167	0.00	0.08	0.093	O	|	|	|	|	0.06
63.250	0.00	0.08	0.092	O	|	|	|	|	0.06
63.333	0.00	0.08	0.092	O	|	|	|	|	0.06
63.417	0.00	0.08	0.091	O	|	|	|	|	0.05
63.500	0.00	0.08	0.091	O	|	|	|	|	0.05
63.583	0.00	0.07	0.090	O	|	|	|	|	0.05
63.667	0.00	0.07	0.090	O	|	|	|	|	0.05
63.750	0.00	0.07	0.089	O	|	|	|	|	0.05
63.833	0.00	0.07	0.089	O	|	|	|	|	0.05
63.917	0.00	0.07	0.088	O	|	|	|	|	0.05
64.000	0.00	0.07	0.088	O	|	|	|	|	0.05
64.083	0.00	0.07	0.087	O	|	|	|	|	0.05
64.167	0.00	0.07	0.087	O	|	|	|	|	0.05
64.250	0.00	0.07	0.086	O	|	|	|	|	0.05
64.333	0.00	0.07	0.086	O	|	|	|	|	0.05
64.417	0.00	0.07	0.085	O	|	|	|	|	0.05

64.500	0.00	0.07	0.085	O	|	|	|	|	0.05
64.583	0.00	0.07	0.084	O	|	|	|	|	0.05
64.667	0.00	0.07	0.084	O	|	|	|	|	0.05
64.750	0.00	0.07	0.083	O	|	|	|	|	0.05
64.833	0.00	0.07	0.083	O	|	|	|	|	0.05
64.917	0.00	0.07	0.082	O	|	|	|	|	0.05
65.000	0.00	0.07	0.082	O	|	|	|	|	0.05
65.083	0.00	0.07	0.081	O	|	|	|	|	0.05
65.167	0.00	0.07	0.081	O	|	|	|	|	0.05
65.250	0.00	0.07	0.080	O	|	|	|	|	0.05
65.333	0.00	0.07	0.080	O	|	|	|	|	0.05
65.417	0.00	0.07	0.080	O	|	|	|	|	0.05
65.500	0.00	0.07	0.079	O	|	|	|	|	0.05
65.583	0.00	0.07	0.079	O	|	|	|	|	0.05
65.667	0.00	0.06	0.078	O	|	|	|	|	0.05
65.750	0.00	0.06	0.078	O	|	|	|	|	0.05
65.833	0.00	0.06	0.077	O	|	|	|	|	0.05
65.917	0.00	0.06	0.077	O	|	|	|	|	0.05
66.000	0.00	0.06	0.076	O	|	|	|	|	0.05
66.083	0.00	0.06	0.076	O	|	|	|	|	0.05
66.167	0.00	0.06	0.076	O	|	|	|	|	0.05
66.250	0.00	0.06	0.075	O	|	|	|	|	0.05
66.333	0.00	0.06	0.075	O	|	|	|	|	0.04
66.417	0.00	0.06	0.074	O	|	|	|	|	0.04
66.500	0.00	0.06	0.074	O	|	|	|	|	0.04
66.583	0.00	0.06	0.073	O	|	|	|	|	0.04
66.667	0.00	0.06	0.073	O	|	|	|	|	0.04
66.750	0.00	0.06	0.073	O	|	|	|	|	0.04
66.833	0.00	0.06	0.072	O	|	|	|	|	0.04
66.917	0.00	0.06	0.072	O	|	|	|	|	0.04
67.000	0.00	0.06	0.071	O	|	|	|	|	0.04
67.083	0.00	0.06	0.071	O	|	|	|	|	0.04
67.167	0.00	0.06	0.071	O	|	|	|	|	0.04
67.250	0.00	0.06	0.070	O	|	|	|	|	0.04
67.333	0.00	0.06	0.070	O	|	|	|	|	0.04
67.417	0.00	0.06	0.069	O	|	|	|	|	0.04
67.500	0.00	0.06	0.069	O	|	|	|	|	0.04
67.583	0.00	0.06	0.069	O	|	|	|	|	0.04
67.667	0.00	0.06	0.068	O	|	|	|	|	0.04
67.750	0.00	0.06	0.068	O	|	|	|	|	0.04
67.833	0.00	0.06	0.067	O	|	|	|	|	0.04
67.917	0.00	0.06	0.067	O	|	|	|	|	0.04
68.000	0.00	0.06	0.067	O	|	|	|	|	0.04
68.083	0.00	0.05	0.066	O	|	|	|	|	0.04
68.167	0.00	0.05	0.066	O	|	|	|	|	0.04
68.250	0.00	0.05	0.065	O	|	|	|	|	0.04
68.333	0.00	0.05	0.065	O	|	|	|	|	0.04
68.417	0.00	0.05	0.065	O	|	|	|	|	0.04
68.500	0.00	0.05	0.064	O	|	|	|	|	0.04
68.583	0.00	0.05	0.064	O	|	|	|	|	0.04
68.667	0.00	0.05	0.064	O	|	|	|	|	0.04
68.750	0.00	0.05	0.063	O	|	|	|	|	0.04
68.833	0.00	0.05	0.063	O	|	|	|	|	0.04
68.917	0.00	0.05	0.063	O	|	|	|	|	0.04
69.000	0.00	0.05	0.062	O	|	|	|	|	0.04
69.083	0.00	0.05	0.062	O	|	|	|	|	0.04
69.167	0.00	0.05	0.061	O	|	|	|	|	0.04
69.250	0.00	0.05	0.061	O	|	|	|	|	0.04
69.333	0.00	0.05	0.061	O	|	|	|	|	0.04
69.417	0.00	0.05	0.060	O	|	|	|	|	0.04
69.500	0.00	0.05	0.060	O	|	|	|	|	0.04
69.583	0.00	0.05	0.060	O	|	|	|	|	0.04
69.667	0.00	0.05	0.059	O	|	|	|	|	0.04
69.750	0.00	0.05	0.059	O	|	|	|	|	0.04
69.833	0.00	0.05	0.059	O	|	|	|	|	0.04
69.917	0.00	0.05	0.058	O	|	|	|	|	0.04
70.000	0.00	0.05	0.058	O	|	|	|	|	0.03
70.083	0.00	0.05	0.058	O	|	|	|	|	0.03
70.167	0.00	0.05	0.057	O	|	|	|	|	0.03
70.250	0.00	0.05	0.057	O	|	|	|	|	0.03
70.333	0.00	0.05	0.057	O	|	|	|	|	0.03

70.417	0.00	0.05	0.056	O	|	|	|	|	0.03
70.500	0.00	0.05	0.056	O	|	|	|	|	0.03
70.583	0.00	0.05	0.056	O	|	|	|	|	0.03
70.667	0.00	0.05	0.055	O	|	|	|	|	0.03
70.750	0.00	0.05	0.055	O	|	|	|	|	0.03
70.833	0.00	0.05	0.055	O	|	|	|	|	0.03
70.917	0.00	0.05	0.055	O	|	|	|	|	0.03
71.000	0.00	0.04	0.054	O	|	|	|	|	0.03
71.083	0.00	0.04	0.054	O	|	|	|	|	0.03
71.167	0.00	0.04	0.054	O	|	|	|	|	0.03
71.250	0.00	0.04	0.053	O	|	|	|	|	0.03
71.333	0.00	0.04	0.053	O	|	|	|	|	0.03
71.417	0.00	0.04	0.053	O	|	|	|	|	0.03
71.500	0.00	0.04	0.052	O	|	|	|	|	0.03
71.583	0.00	0.04	0.052	O	|	|	|	|	0.03
71.667	0.00	0.04	0.052	O	|	|	|	|	0.03
71.750	0.00	0.04	0.052	O	|	|	|	|	0.03
71.833	0.00	0.04	0.051	O	|	|	|	|	0.03
71.917	0.00	0.04	0.051	O	|	|	|	|	0.03
72.000	0.00	0.04	0.051	O	|	|	|	|	0.03
72.083	0.00	0.04	0.050	O	|	|	|	|	0.03
72.167	0.00	0.04	0.050	O	|	|	|	|	0.03
72.250	0.00	0.04	0.050	O	|	|	|	|	0.03
72.333	0.00	0.04	0.049	O	|	|	|	|	0.03
72.417	0.00	0.04	0.049	O	|	|	|	|	0.03
72.500	0.00	0.04	0.049	O	|	|	|	|	0.03
72.583	0.00	0.04	0.049	O	|	|	|	|	0.03
72.667	0.00	0.04	0.048	O	|	|	|	|	0.03
72.750	0.00	0.04	0.048	O	|	|	|	|	0.03
72.833	0.00	0.04	0.048	O	|	|	|	|	0.03
72.917	0.00	0.04	0.048	O	|	|	|	|	0.03
73.000	0.00	0.04	0.047	O	|	|	|	|	0.03
73.083	0.00	0.04	0.047	O	|	|	|	|	0.03
73.167	0.00	0.04	0.047	O	|	|	|	|	0.03
73.250	0.00	0.04	0.046	O	|	|	|	|	0.03
73.333	0.00	0.04	0.046	O	|	|	|	|	0.03
73.417	0.00	0.04	0.046	O	|	|	|	|	0.03
73.500	0.00	0.04	0.046	O	|	|	|	|	0.03
73.583	0.00	0.04	0.045	O	|	|	|	|	0.03
73.667	0.00	0.04	0.045	O	|	|	|	|	0.03
73.750	0.00	0.04	0.045	O	|	|	|	|	0.03
73.833	0.00	0.04	0.045	O	|	|	|	|	0.03
73.917	0.00	0.04	0.044	O	|	|	|	|	0.03
74.000	0.00	0.04	0.044	O	|	|	|	|	0.03
74.083	0.00	0.04	0.044	O	|	|	|	|	0.03
74.167	0.00	0.04	0.044	O	|	|	|	|	0.03
74.250	0.00	0.04	0.043	O	|	|	|	|	0.03
74.333	0.00	0.04	0.043	O	|	|	|	|	0.03
74.417	0.00	0.04	0.043	O	|	|	|	|	0.03
74.500	0.00	0.04	0.043	O	|	|	|	|	0.03
74.583	0.00	0.04	0.042	O	|	|	|	|	0.03
74.667	0.00	0.03	0.042	O	|	|	|	|	0.03
74.750	0.00	0.03	0.042	O	|	|	|	|	0.03
74.833	0.00	0.03	0.042	O	|	|	|	|	0.02
74.917	0.00	0.03	0.041	O	|	|	|	|	0.02
75.000	0.00	0.03	0.041	O	|	|	|	|	0.02
75.083	0.00	0.03	0.041	O	|	|	|	|	0.02
75.167	0.00	0.03	0.041	O	|	|	|	|	0.02
75.250	0.00	0.03	0.041	O	|	|	|	|	0.02
75.333	0.00	0.03	0.040	O	|	|	|	|	0.02
75.417	0.00	0.03	0.040	O	|	|	|	|	0.02
75.500	0.00	0.03	0.040	O	|	|	|	|	0.02
75.583	0.00	0.03	0.040	O	|	|	|	|	0.02
75.667	0.00	0.03	0.039	O	|	|	|	|	0.02
75.750	0.00	0.03	0.039	O	|	|	|	|	0.02
75.833	0.00	0.03	0.039	O	|	|	|	|	0.02
75.917	0.00	0.03	0.039	O	|	|	|	|	0.02
76.000	0.00	0.03	0.038	O	|	|	|	|	0.02
76.083	0.00	0.03	0.038	O	|	|	|	|	0.02
76.167	0.00	0.03	0.038	O	|	|	|	|	0.02
76.250	0.00	0.03	0.038	O	|	|	|	|	0.02

76.333	0.00	0.03	0.038	O					0.02
76.417	0.00	0.03	0.037	O					0.02
76.500	0.00	0.03	0.037	O					0.02
76.583	0.00	0.03	0.037	O					0.02
76.667	0.00	0.03	0.037	O					0.02
76.750	0.00	0.03	0.037	O					0.02
76.833	0.00	0.03	0.036	O					0.02
76.917	0.00	0.03	0.036	O					0.02
77.000	0.00	0.03	0.036	O					0.02
77.083	0.00	0.03	0.036	O					0.02
77.167	0.00	0.03	0.036	O					0.02
77.250	0.00	0.03	0.035	O					0.02
77.333	0.00	0.03	0.035	O					0.02
77.417	0.00	0.03	0.035	O					0.02
77.500	0.00	0.03	0.035	O					0.02
77.583	0.00	0.03	0.035	O					0.02
77.667	0.00	0.03	0.034	O					0.02
77.750	0.00	0.03	0.034	O					0.02
77.833	0.00	0.03	0.034	O					0.02
77.917	0.00	0.03	0.034	O					0.02
78.000	0.00	0.03	0.034	O					0.02
78.083	0.00	0.03	0.033	O					0.02
78.167	0.00	0.03	0.033	O					0.02
78.250	0.00	0.03	0.033	O					0.02
78.333	0.00	0.03	0.033	O					0.02
78.417	0.00	0.03	0.033	O					0.02
78.500	0.00	0.03	0.032	O					0.02
78.583	0.00	0.03	0.032	O					0.02
78.667	0.00	0.03	0.032	O					0.02
78.750	0.00	0.03	0.032	O					0.02
78.833	0.00	0.03	0.032	O					0.02
78.917	0.00	0.03	0.032	O					0.02
79.000	0.00	0.03	0.031	O					0.02
79.083	0.00	0.03	0.031	O					0.02
79.167	0.00	0.03	0.031	O					0.02
79.250	0.00	0.03	0.031	O					0.02
79.333	0.00	0.03	0.031	O					0.02
79.417	0.00	0.03	0.030	O					0.02
79.500	0.00	0.03	0.030	O					0.02
79.583	0.00	0.02	0.030	O					0.02
79.667	0.00	0.02	0.030	O					0.02
79.750	0.00	0.02	0.030	O					0.02
79.833	0.00	0.02	0.030	O					0.02
79.917	0.00	0.02	0.029	O					0.02
80.000	0.00	0.02	0.029	O					0.02
80.083	0.00	0.02	0.029	O					0.02
80.167	0.00	0.02	0.029	O					0.02
80.250	0.00	0.02	0.029	O					0.02
80.333	0.00	0.02	0.029	O					0.02
80.417	0.00	0.02	0.028	O					0.02
80.500	0.00	0.02	0.028	O					0.02
80.583	0.00	0.02	0.028	O					0.02
80.667	0.00	0.02	0.028	O					0.02
80.750	0.00	0.02	0.028	O					0.02
80.833	0.00	0.02	0.028	O					0.02
80.917	0.00	0.02	0.027	O					0.02
81.000	0.00	0.02	0.027	O					0.02
81.083	0.00	0.02	0.027	O					0.02
81.167	0.00	0.02	0.027	O					0.02
81.250	0.00	0.02	0.027	O					0.02
81.333	0.00	0.02	0.027	O					0.02
81.417	0.00	0.02	0.027	O					0.02
81.500	0.00	0.02	0.026	O					0.02
81.583	0.00	0.02	0.026	O					0.02
81.667	0.00	0.02	0.026	O					0.02
81.750	0.00	0.02	0.026	O					0.02
81.833	0.00	0.02	0.026	O					0.02
81.917	0.00	0.02	0.026	O					0.02
82.000	0.00	0.02	0.026	O					0.02
82.083	0.00	0.02	0.025	O					0.02
82.167	0.00	0.02	0.025	O					0.02

82.250	0.00	0.02	0.025	O					0.02
82.333	0.00	0.02	0.025	O					0.01
82.417	0.00	0.02	0.025	O					0.01
82.500	0.00	0.02	0.025	O					0.01
82.583	0.00	0.02	0.025	O					0.01
82.667	0.00	0.02	0.024	O					0.01
82.750	0.00	0.02	0.024	O					0.01
82.833	0.00	0.02	0.024	O					0.01
82.917	0.00	0.02	0.024	O					0.01
83.000	0.00	0.02	0.024	O					0.01
83.083	0.00	0.02	0.024	O					0.01
83.167	0.00	0.02	0.024	O					0.01
83.250	0.00	0.02	0.023	O					0.01
83.333	0.00	0.02	0.023	O					0.01
83.417	0.00	0.02	0.023	O					0.01
83.500	0.00	0.02	0.023	O					0.01
83.583	0.00	0.02	0.023	O					0.01
83.667	0.00	0.02	0.023	O					0.01
83.750	0.00	0.02	0.023	O					0.01
83.833	0.00	0.02	0.022	O					0.01
83.917	0.00	0.02	0.022	O					0.01
84.000	0.00	0.02	0.022	O					0.01
84.083	0.00	0.02	0.022	O					0.01
84.167	0.00	0.02	0.022	O					0.01
84.250	0.00	0.02	0.022	O					0.01
84.333	0.00	0.02	0.022	O					0.01
84.417	0.00	0.02	0.022	O					0.01
84.500	0.00	0.02	0.021	O					0.01
84.583	0.00	0.02	0.021	O					0.01
84.667	0.00	0.02	0.021	O					0.01
84.750	0.00	0.02	0.021	O					0.01
84.833	0.00	0.02	0.021	O					0.01
84.917	0.00	0.02	0.021	O					0.01
85.000	0.00	0.02	0.021	O					0.01
85.083	0.00	0.02	0.021	O					0.01
85.167	0.00	0.02	0.021	O					0.01
85.250	0.00	0.02	0.020	O					0.01
85.333	0.00	0.02	0.020	O					0.01
85.417	0.00	0.02	0.020	O					0.01
85.500	0.00	0.02	0.020	O					0.01
85.583	0.00	0.02	0.020	O					0.01
85.667	0.00	0.02	0.020	O					0.01
85.750	0.00	0.02	0.020	O					0.01
85.833	0.00	0.02	0.020	O					0.01
85.917	0.00	0.02	0.019	O					0.01
86.000	0.00	0.02	0.019	O					0.01
86.083	0.00	0.02	0.019	O					0.01
86.167	0.00	0.02	0.019	O					0.01
86.250	0.00	0.02	0.019	O					0.01
86.333	0.00	0.02	0.019	O					0.01
86.417	0.00	0.02	0.019	O					0.01
86.500	0.00	0.02	0.019	O					0.01
86.583	0.00	0.02	0.019	O					0.01
86.667	0.00	0.02	0.019	O					0.01
86.750	0.00	0.02	0.018	O					0.01
86.833	0.00	0.02	0.018	O					0.01
86.917	0.00	0.02	0.018	O					0.01
87.000	0.00	0.02	0.018	O					0.01
87.083	0.00	0.01	0.018	O					0.01
87.167	0.00	0.01	0.018	O					0.01
87.250	0.00	0.01	0.018	O					0.01
87.333	0.00	0.01	0.018	O					0.01
87.417	0.00	0.01	0.018	O					0.01
87.500	0.00	0.01	0.017	O					0.01
87.583	0.00	0.01	0.017	O					0.01
87.667	0.00	0.01	0.017	O					0.01
87.750	0.00	0.01	0.017	O					0.01
87.833	0.00	0.01	0.017	O					0.01
87.917	0.00	0.01	0.017	O					0.01
88.000	0.00	0.01	0.017	O					0.01
88.083	0.00	0.01	0.017	O					0.01

88.167	0.00	0.01	0.017	O	|	|	|	|	0.01
88.250	0.00	0.01	0.017	O	|	|	|	|	0.01
88.333	0.00	0.01	0.017	O	|	|	|	|	0.01
88.417	0.00	0.01	0.016	O	|	|	|	|	0.01
88.500	0.00	0.01	0.016	O	|	|	|	|	0.01
88.583	0.00	0.01	0.016	O	|	|	|	|	0.01
88.667	0.00	0.01	0.016	O	|	|	|	|	0.01
88.750	0.00	0.01	0.016	O	|	|	|	|	0.01
88.833	0.00	0.01	0.016	O	|	|	|	|	0.01
88.917	0.00	0.01	0.016	O	|	|	|	|	0.01
89.000	0.00	0.01	0.016	O	|	|	|	|	0.01
89.083	0.00	0.01	0.016	O	|	|	|	|	0.01
89.167	0.00	0.01	0.016	O	|	|	|	|	0.01
89.250	0.00	0.01	0.016	O	|	|	|	|	0.01
89.333	0.00	0.01	0.015	O	|	|	|	|	0.01
89.417	0.00	0.01	0.015	O	|	|	|	|	0.01
89.500	0.00	0.01	0.015	O	|	|	|	|	0.01
89.583	0.00	0.01	0.015	O	|	|	|	|	0.01
89.667	0.00	0.01	0.015	O	|	|	|	|	0.01
89.750	0.00	0.01	0.015	O	|	|	|	|	0.01
89.833	0.00	0.01	0.015	O	|	|	|	|	0.01
89.917	0.00	0.01	0.015	O	|	|	|	|	0.01
90.000	0.00	0.01	0.015	O	|	|	|	|	0.01
90.083	0.00	0.01	0.015	O	|	|	|	|	0.01
90.167	0.00	0.01	0.015	O	|	|	|	|	0.01
90.250	0.00	0.01	0.014	O	|	|	|	|	0.01
90.333	0.00	0.01	0.014	O	|	|	|	|	0.01
90.417	0.00	0.01	0.014	O	|	|	|	|	0.01
90.500	0.00	0.01	0.014	O	|	|	|	|	0.01
90.583	0.00	0.01	0.014	O	|	|	|	|	0.01
90.667	0.00	0.01	0.014	O	|	|	|	|	0.01
90.750	0.00	0.01	0.014	O	|	|	|	|	0.01
90.833	0.00	0.01	0.014	O	|	|	|	|	0.01
90.917	0.00	0.01	0.014	O	|	|	|	|	0.01
91.000	0.00	0.01	0.014	O	|	|	|	|	0.01
91.083	0.00	0.01	0.014	O	|	|	|	|	0.01
91.167	0.00	0.01	0.014	O	|	|	|	|	0.01
91.250	0.00	0.01	0.014	O	|	|	|	|	0.01
91.333	0.00	0.01	0.013	O	|	|	|	|	0.01
91.417	0.00	0.01	0.013	O	|	|	|	|	0.01
91.500	0.00	0.01	0.013	O	|	|	|	|	0.01
91.583	0.00	0.01	0.013	O	|	|	|	|	0.01
91.667	0.00	0.01	0.013	O	|	|	|	|	0.01
91.750	0.00	0.01	0.013	O	|	|	|	|	0.01
91.833	0.00	0.01	0.013	O	|	|	|	|	0.01
91.917	0.00	0.01	0.013	O	|	|	|	|	0.01
92.000	0.00	0.01	0.013	O	|	|	|	|	0.01
92.083	0.00	0.01	0.013	O	|	|	|	|	0.01
92.167	0.00	0.01	0.013	O	|	|	|	|	0.01
92.250	0.00	0.01	0.013	O	|	|	|	|	0.01
92.333	0.00	0.01	0.013	O	|	|	|	|	0.01
92.417	0.00	0.01	0.012	O	|	|	|	|	0.01
92.500	0.00	0.01	0.012	O	|	|	|	|	0.01
92.583	0.00	0.01	0.012	O	|	|	|	|	0.01
92.667	0.00	0.01	0.012	O	|	|	|	|	0.01
92.750	0.00	0.01	0.012	O	|	|	|	|	0.01
92.833	0.00	0.01	0.012	O	|	|	|	|	0.01
92.917	0.00	0.01	0.012	O	|	|	|	|	0.01
93.000	0.00	0.01	0.012	O	|	|	|	|	0.01
93.083	0.00	0.01	0.012	O	|	|	|	|	0.01
93.167	0.00	0.01	0.012	O	|	|	|	|	0.01
93.250	0.00	0.01	0.012	O	|	|	|	|	0.01
93.333	0.00	0.01	0.012	O	|	|	|	|	0.01
93.417	0.00	0.01	0.012	O	|	|	|	|	0.01
93.500	0.00	0.01	0.012	O	|	|	|	|	0.01
93.583	0.00	0.01	0.012	O	|	|	|	|	0.01
93.667	0.00	0.01	0.011	O	|	|	|	|	0.01
93.750	0.00	0.01	0.011	O	|	|	|	|	0.01
93.833	0.00	0.01	0.011	O	|	|	|	|	0.01
93.917	0.00	0.01	0.011	O	|	|	|	|	0.01
94.000	0.00	0.01	0.011	O	|	|	|	|	0.01

94.083	0.00	0.01	0.011	O	|	|	|	|	0.01
94.167	0.00	0.01	0.011	O	|	|	|	|	0.01
94.250	0.00	0.01	0.011	O	|	|	|	|	0.01
94.333	0.00	0.01	0.011	O	|	|	|	|	0.01
94.417	0.00	0.01	0.011	O	|	|	|	|	0.01
94.500	0.00	0.01	0.011	O	|	|	|	|	0.01
94.583	0.00	0.01	0.011	O	|	|	|	|	0.01
94.667	0.00	0.01	0.011	O	|	|	|	|	0.01
94.750	0.00	0.01	0.011	O	|	|	|	|	0.01
94.833	0.00	0.01	0.011	O	|	|	|	|	0.01
94.917	0.00	0.01	0.011	O	|	|	|	|	0.01
95.000	0.00	0.01	0.010	O	|	|	|	|	0.01
95.083	0.00	0.01	0.010	O	|	|	|	|	0.01
95.167	0.00	0.01	0.010	O	|	|	|	|	0.01
95.250	0.00	0.01	0.010	O	|	|	|	|	0.01
95.333	0.00	0.01	0.010	O	|	|	|	|	0.01
95.417	0.00	0.01	0.010	O	|	|	|	|	0.01
95.500	0.00	0.01	0.010	O	|	|	|	|	0.01
95.583	0.00	0.01	0.010	O	|	|	|	|	0.01
95.667	0.00	0.01	0.010	O	|	|	|	|	0.01
95.750	0.00	0.01	0.010	O	|	|	|	|	0.01
95.833	0.00	0.01	0.010	O	|	|	|	|	0.01
95.917	0.00	0.01	0.010	O	|	|	|	|	0.01
96.000	0.00	0.01	0.010	O	|	|	|	|	0.01
96.083	0.00	0.01	0.010	O	|	|	|	|	0.01
96.167	0.00	0.01	0.010	O	|	|	|	|	0.01
96.250	0.00	0.01	0.010	O	|	|	|	|	0.01
96.333	0.00	0.01	0.010	O	|	|	|	|	0.01
96.417	0.00	0.01	0.009	O	|	|	|	|	0.01
96.500	0.00	0.01	0.009	O	|	|	|	|	0.01
96.583	0.00	0.01	0.009	O	|	|	|	|	0.01
96.667	0.00	0.01	0.009	O	|	|	|	|	0.01
96.750	0.00	0.01	0.009	O	|	|	|	|	0.01
96.833	0.00	0.01	0.009	O	|	|	|	|	0.01
96.917	0.00	0.01	0.009	O	|	|	|	|	0.01
97.000	0.00	0.01	0.009	O	|	|	|	|	0.01
97.083	0.00	0.01	0.009	O	|	|	|	|	0.01
97.167	0.00	0.01	0.009	O	|	|	|	|	0.01
97.250	0.00	0.01	0.009	O	|	|	|	|	0.01
97.333	0.00	0.01	0.009	O	|	|	|	|	0.01
97.417	0.00	0.01	0.009	O	|	|	|	|	0.01
97.500	0.00	0.01	0.009	O	|	|	|	|	0.01
97.583	0.00	0.01	0.009	O	|	|	|	|	0.01
97.667	0.00	0.01	0.009	O	|	|	|	|	0.01
97.750	0.00	0.01	0.009	O	|	|	|	|	0.01
97.833	0.00	0.01	0.009	O	|	|	|	|	0.01
97.917	0.00	0.01	0.009	O	|	|	|	|	0.01
98.000	0.00	0.01	0.009	O	|	|	|	|	0.01
98.083	0.00	0.01	0.008	O	|	|	|	|	0.01
98.167	0.00	0.01	0.008	O	|	|	|	|	0.01
98.250	0.00	0.01	0.008	O	|	|	|	|	0.01
98.333	0.00	0.01	0.008	O	|	|	|	|	0.00
98.417	0.00	0.01	0.008	O	|	|	|	|	0.00
98.500	0.00	0.01	0.008	O	|	|	|	|	0.00
98.583	0.00	0.01	0.008	O	|	|	|	|	0.00
98.667	0.00	0.01	0.008	O	|	|	|	|	0.00
98.750	0.00	0.01	0.008	O	|	|	|	|	0.00
98.833	0.00	0.01	0.008	O	|	|	|	|	0.00
98.917	0.00	0.01	0.008	O	|	|	|	|	0.00
99.000	0.00	0.01	0.008	O	|	|	|	|	0.00
99.083	0.00	0.01	0.008	O	|	|	|	|	0.00
99.167	0.00	0.01	0.008	O	|	|	|	|	0.00
99.250	0.00	0.01	0.008	O	|	|	|	|	0.00
99.333	0.00	0.01	0.008	O	|	|	|	|	0.00
99.417	0.00	0.01	0.008	O	|	|	|	|	0.00
99.500	0.00	0.01	0.008	O	|	|	|	|	0.00
99.583	0.00	0.01	0.008	O	|	|	|	|	0.00
99.667	0.00	0.01	0.008	O	|	|	|	|	0.00
99.750	0.00	0.01	0.008	O	|	|	|	|	0.00
99.833	0.00	0.01	0.008	O	|	|	|	|	0.00
99.917	0.00	0.01	0.007	O	|	|	|	|	0.00

100.000	0.00	0.01	0.007	O	|	|	|	|	0.00
100.083	0.00	0.01	0.007	O	|	|	|	|	0.00
100.167	0.00	0.01	0.007	O	|	|	|	|	0.00
100.250	0.00	0.01	0.007	O	|	|	|	|	0.00
100.333	0.00	0.01	0.007	O	|	|	|	|	0.00
100.417	0.00	0.01	0.007	O	|	|	|	|	0.00
100.500	0.00	0.01	0.007	O	|	|	|	|	0.00
100.583	0.00	0.01	0.007	O	|	|	|	|	0.00
100.667	0.00	0.01	0.007	O	|	|	|	|	0.00
100.750	0.00	0.01	0.007	O	|	|	|	|	0.00
100.833	0.00	0.01	0.007	O	|	|	|	|	0.00
100.917	0.00	0.01	0.007	O	|	|	|	|	0.00
101.000	0.00	0.01	0.007	O	|	|	|	|	0.00
101.083	0.00	0.01	0.007	O	|	|	|	|	0.00
101.167	0.00	0.01	0.007	O	|	|	|	|	0.00
101.250	0.00	0.01	0.007	O	|	|	|	|	0.00
101.333	0.00	0.01	0.007	O	|	|	|	|	0.00
101.417	0.00	0.01	0.007	O	|	|	|	|	0.00
101.500	0.00	0.01	0.007	O	|	|	|	|	0.00
101.583	0.00	0.01	0.007	O	|	|	|	|	0.00
101.667	0.00	0.01	0.007	O	|	|	|	|	0.00
101.750	0.00	0.01	0.007	O	|	|	|	|	0.00
101.833	0.00	0.01	0.007	O	|	|	|	|	0.00
101.917	0.00	0.01	0.007	O	|	|	|	|	0.00
102.000	0.00	0.01	0.006	O	|	|	|	|	0.00
102.083	0.00	0.01	0.006	O	|	|	|	|	0.00
102.167	0.00	0.01	0.006	O	|	|	|	|	0.00
102.250	0.00	0.01	0.006	O	|	|	|	|	0.00
102.333	0.00	0.01	0.006	O	|	|	|	|	0.00
102.417	0.00	0.01	0.006	O	|	|	|	|	0.00
102.500	0.00	0.01	0.006	O	|	|	|	|	0.00
102.583	0.00	0.01	0.006	O	|	|	|	|	0.00
102.667	0.00	0.01	0.006	O	|	|	|	|	0.00
102.750	0.00	0.01	0.006	O	|	|	|	|	0.00
102.833	0.00	0.01	0.006	O	|	|	|	|	0.00
102.917	0.00	0.01	0.006	O	|	|	|	|	0.00
103.000	0.00	0.01	0.006	O	|	|	|	|	0.00
103.083	0.00	0.00	0.006	O	|	|	|	|	0.00
103.167	0.00	0.00	0.006	O	|	|	|	|	0.00
103.250	0.00	0.00	0.006	O	|	|	|	|	0.00
103.333	0.00	0.00	0.006	O	|	|	|	|	0.00
103.417	0.00	0.00	0.006	O	|	|	|	|	0.00
103.500	0.00	0.00	0.006	O	|	|	|	|	0.00
103.583	0.00	0.00	0.006	O	|	|	|	|	0.00
103.667	0.00	0.00	0.006	O	|	|	|	|	0.00
103.750	0.00	0.00	0.006	O	|	|	|	|	0.00
103.833	0.00	0.00	0.006	O	|	|	|	|	0.00
103.917	0.00	0.00	0.006	O	|	|	|	|	0.00
104.000	0.00	0.00	0.006	O	|	|	|	|	0.00
104.083	0.00	0.00	0.006	O	|	|	|	|	0.00
104.167	0.00	0.00	0.006	O	|	|	|	|	0.00
104.250	0.00	0.00	0.006	O	|	|	|	|	0.00
104.333	0.00	0.00	0.006	O	|	|	|	|	0.00
104.417	0.00	0.00	0.005	O	|	|	|	|	0.00
104.500	0.00	0.00	0.005	O	|	|	|	|	0.00
104.583	0.00	0.00	0.005	O	|	|	|	|	0.00
104.667	0.00	0.00	0.005	O	|	|	|	|	0.00
104.750	0.00	0.00	0.005	O	|	|	|	|	0.00
104.833	0.00	0.00	0.005	O	|	|	|	|	0.00
104.917	0.00	0.00	0.005	O	|	|	|	|	0.00
105.000	0.00	0.00	0.005	O	|	|	|	|	0.00
105.083	0.00	0.00	0.005	O	|	|	|	|	0.00
105.167	0.00	0.00	0.005	O	|	|	|	|	0.00
105.250	0.00	0.00	0.005	O	|	|	|	|	0.00
105.333	0.00	0.00	0.005	O	|	|	|	|	0.00
105.417	0.00	0.00	0.005	O	|	|	|	|	0.00
105.500	0.00	0.00	0.005	O	|	|	|	|	0.00
105.583	0.00	0.00	0.005	O	|	|	|	|	0.00
105.667	0.00	0.00	0.005	O	|	|	|	|	0.00
105.750	0.00	0.00	0.005	O	|	|	|	|	0.00
105.833	0.00	0.00	0.005	O	|	|	|	|	0.00

105.917	0.00	0.00	0.005	O	|	|	|	|	0.00
106.000	0.00	0.00	0.005	O	|	|	|	|	0.00
106.083	0.00	0.00	0.005	O	|	|	|	|	0.00
106.167	0.00	0.00	0.005	O	|	|	|	|	0.00
106.250	0.00	0.00	0.005	O	|	|	|	|	0.00
106.333	0.00	0.00	0.005	O	|	|	|	|	0.00
106.417	0.00	0.00	0.005	O	|	|	|	|	0.00
106.500	0.00	0.00	0.005	O	|	|	|	|	0.00
106.583	0.00	0.00	0.005	O	|	|	|	|	0.00
106.667	0.00	0.00	0.005	O	|	|	|	|	0.00
106.750	0.00	0.00	0.005	O	|	|	|	|	0.00
106.833	0.00	0.00	0.005	O	|	|	|	|	0.00
106.917	0.00	0.00	0.005	O	|	|	|	|	0.00
107.000	0.00	0.00	0.005	O	|	|	|	|	0.00
107.083	0.00	0.00	0.005	O	|	|	|	|	0.00
107.167	0.00	0.00	0.005	O	|	|	|	|	0.00
107.250	0.00	0.00	0.005	O	|	|	|	|	0.00
107.333	0.00	0.00	0.004	O	|	|	|	|	0.00
107.417	0.00	0.00	0.004	O	|	|	|	|	0.00
107.500	0.00	0.00	0.004	O	|	|	|	|	0.00
107.583	0.00	0.00	0.004	O	|	|	|	|	0.00
107.667	0.00	0.00	0.004	O	|	|	|	|	0.00
107.750	0.00	0.00	0.004	O	|	|	|	|	0.00
107.833	0.00	0.00	0.004	O	|	|	|	|	0.00
107.917	0.00	0.00	0.004	O	|	|	|	|	0.00
108.000	0.00	0.00	0.004	O	|	|	|	|	0.00
108.083	0.00	0.00	0.004	O	|	|	|	|	0.00
108.167	0.00	0.00	0.004	O	|	|	|	|	0.00
108.250	0.00	0.00	0.004	O	|	|	|	|	0.00
108.333	0.00	0.00	0.004	O	|	|	|	|	0.00
108.417	0.00	0.00	0.004	O	|	|	|	|	0.00
108.500	0.00	0.00	0.004	O	|	|	|	|	0.00
108.583	0.00	0.00	0.004	O	|	|	|	|	0.00
108.667	0.00	0.00	0.004	O	|	|	|	|	0.00
108.750	0.00	0.00	0.004	O	|	|	|	|	0.00
108.833	0.00	0.00	0.004	O	|	|	|	|	0.00
108.917	0.00	0.00	0.004	O	|	|	|	|	0.00
109.000	0.00	0.00	0.004	O	|	|	|	|	0.00
109.083	0.00	0.00	0.004	O	|	|	|	|	0.00
109.167	0.00	0.00	0.004	O	|	|	|	|	0.00
109.250	0.00	0.00	0.004	O	|	|	|	|	0.00
109.333	0.00	0.00	0.004	O	|	|	|	|	0.00
109.417	0.00	0.00	0.004	O	|	|	|	|	0.00
109.500	0.00	0.00	0.004	O	|	|	|	|	0.00
109.583	0.00	0.00	0.004	O	|	|	|	|	0.00
109.667	0.00	0.00	0.004	O	|	|	|	|	0.00
109.750	0.00	0.00	0.004	O	|	|	|	|	0.00
109.833	0.00	0.00	0.004	O	|	|	|	|	0.00
109.917	0.00	0.00	0.004	O	|	|	|	|	0.00
110.000	0.00	0.00	0.004	O	|	|	|	|	0.00
110.083	0.00	0.00	0.004	O	|	|	|	|	0.00
110.167	0.00	0.00	0.004	O	|	|	|	|	0.00
110.250	0.00	0.00	0.004	O	|	|	|	|	0.00
110.333	0.00	0.00	0.004	O	|	|	|	|	0.00
110.417	0.00	0.00	0.004	O	|	|	|	|	0.00
110.500	0.00	0.00	0.004	O	|	|	|	|	0.00
110.583	0.00	0.00	0.004	O	|	|	|	|	0.00
110.667	0.00	0.00	0.004	O	|	|	|	|	0.00
110.750	0.00	0.00	0.004	O	|	|	|	|	0.00
110.833	0.00	0.00	0.004	O	|	|	|	|	0.00
110.917	0.00	0.00	0.004	O	|	|	|	|	0.00
111.000	0.00	0.00	0.003	O	|	|	|	|	0.00
111.083	0.00	0.00	0.003	O	|	|	|	|	0.00
111.167	0.00	0.00	0.003	O	|	|	|	|	0.00
111.250	0.00	0.00	0.003	O	|	|	|	|	0.00
111.333	0.00	0.00	0.003	O	|	|	|	|	0.00
111.417	0.00	0.00	0.003	O	|	|	|	|	0.00
111.500	0.00	0.00	0.003	O	|	|	|	|	0.00
111.583	0.00	0.00	0.003	O	|	|	|	|	0.00
111.667	0.00	0.00	0.003	O	|	|	|	|	0.00
111.750	0.00	0.00	0.003	O	|	|	|	|	0.00

111.833	0.00	0.00	0.003	O	|	|	|	|	0.00
111.917	0.00	0.00	0.003	O	|	|	|	|	0.00
112.000	0.00	0.00	0.003	O	|	|	|	|	0.00
112.083	0.00	0.00	0.003	O	|	|	|	|	0.00
112.167	0.00	0.00	0.003	O	|	|	|	|	0.00
112.250	0.00	0.00	0.003	O	|	|	|	|	0.00
112.333	0.00	0.00	0.003	O	|	|	|	|	0.00
112.417	0.00	0.00	0.003	O	|	|	|	|	0.00
112.500	0.00	0.00	0.003	O	|	|	|	|	0.00
112.583	0.00	0.00	0.003	O	|	|	|	|	0.00
112.667	0.00	0.00	0.003	O	|	|	|	|	0.00
112.750	0.00	0.00	0.003	O	|	|	|	|	0.00
112.833	0.00	0.00	0.003	O	|	|	|	|	0.00
112.917	0.00	0.00	0.003	O	|	|	|	|	0.00
113.000	0.00	0.00	0.003	O	|	|	|	|	0.00
113.083	0.00	0.00	0.003	O	|	|	|	|	0.00
113.167	0.00	0.00	0.003	O	|	|	|	|	0.00
113.250	0.00	0.00	0.003	O	|	|	|	|	0.00
113.333	0.00	0.00	0.003	O	|	|	|	|	0.00
113.417	0.00	0.00	0.003	O	|	|	|	|	0.00
113.500	0.00	0.00	0.003	O	|	|	|	|	0.00
113.583	0.00	0.00	0.003	O	|	|	|	|	0.00
113.667	0.00	0.00	0.003	O	|	|	|	|	0.00
113.750	0.00	0.00	0.003	O	|	|	|	|	0.00
113.833	0.00	0.00	0.003	O	|	|	|	|	0.00
113.917	0.00	0.00	0.003	O	|	|	|	|	0.00
114.000	0.00	0.00	0.003	O	|	|	|	|	0.00
114.083	0.00	0.00	0.003	O	|	|	|	|	0.00
114.167	0.00	0.00	0.003	O	|	|	|	|	0.00
114.250	0.00	0.00	0.003	O	|	|	|	|	0.00
114.333	0.00	0.00	0.003	O	|	|	|	|	0.00
114.417	0.00	0.00	0.003	O	|	|	|	|	0.00
114.500	0.00	0.00	0.003	O	|	|	|	|	0.00
114.583	0.00	0.00	0.003	O	|	|	|	|	0.00
114.667	0.00	0.00	0.003	O	|	|	|	|	0.00
114.750	0.00	0.00	0.003	O	|	|	|	|	0.00
114.833	0.00	0.00	0.003	O	|	|	|	|	0.00
114.917	0.00	0.00	0.003	O	|	|	|	|	0.00
115.000	0.00	0.00	0.003	O	|	|	|	|	0.00
115.083	0.00	0.00	0.003	O	|	|	|	|	0.00
115.167	0.00	0.00	0.003	O	|	|	|	|	0.00
115.250	0.00	0.00	0.003	O	|	|	|	|	0.00
115.333	0.00	0.00	0.003	O	|	|	|	|	0.00
115.417	0.00	0.00	0.003	O	|	|	|	|	0.00
115.500	0.00	0.00	0.003	O	|	|	|	|	0.00
115.583	0.00	0.00	0.003	O	|	|	|	|	0.00
115.667	0.00	0.00	0.003	O	|	|	|	|	0.00
115.750	0.00	0.00	0.003	O	|	|	|	|	0.00
115.833	0.00	0.00	0.003	O	|	|	|	|	0.00
115.917	0.00	0.00	0.002	O	|	|	|	|	0.00
116.000	0.00	0.00	0.002	O	|	|	|	|	0.00
116.083	0.00	0.00	0.002	O	|	|	|	|	0.00
116.167	0.00	0.00	0.002	O	|	|	|	|	0.00
116.250	0.00	0.00	0.002	O	|	|	|	|	0.00
116.333	0.00	0.00	0.002	O	|	|	|	|	0.00
116.417	0.00	0.00	0.002	O	|	|	|	|	0.00
116.500	0.00	0.00	0.002	O	|	|	|	|	0.00
116.583	0.00	0.00	0.002	O	|	|	|	|	0.00
116.667	0.00	0.00	0.002	O	|	|	|	|	0.00
116.750	0.00	0.00	0.002	O	|	|	|	|	0.00
116.833	0.00	0.00	0.002	O	|	|	|	|	0.00
116.917	0.00	0.00	0.002	O	|	|	|	|	0.00
117.000	0.00	0.00	0.002	O	|	|	|	|	0.00
117.083	0.00	0.00	0.002	O	|	|	|	|	0.00
117.167	0.00	0.00	0.002	O	|	|	|	|	0.00
117.250	0.00	0.00	0.002	O	|	|	|	|	0.00
117.333	0.00	0.00	0.002	O	|	|	|	|	0.00
117.417	0.00	0.00	0.002	O	|	|	|	|	0.00
117.500	0.00	0.00	0.002	O	|	|	|	|	0.00
117.583	0.00	0.00	0.002	O	|	|	|	|	0.00
117.667	0.00	0.00	0.002	O	|	|	|	|	0.00

117.750	0.00	0.00	0.002	O	|	|	|	|	0.00
117.833	0.00	0.00	0.002	O	|	|	|	|	0.00
117.917	0.00	0.00	0.002	O	|	|	|	|	0.00
118.000	0.00	0.00	0.002	O	|	|	|	|	0.00
118.083	0.00	0.00	0.002	O	|	|	|	|	0.00
118.167	0.00	0.00	0.002	O	|	|	|	|	0.00
118.250	0.00	0.00	0.002	O	|	|	|	|	0.00
118.333	0.00	0.00	0.002	O	|	|	|	|	0.00
118.417	0.00	0.00	0.002	O	|	|	|	|	0.00
118.500	0.00	0.00	0.002	O	|	|	|	|	0.00
118.583	0.00	0.00	0.002	O	|	|	|	|	0.00
118.667	0.00	0.00	0.002	O	|	|	|	|	0.00
118.750	0.00	0.00	0.002	O	|	|	|	|	0.00
118.833	0.00	0.00	0.002	O	|	|	|	|	0.00
118.917	0.00	0.00	0.002	O	|	|	|	|	0.00
119.000	0.00	0.00	0.002	O	|	|	|	|	0.00
119.083	0.00	0.00	0.002	O	|	|	|	|	0.00
119.167	0.00	0.00	0.002	O	|	|	|	|	0.00
119.250	0.00	0.00	0.002	O	|	|	|	|	0.00
119.333	0.00	0.00	0.002	O	|	|	|	|	0.00
119.417	0.00	0.00	0.002	O	|	|	|	|	0.00
119.500	0.00	0.00	0.002	O	|	|	|	|	0.00
119.583	0.00	0.00	0.002	O	|	|	|	|	0.00
119.667	0.00	0.00	0.002	O	|	|	|	|	0.00
119.750	0.00	0.00	0.002	O	|	|	|	|	0.00
119.833	0.00	0.00	0.002	O	|	|	|	|	0.00
119.917	0.00	0.00	0.002	O	|	|	|	|	0.00
120.000	0.00	0.00	0.002	O	|	|	|	|	0.00
120.083	0.00	0.00	0.002	O	|	|	|	|	0.00
120.167	0.00	0.00	0.002	O	|	|	|	|	0.00
120.250	0.00	0.00	0.002	O	|	|	|	|	0.00
120.333	0.00	0.00	0.002	O	|	|	|	|	0.00
120.417	0.00	0.00	0.002	O	|	|	|	|	0.00
120.500	0.00	0.00	0.002	O	|	|	|	|	0.00
120.583	0.00	0.00	0.002	O	|	|	|	|	0.00
120.667	0.00	0.00	0.002	O	|	|	|	|	0.00
120.750	0.00	0.00	0.002	O	|	|	|	|	0.00
120.833	0.00	0.00	0.002	O	|	|	|	|	0.00
120.917	0.00	0.00	0.002	O	|	|	|	|	0.00
121.000	0.00	0.00	0.002	O	|	|	|	|	0.00
121.083	0.00	0.00	0.002	O	|	|	|	|	0.00
121.167	0.00	0.00	0.002	O	|	|	|	|	0.00
121.250	0.00	0.00	0.002	O	|	|	|	|	0.00
121.333	0.00	0.00	0.002	O	|	|	|	|	0.00
121.417	0.00	0.00	0.002	O	|	|	|	|	0.00
121.500	0.00	0.00	0.002	O	|	|	|	|	0.00
121.583	0.00	0.00	0.002	O	|	|	|	|	0.00
121.667	0.00	0.00	0.002	O	|	|	|	|	0.00
121.750	0.00	0.00	0.002	O	|	|	|	|	0.00
121.833	0.00	0.00	0.002	O	|	|	|	|	0.00

Remaining water in basin = 0.00 (Ac.Ft)

**********HYDROGRAPH DATA**********

Number of intervals = 1462
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 69.181 (CFS)
Total volume = 29.465 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

- Basin 'C' - 100 Year 12 Hour Storm Routing Analysis

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                    FLOOD HYDROGRAPH ROUTING PROGRAM
          Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012
                       Study date: 03/20/17

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WESTRIDGE HYDROLOGY STUDY
PROPOSED ROUTING - BASIN 'C' - 100 YEAR 12 HOUR STORM
HUNSAKER & ASSOCIATES, MARCH 20, 2017
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------


Program License Serial Number 4094

------------------------------------------------------------------------
******************** HYDROGRAPH INFORMATION **********************

               From study/file name: PRC10012.rte
*****************************HYDROGRAPH DATA*****************************
               Number of intervals =   159
               Time interval =    5.0 (Min.)
               Maximum/Peak flow rate =      360.058 (CFS)
               Total volume =      37.917 (Ac.Ft)
       Status of hydrographs being held in storage
                  Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
       Peak (CFS)      0.000     0.000     0.000     0.000     0.000
       Vol (Ac.Ft)     0.000     0.000     0.000     0.000     0.000
************************************************************************



++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      300.000 to Point/Station      301.000
**** RETARDING BASIN ROUTING ****
________________________________________________________________________

User entry of depth-outflow-storage data
------------------------------------------------------------------------
Total number of inflow hydrograph intervals = 159
Hydrograph time unit =  5.000 (Min.)
Initial depth in storage basin =   0.00(Ft.)
------------------------------------------------------------------------
------------------------------------------------------------------------
Initial basin depth =   0.00 (Ft.)
Initial basin storage =      0.00 (Ac.Ft)
Initial basin outflow =   0.00 (CFS)
------------------------------------------------------------------------
------------------------------------------------------------------------
Depth vs. Storage and Depth vs. Discharge data:
 Basin Depth  Storage    Outflow   (S-O*dt/2)   (S+O*dt/2)
     (Ft.)    (Ac.Ft)    (CFS)     (Ac.Ft)    (Ac.Ft)
------------------------------------------------------------------------
   0.000      0.000      0.000      0.000        0.000
   0.500      0.834      0.692      0.832        0.836
   1.000      1.693      1.672      1.687        1.699
   1.500      2.577      3.059      2.566        2.588
   2.000      3.488      4.757      3.472        3.504
   3.000      5.388      7.930      5.361        5.415
   4.000      7.399     20.434      7.329        7.469
   5.000      9.523     35.089      9.402        9.644
   6.000     11.764     44.538     11.611       11.917
   7.000     14.126     52.170     13.946       14.306
   8.000     16.610     58.766     16.408       16.812
   8.900     18.942     83.236     18.655       19.229
   9.000     19.207     83.236     18.920       19.494
   9.500     20.556    448.796     19.011       22.101
  10.000     21.935   1159.965     17.941       25.929
```

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0	90.0	180.03	270.04	360.06	Depth (Ft.)
0.083	0.50	0.00	0.002	O	|	|	|	|	0.00
0.167	2.49	0.01	0.012	O	|	|	|	|	0.01
0.250	7.55	0.04	0.046	O	|	|	|	|	0.03
0.333	10.18	0.09	0.107	O	|	|	|	|	0.06
0.417	11.55	0.15	0.181	OI	|	|	|	|	0.11
0.500	12.48	0.22	0.262	OI	|	|	|	|	0.16
0.583	13.17	0.29	0.349	OI	|	|	|	|	0.21
0.667	13.67	0.36	0.439	OI	|	|	|	|	0.26
0.750	14.04	0.44	0.532	OI	|	|	|	|	0.32
0.833	14.28	0.52	0.626	OI	|	|	|	|	0.38
0.917	14.45	0.60	0.721	OI	|	|	|	|	0.43
1.000	14.61	0.68	0.817	OI	|	|	|	|	0.49
1.083	14.76	0.78	0.913	OI	|	|	|	|	0.55
1.167	14.91	0.89	1.009	OI	|	|	|	|	0.60
1.250	15.05	1.00	1.106	OI	|	|	|	|	0.66
1.333	15.18	1.11	1.203	OI	|	|	|	|	0.71
1.417	15.30	1.22	1.300	OI	|	|	|	|	0.77
1.500	15.42	1.33	1.397	OI	|	|	|	|	0.83
1.583	15.54	1.44	1.494	OI	|	|	|	|	0.88
1.667	15.66	1.56	1.591	OI	|	|	|	|	0.94
1.750	15.79	1.67	1.688	OI	|	|	|	|	1.00
1.833	15.91	1.82	1.785	OI	|	|	|	|	1.05
1.917	16.04	1.97	1.882	OI	|	|	|	|	1.11
2.000	16.17	2.12	1.979	OI	|	|	|	|	1.16
2.083	16.31	2.27	2.076	OI	|	|	|	|	1.22
2.167	16.44	2.42	2.172	OI	|	|	|	|	1.27
2.250	16.59	2.58	2.269	OI	|	|	|	|	1.33
2.333	16.73	2.73	2.365	OI	|	|	|	|	1.38
2.417	16.88	2.88	2.462	OI	|	|	|	|	1.43
2.500	17.03	3.03	2.558	OI	|	|	|	|	1.49
2.583	17.19	3.20	2.655	OI	|	|	|	|	1.54
2.667	17.34	3.38	2.751	OI	|	|	|	|	1.60
2.750	17.51	3.56	2.847	OI	|	|	|	|	1.65
2.833	17.67	3.74	2.943	OI	|	|	|	|	1.70
2.917	17.85	3.92	3.039	OI	|	|	|	|	1.75
3.000	18.02	4.10	3.135	OI	|	|	|	|	1.81
3.083	18.21	4.28	3.231	OI	|	|	|	|	1.86
3.167	18.38	4.46	3.327	OI	|	|	|	|	1.91
3.250	18.58	4.64	3.423	OI	|	|	|	|	1.96
3.333	18.77	4.81	3.519	OI	|	|	|	|	2.02
3.417	18.97	4.97	3.615	OI	|	|	|	|	2.07
3.500	19.17	5.13	3.712	OI	|	|	|	|	2.12
3.583	19.39	5.29	3.808	OI	|	|	|	|	2.17
3.667	19.60	5.45	3.906	OI	|	|	|	|	2.22
3.750	19.83	5.62	4.003	OI	|	|	|	|	2.27
3.833	20.05	5.78	4.101	OI	|	|	|	|	2.32
3.917	20.30	5.95	4.200	OI	|	|	|	|	2.37
4.000	20.54	6.11	4.299	OI	|	|	|	|	2.43
4.083	21.00	6.28	4.399	OI	|	|	|	|	2.48
4.167	22.04	6.45	4.504	OI	|	|	|	|	2.53
4.250	24.32	6.64	4.618	O I	|	|	|	|	2.59
4.333	25.62	6.85	4.744	O I	|	|	|	|	2.66
4.417	26.44	7.07	4.875	O I	|	|	|	|	2.73
4.500	27.08	7.30	5.010	O I	|	|	|	|	2.80
4.583	27.66	7.53	5.147	O I	|	|	|	|	2.87
4.667	28.15	7.76	5.287	O I	|	|	|	|	2.95
4.750	28.62	8.18	5.428	O I	|	|	|	|	3.02
4.833	29.03	9.04	5.567	O I	|	|	|	|	3.09
4.917	29.45	9.89	5.703	O I	|	|	|	|	3.16
5.000	29.85	10.72	5.836	O I	|	|	|	|	3.22
5.083	30.29	11.53	5.967	|OI	|	|	|	|	3.29
5.167	30.72	12.32	6.095	|OI	|	|	|	|	3.35
5.250	31.19	13.11	6.220	|OI	|	|	|	|	3.41

5.333	31.64	13.87	6.344	|OI	|	|	|	3.48
5.417	32.15	14.63	6.465	|OI	|	|	|	3.54
5.500	32.63	15.37	6.585	|OI	|	|	|	3.60
5.583	33.18	16.11	6.703	|OI	|	|	|	3.65
5.667	33.71	16.83	6.820	|OI	|	|	|	3.71
5.750	34.31	17.56	6.936	|O I	|	|	|	3.77
5.833	34.90	18.27	7.051	|O I	|	|	|	3.83
5.917	35.57	18.98	7.165	|O I	|	|	|	3.88
6.000	36.22	19.69	7.279	|O I	|	|	|	3.94
6.083	36.99	20.40	7.393	|O I	|	|	|	4.00
6.167	37.79	21.18	7.508	|O I	|	|	|	4.05
6.250	38.83	21.98	7.623	|O I	|	|	|	4.11
6.333	39.75	22.78	7.739	| OI	|	|	|	4.16
6.417	40.76	23.59	7.857	| OI	|	|	|	4.22
6.500	41.74	24.41	7.976	| OI	|	|	|	4.27
6.583	42.86	25.24	8.096	| OI	|	|	|	4.33
6.667	43.96	26.09	8.218	| OI	|	|	|	4.39
6.750	45.26	26.95	8.343	| O I	|	|	|	4.44
6.833	46.54	27.83	8.470	| O I	|	|	|	4.50
6.917	48.07	28.73	8.602	| O I	|	|	|	4.57
7.000	49.61	29.66	8.737	| O I	|	|	|	4.63
7.083	51.46	30.63	8.877	| O I	|	|	|	4.70
7.167	53.35	31.64	9.024	| O I	|	|	|	4.76
7.250	55.66	32.70	9.177	| O I	|	|	|	4.84
7.333	58.06	33.83	9.340	| O I	|	|	|	4.91
7.417	60.74	35.01	9.512	| O I	|	|	|	4.99
7.500	62.59	35.81	9.693	| O I	|	|	|	5.08
7.583	63.34	36.58	9.877	| O I	|	|	|	5.16
7.667	66.13	37.39	10.068	| O I	|	|	|	5.24
7.750	71.52	38.29	10.282	| O I	|	|	|	5.34
7.833	78.46	39.34	10.531	| O I	|	|	|	5.45
7.917	90.16	40.63	10.836	| O I	|	|	|	5.59
8.000	108.57	42.31	11.235	| O |I	|	|	|	5.76
8.083	159.23	44.84	11.857	| O | I	|	|	|	6.04
8.167	246.24	48.31	12.932	| O |	| I	|	|	6.49
8.250	360.06	53.61	14.669	| O |	|	|	I	7.22
8.333	239.16	58.07	16.348	| O |	| I	|	|	7.89
8.417	164.23	66.11	17.310	| O | I	|	|	|	8.27
8.500	129.82	71.75	17.847	| O | I	|	|	|	8.48
8.583	108.85	75.07	18.164	| O |I	|	|	|	8.60
8.667	91.96	76.84	18.332	| O I	|	|	|	8.66
8.750	77.90	77.40	18.386	| O |	|	|	|	8.69
8.833	66.28	77.03	18.351	| IO |	|	|	|	8.67
8.917	58.19	76.00	18.252	| IO |	|	|	|	8.63
9.000	53.66	74.60	18.119	| I O |	|	|	|	8.58
9.083	49.74	73.00	17.967	| I O |	|	|	|	8.52
9.167	47.07	71.29	17.803	| I O |	|	|	|	8.46
9.250	43.71	69.48	17.631	| I O |	|	|	|	8.39
9.333	41.01	67.59	17.451	| I O |	|	|	|	8.32
9.417	38.15	65.64	17.265	| I O |	|	|	|	8.25
9.500	36.51	63.66	17.077	| I O |	|	|	|	8.18
9.583	35.10	61.72	16.891	| I O |	|	|	|	8.11
9.667	33.85	59.82	16.710	| I O |	|	|	|	8.04
9.750	32.72	58.56	16.532	| I O |	|	|	|	7.97
9.833	31.70	58.08	16.352	| I O |	|	|	|	7.90
9.917	30.77	57.59	16.169	| I O |	|	|	|	7.82
10.000	29.92	57.10	15.983	| I O |	|	|	|	7.75
10.083	28.94	56.60	15.794	| I O |	|	|	|	7.67
10.167	27.43	56.08	15.600	| I O |	|	|	|	7.59
10.250	24.77	55.54	15.396	| I O |	|	|	|	7.51
10.333	23.14	54.97	15.180	| I O |	|	|	|	7.42
10.417	22.07	54.38	14.959	|I O |	|	|	|	7.34
10.500	21.20	53.79	14.736	|I O |	|	|	|	7.25
10.583	20.48	53.19	14.511	|I O |	|	|	|	7.15
10.667	19.85	52.59	14.285	|I O |	|	|	|	7.06
10.750	19.32	51.96	14.060	|I O |	|	|	|	6.97
10.833	18.85	51.23	13.836	|I O |	|	|	|	6.88
10.917	18.44	50.52	13.614	|I O |	|	|	|	6.78
11.000	18.05	49.81	13.394	|I O |	|	|	|	6.69
11.083	17.69	49.10	13.177	|I O |	|	|	|	6.60
11.167	17.34	48.41	12.962	|I O |	|	|	|	6.51

11.250	17.01	47.72	12.749	|I O	|	|	|	| 6.42
11.333	16.71	47.04	12.539	|I O	|	|	|	| 6.33
11.417	16.42	46.37	12.331	|I O	|	|	|	| 6.24
11.500	16.15	45.71	12.126	|I O	|	|	|	| 6.15
11.583	15.89	45.06	11.924	|I O	|	|	|	| 6.07
11.667	15.63	44.37	11.725	|I O	|	|	|	| 5.98
11.750	15.39	43.55	11.529	|I O	|	|	|	| 5.90
11.833	15.16	42.74	11.337	|I O	|	|	|	| 5.81
11.917	14.94	41.94	11.149	|I O	|	|	|	| 5.73
12.000	14.72	41.17	10.965	|I O	|	|	|	| 5.64
12.083	14.02	40.40	10.783	|I O	|	|	|	| 5.56
12.167	11.85	39.62	10.597	|I O	|	|	|	| 5.48
12.250	6.66	38.75	10.390	I O	|	|	|	| 5.39
12.333	4.00	37.79	10.164	I O	|	|	|	| 5.29
12.417	2.65	36.80	9.930	I O	|	|	|	| 5.18
12.500	1.76	35.81	9.695	I O	|	|	|	| 5.08
12.583	1.14	34.67	9.462	I O	|	|	|	| 4.97
12.667	0.71	33.10	9.235	I O	|	|	|	| 4.86
12.750	0.43	31.59	9.016	I O	|	|	|	| 4.76
12.833	0.28	30.14	8.806	I O	|	|	|	| 4.66
12.917	0.20	28.75	8.605	I O	|	|	|	| 4.57
13.000	0.14	27.43	8.412	I O	|	|	|	| 4.48
13.083	0.10	26.16	8.229	I O	|	|	|	| 4.39
13.167	0.05	24.95	8.053	I O	|	|	|	| 4.31
13.250	0.02	23.79	7.886	I O	|	|	|	| 4.23
13.333	0.00	22.69	7.726	I O	|	|	|	| 4.15
13.417	0.00	21.64	7.573	IO	|	|	|	| 4.08
13.500	0.00	20.63	7.428	IO	|	|	|	| 4.01
13.583	0.00	19.75	7.289	IO	|	|	|	| 3.95
13.667	0.00	18.92	7.155	IO	|	|	|	| 3.88
13.750	0.00	18.13	7.028	IO	|	|	|	| 3.82
13.833	0.00	17.37	6.906	IO	|	|	|	| 3.75
13.917	0.00	16.64	6.789	IO	|	|	|	| 3.70
14.000	0.00	15.94	6.676	IO	|	|	|	| 3.64
14.083	0.00	15.27	6.569	IO	|	|	|	| 3.59
14.167	0.00	14.63	6.466	IO	|	|	|	| 3.54
14.250	0.00	14.02	6.367	IO	|	|	|	| 3.49
14.333	0.00	13.43	6.273	IO	|	|	|	| 3.44
14.417	0.00	12.87	6.182	IO	|	|	|	| 3.39
14.500	0.00	12.33	6.095	IO	|	|	|	| 3.35
14.583	0.00	11.81	6.012	IO	|	|	|	| 3.31
14.667	0.00	11.32	5.933	IO	|	|	|	| 3.27
14.750	0.00	10.84	5.856	O	|	|	|	| 3.23
14.833	0.00	10.39	5.783	O	|	|	|	| 3.20
14.917	0.00	9.95	5.713	O	|	|	|	| 3.16
15.000	0.00	9.53	5.646	O	|	|	|	| 3.13
15.083	0.00	9.13	5.582	O	|	|	|	| 3.10
15.167	0.00	8.75	5.520	O	|	|	|	| 3.07
15.250	0.00	8.38	5.461	O	|	|	|	| 3.04
15.333	0.00	8.03	5.405	O	|	|	|	| 3.01
15.417	0.00	7.87	5.350	O	|	|	|	| 2.98
15.500	0.00	7.78	5.296	O	|	|	|	| 2.95
15.583	0.00	7.69	5.243	O	|	|	|	| 2.92
15.667	0.00	7.60	5.190	O	|	|	|	| 2.90
15.750	0.00	7.51	5.138	O	|	|	|	| 2.87
15.833	0.00	7.43	5.087	O	|	|	|	| 2.84
15.917	0.00	7.34	5.036	O	|	|	|	| 2.81
16.000	0.00	7.26	4.986	O	|	|	|	| 2.79
16.083	0.00	7.17	4.936	O	|	|	|	| 2.76
16.167	0.00	7.09	4.887	O	|	|	|	| 2.74
16.250	0.00	7.01	4.838	O	|	|	|	| 2.71
16.333	0.00	6.93	4.790	O	|	|	|	| 2.69
16.417	0.00	6.85	4.743	O	|	|	|	| 2.66
16.500	0.00	6.77	4.696	O	|	|	|	| 2.64
16.583	0.00	6.70	4.649	O	|	|	|	| 2.61
16.667	0.00	6.62	4.603	O	|	|	|	| 2.59
16.750	0.00	6.54	4.558	O	|	|	|	| 2.56
16.833	0.00	6.47	4.513	O	|	|	|	| 2.54
16.917	0.00	6.40	4.469	O	|	|	|	| 2.52
17.000	0.00	6.32	4.425	O	|	|	|	| 2.49
17.083	0.00	6.25	4.382	O	|	|	|	| 2.47

17.167	0.00	6.18	4.339	O	|	|	|	|	2.45
17.250	0.00	6.11	4.297	O	|	|	|	|	2.43
17.333	0.00	6.04	4.255	O	|	|	|	|	2.40
17.417	0.00	5.97	4.214	O	|	|	|	|	2.38
17.500	0.00	5.90	4.173	O	|	|	|	|	2.36
17.583	0.00	5.83	4.132	O	|	|	|	|	2.34
17.667	0.00	5.77	4.092	O	|	|	|	|	2.32
17.750	0.00	5.70	4.053	O	|	|	|	|	2.30
17.833	0.00	5.64	4.014	O	|	|	|	|	2.28
17.917	0.00	5.57	3.975	O	|	|	|	|	2.26
18.000	0.00	5.51	3.937	O	|	|	|	|	2.24
18.083	0.00	5.44	3.899	O	|	|	|	|	2.22
18.167	0.00	5.38	3.862	O	|	|	|	|	2.20
18.250	0.00	5.32	3.825	O	|	|	|	|	2.18
18.333	0.00	5.26	3.789	O	|	|	|	|	2.16
18.417	0.00	5.20	3.753	O	|	|	|	|	2.14
18.500	0.00	5.14	3.717	O	|	|	|	|	2.12
18.583	0.00	5.08	3.682	O	|	|	|	|	2.10
18.667	0.00	5.02	3.647	O	|	|	|	|	2.08
18.750	0.00	4.97	3.613	O	|	|	|	|	2.07
18.833	0.00	4.91	3.579	O	|	|	|	|	2.05
18.917	0.00	4.85	3.545	O	|	|	|	|	2.03
19.000	0.00	4.80	3.512	O	|	|	|	|	2.01
19.083	0.00	4.74	3.479	O	|	|	|	|	2.00
19.167	0.00	4.68	3.447	O	|	|	|	|	1.98
19.250	0.00	4.62	3.415	O	|	|	|	|	1.96
19.333	0.00	4.56	3.383	O	|	|	|	|	1.94
19.417	0.00	4.50	3.352	O	|	|	|	|	1.93
19.500	0.00	4.45	3.321	O	|	|	|	|	1.91
19.583	0.00	4.39	3.291	O	|	|	|	|	1.89
19.667	0.00	4.33	3.261	O	|	|	|	|	1.88
19.750	0.00	4.28	3.231	O	|	|	|	|	1.86
19.833	0.00	4.22	3.202	O	|	|	|	|	1.84
19.917	0.00	4.17	3.173	O	|	|	|	|	1.83
20.000	0.00	4.12	3.144	O	|	|	|	|	1.81
20.083	0.00	4.06	3.116	O	|	|	|	|	1.80
20.167	0.00	4.01	3.088	O	|	|	|	|	1.78
20.250	0.00	3.96	3.061	O	|	|	|	|	1.77
20.333	0.00	3.91	3.034	O	|	|	|	|	1.75
20.417	0.00	3.86	3.007	O	|	|	|	|	1.74
20.500	0.00	3.81	2.981	O	|	|	|	|	1.72
20.583	0.00	3.76	2.954	O	|	|	|	|	1.71
20.667	0.00	3.71	2.929	O	|	|	|	|	1.69
20.750	0.00	3.67	2.903	O	|	|	|	|	1.68
20.833	0.00	3.62	2.878	O	|	|	|	|	1.67
20.917	0.00	3.57	2.853	O	|	|	|	|	1.65
21.000	0.00	3.53	2.829	O	|	|	|	|	1.64
21.083	0.00	3.48	2.805	O	|	|	|	|	1.63
21.167	0.00	3.44	2.781	O	|	|	|	|	1.61
21.250	0.00	3.40	2.757	O	|	|	|	|	1.60
21.333	0.00	3.35	2.734	O	|	|	|	|	1.59
21.417	0.00	3.31	2.711	O	|	|	|	|	1.57
21.500	0.00	3.27	2.689	O	|	|	|	|	1.56
21.583	0.00	3.23	2.666	O	|	|	|	|	1.55
21.667	0.00	3.18	2.644	O	|	|	|	|	1.54
21.750	0.00	3.14	2.622	O	|	|	|	|	1.52
21.833	0.00	3.10	2.601	O	|	|	|	|	1.51
21.917	0.00	3.06	2.580	O	|	|	|	|	1.50
22.000	0.00	3.03	2.559	O	|	|	|	|	1.49
22.083	0.00	3.00	2.538	O	|	|	|	|	1.48
22.167	0.00	2.97	2.517	O	|	|	|	|	1.47
22.250	0.00	2.93	2.497	O	|	|	|	|	1.45
22.333	0.00	2.90	2.477	O	|	|	|	|	1.44
22.417	0.00	2.87	2.457	O	|	|	|	|	1.43
22.500	0.00	2.84	2.437	O	|	|	|	|	1.42
22.583	0.00	2.81	2.418	O	|	|	|	|	1.41
22.667	0.00	2.78	2.399	O	|	|	|	|	1.40
22.750	0.00	2.75	2.380	O	|	|	|	|	1.39
22.833	0.00	2.72	2.361	O	|	|	|	|	1.38
22.917	0.00	2.69	2.342	O	|	|	|	|	1.37
23.000	0.00	2.66	2.324	O	|	|	|	|	1.36

23.083	0.00	2.63	2.306	O	|	|	|	|	1.35
23.167	0.00	2.60	2.288	O	|	|	|	|	1.34
23.250	0.00	2.58	2.270	O	|	|	|	|	1.33
23.333	0.00	2.55	2.252	O	|	|	|	|	1.32
23.417	0.00	2.52	2.235	O	|	|	|	|	1.31
23.500	0.00	2.49	2.217	O	|	|	|	|	1.30
23.583	0.00	2.47	2.200	O	|	|	|	|	1.29
23.667	0.00	2.44	2.183	O	|	|	|	|	1.28
23.750	0.00	2.42	2.167	O	|	|	|	|	1.27
23.833	0.00	2.39	2.150	O	|	|	|	|	1.26
23.917	0.00	2.36	2.134	O	|	|	|	|	1.25
24.000	0.00	2.34	2.117	O	|	|	|	|	1.24
24.083	0.00	2.31	2.101	O	|	|	|	|	1.23
24.167	0.00	2.29	2.086	O	|	|	|	|	1.22
24.250	0.00	2.26	2.070	O	|	|	|	|	1.21
24.333	0.00	2.24	2.054	O	|	|	|	|	1.20
24.417	0.00	2.22	2.039	O	|	|	|	|	1.20
24.500	0.00	2.19	2.024	O	|	|	|	|	1.19
24.583	0.00	2.17	2.009	O	|	|	|	|	1.18
24.667	0.00	2.14	1.994	O	|	|	|	|	1.17
24.750	0.00	2.12	1.979	O	|	|	|	|	1.16
24.833	0.00	2.10	1.965	O	|	|	|	|	1.15
24.917	0.00	2.08	1.950	O	|	|	|	|	1.15
25.000	0.00	2.05	1.936	O	|	|	|	|	1.14
25.083	0.00	2.03	1.922	O	|	|	|	|	1.13
25.167	0.00	2.01	1.908	O	|	|	|	|	1.12
25.250	0.00	1.99	1.895	O	|	|	|	|	1.11
25.333	0.00	1.97	1.881	O	|	|	|	|	1.11
25.417	0.00	1.95	1.867	O	|	|	|	|	1.10
25.500	0.00	1.92	1.854	O	|	|	|	|	1.09
25.583	0.00	1.90	1.841	O	|	|	|	|	1.08
25.667	0.00	1.88	1.828	O	|	|	|	|	1.08
25.750	0.00	1.86	1.815	O	|	|	|	|	1.07
25.833	0.00	1.84	1.802	O	|	|	|	|	1.06
25.917	0.00	1.82	1.790	O	|	|	|	|	1.05
26.000	0.00	1.80	1.777	O	|	|	|	|	1.05
26.083	0.00	1.78	1.765	O	|	|	|	|	1.04
26.167	0.00	1.77	1.753	O	|	|	|	|	1.03
26.250	0.00	1.75	1.740	O	|	|	|	|	1.03
26.333	0.00	1.73	1.728	O	|	|	|	|	1.02
26.417	0.00	1.71	1.717	O	|	|	|	|	1.01
26.500	0.00	1.69	1.705	O	|	|	|	|	1.01
26.583	0.00	1.67	1.693	O	|	|	|	|	1.00
26.667	0.00	1.66	1.682	O	|	|	|	|	0.99
26.750	0.00	1.65	1.670	O	|	|	|	|	0.99
26.833	0.00	1.63	1.659	O	|	|	|	|	0.98
26.917	0.00	1.62	1.648	O	|	|	|	|	0.97
27.000	0.00	1.61	1.637	O	|	|	|	|	0.97
27.083	0.00	1.60	1.626	O	|	|	|	|	0.96
27.167	0.00	1.58	1.615	O	|	|	|	|	0.95
27.250	0.00	1.57	1.604	O	|	|	|	|	0.95
27.333	0.00	1.56	1.593	O	|	|	|	|	0.94
27.417	0.00	1.55	1.583	O	|	|	|	|	0.94
27.500	0.00	1.53	1.572	O	|	|	|	|	0.93
27.583	0.00	1.52	1.561	O	|	|	|	|	0.92
27.667	0.00	1.51	1.551	O	|	|	|	|	0.92
27.750	0.00	1.50	1.541	O	|	|	|	|	0.91
27.833	0.00	1.49	1.530	O	|	|	|	|	0.91
27.917	0.00	1.47	1.520	O	|	|	|	|	0.90
28.000	0.00	1.46	1.510	O	|	|	|	|	0.89
28.083	0.00	1.45	1.500	O	|	|	|	|	0.89
28.167	0.00	1.44	1.490	O	|	|	|	|	0.88
28.250	0.00	1.43	1.480	O	|	|	|	|	0.88
28.333	0.00	1.42	1.470	O	|	|	|	|	0.87
28.417	0.00	1.41	1.461	O	|	|	|	|	0.86
28.500	0.00	1.40	1.451	O	|	|	|	|	0.86
28.583	0.00	1.38	1.441	O	|	|	|	|	0.85
28.667	0.00	1.37	1.432	O	|	|	|	|	0.85
28.750	0.00	1.36	1.422	O	|	|	|	|	0.84
28.833	0.00	1.35	1.413	O	|	|	|	|	0.84
28.917	0.00	1.34	1.404	O	|	|	|	|	0.83

29.000	0.00	1.33	1.395	O	|	|	|	|	0.83
29.083	0.00	1.32	1.385	O	|	|	|	|	0.82
29.167	0.00	1.31	1.376	O	|	|	|	|	0.82
29.250	0.00	1.30	1.367	O	|	|	|	|	0.81
29.333	0.00	1.29	1.359	O	|	|	|	|	0.81
29.417	0.00	1.28	1.350	O	|	|	|	|	0.80
29.500	0.00	1.27	1.341	O	|	|	|	|	0.80
29.583	0.00	1.26	1.332	O	|	|	|	|	0.79
29.667	0.00	1.25	1.324	O	|	|	|	|	0.78
29.750	0.00	1.24	1.315	O	|	|	|	|	0.78
29.833	0.00	1.23	1.306	O	|	|	|	|	0.77
29.917	0.00	1.22	1.298	O	|	|	|	|	0.77
30.000	0.00	1.21	1.290	O	|	|	|	|	0.77
30.083	0.00	1.20	1.281	O	|	|	|	|	0.76
30.167	0.00	1.19	1.273	O	|	|	|	|	0.76
30.250	0.00	1.18	1.265	O	|	|	|	|	0.75
30.333	0.00	1.17	1.257	O	|	|	|	|	0.75
30.417	0.00	1.17	1.249	O	|	|	|	|	0.74
30.500	0.00	1.16	1.241	O	|	|	|	|	0.74
30.583	0.00	1.15	1.233	O	|	|	|	|	0.73
30.667	0.00	1.14	1.225	O	|	|	|	|	0.73
30.750	0.00	1.13	1.217	O	|	|	|	|	0.72
30.833	0.00	1.12	1.209	O	|	|	|	|	0.72
30.917	0.00	1.11	1.202	O	|	|	|	|	0.71
31.000	0.00	1.10	1.194	O	|	|	|	|	0.71
31.083	0.00	1.09	1.186	O	|	|	|	|	0.71
31.167	0.00	1.09	1.179	O	|	|	|	|	0.70
31.250	0.00	1.08	1.172	O	|	|	|	|	0.70
31.333	0.00	1.07	1.164	O	|	|	|	|	0.69
31.417	0.00	1.06	1.157	O	|	|	|	|	0.69
31.500	0.00	1.05	1.150	O	|	|	|	|	0.68
31.583	0.00	1.04	1.142	O	|	|	|	|	0.68
31.667	0.00	1.04	1.135	O	|	|	|	|	0.68
31.750	0.00	1.03	1.128	O	|	|	|	|	0.67
31.833	0.00	1.02	1.121	O	|	|	|	|	0.67
31.917	0.00	1.01	1.114	O	|	|	|	|	0.66
32.000	0.00	1.00	1.107	O	|	|	|	|	0.66
32.083	0.00	1.00	1.100	O	|	|	|	|	0.65
32.167	0.00	0.99	1.093	O	|	|	|	|	0.65
32.250	0.00	0.98	1.087	O	|	|	|	|	0.65
32.333	0.00	0.97	1.080	O	|	|	|	|	0.64
32.417	0.00	0.96	1.073	O	|	|	|	|	0.64
32.500	0.00	0.96	1.067	O	|	|	|	|	0.64
32.583	0.00	0.95	1.060	O	|	|	|	|	0.63
32.667	0.00	0.94	1.053	O	|	|	|	|	0.63
32.750	0.00	0.94	1.047	O	|	|	|	|	0.62
32.833	0.00	0.93	1.041	O	|	|	|	|	0.62
32.917	0.00	0.92	1.034	O	|	|	|	|	0.62
33.000	0.00	0.91	1.028	O	|	|	|	|	0.61
33.083	0.00	0.91	1.022	O	|	|	|	|	0.61
33.167	0.00	0.90	1.015	O	|	|	|	|	0.61
33.250	0.00	0.89	1.009	O	|	|	|	|	0.60
33.333	0.00	0.88	1.003	O	|	|	|	|	0.60
33.417	0.00	0.88	0.997	O	|	|	|	|	0.59
33.500	0.00	0.87	0.991	O	|	|	|	|	0.59
33.583	0.00	0.86	0.985	O	|	|	|	|	0.59
33.667	0.00	0.86	0.979	O	|	|	|	|	0.58
33.750	0.00	0.85	0.973	O	|	|	|	|	0.58
33.833	0.00	0.84	0.967	O	|	|	|	|	0.58
33.917	0.00	0.84	0.962	O	|	|	|	|	0.57
34.000	0.00	0.83	0.956	O	|	|	|	|	0.57
34.083	0.00	0.82	0.950	O	|	|	|	|	0.57
34.167	0.00	0.82	0.945	O	|	|	|	|	0.56
34.250	0.00	0.81	0.939	O	|	|	|	|	0.56
34.333	0.00	0.81	0.933	O	|	|	|	|	0.56
34.417	0.00	0.80	0.928	O	|	|	|	|	0.55
34.500	0.00	0.79	0.922	O	|	|	|	|	0.55
34.583	0.00	0.79	0.917	O	|	|	|	|	0.55
34.667	0.00	0.78	0.912	O	|	|	|	|	0.55
34.750	0.00	0.77	0.906	O	|	|	|	|	0.54
34.833	0.00	0.77	0.901	O	|	|	|	|	0.54

34.917	0.00	0.76	0.896	O	|	|	|	|	0.54
35.000	0.00	0.76	0.890	O	|	|	|	|	0.53
35.083	0.00	0.75	0.885	O	|	|	|	|	0.53
35.167	0.00	0.74	0.880	O	|	|	|	|	0.53
35.250	0.00	0.74	0.875	O	|	|	|	|	0.52
35.333	0.00	0.73	0.870	O	|	|	|	|	0.52
35.417	0.00	0.73	0.865	O	|	|	|	|	0.52
35.500	0.00	0.72	0.860	O	|	|	|	|	0.52
35.583	0.00	0.72	0.855	O	|	|	|	|	0.51
35.667	0.00	0.71	0.850	O	|	|	|	|	0.51
35.750	0.00	0.70	0.845	O	|	|	|	|	0.51
35.833	0.00	0.70	0.840	O	|	|	|	|	0.50
35.917	0.00	0.69	0.835	O	|	|	|	|	0.50
36.000	0.00	0.69	0.831	O	|	|	|	|	0.50
36.083	0.00	0.69	0.826	O	|	|	|	|	0.50
36.167	0.00	0.68	0.821	O	|	|	|	|	0.49
36.250	0.00	0.68	0.817	O	|	|	|	|	0.49
36.333	0.00	0.67	0.812	O	|	|	|	|	0.49
36.417	0.00	0.67	0.807	O	|	|	|	|	0.48
36.500	0.00	0.67	0.803	O	|	|	|	|	0.48
36.583	0.00	0.66	0.798	O	|	|	|	|	0.48
36.667	0.00	0.66	0.794	O	|	|	|	|	0.48
36.750	0.00	0.65	0.789	O	|	|	|	|	0.47
36.833	0.00	0.65	0.785	O	|	|	|	|	0.47
36.917	0.00	0.65	0.780	O	|	|	|	|	0.47
37.000	0.00	0.64	0.776	O	|	|	|	|	0.47
37.083	0.00	0.64	0.771	O	|	|	|	|	0.46
37.167	0.00	0.64	0.767	O	|	|	|	|	0.46
37.250	0.00	0.63	0.762	O	|	|	|	|	0.46
37.333	0.00	0.63	0.758	O	|	|	|	|	0.45
37.417	0.00	0.63	0.754	O	|	|	|	|	0.45
37.500	0.00	0.62	0.749	O	|	|	|	|	0.45
37.583	0.00	0.62	0.745	O	|	|	|	|	0.45
37.667	0.00	0.61	0.741	O	|	|	|	|	0.44
37.750	0.00	0.61	0.737	O	|	|	|	|	0.44
37.833	0.00	0.61	0.733	O	|	|	|	|	0.44
37.917	0.00	0.60	0.728	O	|	|	|	|	0.44
38.000	0.00	0.60	0.724	O	|	|	|	|	0.43
38.083	0.00	0.60	0.720	O	|	|	|	|	0.43
38.167	0.00	0.59	0.716	O	|	|	|	|	0.43
38.250	0.00	0.59	0.712	O	|	|	|	|	0.43
38.333	0.00	0.59	0.708	O	|	|	|	|	0.42
38.417	0.00	0.58	0.704	O	|	|	|	|	0.42
38.500	0.00	0.58	0.700	O	|	|	|	|	0.42
38.583	0.00	0.58	0.696	O	|	|	|	|	0.42
38.667	0.00	0.57	0.692	O	|	|	|	|	0.41
38.750	0.00	0.57	0.688	O	|	|	|	|	0.41
38.833	0.00	0.57	0.684	O	|	|	|	|	0.41
38.917	0.00	0.56	0.680	O	|	|	|	|	0.41
39.000	0.00	0.56	0.676	O	|	|	|	|	0.41
39.083	0.00	0.56	0.672	O	|	|	|	|	0.40
39.167	0.00	0.55	0.669	O	|	|	|	|	0.40
39.250	0.00	0.55	0.665	O	|	|	|	|	0.40
39.333	0.00	0.55	0.661	O	|	|	|	|	0.40
39.417	0.00	0.55	0.657	O	|	|	|	|	0.39
39.500	0.00	0.54	0.653	O	|	|	|	|	0.39
39.583	0.00	0.54	0.650	O	|	|	|	|	0.39
39.667	0.00	0.54	0.646	O	|	|	|	|	0.39
39.750	0.00	0.53	0.642	O	|	|	|	|	0.39
39.833	0.00	0.53	0.639	O	|	|	|	|	0.38
39.917	0.00	0.53	0.635	O	|	|	|	|	0.38
40.000	0.00	0.52	0.631	O	|	|	|	|	0.38
40.083	0.00	0.52	0.628	O	|	|	|	|	0.38
40.167	0.00	0.52	0.624	O	|	|	|	|	0.37
40.250	0.00	0.52	0.621	O	|	|	|	|	0.37
40.333	0.00	0.51	0.617	O	|	|	|	|	0.37
40.417	0.00	0.51	0.614	O	|	|	|	|	0.37
40.500	0.00	0.51	0.610	O	|	|	|	|	0.37
40.583	0.00	0.50	0.607	O	|	|	|	|	0.36
40.667	0.00	0.50	0.603	O	|	|	|	|	0.36
40.750	0.00	0.50	0.600	O	|	|	|	|	0.36

40.833	0.00	0.49	0.596	O	|	|	|	|	0.36
40.917	0.00	0.49	0.593	O	|	|	|	|	0.36
41.000	0.00	0.49	0.590	O	|	|	|	|	0.35
41.083	0.00	0.49	0.586	O	|	|	|	|	0.35
41.167	0.00	0.48	0.583	O	|	|	|	|	0.35
41.250	0.00	0.48	0.580	O	|	|	|	|	0.35
41.333	0.00	0.48	0.576	O	|	|	|	|	0.35
41.417	0.00	0.48	0.573	O	|	|	|	|	0.34
41.500	0.00	0.47	0.570	O	|	|	|	|	0.34
41.583	0.00	0.47	0.566	O	|	|	|	|	0.34
41.667	0.00	0.47	0.563	O	|	|	|	|	0.34
41.750	0.00	0.46	0.560	O	|	|	|	|	0.34
41.833	0.00	0.46	0.557	O	|	|	|	|	0.33
41.917	0.00	0.46	0.554	O	|	|	|	|	0.33
42.000	0.00	0.46	0.550	O	|	|	|	|	0.33
42.083	0.00	0.45	0.547	O	|	|	|	|	0.33
42.167	0.00	0.45	0.544	O	|	|	|	|	0.33
42.250	0.00	0.45	0.541	O	|	|	|	|	0.32
42.333	0.00	0.45	0.538	O	|	|	|	|	0.32
42.417	0.00	0.44	0.535	O	|	|	|	|	0.32
42.500	0.00	0.44	0.532	O	|	|	|	|	0.32
42.583	0.00	0.44	0.529	O	|	|	|	|	0.32
42.667	0.00	0.44	0.526	O	|	|	|	|	0.32
42.750	0.00	0.43	0.523	O	|	|	|	|	0.31
42.833	0.00	0.43	0.520	O	|	|	|	|	0.31
42.917	0.00	0.43	0.517	O	|	|	|	|	0.31
43.000	0.00	0.43	0.514	O	|	|	|	|	0.31
43.083	0.00	0.42	0.511	O	|	|	|	|	0.31
43.167	0.00	0.42	0.508	O	|	|	|	|	0.30
43.250	0.00	0.42	0.505	O	|	|	|	|	0.30
43.333	0.00	0.42	0.502	O	|	|	|	|	0.30
43.417	0.00	0.41	0.500	O	|	|	|	|	0.30
43.500	0.00	0.41	0.497	O	|	|	|	|	0.30
43.583	0.00	0.41	0.494	O	|	|	|	|	0.30
43.667	0.00	0.41	0.491	O	|	|	|	|	0.29
43.750	0.00	0.41	0.488	O	|	|	|	|	0.29
43.833	0.00	0.40	0.485	O	|	|	|	|	0.29
43.917	0.00	0.40	0.483	O	|	|	|	|	0.29
44.000	0.00	0.40	0.480	O	|	|	|	|	0.29
44.083	0.00	0.40	0.477	O	|	|	|	|	0.29
44.167	0.00	0.39	0.474	O	|	|	|	|	0.28
44.250	0.00	0.39	0.472	O	|	|	|	|	0.28
44.333	0.00	0.39	0.469	O	|	|	|	|	0.28
44.417	0.00	0.39	0.466	O	|	|	|	|	0.28
44.500	0.00	0.38	0.464	O	|	|	|	|	0.28
44.583	0.00	0.38	0.461	O	|	|	|	|	0.28
44.667	0.00	0.38	0.459	O	|	|	|	|	0.27
44.750	0.00	0.38	0.456	O	|	|	|	|	0.27
44.833	0.00	0.38	0.453	O	|	|	|	|	0.27
44.917	0.00	0.37	0.451	O	|	|	|	|	0.27
45.000	0.00	0.37	0.448	O	|	|	|	|	0.27
45.083	0.00	0.37	0.446	O	|	|	|	|	0.27
45.167	0.00	0.37	0.443	O	|	|	|	|	0.27
45.250	0.00	0.37	0.441	O	|	|	|	|	0.26
45.333	0.00	0.36	0.438	O	|	|	|	|	0.26
45.417	0.00	0.36	0.436	O	|	|	|	|	0.26
45.500	0.00	0.36	0.433	O	|	|	|	|	0.26
45.583	0.00	0.36	0.431	O	|	|	|	|	0.26
45.667	0.00	0.36	0.428	O	|	|	|	|	0.26
45.750	0.00	0.35	0.426	O	|	|	|	|	0.26
45.833	0.00	0.35	0.423	O	|	|	|	|	0.25
45.917	0.00	0.35	0.421	O	|	|	|	|	0.25
46.000	0.00	0.35	0.418	O	|	|	|	|	0.25
46.083	0.00	0.35	0.416	O	|	|	|	|	0.25
46.167	0.00	0.34	0.414	O	|	|	|	|	0.25
46.250	0.00	0.34	0.411	O	|	|	|	|	0.25
46.333	0.00	0.34	0.409	O	|	|	|	|	0.25
46.417	0.00	0.34	0.407	O	|	|	|	|	0.24
46.500	0.00	0.34	0.404	O	|	|	|	|	0.24
46.583	0.00	0.33	0.402	O	|	|	|	|	0.24
46.667	0.00	0.33	0.400	O	|	|	|	|	0.24

46.750	0.00	0.33	0.397	O	|	|	|	|	0.24
46.833	0.00	0.33	0.395	O	|	|	|	|	0.24
46.917	0.00	0.33	0.393	O	|	|	|	|	0.24
47.000	0.00	0.32	0.391	O	|	|	|	|	0.23
47.083	0.00	0.32	0.388	O	|	|	|	|	0.23
47.167	0.00	0.32	0.386	O	|	|	|	|	0.23
47.250	0.00	0.32	0.384	O	|	|	|	|	0.23
47.333	0.00	0.32	0.382	O	|	|	|	|	0.23
47.417	0.00	0.32	0.380	O	|	|	|	|	0.23
47.500	0.00	0.31	0.378	O	|	|	|	|	0.23
47.583	0.00	0.31	0.375	O	|	|	|	|	0.23
47.667	0.00	0.31	0.373	O	|	|	|	|	0.22
47.750	0.00	0.31	0.371	O	|	|	|	|	0.22
47.833	0.00	0.31	0.369	O	|	|	|	|	0.22
47.917	0.00	0.30	0.367	O	|	|	|	|	0.22
48.000	0.00	0.30	0.365	O	|	|	|	|	0.22
48.083	0.00	0.30	0.363	O	|	|	|	|	0.22
48.167	0.00	0.30	0.361	O	|	|	|	|	0.22
48.250	0.00	0.30	0.359	O	|	|	|	|	0.21
48.333	0.00	0.30	0.357	O	|	|	|	|	0.21
48.417	0.00	0.29	0.355	O	|	|	|	|	0.21
48.500	0.00	0.29	0.353	O	|	|	|	|	0.21
48.583	0.00	0.29	0.351	O	|	|	|	|	0.21
48.667	0.00	0.29	0.349	O	|	|	|	|	0.21
48.750	0.00	0.29	0.347	O	|	|	|	|	0.21
48.833	0.00	0.29	0.345	O	|	|	|	|	0.21
48.917	0.00	0.28	0.343	O	|	|	|	|	0.21
49.000	0.00	0.28	0.341	O	|	|	|	|	0.20
49.083	0.00	0.28	0.339	O	|	|	|	|	0.20
49.167	0.00	0.28	0.337	O	|	|	|	|	0.20
49.250	0.00	0.28	0.335	O	|	|	|	|	0.20
49.333	0.00	0.28	0.333	O	|	|	|	|	0.20
49.417	0.00	0.27	0.331	O	|	|	|	|	0.20
49.500	0.00	0.27	0.329	O	|	|	|	|	0.20
49.583	0.00	0.27	0.327	O	|	|	|	|	0.20
49.667	0.00	0.27	0.325	O	|	|	|	|	0.20
49.750	0.00	0.27	0.324	O	|	|	|	|	0.19
49.833	0.00	0.27	0.322	O	|	|	|	|	0.19
49.917	0.00	0.27	0.320	O	|	|	|	|	0.19
50.000	0.00	0.26	0.318	O	|	|	|	|	0.19
50.083	0.00	0.26	0.316	O	|	|	|	|	0.19
50.167	0.00	0.26	0.314	O	|	|	|	|	0.19
50.250	0.00	0.26	0.313	O	|	|	|	|	0.19
50.333	0.00	0.26	0.311	O	|	|	|	|	0.19
50.417	0.00	0.26	0.309	O	|	|	|	|	0.19
50.500	0.00	0.26	0.307	O	|	|	|	|	0.18
50.583	0.00	0.25	0.306	O	|	|	|	|	0.18
50.667	0.00	0.25	0.304	O	|	|	|	|	0.18
50.750	0.00	0.25	0.302	O	|	|	|	|	0.18
50.833	0.00	0.25	0.300	O	|	|	|	|	0.18
50.917	0.00	0.25	0.299	O	|	|	|	|	0.18
51.000	0.00	0.25	0.297	O	|	|	|	|	0.18
51.083	0.00	0.25	0.295	O	|	|	|	|	0.18
51.167	0.00	0.24	0.294	O	|	|	|	|	0.18
51.250	0.00	0.24	0.292	O	|	|	|	|	0.18
51.333	0.00	0.24	0.290	O	|	|	|	|	0.17
51.417	0.00	0.24	0.289	O	|	|	|	|	0.17
51.500	0.00	0.24	0.287	O	|	|	|	|	0.17
51.583	0.00	0.24	0.285	O	|	|	|	|	0.17
51.667	0.00	0.24	0.284	O	|	|	|	|	0.17
51.750	0.00	0.23	0.282	O	|	|	|	|	0.17
51.833	0.00	0.23	0.280	O	|	|	|	|	0.17
51.917	0.00	0.23	0.279	O	|	|	|	|	0.17
52.000	0.00	0.23	0.277	O	|	|	|	|	0.17
52.083	0.00	0.23	0.276	O	|	|	|	|	0.17
52.167	0.00	0.23	0.274	O	|	|	|	|	0.16
52.250	0.00	0.23	0.273	O	|	|	|	|	0.16
52.333	0.00	0.22	0.271	O	|	|	|	|	0.16
52.417	0.00	0.22	0.269	O	|	|	|	|	0.16
52.500	0.00	0.22	0.268	O	|	|	|	|	0.16
52.583	0.00	0.22	0.266	O	|	|	|	|	0.16

52.667	0.00	0.22	0.265	O	|	|	|	|	0.16
52.750	0.00	0.22	0.263	O	|	|	|	|	0.16
52.833	0.00	0.22	0.262	O	|	|	|	|	0.16
52.917	0.00	0.22	0.260	O	|	|	|	|	0.16
53.000	0.00	0.21	0.259	O	|	|	|	|	0.16
53.083	0.00	0.21	0.257	O	|	|	|	|	0.15
53.167	0.00	0.21	0.256	O	|	|	|	|	0.15
53.250	0.00	0.21	0.255	O	|	|	|	|	0.15
53.333	0.00	0.21	0.253	O	|	|	|	|	0.15
53.417	0.00	0.21	0.252	O	|	|	|	|	0.15
53.500	0.00	0.21	0.250	O	|	|	|	|	0.15
53.583	0.00	0.21	0.249	O	|	|	|	|	0.15
53.667	0.00	0.21	0.247	O	|	|	|	|	0.15
53.750	0.00	0.20	0.246	O	|	|	|	|	0.15
53.833	0.00	0.20	0.245	O	|	|	|	|	0.15
53.917	0.00	0.20	0.243	O	|	|	|	|	0.15
54.000	0.00	0.20	0.242	O	|	|	|	|	0.14
54.083	0.00	0.20	0.240	O	|	|	|	|	0.14
54.167	0.00	0.20	0.239	O	|	|	|	|	0.14
54.250	0.00	0.20	0.238	O	|	|	|	|	0.14
54.333	0.00	0.20	0.236	O	|	|	|	|	0.14
54.417	0.00	0.19	0.235	O	|	|	|	|	0.14
54.500	0.00	0.19	0.234	O	|	|	|	|	0.14
54.583	0.00	0.19	0.232	O	|	|	|	|	0.14
54.667	0.00	0.19	0.231	O	|	|	|	|	0.14
54.750	0.00	0.19	0.230	O	|	|	|	|	0.14
54.833	0.00	0.19	0.228	O	|	|	|	|	0.14
54.917	0.00	0.19	0.227	O	|	|	|	|	0.14
55.000	0.00	0.19	0.226	O	|	|	|	|	0.14
55.083	0.00	0.19	0.224	O	|	|	|	|	0.13
55.167	0.00	0.19	0.223	O	|	|	|	|	0.13
55.250	0.00	0.18	0.222	O	|	|	|	|	0.13
55.333	0.00	0.18	0.221	O	|	|	|	|	0.13
55.417	0.00	0.18	0.219	O	|	|	|	|	0.13
55.500	0.00	0.18	0.218	O	|	|	|	|	0.13
55.583	0.00	0.18	0.217	O	|	|	|	|	0.13
55.667	0.00	0.18	0.216	O	|	|	|	|	0.13
55.750	0.00	0.18	0.214	O	|	|	|	|	0.13
55.833	0.00	0.18	0.213	O	|	|	|	|	0.13
55.917	0.00	0.18	0.212	O	|	|	|	|	0.13
56.000	0.00	0.17	0.211	O	|	|	|	|	0.13
56.083	0.00	0.17	0.210	O	|	|	|	|	0.13
56.167	0.00	0.17	0.208	O	|	|	|	|	0.12
56.250	0.00	0.17	0.207	O	|	|	|	|	0.12
56.333	0.00	0.17	0.206	O	|	|	|	|	0.12
56.417	0.00	0.17	0.205	O	|	|	|	|	0.12
56.500	0.00	0.17	0.204	O	|	|	|	|	0.12
56.583	0.00	0.17	0.203	O	|	|	|	|	0.12
56.667	0.00	0.17	0.201	O	|	|	|	|	0.12
56.750	0.00	0.17	0.200	O	|	|	|	|	0.12
56.833	0.00	0.17	0.199	O	|	|	|	|	0.12
56.917	0.00	0.16	0.198	O	|	|	|	|	0.12
57.000	0.00	0.16	0.197	O	|	|	|	|	0.12
57.083	0.00	0.16	0.196	O	|	|	|	|	0.12
57.167	0.00	0.16	0.195	O	|	|	|	|	0.12
57.250	0.00	0.16	0.193	O	|	|	|	|	0.12
57.333	0.00	0.16	0.192	O	|	|	|	|	0.12
57.417	0.00	0.16	0.191	O	|	|	|	|	0.11
57.500	0.00	0.16	0.190	O	|	|	|	|	0.11
57.583	0.00	0.16	0.189	O	|	|	|	|	0.11
57.667	0.00	0.16	0.188	O	|	|	|	|	0.11
57.750	0.00	0.16	0.187	O	|	|	|	|	0.11
57.833	0.00	0.15	0.186	O	|	|	|	|	0.11
57.917	0.00	0.15	0.185	O	|	|	|	|	0.11
58.000	0.00	0.15	0.184	O	|	|	|	|	0.11
58.083	0.00	0.15	0.183	O	|	|	|	|	0.11
58.167	0.00	0.15	0.182	O	|	|	|	|	0.11
58.250	0.00	0.15	0.181	O	|	|	|	|	0.11
58.333	0.00	0.15	0.180	O	|	|	|	|	0.11
58.417	0.00	0.15	0.179	O	|	|	|	|	0.11
58.500	0.00	0.15	0.178	O	|	|	|	|	0.11

58.583	0.00	0.15	0.177	O	|	|	|	|	0.11
58.667	0.00	0.15	0.176	O	|	|	|	|	0.11
58.750	0.00	0.14	0.175	O	|	|	|	|	0.10
58.833	0.00	0.14	0.174	O	|	|	|	|	0.10
58.917	0.00	0.14	0.173	O	|	|	|	|	0.10
59.000	0.00	0.14	0.172	O	|	|	|	|	0.10
59.083	0.00	0.14	0.171	O	|	|	|	|	0.10
59.167	0.00	0.14	0.170	O	|	|	|	|	0.10
59.250	0.00	0.14	0.169	O	|	|	|	|	0.10
59.333	0.00	0.14	0.168	O	|	|	|	|	0.10
59.417	0.00	0.14	0.167	O	|	|	|	|	0.10
59.500	0.00	0.14	0.166	O	|	|	|	|	0.10
59.583	0.00	0.14	0.165	O	|	|	|	|	0.10
59.667	0.00	0.14	0.164	O	|	|	|	|	0.10
59.750	0.00	0.14	0.163	O	|	|	|	|	0.10
59.833	0.00	0.13	0.162	O	|	|	|	|	0.10
59.917	0.00	0.13	0.161	O	|	|	|	|	0.10
60.000	0.00	0.13	0.160	O	|	|	|	|	0.10
60.083	0.00	0.13	0.159	O	|	|	|	|	0.10
60.167	0.00	0.13	0.158	O	|	|	|	|	0.09
60.250	0.00	0.13	0.157	O	|	|	|	|	0.09
60.333	0.00	0.13	0.157	O	|	|	|	|	0.09
60.417	0.00	0.13	0.156	O	|	|	|	|	0.09
60.500	0.00	0.13	0.155	O	|	|	|	|	0.09
60.583	0.00	0.13	0.154	O	|	|	|	|	0.09
60.667	0.00	0.13	0.153	O	|	|	|	|	0.09
60.750	0.00	0.13	0.152	O	|	|	|	|	0.09
60.833	0.00	0.13	0.151	O	|	|	|	|	0.09
60.917	0.00	0.12	0.150	O	|	|	|	|	0.09
61.000	0.00	0.12	0.150	O	|	|	|	|	0.09
61.083	0.00	0.12	0.149	O	|	|	|	|	0.09
61.167	0.00	0.12	0.148	O	|	|	|	|	0.09
61.250	0.00	0.12	0.147	O	|	|	|	|	0.09
61.333	0.00	0.12	0.146	O	|	|	|	|	0.09
61.417	0.00	0.12	0.145	O	|	|	|	|	0.09
61.500	0.00	0.12	0.145	O	|	|	|	|	0.09
61.583	0.00	0.12	0.144	O	|	|	|	|	0.09
61.667	0.00	0.12	0.143	O	|	|	|	|	0.09
61.750	0.00	0.12	0.142	O	|	|	|	|	0.09
61.833	0.00	0.12	0.141	O	|	|	|	|	0.08
61.917	0.00	0.12	0.140	O	|	|	|	|	0.08
62.000	0.00	0.12	0.140	O	|	|	|	|	0.08
62.083	0.00	0.12	0.139	O	|	|	|	|	0.08
62.167	0.00	0.11	0.138	O	|	|	|	|	0.08
62.250	0.00	0.11	0.137	O	|	|	|	|	0.08
62.333	0.00	0.11	0.137	O	|	|	|	|	0.08
62.417	0.00	0.11	0.136	O	|	|	|	|	0.08
62.500	0.00	0.11	0.135	O	|	|	|	|	0.08
62.583	0.00	0.11	0.134	O	|	|	|	|	0.08
62.667	0.00	0.11	0.133	O	|	|	|	|	0.08
62.750	0.00	0.11	0.133	O	|	|	|	|	0.08
62.833	0.00	0.11	0.132	O	|	|	|	|	0.08
62.917	0.00	0.11	0.131	O	|	|	|	|	0.08
63.000	0.00	0.11	0.130	O	|	|	|	|	0.08
63.083	0.00	0.11	0.130	O	|	|	|	|	0.08
63.167	0.00	0.11	0.129	O	|	|	|	|	0.08
63.250	0.00	0.11	0.128	O	|	|	|	|	0.08
63.333	0.00	0.11	0.127	O	|	|	|	|	0.08
63.417	0.00	0.11	0.127	O	|	|	|	|	0.08
63.500	0.00	0.10	0.126	O	|	|	|	|	0.08
63.583	0.00	0.10	0.125	O	|	|	|	|	0.08
63.667	0.00	0.10	0.125	O	|	|	|	|	0.07
63.750	0.00	0.10	0.124	O	|	|	|	|	0.07
63.833	0.00	0.10	0.123	O	|	|	|	|	0.07
63.917	0.00	0.10	0.122	O	|	|	|	|	0.07
64.000	0.00	0.10	0.122	O	|	|	|	|	0.07
64.083	0.00	0.10	0.121	O	|	|	|	|	0.07
64.167	0.00	0.10	0.120	O	|	|	|	|	0.07
64.250	0.00	0.10	0.120	O	|	|	|	|	0.07
64.333	0.00	0.10	0.119	O	|	|	|	|	0.07
64.417	0.00	0.10	0.118	O	|	|	|	|	0.07

64.500	0.00	0.10	0.118	O	|	|	|	|	0.07
64.583	0.00	0.10	0.117	O	|	|	|	|	0.07
64.667	0.00	0.10	0.116	O	|	|	|	|	0.07
64.750	0.00	0.10	0.116	O	|	|	|	|	0.07
64.833	0.00	0.10	0.115	O	|	|	|	|	0.07
64.917	0.00	0.09	0.114	O	|	|	|	|	0.07
65.000	0.00	0.09	0.114	O	|	|	|	|	0.07
65.083	0.00	0.09	0.113	O	|	|	|	|	0.07
65.167	0.00	0.09	0.112	O	|	|	|	|	0.07
65.250	0.00	0.09	0.112	O	|	|	|	|	0.07
65.333	0.00	0.09	0.111	O	|	|	|	|	0.07
65.417	0.00	0.09	0.111	O	|	|	|	|	0.07
65.500	0.00	0.09	0.110	O	|	|	|	|	0.07
65.583	0.00	0.09	0.109	O	|	|	|	|	0.07
65.667	0.00	0.09	0.109	O	|	|	|	|	0.07
65.750	0.00	0.09	0.108	O	|	|	|	|	0.06
65.833	0.00	0.09	0.107	O	|	|	|	|	0.06
65.917	0.00	0.09	0.107	O	|	|	|	|	0.06
66.000	0.00	0.09	0.106	O	|	|	|	|	0.06
66.083	0.00	0.09	0.106	O	|	|	|	|	0.06
66.167	0.00	0.09	0.105	O	|	|	|	|	0.06
66.250	0.00	0.09	0.104	O	|	|	|	|	0.06
66.333	0.00	0.09	0.104	O	|	|	|	|	0.06
66.417	0.00	0.09	0.103	O	|	|	|	|	0.06
66.500	0.00	0.09	0.103	O	|	|	|	|	0.06
66.583	0.00	0.08	0.102	O	|	|	|	|	0.06
66.667	0.00	0.08	0.101	O	|	|	|	|	0.06
66.750	0.00	0.08	0.101	O	|	|	|	|	0.06
66.833	0.00	0.08	0.100	O	|	|	|	|	0.06
66.917	0.00	0.08	0.100	O	|	|	|	|	0.06
67.000	0.00	0.08	0.099	O	|	|	|	|	0.06
67.083	0.00	0.08	0.099	O	|	|	|	|	0.06
67.167	0.00	0.08	0.098	O	|	|	|	|	0.06
67.250	0.00	0.08	0.097	O	|	|	|	|	0.06
67.333	0.00	0.08	0.097	O	|	|	|	|	0.06
67.417	0.00	0.08	0.096	O	|	|	|	|	0.06
67.500	0.00	0.08	0.096	O	|	|	|	|	0.06
67.583	0.00	0.08	0.095	O	|	|	|	|	0.06
67.667	0.00	0.08	0.095	O	|	|	|	|	0.06
67.750	0.00	0.08	0.094	O	|	|	|	|	0.06
67.833	0.00	0.08	0.094	O	|	|	|	|	0.06
67.917	0.00	0.08	0.093	O	|	|	|	|	0.06
68.000	0.00	0.08	0.093	O	|	|	|	|	0.06
68.083	0.00	0.08	0.092	O	|	|	|	|	0.06
68.167	0.00	0.08	0.092	O	|	|	|	|	0.05
68.250	0.00	0.08	0.091	O	|	|	|	|	0.05
68.333	0.00	0.08	0.090	O	|	|	|	|	0.05
68.417	0.00	0.07	0.090	O	|	|	|	|	0.05
68.500	0.00	0.07	0.089	O	|	|	|	|	0.05
68.583	0.00	0.07	0.089	O	|	|	|	|	0.05
68.667	0.00	0.07	0.088	O	|	|	|	|	0.05
68.750	0.00	0.07	0.088	O	|	|	|	|	0.05
68.833	0.00	0.07	0.087	O	|	|	|	|	0.05
68.917	0.00	0.07	0.087	O	|	|	|	|	0.05
69.000	0.00	0.07	0.086	O	|	|	|	|	0.05
69.083	0.00	0.07	0.086	O	|	|	|	|	0.05
69.167	0.00	0.07	0.085	O	|	|	|	|	0.05
69.250	0.00	0.07	0.085	O	|	|	|	|	0.05
69.333	0.00	0.07	0.084	O	|	|	|	|	0.05
69.417	0.00	0.07	0.084	O	|	|	|	|	0.05
69.500	0.00	0.07	0.084	O	|	|	|	|	0.05
69.583	0.00	0.07	0.083	O	|	|	|	|	0.05
69.667	0.00	0.07	0.083	O	|	|	|	|	0.05
69.750	0.00	0.07	0.082	O	|	|	|	|	0.05
69.833	0.00	0.07	0.082	O	|	|	|	|	0.05
69.917	0.00	0.07	0.081	O	|	|	|	|	0.05
70.000	0.00	0.07	0.081	O	|	|	|	|	0.05
70.083	0.00	0.07	0.080	O	|	|	|	|	0.05
70.167	0.00	0.07	0.080	O	|	|	|	|	0.05
70.250	0.00	0.07	0.079	O	|	|	|	|	0.05
70.333	0.00	0.07	0.079	O	|	|	|	|	0.05

70.417	0.00	0.07	0.078	O	|	|	|	|	0.05
70.500	0.00	0.06	0.078	O	|	|	|	|	0.05
70.583	0.00	0.06	0.078	O	|	|	|	|	0.05
70.667	0.00	0.06	0.077	O	|	|	|	|	0.05
70.750	0.00	0.06	0.077	O	|	|	|	|	0.05
70.833	0.00	0.06	0.076	O	|	|	|	|	0.05
70.917	0.00	0.06	0.076	O	|	|	|	|	0.05
71.000	0.00	0.06	0.075	O	|	|	|	|	0.05
71.083	0.00	0.06	0.075	O	|	|	|	|	0.04
71.167	0.00	0.06	0.074	O	|	|	|	|	0.04
71.250	0.00	0.06	0.074	O	|	|	|	|	0.04
71.333	0.00	0.06	0.074	O	|	|	|	|	0.04
71.417	0.00	0.06	0.073	O	|	|	|	|	0.04
71.500	0.00	0.06	0.073	O	|	|	|	|	0.04
71.583	0.00	0.06	0.072	O	|	|	|	|	0.04
71.667	0.00	0.06	0.072	O	|	|	|	|	0.04
71.750	0.00	0.06	0.072	O	|	|	|	|	0.04
71.833	0.00	0.06	0.071	O	|	|	|	|	0.04
71.917	0.00	0.06	0.071	O	|	|	|	|	0.04
72.000	0.00	0.06	0.070	O	|	|	|	|	0.04
72.083	0.00	0.06	0.070	O	|	|	|	|	0.04
72.167	0.00	0.06	0.070	O	|	|	|	|	0.04
72.250	0.00	0.06	0.069	O	|	|	|	|	0.04
72.333	0.00	0.06	0.069	O	|	|	|	|	0.04
72.417	0.00	0.06	0.068	O	|	|	|	|	0.04
72.500	0.00	0.06	0.068	O	|	|	|	|	0.04
72.583	0.00	0.06	0.068	O	|	|	|	|	0.04
72.667	0.00	0.06	0.067	O	|	|	|	|	0.04
72.750	0.00	0.06	0.067	O	|	|	|	|	0.04
72.833	0.00	0.06	0.066	O	|	|	|	|	0.04
72.917	0.00	0.05	0.066	O	|	|	|	|	0.04
73.000	0.00	0.05	0.066	O	|	|	|	|	0.04
73.083	0.00	0.05	0.065	O	|	|	|	|	0.04
73.167	0.00	0.05	0.065	O	|	|	|	|	0.04
73.250	0.00	0.05	0.065	O	|	|	|	|	0.04
73.333	0.00	0.05	0.064	O	|	|	|	|	0.04
73.417	0.00	0.05	0.064	O	|	|	|	|	0.04
73.500	0.00	0.05	0.063	O	|	|	|	|	0.04
73.583	0.00	0.05	0.063	O	|	|	|	|	0.04
73.667	0.00	0.05	0.063	O	|	|	|	|	0.04
73.750	0.00	0.05	0.062	O	|	|	|	|	0.04
73.833	0.00	0.05	0.062	O	|	|	|	|	0.04
73.917	0.00	0.05	0.062	O	|	|	|	|	0.04
74.000	0.00	0.05	0.061	O	|	|	|	|	0.04
74.083	0.00	0.05	0.061	O	|	|	|	|	0.04
74.167	0.00	0.05	0.061	O	|	|	|	|	0.04
74.250	0.00	0.05	0.060	O	|	|	|	|	0.04
74.333	0.00	0.05	0.060	O	|	|	|	|	0.04
74.417	0.00	0.05	0.060	O	|	|	|	|	0.04
74.500	0.00	0.05	0.059	O	|	|	|	|	0.04
74.583	0.00	0.05	0.059	O	|	|	|	|	0.04
74.667	0.00	0.05	0.059	O	|	|	|	|	0.04
74.750	0.00	0.05	0.058	O	|	|	|	|	0.03
74.833	0.00	0.05	0.058	O	|	|	|	|	0.03
74.917	0.00	0.05	0.058	O	|	|	|	|	0.03
75.000	0.00	0.05	0.057	O	|	|	|	|	0.03
75.083	0.00	0.05	0.057	O	|	|	|	|	0.03
75.167	0.00	0.05	0.057	O	|	|	|	|	0.03
75.250	0.00	0.05	0.056	O	|	|	|	|	0.03
75.333	0.00	0.05	0.056	O	|	|	|	|	0.03
75.417	0.00	0.05	0.056	O	|	|	|	|	0.03
75.500	0.00	0.05	0.055	O	|	|	|	|	0.03
75.583	0.00	0.05	0.055	O	|	|	|	|	0.03
75.667	0.00	0.05	0.055	O	|	|	|	|	0.03
75.750	0.00	0.05	0.054	O	|	|	|	|	0.03
75.833	0.00	0.04	0.054	O	|	|	|	|	0.03
75.917	0.00	0.04	0.054	O	|	|	|	|	0.03
76.000	0.00	0.04	0.053	O	|	|	|	|	0.03
76.083	0.00	0.04	0.053	O	|	|	|	|	0.03
76.167	0.00	0.04	0.053	O	|	|	|	|	0.03
76.250	0.00	0.04	0.053	O	|	|	|	|	0.03

76.333	0.00	0.04	0.052	O					0.03
76.417	0.00	0.04	0.052	O					0.03
76.500	0.00	0.04	0.052	O					0.03
76.583	0.00	0.04	0.051	O					0.03
76.667	0.00	0.04	0.051	O					0.03
76.750	0.00	0.04	0.051	O					0.03
76.833	0.00	0.04	0.051	O					0.03
76.917	0.00	0.04	0.050	O					0.03
77.000	0.00	0.04	0.050	O					0.03
77.083	0.00	0.04	0.050	O					0.03
77.167	0.00	0.04	0.049	O					0.03
77.250	0.00	0.04	0.049	O					0.03
77.333	0.00	0.04	0.049	O					0.03
77.417	0.00	0.04	0.049	O					0.03
77.500	0.00	0.04	0.048	O					0.03
77.583	0.00	0.04	0.048	O					0.03
77.667	0.00	0.04	0.048	O					0.03
77.750	0.00	0.04	0.047	O					0.03
77.833	0.00	0.04	0.047	O					0.03
77.917	0.00	0.04	0.047	O					0.03
78.000	0.00	0.04	0.047	O					0.03
78.083	0.00	0.04	0.046	O					0.03
78.167	0.00	0.04	0.046	O					0.03
78.250	0.00	0.04	0.046	O					0.03
78.333	0.00	0.04	0.046	O					0.03
78.417	0.00	0.04	0.045	O					0.03
78.500	0.00	0.04	0.045	O					0.03
78.583	0.00	0.04	0.045	O					0.03
78.667	0.00	0.04	0.045	O					0.03
78.750	0.00	0.04	0.044	O					0.03
78.833	0.00	0.04	0.044	O					0.03
78.917	0.00	0.04	0.044	O					0.03
79.000	0.00	0.04	0.044	O					0.03
79.083	0.00	0.04	0.043	O					0.03
79.167	0.00	0.04	0.043	O					0.03
79.250	0.00	0.04	0.043	O					0.03
79.333	0.00	0.04	0.043	O					0.03
79.417	0.00	0.04	0.042	O					0.03
79.500	0.00	0.03	0.042	O					0.03
79.583	0.00	0.03	0.042	O					0.03
79.667	0.00	0.03	0.042	O					0.02
79.750	0.00	0.03	0.041	O					0.02
79.833	0.00	0.03	0.041	O					0.02
79.917	0.00	0.03	0.041	O					0.02
80.000	0.00	0.03	0.041	O					0.02
80.083	0.00	0.03	0.040	O					0.02
80.167	0.00	0.03	0.040	O					0.02
80.250	0.00	0.03	0.040	O					0.02
80.333	0.00	0.03	0.040	O					0.02
80.417	0.00	0.03	0.040	O					0.02
80.500	0.00	0.03	0.039	O					0.02
80.583	0.00	0.03	0.039	O					0.02
80.667	0.00	0.03	0.039	O					0.02
80.750	0.00	0.03	0.039	O					0.02
80.833	0.00	0.03	0.038	O					0.02
80.917	0.00	0.03	0.038	O					0.02
81.000	0.00	0.03	0.038	O					0.02
81.083	0.00	0.03	0.038	O					0.02
81.167	0.00	0.03	0.038	O					0.02
81.250	0.00	0.03	0.037	O					0.02
81.333	0.00	0.03	0.037	O					0.02
81.417	0.00	0.03	0.037	O					0.02
81.500	0.00	0.03	0.037	O					0.02
81.583	0.00	0.03	0.036	O					0.02
81.667	0.00	0.03	0.036	O					0.02
81.750	0.00	0.03	0.036	O					0.02
81.833	0.00	0.03	0.036	O					0.02
81.917	0.00	0.03	0.036	O					0.02
82.000	0.00	0.03	0.035	O					0.02
82.083	0.00	0.03	0.035	O					0.02
82.167	0.00	0.03	0.035	O					0.02

82.250	0.00	0.03	0.035	O					0.02
82.333	0.00	0.03	0.035	O					0.02
82.417	0.00	0.03	0.034	O					0.02
82.500	0.00	0.03	0.034	O					0.02
82.583	0.00	0.03	0.034	O					0.02
82.667	0.00	0.03	0.034	O					0.02
82.750	0.00	0.03	0.034	O					0.02
82.833	0.00	0.03	0.033	O					0.02
82.917	0.00	0.03	0.033	O					0.02
83.000	0.00	0.03	0.033	O					0.02
83.083	0.00	0.03	0.033	O					0.02
83.167	0.00	0.03	0.033	O					0.02
83.250	0.00	0.03	0.033	O					0.02
83.333	0.00	0.03	0.032	O					0.02
83.417	0.00	0.03	0.032	O					0.02
83.500	0.00	0.03	0.032	O					0.02
83.583	0.00	0.03	0.032	O					0.02
83.667	0.00	0.03	0.032	O					0.02
83.750	0.00	0.03	0.031	O					0.02
83.833	0.00	0.03	0.031	O					0.02
83.917	0.00	0.03	0.031	O					0.02
84.000	0.00	0.03	0.031	O					0.02
84.083	0.00	0.03	0.031	O					0.02
84.167	0.00	0.03	0.031	O					0.02
84.250	0.00	0.03	0.030	O					0.02
84.333	0.00	0.03	0.030	O					0.02
84.417	0.00	0.02	0.030	O					0.02
84.500	0.00	0.02	0.030	O					0.02
84.583	0.00	0.02	0.030	O					0.02
84.667	0.00	0.02	0.030	O					0.02
84.750	0.00	0.02	0.029	O					0.02
84.833	0.00	0.02	0.029	O					0.02
84.917	0.00	0.02	0.029	O					0.02
85.000	0.00	0.02	0.029	O					0.02
85.083	0.00	0.02	0.029	O					0.02
85.167	0.00	0.02	0.029	O					0.02
85.250	0.00	0.02	0.028	O					0.02
85.333	0.00	0.02	0.028	O					0.02
85.417	0.00	0.02	0.028	O					0.02
85.500	0.00	0.02	0.028	O					0.02
85.583	0.00	0.02	0.028	O					0.02
85.667	0.00	0.02	0.028	O					0.02
85.750	0.00	0.02	0.027	O					0.02
85.833	0.00	0.02	0.027	O					0.02
85.917	0.00	0.02	0.027	O					0.02
86.000	0.00	0.02	0.027	O					0.02
86.083	0.00	0.02	0.027	O					0.02
86.167	0.00	0.02	0.027	O					0.02
86.250	0.00	0.02	0.026	O					0.02
86.333	0.00	0.02	0.026	O					0.02
86.417	0.00	0.02	0.026	O					0.02
86.500	0.00	0.02	0.026	O					0.02
86.583	0.00	0.02	0.026	O					0.02
86.667	0.00	0.02	0.026	O					0.02
86.750	0.00	0.02	0.026	O					0.02
86.833	0.00	0.02	0.025	O					0.02
86.917	0.00	0.02	0.025	O					0.02
87.000	0.00	0.02	0.025	O					0.02
87.083	0.00	0.02	0.025	O					0.01
87.167	0.00	0.02	0.025	O					0.01
87.250	0.00	0.02	0.025	O					0.01
87.333	0.00	0.02	0.025	O					0.01
87.417	0.00	0.02	0.024	O					0.01
87.500	0.00	0.02	0.024	O					0.01
87.583	0.00	0.02	0.024	O					0.01
87.667	0.00	0.02	0.024	O					0.01
87.750	0.00	0.02	0.024	O					0.01
87.833	0.00	0.02	0.024	O					0.01
87.917	0.00	0.02	0.024	O					0.01
88.000	0.00	0.02	0.023	O					0.01
88.083	0.00	0.02	0.023	O					0.01

88.167	0.00	0.02	0.023	O	|	|	|	|	0.01
88.250	0.00	0.02	0.023	O	|	|	|	|	0.01
88.333	0.00	0.02	0.023	O	|	|	|	|	0.01
88.417	0.00	0.02	0.023	O	|	|	|	|	0.01
88.500	0.00	0.02	0.023	O	|	|	|	|	0.01
88.583	0.00	0.02	0.023	O	|	|	|	|	0.01
88.667	0.00	0.02	0.022	O	|	|	|	|	0.01
88.750	0.00	0.02	0.022	O	|	|	|	|	0.01
88.833	0.00	0.02	0.022	O	|	|	|	|	0.01
88.917	0.00	0.02	0.022	O	|	|	|	|	0.01
89.000	0.00	0.02	0.022	O	|	|	|	|	0.01
89.083	0.00	0.02	0.022	O	|	|	|	|	0.01
89.167	0.00	0.02	0.022	O	|	|	|	|	0.01
89.250	0.00	0.02	0.022	O	|	|	|	|	0.01
89.333	0.00	0.02	0.021	O	|	|	|	|	0.01
89.417	0.00	0.02	0.021	O	|	|	|	|	0.01
89.500	0.00	0.02	0.021	O	|	|	|	|	0.01
89.583	0.00	0.02	0.021	O	|	|	|	|	0.01
89.667	0.00	0.02	0.021	O	|	|	|	|	0.01
89.750	0.00	0.02	0.021	O	|	|	|	|	0.01
89.833	0.00	0.02	0.021	O	|	|	|	|	0.01
89.917	0.00	0.02	0.021	O	|	|	|	|	0.01
90.000	0.00	0.02	0.020	O	|	|	|	|	0.01
90.083	0.00	0.02	0.020	O	|	|	|	|	0.01
90.167	0.00	0.02	0.020	O	|	|	|	|	0.01
90.250	0.00	0.02	0.020	O	|	|	|	|	0.01
90.333	0.00	0.02	0.020	O	|	|	|	|	0.01
90.417	0.00	0.02	0.020	O	|	|	|	|	0.01
90.500	0.00	0.02	0.020	O	|	|	|	|	0.01
90.583	0.00	0.02	0.020	O	|	|	|	|	0.01
90.667	0.00	0.02	0.020	O	|	|	|	|	0.01
90.750	0.00	0.02	0.019	O	|	|	|	|	0.01
90.833	0.00	0.02	0.019	O	|	|	|	|	0.01
90.917	0.00	0.02	0.019	O	|	|	|	|	0.01
91.000	0.00	0.02	0.019	O	|	|	|	|	0.01
91.083	0.00	0.02	0.019	O	|	|	|	|	0.01
91.167	0.00	0.02	0.019	O	|	|	|	|	0.01
91.250	0.00	0.02	0.019	O	|	|	|	|	0.01
91.333	0.00	0.02	0.019	O	|	|	|	|	0.01
91.417	0.00	0.02	0.019	O	|	|	|	|	0.01
91.500	0.00	0.02	0.018	O	|	|	|	|	0.01
91.583	0.00	0.02	0.018	O	|	|	|	|	0.01
91.667	0.00	0.02	0.018	O	|	|	|	|	0.01
91.750	0.00	0.02	0.018	O	|	|	|	|	0.01
91.833	0.00	0.01	0.018	O	|	|	|	|	0.01
91.917	0.00	0.01	0.018	O	|	|	|	|	0.01
92.000	0.00	0.01	0.018	O	|	|	|	|	0.01
92.083	0.00	0.01	0.018	O	|	|	|	|	0.01
92.167	0.00	0.01	0.018	O	|	|	|	|	0.01
92.250	0.00	0.01	0.018	O	|	|	|	|	0.01
92.333	0.00	0.01	0.017	O	|	|	|	|	0.01
92.417	0.00	0.01	0.017	O	|	|	|	|	0.01
92.500	0.00	0.01	0.017	O	|	|	|	|	0.01
92.583	0.00	0.01	0.017	O	|	|	|	|	0.01
92.667	0.00	0.01	0.017	O	|	|	|	|	0.01
92.750	0.00	0.01	0.017	O	|	|	|	|	0.01
92.833	0.00	0.01	0.017	O	|	|	|	|	0.01
92.917	0.00	0.01	0.017	O	|	|	|	|	0.01
93.000	0.00	0.01	0.017	O	|	|	|	|	0.01
93.083	0.00	0.01	0.017	O	|	|	|	|	0.01
93.167	0.00	0.01	0.016	O	|	|	|	|	0.01
93.250	0.00	0.01	0.016	O	|	|	|	|	0.01
93.333	0.00	0.01	0.016	O	|	|	|	|	0.01
93.417	0.00	0.01	0.016	O	|	|	|	|	0.01
93.500	0.00	0.01	0.016	O	|	|	|	|	0.01
93.583	0.00	0.01	0.016	O	|	|	|	|	0.01
93.667	0.00	0.01	0.016	O	|	|	|	|	0.01
93.750	0.00	0.01	0.016	O	|	|	|	|	0.01
93.833	0.00	0.01	0.016	O	|	|	|	|	0.01
93.917	0.00	0.01	0.016	O	|	|	|	|	0.01
94.000	0.00	0.01	0.016	O	|	|	|	|	0.01

94.083	0.00	0.01	0.015	O					0.01
94.167	0.00	0.01	0.015	O					0.01
94.250	0.00	0.01	0.015	O					0.01
94.333	0.00	0.01	0.015	O					0.01
94.417	0.00	0.01	0.015	O					0.01
94.500	0.00	0.01	0.015	O					0.01
94.583	0.00	0.01	0.015	O					0.01
94.667	0.00	0.01	0.015	O					0.01
94.750	0.00	0.01	0.015	O					0.01
94.833	0.00	0.01	0.015	O					0.01
94.917	0.00	0.01	0.015	O					0.01
95.000	0.00	0.01	0.015	O					0.01
95.083	0.00	0.01	0.014	O					0.01
95.167	0.00	0.01	0.014	O					0.01
95.250	0.00	0.01	0.014	O					0.01
95.333	0.00	0.01	0.014	O					0.01
95.417	0.00	0.01	0.014	O					0.01
95.500	0.00	0.01	0.014	O					0.01
95.583	0.00	0.01	0.014	O					0.01
95.667	0.00	0.01	0.014	O					0.01
95.750	0.00	0.01	0.014	O					0.01
95.833	0.00	0.01	0.014	O					0.01
95.917	0.00	0.01	0.014	O					0.01
96.000	0.00	0.01	0.014	O					0.01
96.083	0.00	0.01	0.013	O					0.01
96.167	0.00	0.01	0.013	O					0.01
96.250	0.00	0.01	0.013	O					0.01
96.333	0.00	0.01	0.013	O					0.01
96.417	0.00	0.01	0.013	O					0.01
96.500	0.00	0.01	0.013	O					0.01
96.583	0.00	0.01	0.013	O					0.01
96.667	0.00	0.01	0.013	O					0.01
96.750	0.00	0.01	0.013	O					0.01
96.833	0.00	0.01	0.013	O					0.01
96.917	0.00	0.01	0.013	O					0.01
97.000	0.00	0.01	0.013	O					0.01
97.083	0.00	0.01	0.013	O					0.01
97.167	0.00	0.01	0.013	O					0.01
97.250	0.00	0.01	0.012	O					0.01
97.333	0.00	0.01	0.012	O					0.01
97.417	0.00	0.01	0.012	O					0.01
97.500	0.00	0.01	0.012	O					0.01
97.583	0.00	0.01	0.012	O					0.01
97.667	0.00	0.01	0.012	O					0.01
97.750	0.00	0.01	0.012	O					0.01
97.833	0.00	0.01	0.012	O					0.01
97.917	0.00	0.01	0.012	O					0.01
98.000	0.00	0.01	0.012	O					0.01
98.083	0.00	0.01	0.012	O					0.01
98.167	0.00	0.01	0.012	O					0.01
98.250	0.00	0.01	0.012	O					0.01
98.333	0.00	0.01	0.012	O					0.01
98.417	0.00	0.01	0.011	O					0.01
98.500	0.00	0.01	0.011	O					0.01
98.583	0.00	0.01	0.011	O					0.01
98.667	0.00	0.01	0.011	O					0.01
98.750	0.00	0.01	0.011	O					0.01
98.833	0.00	0.01	0.011	O					0.01
98.917	0.00	0.01	0.011	O					0.01
99.000	0.00	0.01	0.011	O					0.01
99.083	0.00	0.01	0.011	O					0.01
99.167	0.00	0.01	0.011	O					0.01
99.250	0.00	0.01	0.011	O					0.01
99.333	0.00	0.01	0.011	O					0.01
99.417	0.00	0.01	0.011	O					0.01
99.500	0.00	0.01	0.011	O					0.01
99.583	0.00	0.01	0.011	O					0.01
99.667	0.00	0.01	0.011	O					0.01
99.750	0.00	0.01	0.010	O					0.01
99.833	0.00	0.01	0.010	O					0.01
99.917	0.00	0.01	0.010	O					0.01

100.000	0.00	0.01	0.010	O					0.01
100.083	0.00	0.01	0.010	O					0.01
100.167	0.00	0.01	0.010	O					0.01
100.250	0.00	0.01	0.010	O					0.01
100.333	0.00	0.01	0.010	O					0.01
100.417	0.00	0.01	0.010	O					0.01
100.500	0.00	0.01	0.010	O					0.01
100.583	0.00	0.01	0.010	O					0.01
100.667	0.00	0.01	0.010	O					0.01
100.750	0.00	0.01	0.010	O					0.01
100.833	0.00	0.01	0.010	O					0.01
100.917	0.00	0.01	0.010	O					0.01
101.000	0.00	0.01	0.010	O					0.01
101.083	0.00	0.01	0.010	O					0.01
101.167	0.00	0.01	0.010	O					0.01
101.250	0.00	0.01	0.009	O					0.01
101.333	0.00	0.01	0.009	O					0.01
101.417	0.00	0.01	0.009	O					0.01
101.500	0.00	0.01	0.009	O					0.01
101.583	0.00	0.01	0.009	O					0.01
101.667	0.00	0.01	0.009	O					0.01
101.750	0.00	0.01	0.009	O					0.01
101.833	0.00	0.01	0.009	O					0.01
101.917	0.00	0.01	0.009	O					0.01
102.000	0.00	0.01	0.009	O					0.01
102.083	0.00	0.01	0.009	O					0.01
102.167	0.00	0.01	0.009	O					0.01
102.250	0.00	0.01	0.009	O					0.01
102.333	0.00	0.01	0.009	O					0.01
102.417	0.00	0.01	0.009	O					0.01
102.500	0.00	0.01	0.009	O					0.01
102.583	0.00	0.01	0.009	O					0.01
102.667	0.00	0.01	0.009	O					0.01
102.750	0.00	0.01	0.009	O					0.01
102.833	0.00	0.01	0.008	O					0.01
102.917	0.00	0.01	0.008	O					0.01
103.000	0.00	0.01	0.008	O					0.01
103.083	0.00	0.01	0.008	O					0.01
103.167	0.00	0.01	0.008	O					0.00
103.250	0.00	0.01	0.008	O					0.00
103.333	0.00	0.01	0.008	O					0.00
103.417	0.00	0.01	0.008	O					0.00
103.500	0.00	0.01	0.008	O					0.00
103.583	0.00	0.01	0.008	O					0.00
103.667	0.00	0.01	0.008	O					0.00
103.750	0.00	0.01	0.008	O					0.00
103.833	0.00	0.01	0.008	O					0.00
103.917	0.00	0.01	0.008	O					0.00
104.000	0.00	0.01	0.008	O					0.00
104.083	0.00	0.01	0.008	O					0.00
104.167	0.00	0.01	0.008	O					0.00
104.250	0.00	0.01	0.008	O					0.00
104.333	0.00	0.01	0.008	O					0.00
104.417	0.00	0.01	0.008	O					0.00
104.500	0.00	0.01	0.008	O					0.00
104.583	0.00	0.01	0.008	O					0.00
104.667	0.00	0.01	0.007	O					0.00
104.750	0.00	0.01	0.007	O					0.00
104.833	0.00	0.01	0.007	O					0.00
104.917	0.00	0.01	0.007	O					0.00
105.000	0.00	0.01	0.007	O					0.00
105.083	0.00	0.01	0.007	O					0.00
105.167	0.00	0.01	0.007	O					0.00
105.250	0.00	0.01	0.007	O					0.00
105.333	0.00	0.01	0.007	O					0.00
105.417	0.00	0.01	0.007	O					0.00
105.500	0.00	0.01	0.007	O					0.00
105.583	0.00	0.01	0.007	O					0.00
105.667	0.00	0.01	0.007	O					0.00
105.750	0.00	0.01	0.007	O					0.00
105.833	0.00	0.01	0.007	O					0.00

105.917	0.00	0.01	0.007	O	|	|	|	|	0.00
106.000	0.00	0.01	0.007	O	|	|	|	|	0.00
106.083	0.00	0.01	0.007	O	|	|	|	|	0.00
106.167	0.00	0.01	0.007	O	|	|	|	|	0.00
106.250	0.00	0.01	0.007	O	|	|	|	|	0.00
106.333	0.00	0.01	0.007	O	|	|	|	|	0.00
106.417	0.00	0.01	0.007	O	|	|	|	|	0.00
106.500	0.00	0.01	0.007	O	|	|	|	|	0.00
106.583	0.00	0.01	0.007	O	|	|	|	|	0.00
106.667	0.00	0.01	0.007	O	|	|	|	|	0.00
106.750	0.00	0.01	0.006	O	|	|	|	|	0.00
106.833	0.00	0.01	0.006	O	|	|	|	|	0.00
106.917	0.00	0.01	0.006	O	|	|	|	|	0.00
107.000	0.00	0.01	0.006	O	|	|	|	|	0.00
107.083	0.00	0.01	0.006	O	|	|	|	|	0.00
107.167	0.00	0.01	0.006	O	|	|	|	|	0.00
107.250	0.00	0.01	0.006	O	|	|	|	|	0.00
107.333	0.00	0.01	0.006	O	|	|	|	|	0.00
107.417	0.00	0.01	0.006	O	|	|	|	|	0.00
107.500	0.00	0.01	0.006	O	|	|	|	|	0.00
107.583	0.00	0.01	0.006	O	|	|	|	|	0.00
107.667	0.00	0.01	0.006	O	|	|	|	|	0.00
107.750	0.00	0.01	0.006	O	|	|	|	|	0.00
107.833	0.00	0.01	0.006	O	|	|	|	|	0.00
107.917	0.00	0.00	0.006	O	|	|	|	|	0.00
108.000	0.00	0.00	0.006	O	|	|	|	|	0.00
108.083	0.00	0.00	0.006	O	|	|	|	|	0.00
108.167	0.00	0.00	0.006	O	|	|	|	|	0.00
108.250	0.00	0.00	0.006	O	|	|	|	|	0.00
108.333	0.00	0.00	0.006	O	|	|	|	|	0.00
108.417	0.00	0.00	0.006	O	|	|	|	|	0.00
108.500	0.00	0.00	0.006	O	|	|	|	|	0.00
108.583	0.00	0.00	0.006	O	|	|	|	|	0.00
108.667	0.00	0.00	0.006	O	|	|	|	|	0.00
108.750	0.00	0.00	0.006	O	|	|	|	|	0.00
108.833	0.00	0.00	0.006	O	|	|	|	|	0.00
108.917	0.00	0.00	0.006	O	|	|	|	|	0.00
109.000	0.00	0.00	0.006	O	|	|	|	|	0.00
109.083	0.00	0.00	0.006	O	|	|	|	|	0.00
109.167	0.00	0.00	0.006	O	|	|	|	|	0.00
109.250	0.00	0.00	0.005	O	|	|	|	|	0.00
109.333	0.00	0.00	0.005	O	|	|	|	|	0.00
109.417	0.00	0.00	0.005	O	|	|	|	|	0.00
109.500	0.00	0.00	0.005	O	|	|	|	|	0.00
109.583	0.00	0.00	0.005	O	|	|	|	|	0.00
109.667	0.00	0.00	0.005	O	|	|	|	|	0.00
109.750	0.00	0.00	0.005	O	|	|	|	|	0.00
109.833	0.00	0.00	0.005	O	|	|	|	|	0.00
109.917	0.00	0.00	0.005	O	|	|	|	|	0.00
110.000	0.00	0.00	0.005	O	|	|	|	|	0.00
110.083	0.00	0.00	0.005	O	|	|	|	|	0.00
110.167	0.00	0.00	0.005	O	|	|	|	|	0.00
110.250	0.00	0.00	0.005	O	|	|	|	|	0.00
110.333	0.00	0.00	0.005	O	|	|	|	|	0.00
110.417	0.00	0.00	0.005	O	|	|	|	|	0.00
110.500	0.00	0.00	0.005	O	|	|	|	|	0.00
110.583	0.00	0.00	0.005	O	|	|	|	|	0.00
110.667	0.00	0.00	0.005	O	|	|	|	|	0.00
110.750	0.00	0.00	0.005	O	|	|	|	|	0.00
110.833	0.00	0.00	0.005	O	|	|	|	|	0.00
110.917	0.00	0.00	0.005	O	|	|	|	|	0.00
111.000	0.00	0.00	0.005	O	|	|	|	|	0.00
111.083	0.00	0.00	0.005	O	|	|	|	|	0.00
111.167	0.00	0.00	0.005	O	|	|	|	|	0.00
111.250	0.00	0.00	0.005	O	|	|	|	|	0.00
111.333	0.00	0.00	0.005	O	|	|	|	|	0.00
111.417	0.00	0.00	0.005	O	|	|	|	|	0.00
111.500	0.00	0.00	0.005	O	|	|	|	|	0.00
111.583	0.00	0.00	0.005	O	|	|	|	|	0.00
111.667	0.00	0.00	0.005	O	|	|	|	|	0.00
111.750	0.00	0.00	0.005	O	|	|	|	|	0.00

111.833	0.00	0.00	0.005	O	|	|	|	|	0.00
111.917	0.00	0.00	0.005	O	|	|	|	|	0.00
112.000	0.00	0.00	0.005	O	|	|	|	|	0.00
112.083	0.00	0.00	0.005	O	|	|	|	|	0.00
112.167	0.00	0.00	0.004	O	|	|	|	|	0.00
112.250	0.00	0.00	0.004	O	|	|	|	|	0.00
112.333	0.00	0.00	0.004	O	|	|	|	|	0.00
112.417	0.00	0.00	0.004	O	|	|	|	|	0.00
112.500	0.00	0.00	0.004	O	|	|	|	|	0.00
112.583	0.00	0.00	0.004	O	|	|	|	|	0.00
112.667	0.00	0.00	0.004	O	|	|	|	|	0.00
112.750	0.00	0.00	0.004	O	|	|	|	|	0.00
112.833	0.00	0.00	0.004	O	|	|	|	|	0.00
112.917	0.00	0.00	0.004	O	|	|	|	|	0.00
113.000	0.00	0.00	0.004	O	|	|	|	|	0.00
113.083	0.00	0.00	0.004	O	|	|	|	|	0.00
113.167	0.00	0.00	0.004	O	|	|	|	|	0.00
113.250	0.00	0.00	0.004	O	|	|	|	|	0.00
113.333	0.00	0.00	0.004	O	|	|	|	|	0.00
113.417	0.00	0.00	0.004	O	|	|	|	|	0.00
113.500	0.00	0.00	0.004	O	|	|	|	|	0.00
113.583	0.00	0.00	0.004	O	|	|	|	|	0.00
113.667	0.00	0.00	0.004	O	|	|	|	|	0.00
113.750	0.00	0.00	0.004	O	|	|	|	|	0.00
113.833	0.00	0.00	0.004	O	|	|	|	|	0.00
113.917	0.00	0.00	0.004	O	|	|	|	|	0.00
114.000	0.00	0.00	0.004	O	|	|	|	|	0.00
114.083	0.00	0.00	0.004	O	|	|	|	|	0.00
114.167	0.00	0.00	0.004	O	|	|	|	|	0.00
114.250	0.00	0.00	0.004	O	|	|	|	|	0.00
114.333	0.00	0.00	0.004	O	|	|	|	|	0.00
114.417	0.00	0.00	0.004	O	|	|	|	|	0.00
114.500	0.00	0.00	0.004	O	|	|	|	|	0.00
114.583	0.00	0.00	0.004	O	|	|	|	|	0.00
114.667	0.00	0.00	0.004	O	|	|	|	|	0.00
114.750	0.00	0.00	0.004	O	|	|	|	|	0.00
114.833	0.00	0.00	0.004	O	|	|	|	|	0.00
114.917	0.00	0.00	0.004	O	|	|	|	|	0.00
115.000	0.00	0.00	0.004	O	|	|	|	|	0.00
115.083	0.00	0.00	0.004	O	|	|	|	|	0.00
115.167	0.00	0.00	0.004	O	|	|	|	|	0.00
115.250	0.00	0.00	0.004	O	|	|	|	|	0.00
115.333	0.00	0.00	0.004	O	|	|	|	|	0.00
115.417	0.00	0.00	0.004	O	|	|	|	|	0.00
115.500	0.00	0.00	0.004	O	|	|	|	|	0.00
115.583	0.00	0.00	0.004	O	|	|	|	|	0.00
115.667	0.00	0.00	0.004	O	|	|	|	|	0.00
115.750	0.00	0.00	0.004	O	|	|	|	|	0.00
115.833	0.00	0.00	0.003	O	|	|	|	|	0.00
115.917	0.00	0.00	0.003	O	|	|	|	|	0.00
116.000	0.00	0.00	0.003	O	|	|	|	|	0.00
116.083	0.00	0.00	0.003	O	|	|	|	|	0.00
116.167	0.00	0.00	0.003	O	|	|	|	|	0.00
116.250	0.00	0.00	0.003	O	|	|	|	|	0.00
116.333	0.00	0.00	0.003	O	|	|	|	|	0.00
116.417	0.00	0.00	0.003	O	|	|	|	|	0.00
116.500	0.00	0.00	0.003	O	|	|	|	|	0.00
116.583	0.00	0.00	0.003	O	|	|	|	|	0.00
116.667	0.00	0.00	0.003	O	|	|	|	|	0.00
116.750	0.00	0.00	0.003	O	|	|	|	|	0.00
116.833	0.00	0.00	0.003	O	|	|	|	|	0.00
116.917	0.00	0.00	0.003	O	|	|	|	|	0.00
117.000	0.00	0.00	0.003	O	|	|	|	|	0.00
117.083	0.00	0.00	0.003	O	|	|	|	|	0.00
117.167	0.00	0.00	0.003	O	|	|	|	|	0.00
117.250	0.00	0.00	0.003	O	|	|	|	|	0.00
117.333	0.00	0.00	0.003	O	|	|	|	|	0.00
117.417	0.00	0.00	0.003	O	|	|	|	|	0.00
117.500	0.00	0.00	0.003	O	|	|	|	|	0.00
117.583	0.00	0.00	0.003	O	|	|	|	|	0.00
117.667	0.00	0.00	0.003	O	|	|	|	|	0.00

117.750	0.00	0.00	0.003	O	|	|	|	|	0.00
117.833	0.00	0.00	0.003	O	|	|	|	|	0.00
117.917	0.00	0.00	0.003	O	|	|	|	|	0.00
118.000	0.00	0.00	0.003	O	|	|	|	|	0.00
118.083	0.00	0.00	0.003	O	|	|	|	|	0.00
118.167	0.00	0.00	0.003	O	|	|	|	|	0.00
118.250	0.00	0.00	0.003	O	|	|	|	|	0.00
118.333	0.00	0.00	0.003	O	|	|	|	|	0.00
118.417	0.00	0.00	0.003	O	|	|	|	|	0.00
118.500	0.00	0.00	0.003	O	|	|	|	|	0.00
118.583	0.00	0.00	0.003	O	|	|	|	|	0.00
118.667	0.00	0.00	0.003	O	|	|	|	|	0.00
118.750	0.00	0.00	0.003	O	|	|	|	|	0.00
118.833	0.00	0.00	0.003	O	|	|	|	|	0.00
118.917	0.00	0.00	0.003	O	|	|	|	|	0.00
119.000	0.00	0.00	0.003	O	|	|	|	|	0.00
119.083	0.00	0.00	0.003	O	|	|	|	|	0.00
119.167	0.00	0.00	0.003	O	|	|	|	|	0.00
119.250	0.00	0.00	0.003	O	|	|	|	|	0.00
119.333	0.00	0.00	0.003	O	|	|	|	|	0.00
119.417	0.00	0.00	0.003	O	|	|	|	|	0.00
119.500	0.00	0.00	0.003	O	|	|	|	|	0.00
119.583	0.00	0.00	0.003	O	|	|	|	|	0.00
119.667	0.00	0.00	0.003	O	|	|	|	|	0.00
119.750	0.00	0.00	0.003	O	|	|	|	|	0.00
119.833	0.00	0.00	0.003	O	|	|	|	|	0.00
119.917	0.00	0.00	0.003	O	|	|	|	|	0.00
120.000	0.00	0.00	0.003	O	|	|	|	|	0.00
120.083	0.00	0.00	0.003	O	|	|	|	|	0.00
120.167	0.00	0.00	0.003	O	|	|	|	|	0.00
120.250	0.00	0.00	0.003	O	|	|	|	|	0.00
120.333	0.00	0.00	0.003	O	|	|	|	|	0.00
120.417	0.00	0.00	0.003	O	|	|	|	|	0.00
120.500	0.00	0.00	0.003	O	|	|	|	|	0.00
120.583	0.00	0.00	0.003	O	|	|	|	|	0.00
120.667	0.00	0.00	0.003	O	|	|	|	|	0.00
120.750	0.00	0.00	0.002	O	|	|	|	|	0.00
120.833	0.00	0.00	0.002	O	|	|	|	|	0.00
120.917	0.00	0.00	0.002	O	|	|	|	|	0.00
121.000	0.00	0.00	0.002	O	|	|	|	|	0.00
121.083	0.00	0.00	0.002	O	|	|	|	|	0.00
121.167	0.00	0.00	0.002	O	|	|	|	|	0.00
121.250	0.00	0.00	0.002	O	|	|	|	|	0.00
121.333	0.00	0.00	0.002	O	|	|	|	|	0.00
121.417	0.00	0.00	0.002	O	|	|	|	|	0.00
121.500	0.00	0.00	0.002	O	|	|	|	|	0.00
121.583	0.00	0.00	0.002	O	|	|	|	|	0.00
121.667	0.00	0.00	0.002	O	|	|	|	|	0.00
121.750	0.00	0.00	0.002	O	|	|	|	|	0.00
121.833	0.00	0.00	0.002	O	|	|	|	|	0.00
121.917	0.00	0.00	0.002	O	|	|	|	|	0.00
122.000	0.00	0.00	0.002	O	|	|	|	|	0.00
122.083	0.00	0.00	0.002	O	|	|	|	|	0.00
122.167	0.00	0.00	0.002	O	|	|	|	|	0.00
122.250	0.00	0.00	0.002	O	|	|	|	|	0.00
122.333	0.00	0.00	0.002	O	|	|	|	|	0.00
122.417	0.00	0.00	0.002	O	|	|	|	|	0.00
122.500	0.00	0.00	0.002	O	|	|	|	|	0.00
122.583	0.00	0.00	0.002	O	|	|	|	|	0.00
122.667	0.00	0.00	0.002	O	|	|	|	|	0.00
122.750	0.00	0.00	0.002	O	|	|	|	|	0.00
122.833	0.00	0.00	0.002	O	|	|	|	|	0.00
122.917	0.00	0.00	0.002	O	|	|	|	|	0.00
123.000	0.00	0.00	0.002	O	|	|	|	|	0.00
123.083	0.00	0.00	0.002	O	|	|	|	|	0.00
123.167	0.00	0.00	0.002	O	|	|	|	|	0.00
123.250	0.00	0.00	0.002	O	|	|	|	|	0.00
123.333	0.00	0.00	0.002	O	|	|	|	|	0.00
123.417	0.00	0.00	0.002	O	|	|	|	|	0.00
123.500	0.00	0.00	0.002	O	|	|	|	|	0.00
123.583	0.00	0.00	0.002	O	|	|	|	|	0.00

```
123.667    0.00    0.00      0.002  O       |       |       |       |      0.00
123.750    0.00    0.00      0.002  O       |       |       |       |      0.00
123.833    0.00    0.00      0.002  O       |       |       |       |      0.00
123.917    0.00    0.00      0.002  O       |       |       |       |      0.00
124.000    0.00    0.00      0.002  O       |       |       |       |      0.00
124.083    0.00    0.00      0.002  O       |       |       |       |      0.00
124.167    0.00    0.00      0.002  O       |       |       |       |      0.00
124.250    0.00    0.00      0.002  O       |       |       |       |      0.00
124.333    0.00    0.00      0.002  O       |       |       |       |      0.00
124.417    0.00    0.00      0.002  O       |       |       |       |      0.00
124.500    0.00    0.00      0.002  O       |       |       |       |      0.00
124.583    0.00    0.00      0.002  O       |       |       |       |      0.00
124.667    0.00    0.00      0.002  O       |       |       |       |      0.00
124.750    0.00    0.00      0.002  O       |       |       |       |      0.00
124.833    0.00    0.00      0.002  O       |       |       |       |      0.00
124.917    0.00    0.00      0.002  O       |       |       |       |      0.00
125.000    0.00    0.00      0.002  O       |       |       |       |      0.00
125.083    0.00    0.00      0.002  O       |       |       |       |      0.00
125.167    0.00    0.00      0.002  O       |       |       |       |      0.00
125.250    0.00    0.00      0.002  O       |       |       |       |      0.00
125.333    0.00    0.00      0.002  O       |       |       |       |      0.00
125.417    0.00    0.00      0.002  O       |       |       |       |      0.00
125.500    0.00    0.00      0.002  O       |       |       |       |      0.00
125.583    0.00    0.00      0.002  O       |       |       |       |      0.00
125.667    0.00    0.00      0.002  O       |       |       |       |      0.00
125.750    0.00    0.00      0.002  O       |       |       |       |      0.00
125.833    0.00    0.00      0.002  O       |       |       |       |      0.00
125.917    0.00    0.00      0.002  O       |       |       |       |      0.00
126.000    0.00    0.00      0.002  O       |       |       |       |      0.00
126.083    0.00    0.00      0.002  O       |       |       |       |      0.00
126.167    0.00    0.00      0.002  O       |       |       |       |      0.00
126.250    0.00    0.00      0.002  O       |       |       |       |      0.00
126.333    0.00    0.00      0.002  O       |       |       |       |      0.00
126.417    0.00    0.00      0.002  O       |       |       |       |      0.00
126.500    0.00    0.00      0.002  O       |       |       |       |      0.00
126.583    0.00    0.00      0.002  O       |       |       |       |      0.00

 Remaining water in basin =    0.00 (Ac.Ft)


 ****************************HYDROGRAPH DATA****************************
                Number of intervals =  1519
                Time interval =    5.0 (Min.)
                Maximum/Peak flow rate =       77.401 (CFS)
                Total volume =      37.915 (Ac.Ft)
        Status of hydrographs being held in storage
                    Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
        Peak (CFS)      0.000     0.000     0.000     0.000     0.000
        Vol (Ac.Ft)     0.000     0.000     0.000     0.000     0.000
 ***********************************************************************

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- Basin 'C' - 100 Year 24 Hour Storm Routing Analysis

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                    FLOOD HYDROGRAPH ROUTING PROGRAM
          Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012
                       Study date: 03/20/17

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WESTRIDGE HYDROLOGY STUDY
PROPOSED ROUTING - BASIN 'C' - 100 YEAR 24 HOUR STORM
HUNSAKER & ASSOCIATES, MARCH 20, 2017
BY: BRIAN LOWELL, PE
------------------------------------------------------------------------


Program License Serial Number 4094

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******************** HYDROGRAPH INFORMATION **********************

               From study/file name: PRC10024.rte
*****************************HYDROGRAPH DATA*****************************
               Number of intervals =   303
               Time interval =    5.0 (Min.)
               Maximum/Peak flow rate =      360.058 (CFS)
               Total volume =      48.856 (Ac.Ft)
       Status of hydrographs being held in storage
                   Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
       Peak (CFS)      0.000     0.000     0.000     0.000     0.000
       Vol (Ac.Ft)     0.000     0.000     0.000     0.000     0.000
************************************************************************



++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      300.000 to Point/Station      301.000
**** RETARDING BASIN ROUTING ****
________________________________________________________________________

User entry of depth-outflow-storage data
------------------------------------------------------------------------
Total number of inflow hydrograph intervals = 303
Hydrograph time unit =  5.000 (Min.)
Initial depth in storage basin =   0.00(Ft.)
------------------------------------------------------------------------
------------------------------------------------------------------------
Initial basin depth =   0.00 (Ft.)
Initial basin storage =      0.00 (Ac.Ft)
Initial basin outflow =   0.00 (CFS)
------------------------------------------------------------------------
------------------------------------------------------------------------
Depth vs. Storage and Depth vs. Discharge data:
 Basin Depth  Storage    Outflow   (S-O*dt/2)   (S+O*dt/2)
     (Ft.)    (Ac.Ft)    (CFS)     (Ac.Ft)    (Ac.Ft)
------------------------------------------------------------------------
   0.000      0.000      0.000      0.000        0.000
   0.500      0.834      0.692      0.832        0.836
   1.000      1.693      1.672      1.687        1.699
   1.500      2.577      3.059      2.566        2.588
   2.000      3.488      4.757      3.472        3.504
   3.000      5.388      7.930      5.361        5.415
   4.000      7.399     20.434      7.329        7.469
   5.000      9.523     35.089      9.402        9.644
   6.000     11.764     44.538     11.611       11.917
   7.000     14.126     52.170     13.946       14.306
   8.000     16.610     58.766     16.408       16.812
   8.900     18.942     83.236     18.655       19.229
   9.000     19.207     83.236     18.920       19.494
   9.500     20.556    448.796     19.011       22.101
  10.000     21.935   1159.965     17.941       25.929
```

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0	90.0	180.03	270.04	360.06	Depth (Ft.)
0.083	0.32	0.00	0.001	O	|	|	|	|	0.00
0.167	1.61	0.01	0.008	O	|	|	|	|	0.00
0.250	4.88	0.02	0.030	O	|	|	|	|	0.02
0.333	6.56	0.06	0.069	O	|	|	|	|	0.04
0.417	7.43	0.10	0.117	O	|	|	|	|	0.07
0.500	8.00	0.14	0.169	O	|	|	|	|	0.10
0.583	8.42	0.19	0.224	O	|	|	|	|	0.13
0.667	8.71	0.23	0.282	O	|	|	|	|	0.17
0.750	8.92	0.28	0.341	O	|	|	|	|	0.20
0.833	9.04	0.33	0.401	O	|	|	|	|	0.24
0.917	9.12	0.38	0.461	O	|	|	|	|	0.28
1.000	9.19	0.43	0.521	O	|	|	|	|	0.31
1.083	9.25	0.48	0.581	O	|	|	|	|	0.35
1.167	9.31	0.53	0.642	O	|	|	|	|	0.38
1.250	9.36	0.58	0.702	O	|	|	|	|	0.42
1.333	9.41	0.63	0.763	O	|	|	|	|	0.46
1.417	9.44	0.68	0.823	O	|	|	|	|	0.49
1.500	9.47	0.75	0.883	O	|	|	|	|	0.53
1.583	9.51	0.82	0.943	O	|	|	|	|	0.56
1.667	9.54	0.88	1.003	O	|	|	|	|	0.60
1.750	9.57	0.95	1.062	O	|	|	|	|	0.63
1.833	9.61	1.02	1.122	O	|	|	|	|	0.67
1.917	9.64	1.09	1.181	O	|	|	|	|	0.70
2.000	9.68	1.15	1.239	O	|	|	|	|	0.74
2.083	9.72	1.22	1.298	O	|	|	|	|	0.77
2.167	9.75	1.29	1.356	O	|	|	|	|	0.80
2.250	9.79	1.35	1.415	O	|	|	|	|	0.84
2.333	9.82	1.42	1.473	O	|	|	|	|	0.87
2.417	9.86	1.49	1.530	O	|	|	|	|	0.91
2.500	9.90	1.55	1.588	O	|	|	|	|	0.94
2.583	9.94	1.62	1.645	O	|	|	|	|	0.97
2.667	9.97	1.69	1.702	O	|	|	|	|	1.01
2.750	10.01	1.78	1.759	O	|	|	|	|	1.04
2.833	10.05	1.86	1.816	O	|	|	|	|	1.07
2.917	10.09	1.95	1.872	O	|	|	|	|	1.10
3.000	10.13	2.04	1.928	O	|	|	|	|	1.13
3.083	10.17	2.13	1.984	O	|	|	|	|	1.16
3.167	10.21	2.21	2.039	O	|	|	|	|	1.20
3.250	10.25	2.30	2.094	O	|	|	|	|	1.23
3.333	10.29	2.39	2.148	O	|	|	|	|	1.26
3.417	10.33	2.47	2.203	O	|	|	|	|	1.29
3.500	10.37	2.56	2.257	O	|	|	|	|	1.32
3.583	10.42	2.64	2.310	O	|	|	|	|	1.35
3.667	10.46	2.72	2.364	O	|	|	|	|	1.38
3.750	10.50	2.81	2.417	O	|	|	|	|	1.41
3.833	10.55	2.89	2.470	O	|	|	|	|	1.44
3.917	10.59	2.97	2.522	O	|	|	|	|	1.47
4.000	10.64	3.06	2.575	O	|	|	|	|	1.50
4.083	10.68	3.15	2.627	O	|	|	|	|	1.53
4.167	10.73	3.25	2.678	O	|	|	|	|	1.56
4.250	10.78	3.34	2.730	O	|	|	|	|	1.58
4.333	10.82	3.44	2.781	O	|	|	|	|	1.61
4.417	10.87	3.53	2.831	O	|	|	|	|	1.64
4.500	10.92	3.63	2.882	O	|	|	|	|	1.67
4.583	10.97	3.72	2.932	O	|	|	|	|	1.69
4.667	11.01	3.81	2.982	O	|	|	|	|	1.72
4.750	11.07	3.91	3.031	O	|	|	|	|	1.75
4.833	11.11	4.00	3.080	O	|	|	|	|	1.78
4.917	11.17	4.09	3.129	O	|	|	|	|	1.80
5.000	11.22	4.18	3.178	O	|	|	|	|	1.83
5.083	11.27	4.27	3.226	OI	|	|	|	|	1.86
5.167	11.32	4.36	3.274	OI	|	|	|	|	1.88
5.250	11.38	4.45	3.322	OI	|	|	|	|	1.91

5.333	11.43	4.54	3.370	OI					1.93
5.417	11.49	4.62	3.417	OI					1.96
5.500	11.54	4.71	3.464	OI					1.99
5.583	11.60	4.80	3.511	OI					2.01
5.667	11.65	4.87	3.558	OI					2.04
5.750	11.71	4.95	3.604	OI					2.06
5.833	11.77	5.03	3.651	OI					2.09
5.917	11.83	5.11	3.697	OI					2.11
6.000	11.89	5.18	3.743	OI					2.13
6.083	11.95	5.26	3.790	OI					2.16
6.167	12.01	5.34	3.836	OI					2.18
6.250	12.07	5.41	3.881	OI					2.21
6.333	12.13	5.49	3.927	OI					2.23
6.417	12.20	5.57	3.973	OI					2.26
6.500	12.26	5.64	4.019	OI					2.28
6.583	12.33	5.72	4.064	OI					2.30
6.667	12.40	5.80	4.110	OI					2.33
6.750	12.47	5.87	4.155	OI					2.35
6.833	12.53	5.95	4.201	OI					2.38
6.917	12.60	6.02	4.246	OI					2.40
7.000	12.67	6.10	4.291	OI					2.42
7.083	12.75	6.17	4.336	OI					2.45
7.167	12.82	6.25	4.382	OI					2.47
7.250	12.89	6.32	4.427	OI					2.49
7.333	12.96	6.40	4.472	OI					2.52
7.417	13.04	6.48	4.517	OI					2.54
7.500	13.12	6.55	4.563	OI					2.57
7.583	13.20	6.63	4.608	OI					2.59
7.667	13.28	6.70	4.653	OI					2.61
7.750	13.36	6.78	4.698	OI					2.64
7.833	13.44	6.85	4.744	OI					2.66
7.917	13.53	6.93	4.789	OI					2.68
8.000	13.61	7.01	4.835	OI					2.71
8.083	13.70	7.08	4.880	OI					2.73
8.167	13.78	7.16	4.926	OI					2.76
8.250	13.87	7.23	4.971	OI					2.78
8.333	13.96	7.31	5.017	OI					2.80
8.417	14.06	7.39	5.063	OI					2.83
8.500	14.15	7.46	5.109	OI					2.85
8.583	14.25	7.54	5.155	OI					2.88
8.667	14.34	7.62	5.201	OI					2.90
8.750	14.44	7.70	5.248	OI					2.93
8.833	14.54	7.77	5.294	OI					2.95
8.917	14.65	7.85	5.341	OI					2.98
9.000	14.75	7.93	5.388	OI					3.00
9.083	14.86	8.22	5.434	OI					3.02
9.167	14.96	8.50	5.479	OI					3.05
9.250	15.08	8.77	5.523	OI					3.07
9.333	15.18	9.04	5.566	OI					3.09
9.417	15.30	9.30	5.608	OI					3.11
9.500	15.42	9.55	5.649	OI					3.13
9.583	15.54	9.80	5.689	OI					3.15
9.667	15.66	10.04	5.728	OI					3.17
9.750	15.79	10.28	5.766	OI					3.19
9.833	15.91	10.51	5.804	OI					3.21
9.917	16.04	10.74	5.841	OI					3.23
10.000	16.17	10.97	5.877	OI					3.24
10.083	16.31	11.19	5.912	OI					3.26
10.167	16.44	11.41	5.947	IO					3.28
10.250	16.59	11.62	5.982	IO					3.30
10.333	16.73	11.83	6.016	IO					3.31
10.417	16.88	12.04	6.049	IO					3.33
10.500	17.03	12.25	6.082	IO					3.35
10.583	17.19	12.45	6.115	IO					3.36
10.667	17.34	12.65	6.148	IO					3.38
10.750	17.51	12.85	6.180	IO					3.39
10.833	17.67	13.05	6.212	IO					3.41
10.917	17.85	13.25	6.244	IO					3.43
11.000	18.02	13.45	6.275	IO					3.44
11.083	18.21	13.64	6.307	IO					3.46
11.167	18.38	13.84	6.338	IO					3.47

11.250	18.58	14.03	6.369	|O	|	|	|	|	3.49
11.333	18.77	14.23	6.401	|O	|	|	|	|	3.50
11.417	18.97	14.42	6.432	|O	|	|	|	|	3.52
11.500	19.17	14.62	6.463	|O	|	|	|	|	3.53
11.583	19.39	14.81	6.495	|O	|	|	|	|	3.55
11.667	19.60	15.01	6.526	|O	|	|	|	|	3.57
11.750	19.83	15.20	6.558	|O	|	|	|	|	3.58
11.833	20.05	15.40	6.590	|O	|	|	|	|	3.60
11.917	20.30	15.60	6.622	|O	|	|	|	|	3.61
12.000	20.54	15.81	6.655	|O	|	|	|	|	3.63
12.083	21.00	16.01	6.688	|O	|	|	|	|	3.65
12.167	22.04	16.24	6.725	|O	|	|	|	|	3.66
12.250	24.32	16.53	6.772	|OI	|	|	|	|	3.69
12.333	25.62	16.89	6.829	|OI	|	|	|	|	3.72
12.417	26.44	17.27	6.890	|OI	|	|	|	|	3.75
12.500	27.08	17.67	6.954	|OI	|	|	|	|	3.78
12.583	27.66	18.08	7.020	|OI	|	|	|	|	3.81
12.667	28.15	18.49	7.086	|OI	|	|	|	|	3.84
12.750	28.62	18.90	7.153	|OI	|	|	|	|	3.88
12.833	29.03	19.32	7.220	|OI	|	|	|	|	3.91
12.917	29.45	19.74	7.287	|OI	|	|	|	|	3.94
13.000	29.85	20.15	7.353	|OI	|	|	|	|	3.98
13.083	30.29	20.58	7.420	|OI	|	|	|	|	4.01
13.167	30.72	21.04	7.487	|OI	|	|	|	|	4.04
13.250	31.19	21.50	7.554	|OI	|	|	|	|	4.07
13.333	31.64	21.96	7.621	|OI	|	|	|	|	4.10
13.417	32.15	22.42	7.687	|OI	|	|	|	|	4.14
13.500	32.63	22.89	7.754	| O	|	|	|	|	4.17
13.583	33.18	23.35	7.822	| O	|	|	|	|	4.20
13.667	33.71	23.82	7.890	| O	|	|	|	|	4.23
13.750	34.31	24.29	7.958	| OI	|	|	|	|	4.26
13.833	34.90	24.77	8.028	| OI	|	|	|	|	4.30
13.917	35.57	25.26	8.098	| OI	|	|	|	|	4.33
14.000	36.22	25.75	8.170	| OI	|	|	|	|	4.36
14.083	36.99	26.25	8.243	| OI	|	|	|	|	4.40
14.167	37.79	26.77	8.317	| OI	|	|	|	|	4.43
14.250	38.83	27.31	8.395	| OI	|	|	|	|	4.47
14.333	39.75	27.86	8.476	| OI	|	|	|	|	4.51
14.417	40.76	28.44	8.559	| OI	|	|	|	|	4.55
14.500	41.74	29.03	8.645	| OI	|	|	|	|	4.59
14.583	42.86	29.65	8.735	| OI	|	|	|	|	4.63
14.667	43.96	30.29	8.827	| OI	|	|	|	|	4.67
14.750	45.26	30.95	8.923	| O I	|	|	|	|	4.72
14.833	46.54	31.65	9.024	| O I	|	|	|	|	4.77
14.917	48.07	32.37	9.129	| O I	|	|	|	|	4.81
15.000	49.61	33.14	9.240	| O I	|	|	|	|	4.87
15.083	51.46	33.95	9.357	| OI	|	|	|	|	4.92
15.167	53.35	34.80	9.481	| OI	|	|	|	|	4.98
15.250	55.66	35.48	9.615	| OI	|	|	|	|	5.04
15.333	58.06	36.09	9.760	| O I	|	|	|	|	5.11
15.417	60.74	36.76	9.918	| O I	|	|	|	|	5.18
15.500	62.59	37.47	10.087	| O I	|	|	|	|	5.25
15.583	63.34	38.20	10.260	| O I	|	|	|	|	5.33
15.667	66.13	38.96	10.441	| O I	|	|	|	|	5.41
15.750	71.52	39.81	10.643	| O I	|	|	|	|	5.50
15.833	78.46	40.82	10.882	| O I	|	|	|	|	5.61
15.917	90.16	42.06	11.177	| O I	|	|	|	|	5.74
16.000	108.57	43.70	11.566	| O |I	|	|	|	|	5.91
16.083	159.23	45.88	12.180	| O | I	|	|	|	|	6.18
16.167	246.24	49.33	13.248	| O | | I	|	|	|	|	6.63
16.250	360.06	54.43	14.979	| O | |	|	|	|	| I	7.34
16.333	239.16	59.20	16.651	| O | | I	|	|	|	|	8.02
16.417	164.23	69.13	17.598	| O | I	|	|	|	|	8.38
16.500	129.82	74.57	18.116	| O | I	|	|	|	|	8.58
16.583	108.85	77.69	18.413	| O |I	|	|	|	|	8.70
16.667	91.96	79.27	18.564	| OI	|	|	|	|	8.75
16.750	77.90	79.67	18.602	| IO|	|	|	|	|	8.77
16.833	66.28	79.14	18.552	| I O|	|	|	|	|	8.75
16.917	58.19	77.96	18.439	| IO |	|	|	|	|	8.71
17.000	53.66	76.42	18.293	| I O |	|	|	|	|	8.65
17.083	49.74	74.70	18.129	| I O |	|	|	|	|	8.59

17.167	47.07	72.87	17.954	| I O |	|	|	|	8.52
17.250	43.71	70.95	17.771	| I O |	|	|	|	8.45
17.333	41.01	68.96	17.581	| I O |	|	|	|	8.37
17.417	38.15	66.91	17.386	| I O |	|	|	|	8.30
17.500	36.51	64.84	17.189	| I O |	|	|	|	8.22
17.583	35.10	62.82	16.996	| I O |	|	|	|	8.15
17.667	33.85	60.84	16.808	| I O |	|	|	|	8.08
17.750	32.72	58.92	16.625	| I O |	|	|	|	8.01
17.833	31.70	58.32	16.443	| I O |	|	|	|	7.93
17.917	30.77	57.83	16.258	| I O |	|	|	|	7.86
18.000	29.92	57.33	16.070	| I O |	|	|	|	7.78
18.083	28.94	56.83	15.880	| I O |	|	|	|	7.71
18.167	27.43	56.31	15.684	| I O |	|	|	|	7.63
18.250	24.77	55.76	15.478	| I O |	|	|	|	7.54
18.333	23.14	55.18	15.261	| I O |	|	|	|	7.46
18.417	22.07	54.59	15.039	|I O |	|	|	|	7.37
18.500	21.20	54.00	14.814	|I O |	|	|	|	7.28
18.583	20.48	53.40	14.588	|I O |	|	|	|	7.19
18.667	19.85	52.79	14.361	|I O |	|	|	|	7.09
18.750	19.32	52.19	14.134	|I O |	|	|	|	7.00
18.833	18.85	51.47	13.909	|I O |	|	|	|	6.91
18.917	18.44	50.75	13.685	|I O |	|	|	|	6.81
19.000	18.05	50.03	13.464	|I O |	|	|	|	6.72
19.083	17.69	49.32	13.245	|I O |	|	|	|	6.63
19.167	17.34	48.62	13.028	|I O |	|	|	|	6.54
19.250	17.01	47.93	12.814	|I O |	|	|	|	6.44
19.333	16.71	47.25	12.602	|I O |	|	|	|	6.35
19.417	16.42	46.57	12.393	|I O |	|	|	|	6.27
19.500	16.15	45.90	12.187	|I O |	|	|	|	6.18
19.583	15.89	45.25	11.983	|I O |	|	|	|	6.09
19.667	15.63	44.60	11.783	|I O |	|	|	|	6.01
19.750	15.39	43.78	11.585	|I O |	|	|	|	5.92
19.833	15.16	42.97	11.392	|I O |	|	|	|	5.83
19.917	14.94	42.17	11.202	|I O |	|	|	|	5.75
20.000	14.72	41.39	11.016	|I O |	|	|	|	5.67
20.083	14.52	40.62	10.835	|I O |	|	|	|	5.59
20.167	14.32	39.87	10.657	|I O |	|	|	|	5.51
20.250	14.13	39.14	10.483	|I O |	|	|	|	5.43
20.333	13.94	38.42	10.312	|I O |	|	|	|	5.35
20.417	13.76	37.71	10.146	|I O |	|	|	|	5.28
20.500	13.59	37.03	9.982	|I O |	|	|	|	5.21
20.583	13.42	36.35	9.823	|I O |	|	|	|	5.13
20.667	13.26	35.69	9.667	|I O |	|	|	|	5.06
20.750	13.10	35.03	9.514	|I O |	|	|	|	5.00
20.833	12.95	34.00	9.366	|I O |	|	|	|	4.93
20.917	12.80	33.02	9.224	|IO |	|	|	|	4.86
21.000	12.65	32.08	9.087	|IO |	|	|	|	4.79
21.083	12.51	31.18	8.956	|IO |	|	|	|	4.73
21.167	12.38	30.31	8.830	|IO |	|	|	|	4.67
21.250	12.25	29.47	8.709	|IO |	|	|	|	4.62
21.333	12.12	28.67	8.593	|IO |	|	|	|	4.56
21.417	11.99	27.90	8.481	|IO |	|	|	|	4.51
21.500	11.87	27.16	8.373	|IO |	|	|	|	4.46
21.583	11.75	26.44	8.270	|IO |	|	|	|	4.41
21.667	11.64	25.76	8.171	|IO |	|	|	|	4.36
21.750	11.52	25.10	8.076	|IO |	|	|	|	4.32
21.833	11.41	24.47	7.984	|IO |	|	|	|	4.28
21.917	11.31	23.86	7.896	|IO |	|	|	|	4.23
22.000	11.20	23.28	7.811	I O |	|	|	|	4.19
22.083	11.10	22.71	7.729	I O |	|	|	|	4.16
22.167	11.00	22.17	7.651	IO |	|	|	|	4.12
22.250	10.90	21.65	7.575	IO |	|	|	|	4.08
22.333	10.81	21.15	7.503	IO |	|	|	|	4.05
22.417	10.71	20.67	7.433	IO |	|	|	|	4.02
22.500	10.62	20.23	7.366	IO |	|	|	|	3.98
22.583	10.53	19.82	7.300	IO |	|	|	|	3.95
22.667	10.45	19.43	7.238	IO |	|	|	|	3.92
22.750	10.36	19.05	7.177	IO |	|	|	|	3.89
22.833	10.28	18.69	7.118	IO |	|	|	|	3.86
22.917	10.20	18.33	7.061	IO |	|	|	|	3.83
23.000	10.12	17.99	7.006	IO |	|	|	|	3.80

23.083	10.04	17.66	6.952	IO	|	|	|	|	3.78
23.167	9.96	17.34	6.901	IO	|	|	|	|	3.75
23.250	9.89	17.03	6.851	IO	|	|	|	|	3.73
23.333	9.81	16.72	6.802	IO	|	|	|	|	3.70
23.417	9.74	16.43	6.756	IO	|	|	|	|	3.68
23.500	9.67	16.15	6.710	IO	|	|	|	|	3.66
23.583	9.60	15.88	6.666	IO	|	|	|	|	3.64
23.667	9.53	15.61	6.624	IO	|	|	|	|	3.61
23.750	9.46	15.36	6.582	IO	|	|	|	|	3.59
23.833	9.40	15.11	6.542	IO	|	|	|	|	3.57
23.917	9.33	14.87	6.504	IO	|	|	|	|	3.55
24.000	9.27	14.63	6.466	IO	|	|	|	|	3.54
24.083	8.88	14.40	6.429	IO	|	|	|	|	3.52
24.167	7.54	14.14	6.387	IO	|	|	|	|	3.50
24.250	4.23	13.80	6.331	IO	|	|	|	|	3.47
24.333	2.54	13.36	6.261	IO	|	|	|	|	3.43
24.417	1.68	12.89	6.185	IO	|	|	|	|	3.40
24.500	1.12	12.41	6.108	IO	|	|	|	|	3.36
24.583	0.72	11.92	6.030	IO	|	|	|	|	3.32
24.667	0.45	11.45	5.954	IO	|	|	|	|	3.28
24.750	0.27	10.98	5.879	O	|	|	|	|	3.24
24.833	0.18	10.53	5.807	O	|	|	|	|	3.21
24.917	0.13	10.10	5.737	O	|	|	|	|	3.17
25.000	0.09	9.68	5.669	O	|	|	|	|	3.14
25.083	0.06	9.28	5.605	O	|	|	|	|	3.11
25.167	0.03	8.89	5.542	O	|	|	|	|	3.08
25.250	0.01	8.52	5.483	O	|	|	|	|	3.05
25.333	0.00	8.16	5.425	O	|	|	|	|	3.02
25.417	0.00	7.90	5.370	O	|	|	|	|	2.99
25.500	0.00	7.81	5.316	O	|	|	|	|	2.96
25.583	0.00	7.72	5.262	O	|	|	|	|	2.93
25.667	0.00	7.63	5.209	O	|	|	|	|	2.91
25.750	0.00	7.54	5.157	O	|	|	|	|	2.88
25.833	0.00	7.46	5.105	O	|	|	|	|	2.85
25.917	0.00	7.37	5.054	O	|	|	|	|	2.82
26.000	0.00	7.29	5.004	O	|	|	|	|	2.80
26.083	0.00	7.21	4.954	O	|	|	|	|	2.77
26.167	0.00	7.12	4.905	O	|	|	|	|	2.75
26.250	0.00	7.04	4.856	O	|	|	|	|	2.72
26.333	0.00	6.96	4.808	O	|	|	|	|	2.69
26.417	0.00	6.88	4.760	O	|	|	|	|	2.67
26.500	0.00	6.80	4.713	O	|	|	|	|	2.64
26.583	0.00	6.72	4.666	O	|	|	|	|	2.62
26.667	0.00	6.65	4.620	O	|	|	|	|	2.60
26.750	0.00	6.57	4.575	O	|	|	|	|	2.57
26.833	0.00	6.50	4.530	O	|	|	|	|	2.55
26.917	0.00	6.42	4.485	O	|	|	|	|	2.52
27.000	0.00	6.35	4.441	O	|	|	|	|	2.50
27.083	0.00	6.28	4.398	O	|	|	|	|	2.48
27.167	0.00	6.20	4.355	O	|	|	|	|	2.46
27.250	0.00	6.13	4.312	O	|	|	|	|	2.43
27.333	0.00	6.06	4.270	O	|	|	|	|	2.41
27.417	0.00	5.99	4.229	O	|	|	|	|	2.39
27.500	0.00	5.93	4.188	O	|	|	|	|	2.37
27.583	0.00	5.86	4.147	O	|	|	|	|	2.35
27.667	0.00	5.79	4.107	O	|	|	|	|	2.33
27.750	0.00	5.72	4.067	O	|	|	|	|	2.30
27.833	0.00	5.66	4.028	O	|	|	|	|	2.28
27.917	0.00	5.59	3.989	O	|	|	|	|	2.26
28.000	0.00	5.53	3.951	O	|	|	|	|	2.24
28.083	0.00	5.47	3.913	O	|	|	|	|	2.22
28.167	0.00	5.40	3.876	O	|	|	|	|	2.20
28.250	0.00	5.34	3.839	O	|	|	|	|	2.18
28.333	0.00	5.28	3.802	O	|	|	|	|	2.17
28.417	0.00	5.22	3.766	O	|	|	|	|	2.15
28.500	0.00	5.16	3.730	O	|	|	|	|	2.13
28.583	0.00	5.10	3.695	O	|	|	|	|	2.11
28.667	0.00	5.04	3.660	O	|	|	|	|	2.09
28.750	0.00	4.99	3.626	O	|	|	|	|	2.07
28.833	0.00	4.93	3.591	O	|	|	|	|	2.05
28.917	0.00	4.87	3.558	O	|	|	|	|	2.04

29.000	0.00	4.82	3.524	O					2.02
29.083	0.00	4.76	3.491	O					2.00
29.167	0.00	4.70	3.459	O					1.98
29.250	0.00	4.64	3.426	O					1.97
29.333	0.00	4.58	3.395	O					1.95
29.417	0.00	4.52	3.363	O					1.93
29.500	0.00	4.47	3.332	O					1.91
29.583	0.00	4.41	3.302	O					1.90
29.667	0.00	4.35	3.272	O					1.88
29.750	0.00	4.30	3.242	O					1.86
29.833	0.00	4.24	3.212	O					1.85
29.917	0.00	4.19	3.183	O					1.83
30.000	0.00	4.14	3.155	O					1.82
30.083	0.00	4.08	3.126	O					1.80
30.167	0.00	4.03	3.098	O					1.79
30.250	0.00	3.98	3.071	O					1.77
30.333	0.00	3.93	3.044	O					1.76
30.417	0.00	3.88	3.017	O					1.74
30.500	0.00	3.83	2.990	O					1.73
30.583	0.00	3.78	2.964	O					1.71
30.667	0.00	3.73	2.938	O					1.70
30.750	0.00	3.68	2.913	O					1.68
30.833	0.00	3.64	2.887	O					1.67
30.917	0.00	3.59	2.863	O					1.66
31.000	0.00	3.55	2.838	O					1.64
31.083	0.00	3.50	2.814	O					1.63
31.167	0.00	3.46	2.790	O					1.62
31.250	0.00	3.41	2.766	O					1.60
31.333	0.00	3.37	2.743	O					1.59
31.417	0.00	3.32	2.720	O					1.58
31.500	0.00	3.28	2.697	O					1.57
31.583	0.00	3.24	2.674	O					1.55
31.667	0.00	3.20	2.652	O					1.54
31.750	0.00	3.16	2.630	O					1.53
31.833	0.00	3.12	2.609	O					1.52
31.917	0.00	3.08	2.587	O					1.51
32.000	0.00	3.04	2.566	O					1.49
32.083	0.00	3.01	2.546	O					1.48
32.167	0.00	2.98	2.525	O					1.47
32.250	0.00	2.95	2.505	O					1.46
32.333	0.00	2.91	2.484	O					1.45
32.417	0.00	2.88	2.464	O					1.44
32.500	0.00	2.85	2.445	O					1.43
32.583	0.00	2.82	2.425	O					1.41
32.667	0.00	2.79	2.406	O					1.40
32.750	0.00	2.76	2.387	O					1.39
32.833	0.00	2.73	2.368	O					1.38
32.917	0.00	2.70	2.349	O					1.37
33.000	0.00	2.67	2.331	O					1.36
33.083	0.00	2.64	2.312	O					1.35
33.167	0.00	2.62	2.294	O					1.34
33.250	0.00	2.59	2.276	O					1.33
33.333	0.00	2.56	2.259	O					1.32
33.417	0.00	2.53	2.241	O					1.31
33.500	0.00	2.50	2.224	O					1.30
33.583	0.00	2.48	2.206	O					1.29
33.667	0.00	2.45	2.190	O					1.28
33.750	0.00	2.42	2.173	O					1.27
33.833	0.00	2.40	2.156	O					1.26
33.917	0.00	2.37	2.140	O					1.25
34.000	0.00	2.35	2.123	O					1.24
34.083	0.00	2.32	2.107	O					1.23
34.167	0.00	2.30	2.091	O					1.23
34.250	0.00	2.27	2.076	O					1.22
34.333	0.00	2.25	2.060	O					1.21
34.417	0.00	2.22	2.045	O					1.20
34.500	0.00	2.20	2.030	O					1.19
34.583	0.00	2.18	2.014	O					1.18
34.667	0.00	2.15	2.000	O					1.17
34.750	0.00	2.13	1.985	O					1.17
34.833	0.00	2.11	1.970	O					1.16

34.917	0.00	2.08	1.956	O	|	|	|	|	1.15
35.000	0.00	2.06	1.941	O	|	|	|	|	1.14
35.083	0.00	2.04	1.927	O	|	|	|	|	1.13
35.167	0.00	2.02	1.913	O	|	|	|	|	1.12
35.250	0.00	2.00	1.900	O	|	|	|	|	1.12
35.333	0.00	1.97	1.886	O	|	|	|	|	1.11
35.417	0.00	1.95	1.872	O	|	|	|	|	1.10
35.500	0.00	1.93	1.859	O	|	|	|	|	1.09
35.583	0.00	1.91	1.846	O	|	|	|	|	1.09
35.667	0.00	1.89	1.833	O	|	|	|	|	1.08
35.750	0.00	1.87	1.820	O	|	|	|	|	1.07
35.833	0.00	1.85	1.807	O	|	|	|	|	1.06
35.917	0.00	1.83	1.794	O	|	|	|	|	1.06
36.000	0.00	1.81	1.782	O	|	|	|	|	1.05
36.083	0.00	1.79	1.769	O	|	|	|	|	1.04
36.167	0.00	1.77	1.757	O	|	|	|	|	1.04
36.250	0.00	1.75	1.745	O	|	|	|	|	1.03
36.333	0.00	1.73	1.733	O	|	|	|	|	1.02
36.417	0.00	1.72	1.721	O	|	|	|	|	1.02
36.500	0.00	1.70	1.709	O	|	|	|	|	1.01
36.583	0.00	1.68	1.698	O	|	|	|	|	1.00
36.667	0.00	1.66	1.686	O	|	|	|	|	1.00
36.750	0.00	1.65	1.675	O	|	|	|	|	0.99
36.833	0.00	1.64	1.663	O	|	|	|	|	0.98
36.917	0.00	1.63	1.652	O	|	|	|	|	0.98
37.000	0.00	1.61	1.641	O	|	|	|	|	0.97
37.083	0.00	1.60	1.630	O	|	|	|	|	0.96
37.167	0.00	1.59	1.619	O	|	|	|	|	0.96
37.250	0.00	1.58	1.608	O	|	|	|	|	0.95
37.333	0.00	1.56	1.597	O	|	|	|	|	0.94
37.417	0.00	1.55	1.586	O	|	|	|	|	0.94
37.500	0.00	1.54	1.576	O	|	|	|	|	0.93
37.583	0.00	1.53	1.565	O	|	|	|	|	0.93
37.667	0.00	1.51	1.555	O	|	|	|	|	0.92
37.750	0.00	1.50	1.544	O	|	|	|	|	0.91
37.833	0.00	1.49	1.534	O	|	|	|	|	0.91
37.917	0.00	1.48	1.524	O	|	|	|	|	0.90
38.000	0.00	1.47	1.514	O	|	|	|	|	0.90
38.083	0.00	1.46	1.504	O	|	|	|	|	0.89
38.167	0.00	1.44	1.494	O	|	|	|	|	0.88
38.250	0.00	1.43	1.484	O	|	|	|	|	0.88
38.333	0.00	1.42	1.474	O	|	|	|	|	0.87
38.417	0.00	1.41	1.464	O	|	|	|	|	0.87
38.500	0.00	1.40	1.455	O	|	|	|	|	0.86
38.583	0.00	1.39	1.445	O	|	|	|	|	0.86
38.667	0.00	1.38	1.435	O	|	|	|	|	0.85
38.750	0.00	1.37	1.426	O	|	|	|	|	0.84
38.833	0.00	1.36	1.417	O	|	|	|	|	0.84
38.917	0.00	1.35	1.407	O	|	|	|	|	0.83
39.000	0.00	1.34	1.398	O	|	|	|	|	0.83
39.083	0.00	1.32	1.389	O	|	|	|	|	0.82
39.167	0.00	1.31	1.380	O	|	|	|	|	0.82
39.250	0.00	1.30	1.371	O	|	|	|	|	0.81
39.333	0.00	1.29	1.362	O	|	|	|	|	0.81
39.417	0.00	1.28	1.353	O	|	|	|	|	0.80
39.500	0.00	1.27	1.344	O	|	|	|	|	0.80
39.583	0.00	1.26	1.335	O	|	|	|	|	0.79
39.667	0.00	1.25	1.327	O	|	|	|	|	0.79
39.750	0.00	1.24	1.318	O	|	|	|	|	0.78
39.833	0.00	1.23	1.310	O	|	|	|	|	0.78
39.917	0.00	1.22	1.301	O	|	|	|	|	0.77
40.000	0.00	1.22	1.293	O	|	|	|	|	0.77
40.083	0.00	1.21	1.284	O	|	|	|	|	0.76
40.167	0.00	1.20	1.276	O	|	|	|	|	0.76
40.250	0.00	1.19	1.268	O	|	|	|	|	0.75
40.333	0.00	1.18	1.260	O	|	|	|	|	0.75
40.417	0.00	1.17	1.252	O	|	|	|	|	0.74
40.500	0.00	1.16	1.244	O	|	|	|	|	0.74
40.583	0.00	1.15	1.236	O	|	|	|	|	0.73
40.667	0.00	1.14	1.228	O	|	|	|	|	0.73
40.750	0.00	1.13	1.220	O	|	|	|	|	0.72

40.833	0.00	1.12	1.212	O	|	|	|	|	0.72
40.917	0.00	1.11	1.204	O	|	|	|	|	0.72
41.000	0.00	1.11	1.197	O	|	|	|	|	0.71
41.083	0.00	1.10	1.189	O	|	|	|	|	0.71
41.167	0.00	1.09	1.182	O	|	|	|	|	0.70
41.250	0.00	1.08	1.174	O	|	|	|	|	0.70
41.333	0.00	1.07	1.167	O	|	|	|	|	0.69
41.417	0.00	1.06	1.159	O	|	|	|	|	0.69
41.500	0.00	1.06	1.152	O	|	|	|	|	0.69
41.583	0.00	1.05	1.145	O	|	|	|	|	0.68
41.667	0.00	1.04	1.138	O	|	|	|	|	0.68
41.750	0.00	1.03	1.131	O	|	|	|	|	0.67
41.833	0.00	1.02	1.124	O	|	|	|	|	0.67
41.917	0.00	1.01	1.117	O	|	|	|	|	0.66
42.000	0.00	1.01	1.110	O	|	|	|	|	0.66
42.083	0.00	1.00	1.103	O	|	|	|	|	0.66
42.167	0.00	0.99	1.096	O	|	|	|	|	0.65
42.250	0.00	0.98	1.089	O	|	|	|	|	0.65
42.333	0.00	0.98	1.082	O	|	|	|	|	0.64
42.417	0.00	0.97	1.076	O	|	|	|	|	0.64
42.500	0.00	0.96	1.069	O	|	|	|	|	0.64
42.583	0.00	0.95	1.062	O	|	|	|	|	0.63
42.667	0.00	0.95	1.056	O	|	|	|	|	0.63
42.750	0.00	0.94	1.049	O	|	|	|	|	0.63
42.833	0.00	0.93	1.043	O	|	|	|	|	0.62
42.917	0.00	0.92	1.037	O	|	|	|	|	0.62
43.000	0.00	0.92	1.030	O	|	|	|	|	0.61
43.083	0.00	0.91	1.024	O	|	|	|	|	0.61
43.167	0.00	0.90	1.018	O	|	|	|	|	0.61
43.250	0.00	0.89	1.012	O	|	|	|	|	0.60
43.333	0.00	0.89	1.005	O	|	|	|	|	0.60
43.417	0.00	0.88	0.999	O	|	|	|	|	0.60
43.500	0.00	0.87	0.993	O	|	|	|	|	0.59
43.583	0.00	0.87	0.987	O	|	|	|	|	0.59
43.667	0.00	0.86	0.981	O	|	|	|	|	0.59
43.750	0.00	0.85	0.975	O	|	|	|	|	0.58
43.833	0.00	0.85	0.970	O	|	|	|	|	0.58
43.917	0.00	0.84	0.964	O	|	|	|	|	0.58
44.000	0.00	0.83	0.958	O	|	|	|	|	0.57
44.083	0.00	0.83	0.952	O	|	|	|	|	0.57
44.167	0.00	0.82	0.947	O	|	|	|	|	0.57
44.250	0.00	0.81	0.941	O	|	|	|	|	0.56
44.333	0.00	0.81	0.935	O	|	|	|	|	0.56
44.417	0.00	0.80	0.930	O	|	|	|	|	0.56
44.500	0.00	0.80	0.924	O	|	|	|	|	0.55
44.583	0.00	0.79	0.919	O	|	|	|	|	0.55
44.667	0.00	0.78	0.913	O	|	|	|	|	0.55
44.750	0.00	0.78	0.908	O	|	|	|	|	0.54
44.833	0.00	0.77	0.903	O	|	|	|	|	0.54
44.917	0.00	0.76	0.898	O	|	|	|	|	0.54
45.000	0.00	0.76	0.892	O	|	|	|	|	0.53
45.083	0.00	0.75	0.887	O	|	|	|	|	0.53
45.167	0.00	0.75	0.882	O	|	|	|	|	0.53
45.250	0.00	0.74	0.877	O	|	|	|	|	0.52
45.333	0.00	0.74	0.872	O	|	|	|	|	0.52
45.417	0.00	0.73	0.867	O	|	|	|	|	0.52
45.500	0.00	0.72	0.862	O	|	|	|	|	0.52
45.583	0.00	0.72	0.857	O	|	|	|	|	0.51
45.667	0.00	0.71	0.852	O	|	|	|	|	0.51
45.750	0.00	0.71	0.847	O	|	|	|	|	0.51
45.833	0.00	0.70	0.842	O	|	|	|	|	0.50
45.917	0.00	0.70	0.837	O	|	|	|	|	0.50
46.000	0.00	0.69	0.832	O	|	|	|	|	0.50
46.083	0.00	0.69	0.828	O	|	|	|	|	0.50
46.167	0.00	0.68	0.823	O	|	|	|	|	0.49
46.250	0.00	0.68	0.818	O	|	|	|	|	0.49
46.333	0.00	0.68	0.814	O	|	|	|	|	0.49
46.417	0.00	0.67	0.809	O	|	|	|	|	0.49
46.500	0.00	0.67	0.804	O	|	|	|	|	0.48
46.583	0.00	0.66	0.800	O	|	|	|	|	0.48
46.667	0.00	0.66	0.795	O	|	|	|	|	0.48

46.750	0.00	0.66	0.791	O	|	|	|	|	0.47
46.833	0.00	0.65	0.786	O	|	|	|	|	0.47
46.917	0.00	0.65	0.782	O	|	|	|	|	0.47
47.000	0.00	0.64	0.777	O	|	|	|	|	0.47
47.083	0.00	0.64	0.773	O	|	|	|	|	0.46
47.167	0.00	0.64	0.768	O	|	|	|	|	0.46
47.250	0.00	0.63	0.764	O	|	|	|	|	0.46
47.333	0.00	0.63	0.760	O	|	|	|	|	0.46
47.417	0.00	0.63	0.755	O	|	|	|	|	0.45
47.500	0.00	0.62	0.751	O	|	|	|	|	0.45
47.583	0.00	0.62	0.747	O	|	|	|	|	0.45
47.667	0.00	0.62	0.743	O	|	|	|	|	0.45
47.750	0.00	0.61	0.738	O	|	|	|	|	0.44
47.833	0.00	0.61	0.734	O	|	|	|	|	0.44
47.917	0.00	0.61	0.730	O	|	|	|	|	0.44
48.000	0.00	0.60	0.726	O	|	|	|	|	0.44
48.083	0.00	0.60	0.722	O	|	|	|	|	0.43
48.167	0.00	0.60	0.718	O	|	|	|	|	0.43
48.250	0.00	0.59	0.713	O	|	|	|	|	0.43
48.333	0.00	0.59	0.709	O	|	|	|	|	0.43
48.417	0.00	0.59	0.705	O	|	|	|	|	0.42
48.500	0.00	0.58	0.701	O	|	|	|	|	0.42
48.583	0.00	0.58	0.697	O	|	|	|	|	0.42
48.667	0.00	0.58	0.693	O	|	|	|	|	0.42
48.750	0.00	0.57	0.689	O	|	|	|	|	0.41
48.833	0.00	0.57	0.685	O	|	|	|	|	0.41
48.917	0.00	0.57	0.682	O	|	|	|	|	0.41
49.000	0.00	0.56	0.678	O	|	|	|	|	0.41
49.083	0.00	0.56	0.674	O	|	|	|	|	0.40
49.167	0.00	0.56	0.670	O	|	|	|	|	0.40
49.250	0.00	0.55	0.666	O	|	|	|	|	0.40
49.333	0.00	0.55	0.662	O	|	|	|	|	0.40
49.417	0.00	0.55	0.659	O	|	|	|	|	0.39
49.500	0.00	0.54	0.655	O	|	|	|	|	0.39
49.583	0.00	0.54	0.651	O	|	|	|	|	0.39
49.667	0.00	0.54	0.647	O	|	|	|	|	0.39
49.750	0.00	0.53	0.644	O	|	|	|	|	0.39
49.833	0.00	0.53	0.640	O	|	|	|	|	0.38
49.917	0.00	0.53	0.636	O	|	|	|	|	0.38
50.000	0.00	0.53	0.633	O	|	|	|	|	0.38
50.083	0.00	0.52	0.629	O	|	|	|	|	0.38
50.167	0.00	0.52	0.626	O	|	|	|	|	0.38
50.250	0.00	0.52	0.622	O	|	|	|	|	0.37
50.333	0.00	0.51	0.618	O	|	|	|	|	0.37
50.417	0.00	0.51	0.615	O	|	|	|	|	0.37
50.500	0.00	0.51	0.611	O	|	|	|	|	0.37
50.583	0.00	0.50	0.608	O	|	|	|	|	0.36
50.667	0.00	0.50	0.604	O	|	|	|	|	0.36
50.750	0.00	0.50	0.601	O	|	|	|	|	0.36
50.833	0.00	0.50	0.598	O	|	|	|	|	0.36
50.917	0.00	0.49	0.594	O	|	|	|	|	0.36
51.000	0.00	0.49	0.591	O	|	|	|	|	0.35
51.083	0.00	0.49	0.587	O	|	|	|	|	0.35
51.167	0.00	0.48	0.584	O	|	|	|	|	0.35
51.250	0.00	0.48	0.581	O	|	|	|	|	0.35
51.333	0.00	0.48	0.577	O	|	|	|	|	0.35
51.417	0.00	0.48	0.574	O	|	|	|	|	0.34
51.500	0.00	0.47	0.571	O	|	|	|	|	0.34
51.583	0.00	0.47	0.568	O	|	|	|	|	0.34
51.667	0.00	0.47	0.564	O	|	|	|	|	0.34
51.750	0.00	0.47	0.561	O	|	|	|	|	0.34
51.833	0.00	0.46	0.558	O	|	|	|	|	0.33
51.917	0.00	0.46	0.555	O	|	|	|	|	0.33
52.000	0.00	0.46	0.552	O	|	|	|	|	0.33
52.083	0.00	0.46	0.549	O	|	|	|	|	0.33
52.167	0.00	0.45	0.545	O	|	|	|	|	0.33
52.250	0.00	0.45	0.542	O	|	|	|	|	0.33
52.333	0.00	0.45	0.539	O	|	|	|	|	0.32
52.417	0.00	0.44	0.536	O	|	|	|	|	0.32
52.500	0.00	0.44	0.533	O	|	|	|	|	0.32
52.583	0.00	0.44	0.530	O	|	|	|	|	0.32

52.667	0.00	0.44	0.527	O	|	|	|	|	0.32
52.750	0.00	0.43	0.524	O	|	|	|	|	0.31
52.833	0.00	0.43	0.521	O	|	|	|	|	0.31
52.917	0.00	0.43	0.518	O	|	|	|	|	0.31
53.000	0.00	0.43	0.515	O	|	|	|	|	0.31
53.083	0.00	0.42	0.512	O	|	|	|	|	0.31
53.167	0.00	0.42	0.509	O	|	|	|	|	0.31
53.250	0.00	0.42	0.506	O	|	|	|	|	0.30
53.333	0.00	0.42	0.503	O	|	|	|	|	0.30
53.417	0.00	0.42	0.501	O	|	|	|	|	0.30
53.500	0.00	0.41	0.498	O	|	|	|	|	0.30
53.583	0.00	0.41	0.495	O	|	|	|	|	0.30
53.667	0.00	0.41	0.492	O	|	|	|	|	0.30
53.750	0.00	0.41	0.489	O	|	|	|	|	0.29
53.833	0.00	0.40	0.486	O	|	|	|	|	0.29
53.917	0.00	0.40	0.484	O	|	|	|	|	0.29
54.000	0.00	0.40	0.481	O	|	|	|	|	0.29
54.083	0.00	0.40	0.478	O	|	|	|	|	0.29
54.167	0.00	0.39	0.475	O	|	|	|	|	0.29
54.250	0.00	0.39	0.473	O	|	|	|	|	0.28
54.333	0.00	0.39	0.470	O	|	|	|	|	0.28
54.417	0.00	0.39	0.467	O	|	|	|	|	0.28
54.500	0.00	0.39	0.465	O	|	|	|	|	0.28
54.583	0.00	0.38	0.462	O	|	|	|	|	0.28
54.667	0.00	0.38	0.459	O	|	|	|	|	0.28
54.750	0.00	0.38	0.457	O	|	|	|	|	0.27
54.833	0.00	0.38	0.454	O	|	|	|	|	0.27
54.917	0.00	0.37	0.452	O	|	|	|	|	0.27
55.000	0.00	0.37	0.449	O	|	|	|	|	0.27
55.083	0.00	0.37	0.447	O	|	|	|	|	0.27
55.167	0.00	0.37	0.444	O	|	|	|	|	0.27
55.250	0.00	0.37	0.441	O	|	|	|	|	0.26
55.333	0.00	0.36	0.439	O	|	|	|	|	0.26
55.417	0.00	0.36	0.436	O	|	|	|	|	0.26
55.500	0.00	0.36	0.434	O	|	|	|	|	0.26
55.583	0.00	0.36	0.431	O	|	|	|	|	0.26
55.667	0.00	0.36	0.429	O	|	|	|	|	0.26
55.750	0.00	0.35	0.427	O	|	|	|	|	0.26
55.833	0.00	0.35	0.424	O	|	|	|	|	0.25
55.917	0.00	0.35	0.422	O	|	|	|	|	0.25
56.000	0.00	0.35	0.419	O	|	|	|	|	0.25
56.083	0.00	0.35	0.417	O	|	|	|	|	0.25
56.167	0.00	0.34	0.415	O	|	|	|	|	0.25
56.250	0.00	0.34	0.412	O	|	|	|	|	0.25
56.333	0.00	0.34	0.410	O	|	|	|	|	0.25
56.417	0.00	0.34	0.408	O	|	|	|	|	0.24
56.500	0.00	0.34	0.405	O	|	|	|	|	0.24
56.583	0.00	0.33	0.403	O	|	|	|	|	0.24
56.667	0.00	0.33	0.401	O	|	|	|	|	0.24
56.750	0.00	0.33	0.398	O	|	|	|	|	0.24
56.833	0.00	0.33	0.396	O	|	|	|	|	0.24
56.917	0.00	0.33	0.394	O	|	|	|	|	0.24
57.000	0.00	0.32	0.392	O	|	|	|	|	0.23
57.083	0.00	0.32	0.389	O	|	|	|	|	0.23
57.167	0.00	0.32	0.387	O	|	|	|	|	0.23
57.250	0.00	0.32	0.385	O	|	|	|	|	0.23
57.333	0.00	0.32	0.383	O	|	|	|	|	0.23
57.417	0.00	0.32	0.380	O	|	|	|	|	0.23
57.500	0.00	0.31	0.378	O	|	|	|	|	0.23
57.583	0.00	0.31	0.376	O	|	|	|	|	0.23
57.667	0.00	0.31	0.374	O	|	|	|	|	0.22
57.750	0.00	0.31	0.372	O	|	|	|	|	0.22
57.833	0.00	0.31	0.370	O	|	|	|	|	0.22
57.917	0.00	0.31	0.368	O	|	|	|	|	0.22
58.000	0.00	0.30	0.366	O	|	|	|	|	0.22
58.083	0.00	0.30	0.363	O	|	|	|	|	0.22
58.167	0.00	0.30	0.361	O	|	|	|	|	0.22
58.250	0.00	0.30	0.359	O	|	|	|	|	0.22
58.333	0.00	0.30	0.357	O	|	|	|	|	0.21
58.417	0.00	0.29	0.355	O	|	|	|	|	0.21
58.500	0.00	0.29	0.353	O	|	|	|	|	0.21

58.583	0.00	0.29	0.351	O	|	|	|	|	0.21
58.667	0.00	0.29	0.349	O	|	|	|	|	0.21
58.750	0.00	0.29	0.347	O	|	|	|	|	0.21
58.833	0.00	0.29	0.345	O	|	|	|	|	0.21
58.917	0.00	0.28	0.343	O	|	|	|	|	0.21
59.000	0.00	0.28	0.341	O	|	|	|	|	0.20
59.083	0.00	0.28	0.339	O	|	|	|	|	0.20
59.167	0.00	0.28	0.337	O	|	|	|	|	0.20
59.250	0.00	0.28	0.336	O	|	|	|	|	0.20
59.333	0.00	0.28	0.334	O	|	|	|	|	0.20
59.417	0.00	0.28	0.332	O	|	|	|	|	0.20
59.500	0.00	0.27	0.330	O	|	|	|	|	0.20
59.583	0.00	0.27	0.328	O	|	|	|	|	0.20
59.667	0.00	0.27	0.326	O	|	|	|	|	0.20
59.750	0.00	0.27	0.324	O	|	|	|	|	0.19
59.833	0.00	0.27	0.322	O	|	|	|	|	0.19
59.917	0.00	0.27	0.321	O	|	|	|	|	0.19
60.000	0.00	0.26	0.319	O	|	|	|	|	0.19
60.083	0.00	0.26	0.317	O	|	|	|	|	0.19
60.167	0.00	0.26	0.315	O	|	|	|	|	0.19
60.250	0.00	0.26	0.313	O	|	|	|	|	0.19
60.333	0.00	0.26	0.312	O	|	|	|	|	0.19
60.417	0.00	0.26	0.310	O	|	|	|	|	0.19
60.500	0.00	0.26	0.308	O	|	|	|	|	0.18
60.583	0.00	0.25	0.306	O	|	|	|	|	0.18
60.667	0.00	0.25	0.304	O	|	|	|	|	0.18
60.750	0.00	0.25	0.303	O	|	|	|	|	0.18
60.833	0.00	0.25	0.301	O	|	|	|	|	0.18
60.917	0.00	0.25	0.299	O	|	|	|	|	0.18
61.000	0.00	0.25	0.298	O	|	|	|	|	0.18
61.083	0.00	0.25	0.296	O	|	|	|	|	0.18
61.167	0.00	0.24	0.294	O	|	|	|	|	0.18
61.250	0.00	0.24	0.293	O	|	|	|	|	0.18
61.333	0.00	0.24	0.291	O	|	|	|	|	0.17
61.417	0.00	0.24	0.289	O	|	|	|	|	0.17
61.500	0.00	0.24	0.288	O	|	|	|	|	0.17
61.583	0.00	0.24	0.286	O	|	|	|	|	0.17
61.667	0.00	0.24	0.284	O	|	|	|	|	0.17
61.750	0.00	0.23	0.283	O	|	|	|	|	0.17
61.833	0.00	0.23	0.281	O	|	|	|	|	0.17
61.917	0.00	0.23	0.279	O	|	|	|	|	0.17
62.000	0.00	0.23	0.278	O	|	|	|	|	0.17
62.083	0.00	0.23	0.276	O	|	|	|	|	0.17
62.167	0.00	0.23	0.275	O	|	|	|	|	0.16
62.250	0.00	0.23	0.273	O	|	|	|	|	0.16
62.333	0.00	0.23	0.272	O	|	|	|	|	0.16
62.417	0.00	0.22	0.270	O	|	|	|	|	0.16
62.500	0.00	0.22	0.269	O	|	|	|	|	0.16
62.583	0.00	0.22	0.267	O	|	|	|	|	0.16
62.667	0.00	0.22	0.265	O	|	|	|	|	0.16
62.750	0.00	0.22	0.264	O	|	|	|	|	0.16
62.833	0.00	0.22	0.262	O	|	|	|	|	0.16
62.917	0.00	0.22	0.261	O	|	|	|	|	0.16
63.000	0.00	0.22	0.259	O	|	|	|	|	0.16
63.083	0.00	0.21	0.258	O	|	|	|	|	0.15
63.167	0.00	0.21	0.257	O	|	|	|	|	0.15
63.250	0.00	0.21	0.255	O	|	|	|	|	0.15
63.333	0.00	0.21	0.254	O	|	|	|	|	0.15
63.417	0.00	0.21	0.252	O	|	|	|	|	0.15
63.500	0.00	0.21	0.251	O	|	|	|	|	0.15
63.583	0.00	0.21	0.249	O	|	|	|	|	0.15
63.667	0.00	0.21	0.248	O	|	|	|	|	0.15
63.750	0.00	0.20	0.246	O	|	|	|	|	0.15
63.833	0.00	0.20	0.245	O	|	|	|	|	0.15
63.917	0.00	0.20	0.244	O	|	|	|	|	0.15
64.000	0.00	0.20	0.242	O	|	|	|	|	0.15
64.083	0.00	0.20	0.241	O	|	|	|	|	0.14
64.167	0.00	0.20	0.240	O	|	|	|	|	0.14
64.250	0.00	0.20	0.238	O	|	|	|	|	0.14
64.333	0.00	0.20	0.237	O	|	|	|	|	0.14
64.417	0.00	0.20	0.235	O	|	|	|	|	0.14

64.500	0.00	0.19	0.234	O	|	|	|	|	0.14
64.583	0.00	0.19	0.233	O	|	|	|	|	0.14
64.667	0.00	0.19	0.231	O	|	|	|	|	0.14
64.750	0.00	0.19	0.230	O	|	|	|	|	0.14
64.833	0.00	0.19	0.229	O	|	|	|	|	0.14
64.917	0.00	0.19	0.228	O	|	|	|	|	0.14
65.000	0.00	0.19	0.226	O	|	|	|	|	0.14
65.083	0.00	0.19	0.225	O	|	|	|	|	0.13
65.167	0.00	0.19	0.224	O	|	|	|	|	0.13
65.250	0.00	0.18	0.222	O	|	|	|	|	0.13
65.333	0.00	0.18	0.221	O	|	|	|	|	0.13
65.417	0.00	0.18	0.220	O	|	|	|	|	0.13
65.500	0.00	0.18	0.219	O	|	|	|	|	0.13
65.583	0.00	0.18	0.217	O	|	|	|	|	0.13
65.667	0.00	0.18	0.216	O	|	|	|	|	0.13
65.750	0.00	0.18	0.215	O	|	|	|	|	0.13
65.833	0.00	0.18	0.214	O	|	|	|	|	0.13
65.917	0.00	0.18	0.212	O	|	|	|	|	0.13
66.000	0.00	0.18	0.211	O	|	|	|	|	0.13
66.083	0.00	0.17	0.210	O	|	|	|	|	0.13
66.167	0.00	0.17	0.209	O	|	|	|	|	0.13
66.250	0.00	0.17	0.208	O	|	|	|	|	0.12
66.333	0.00	0.17	0.206	O	|	|	|	|	0.12
66.417	0.00	0.17	0.205	O	|	|	|	|	0.12
66.500	0.00	0.17	0.204	O	|	|	|	|	0.12
66.583	0.00	0.17	0.203	O	|	|	|	|	0.12
66.667	0.00	0.17	0.202	O	|	|	|	|	0.12
66.750	0.00	0.17	0.201	O	|	|	|	|	0.12
66.833	0.00	0.17	0.199	O	|	|	|	|	0.12
66.917	0.00	0.16	0.198	O	|	|	|	|	0.12
67.000	0.00	0.16	0.197	O	|	|	|	|	0.12
67.083	0.00	0.16	0.196	O	|	|	|	|	0.12
67.167	0.00	0.16	0.195	O	|	|	|	|	0.12
67.250	0.00	0.16	0.194	O	|	|	|	|	0.12
67.333	0.00	0.16	0.193	O	|	|	|	|	0.12
67.417	0.00	0.16	0.192	O	|	|	|	|	0.11
67.500	0.00	0.16	0.191	O	|	|	|	|	0.11
67.583	0.00	0.16	0.189	O	|	|	|	|	0.11
67.667	0.00	0.16	0.188	O	|	|	|	|	0.11
67.750	0.00	0.16	0.187	O	|	|	|	|	0.11
67.833	0.00	0.15	0.186	O	|	|	|	|	0.11
67.917	0.00	0.15	0.185	O	|	|	|	|	0.11
68.000	0.00	0.15	0.184	O	|	|	|	|	0.11
68.083	0.00	0.15	0.183	O	|	|	|	|	0.11
68.167	0.00	0.15	0.182	O	|	|	|	|	0.11
68.250	0.00	0.15	0.181	O	|	|	|	|	0.11
68.333	0.00	0.15	0.180	O	|	|	|	|	0.11
68.417	0.00	0.15	0.179	O	|	|	|	|	0.11
68.500	0.00	0.15	0.178	O	|	|	|	|	0.11
68.583	0.00	0.15	0.177	O	|	|	|	|	0.11
68.667	0.00	0.15	0.176	O	|	|	|	|	0.11
68.750	0.00	0.15	0.175	O	|	|	|	|	0.10
68.833	0.00	0.14	0.174	O	|	|	|	|	0.10
68.917	0.00	0.14	0.173	O	|	|	|	|	0.10
69.000	0.00	0.14	0.172	O	|	|	|	|	0.10
69.083	0.00	0.14	0.171	O	|	|	|	|	0.10
69.167	0.00	0.14	0.170	O	|	|	|	|	0.10
69.250	0.00	0.14	0.169	O	|	|	|	|	0.10
69.333	0.00	0.14	0.168	O	|	|	|	|	0.10
69.417	0.00	0.14	0.167	O	|	|	|	|	0.10
69.500	0.00	0.14	0.166	O	|	|	|	|	0.10
69.583	0.00	0.14	0.165	O	|	|	|	|	0.10
69.667	0.00	0.14	0.164	O	|	|	|	|	0.10
69.750	0.00	0.14	0.163	O	|	|	|	|	0.10
69.833	0.00	0.13	0.162	O	|	|	|	|	0.10
69.917	0.00	0.13	0.161	O	|	|	|	|	0.10
70.000	0.00	0.13	0.161	O	|	|	|	|	0.10
70.083	0.00	0.13	0.160	O	|	|	|	|	0.10
70.167	0.00	0.13	0.159	O	|	|	|	|	0.10
70.250	0.00	0.13	0.158	O	|	|	|	|	0.09
70.333	0.00	0.13	0.157	O	|	|	|	|	0.09

70.417	0.00	0.13	0.156	O	|	|	|	|	0.09
70.500	0.00	0.13	0.155	O	|	|	|	|	0.09
70.583	0.00	0.13	0.154	O	|	|	|	|	0.09
70.667	0.00	0.13	0.153	O	|	|	|	|	0.09
70.750	0.00	0.13	0.153	O	|	|	|	|	0.09
70.833	0.00	0.13	0.152	O	|	|	|	|	0.09
70.917	0.00	0.13	0.151	O	|	|	|	|	0.09
71.000	0.00	0.12	0.150	O	|	|	|	|	0.09
71.083	0.00	0.12	0.149	O	|	|	|	|	0.09
71.167	0.00	0.12	0.148	O	|	|	|	|	0.09
71.250	0.00	0.12	0.147	O	|	|	|	|	0.09
71.333	0.00	0.12	0.147	O	|	|	|	|	0.09
71.417	0.00	0.12	0.146	O	|	|	|	|	0.09
71.500	0.00	0.12	0.145	O	|	|	|	|	0.09
71.583	0.00	0.12	0.144	O	|	|	|	|	0.09
71.667	0.00	0.12	0.143	O	|	|	|	|	0.09
71.750	0.00	0.12	0.142	O	|	|	|	|	0.09
71.833	0.00	0.12	0.142	O	|	|	|	|	0.08
71.917	0.00	0.12	0.141	O	|	|	|	|	0.08
72.000	0.00	0.12	0.140	O	|	|	|	|	0.08
72.083	0.00	0.12	0.139	O	|	|	|	|	0.08
72.167	0.00	0.11	0.138	O	|	|	|	|	0.08
72.250	0.00	0.11	0.138	O	|	|	|	|	0.08
72.333	0.00	0.11	0.137	O	|	|	|	|	0.08
72.417	0.00	0.11	0.136	O	|	|	|	|	0.08
72.500	0.00	0.11	0.135	O	|	|	|	|	0.08
72.583	0.00	0.11	0.134	O	|	|	|	|	0.08
72.667	0.00	0.11	0.134	O	|	|	|	|	0.08
72.750	0.00	0.11	0.133	O	|	|	|	|	0.08
72.833	0.00	0.11	0.132	O	|	|	|	|	0.08
72.917	0.00	0.11	0.131	O	|	|	|	|	0.08
73.000	0.00	0.11	0.131	O	|	|	|	|	0.08
73.083	0.00	0.11	0.130	O	|	|	|	|	0.08
73.167	0.00	0.11	0.129	O	|	|	|	|	0.08
73.250	0.00	0.11	0.128	O	|	|	|	|	0.08
73.333	0.00	0.11	0.128	O	|	|	|	|	0.08
73.417	0.00	0.11	0.127	O	|	|	|	|	0.08
73.500	0.00	0.10	0.126	O	|	|	|	|	0.08
73.583	0.00	0.10	0.126	O	|	|	|	|	0.08
73.667	0.00	0.10	0.125	O	|	|	|	|	0.07
73.750	0.00	0.10	0.124	O	|	|	|	|	0.07
73.833	0.00	0.10	0.123	O	|	|	|	|	0.07
73.917	0.00	0.10	0.123	O	|	|	|	|	0.07
74.000	0.00	0.10	0.122	O	|	|	|	|	0.07
74.083	0.00	0.10	0.121	O	|	|	|	|	0.07
74.167	0.00	0.10	0.121	O	|	|	|	|	0.07
74.250	0.00	0.10	0.120	O	|	|	|	|	0.07
74.333	0.00	0.10	0.119	O	|	|	|	|	0.07
74.417	0.00	0.10	0.119	O	|	|	|	|	0.07
74.500	0.00	0.10	0.118	O	|	|	|	|	0.07
74.583	0.00	0.10	0.117	O	|	|	|	|	0.07
74.667	0.00	0.10	0.117	O	|	|	|	|	0.07
74.750	0.00	0.10	0.116	O	|	|	|	|	0.07
74.833	0.00	0.10	0.115	O	|	|	|	|	0.07
74.917	0.00	0.10	0.115	O	|	|	|	|	0.07
75.000	0.00	0.09	0.114	O	|	|	|	|	0.07
75.083	0.00	0.09	0.113	O	|	|	|	|	0.07
75.167	0.00	0.09	0.113	O	|	|	|	|	0.07
75.250	0.00	0.09	0.112	O	|	|	|	|	0.07
75.333	0.00	0.09	0.111	O	|	|	|	|	0.07
75.417	0.00	0.09	0.111	O	|	|	|	|	0.07
75.500	0.00	0.09	0.110	O	|	|	|	|	0.07
75.583	0.00	0.09	0.109	O	|	|	|	|	0.07
75.667	0.00	0.09	0.109	O	|	|	|	|	0.07
75.750	0.00	0.09	0.108	O	|	|	|	|	0.06
75.833	0.00	0.09	0.108	O	|	|	|	|	0.06
75.917	0.00	0.09	0.107	O	|	|	|	|	0.06
76.000	0.00	0.09	0.106	O	|	|	|	|	0.06
76.083	0.00	0.09	0.106	O	|	|	|	|	0.06
76.167	0.00	0.09	0.105	O	|	|	|	|	0.06
76.250	0.00	0.09	0.105	O	|	|	|	|	0.06

76.333	0.00	0.09	0.104	O	|	|	|	|	0.06
76.417	0.00	0.09	0.103	O	|	|	|	|	0.06
76.500	0.00	0.09	0.103	O	|	|	|	|	0.06
76.583	0.00	0.08	0.102	O	|	|	|	|	0.06
76.667	0.00	0.08	0.102	O	|	|	|	|	0.06
76.750	0.00	0.08	0.101	O	|	|	|	|	0.06
76.833	0.00	0.08	0.100	O	|	|	|	|	0.06
76.917	0.00	0.08	0.100	O	|	|	|	|	0.06
77.000	0.00	0.08	0.099	O	|	|	|	|	0.06
77.083	0.00	0.08	0.099	O	|	|	|	|	0.06
77.167	0.00	0.08	0.098	O	|	|	|	|	0.06
77.250	0.00	0.08	0.098	O	|	|	|	|	0.06
77.333	0.00	0.08	0.097	O	|	|	|	|	0.06
77.417	0.00	0.08	0.097	O	|	|	|	|	0.06
77.500	0.00	0.08	0.096	O	|	|	|	|	0.06
77.583	0.00	0.08	0.095	O	|	|	|	|	0.06
77.667	0.00	0.08	0.095	O	|	|	|	|	0.06
77.750	0.00	0.08	0.094	O	|	|	|	|	0.06
77.833	0.00	0.08	0.094	O	|	|	|	|	0.06
77.917	0.00	0.08	0.093	O	|	|	|	|	0.06
78.000	0.00	0.08	0.093	O	|	|	|	|	0.06
78.083	0.00	0.08	0.092	O	|	|	|	|	0.06
78.167	0.00	0.08	0.092	O	|	|	|	|	0.05
78.250	0.00	0.08	0.091	O	|	|	|	|	0.05
78.333	0.00	0.08	0.091	O	|	|	|	|	0.05
78.417	0.00	0.07	0.090	O	|	|	|	|	0.05
78.500	0.00	0.07	0.090	O	|	|	|	|	0.05
78.583	0.00	0.07	0.089	O	|	|	|	|	0.05
78.667	0.00	0.07	0.089	O	|	|	|	|	0.05
78.750	0.00	0.07	0.088	O	|	|	|	|	0.05
78.833	0.00	0.07	0.088	O	|	|	|	|	0.05
78.917	0.00	0.07	0.087	O	|	|	|	|	0.05
79.000	0.00	0.07	0.087	O	|	|	|	|	0.05
79.083	0.00	0.07	0.086	O	|	|	|	|	0.05
79.167	0.00	0.07	0.086	O	|	|	|	|	0.05
79.250	0.00	0.07	0.085	O	|	|	|	|	0.05
79.333	0.00	0.07	0.085	O	|	|	|	|	0.05
79.417	0.00	0.07	0.084	O	|	|	|	|	0.05
79.500	0.00	0.07	0.084	O	|	|	|	|	0.05
79.583	0.00	0.07	0.083	O	|	|	|	|	0.05
79.667	0.00	0.07	0.083	O	|	|	|	|	0.05
79.750	0.00	0.07	0.082	O	|	|	|	|	0.05
79.833	0.00	0.07	0.082	O	|	|	|	|	0.05
79.917	0.00	0.07	0.081	O	|	|	|	|	0.05
80.000	0.00	0.07	0.081	O	|	|	|	|	0.05
80.083	0.00	0.07	0.080	O	|	|	|	|	0.05
80.167	0.00	0.07	0.080	O	|	|	|	|	0.05
80.250	0.00	0.07	0.079	O	|	|	|	|	0.05
80.333	0.00	0.07	0.079	O	|	|	|	|	0.05
80.417	0.00	0.07	0.079	O	|	|	|	|	0.05
80.500	0.00	0.06	0.078	O	|	|	|	|	0.05
80.583	0.00	0.06	0.078	O	|	|	|	|	0.05
80.667	0.00	0.06	0.077	O	|	|	|	|	0.05
80.750	0.00	0.06	0.077	O	|	|	|	|	0.05
80.833	0.00	0.06	0.076	O	|	|	|	|	0.05
80.917	0.00	0.06	0.076	O	|	|	|	|	0.05
81.000	0.00	0.06	0.076	O	|	|	|	|	0.05
81.083	0.00	0.06	0.075	O	|	|	|	|	0.05
81.167	0.00	0.06	0.075	O	|	|	|	|	0.04
81.250	0.00	0.06	0.074	O	|	|	|	|	0.04
81.333	0.00	0.06	0.074	O	|	|	|	|	0.04
81.417	0.00	0.06	0.073	O	|	|	|	|	0.04
81.500	0.00	0.06	0.073	O	|	|	|	|	0.04
81.583	0.00	0.06	0.073	O	|	|	|	|	0.04
81.667	0.00	0.06	0.072	O	|	|	|	|	0.04
81.750	0.00	0.06	0.072	O	|	|	|	|	0.04
81.833	0.00	0.06	0.071	O	|	|	|	|	0.04
81.917	0.00	0.06	0.071	O	|	|	|	|	0.04
82.000	0.00	0.06	0.071	O	|	|	|	|	0.04
82.083	0.00	0.06	0.070	O	|	|	|	|	0.04
82.167	0.00	0.06	0.070	O	|	|	|	|	0.04

82.250	0.00	0.06	0.069	O					0.04
82.333	0.00	0.06	0.069	O					0.04
82.417	0.00	0.06	0.069	O					0.04
82.500	0.00	0.06	0.068	O					0.04
82.583	0.00	0.06	0.068	O					0.04
82.667	0.00	0.06	0.067	O					0.04
82.750	0.00	0.06	0.067	O					0.04
82.833	0.00	0.06	0.067	O					0.04
82.917	0.00	0.05	0.066	O					0.04
83.000	0.00	0.05	0.066	O					0.04
83.083	0.00	0.05	0.065	O					0.04
83.167	0.00	0.05	0.065	O					0.04
83.250	0.00	0.05	0.065	O					0.04
83.333	0.00	0.05	0.064	O					0.04
83.417	0.00	0.05	0.064	O					0.04
83.500	0.00	0.05	0.064	O					0.04
83.583	0.00	0.05	0.063	O					0.04
83.667	0.00	0.05	0.063	O					0.04
83.750	0.00	0.05	0.063	O					0.04
83.833	0.00	0.05	0.062	O					0.04
83.917	0.00	0.05	0.062	O					0.04
84.000	0.00	0.05	0.061	O					0.04
84.083	0.00	0.05	0.061	O					0.04
84.167	0.00	0.05	0.061	O					0.04
84.250	0.00	0.05	0.060	O					0.04
84.333	0.00	0.05	0.060	O					0.04
84.417	0.00	0.05	0.060	O					0.04
84.500	0.00	0.05	0.059	O					0.04
84.583	0.00	0.05	0.059	O					0.04
84.667	0.00	0.05	0.059	O					0.04
84.750	0.00	0.05	0.058	O					0.04
84.833	0.00	0.05	0.058	O					0.03
84.917	0.00	0.05	0.058	O					0.03
85.000	0.00	0.05	0.057	O					0.03
85.083	0.00	0.05	0.057	O					0.03
85.167	0.00	0.05	0.057	O					0.03
85.250	0.00	0.05	0.056	O					0.03
85.333	0.00	0.05	0.056	O					0.03
85.417	0.00	0.05	0.056	O					0.03
85.500	0.00	0.05	0.055	O					0.03
85.583	0.00	0.05	0.055	O					0.03
85.667	0.00	0.05	0.055	O					0.03
85.750	0.00	0.05	0.055	O					0.03
85.833	0.00	0.04	0.054	O					0.03
85.917	0.00	0.04	0.054	O					0.03
86.000	0.00	0.04	0.054	O					0.03
86.083	0.00	0.04	0.053	O					0.03
86.167	0.00	0.04	0.053	O					0.03
86.250	0.00	0.04	0.053	O					0.03
86.333	0.00	0.04	0.052	O					0.03
86.417	0.00	0.04	0.052	O					0.03
86.500	0.00	0.04	0.052	O					0.03
86.583	0.00	0.04	0.051	O					0.03
86.667	0.00	0.04	0.051	O					0.03
86.750	0.00	0.04	0.051	O					0.03
86.833	0.00	0.04	0.051	O					0.03
86.917	0.00	0.04	0.050	O					0.03
87.000	0.00	0.04	0.050	O					0.03
87.083	0.00	0.04	0.050	O					0.03
87.167	0.00	0.04	0.049	O					0.03
87.250	0.00	0.04	0.049	O					0.03
87.333	0.00	0.04	0.049	O					0.03
87.417	0.00	0.04	0.049	O					0.03
87.500	0.00	0.04	0.048	O					0.03
87.583	0.00	0.04	0.048	O					0.03
87.667	0.00	0.04	0.048	O					0.03
87.750	0.00	0.04	0.048	O					0.03
87.833	0.00	0.04	0.047	O					0.03
87.917	0.00	0.04	0.047	O					0.03
88.000	0.00	0.04	0.047	O					0.03
88.083	0.00	0.04	0.046	O					0.03

88.167	0.00	0.04	0.046	O	|	|	|	|	0.03
88.250	0.00	0.04	0.046	O	|	|	|	|	0.03
88.333	0.00	0.04	0.046	O	|	|	|	|	0.03
88.417	0.00	0.04	0.045	O	|	|	|	|	0.03
88.500	0.00	0.04	0.045	O	|	|	|	|	0.03
88.583	0.00	0.04	0.045	O	|	|	|	|	0.03
88.667	0.00	0.04	0.045	O	|	|	|	|	0.03
88.750	0.00	0.04	0.044	O	|	|	|	|	0.03
88.833	0.00	0.04	0.044	O	|	|	|	|	0.03
88.917	0.00	0.04	0.044	O	|	|	|	|	0.03
89.000	0.00	0.04	0.044	O	|	|	|	|	0.03
89.083	0.00	0.04	0.043	O	|	|	|	|	0.03
89.167	0.00	0.04	0.043	O	|	|	|	|	0.03
89.250	0.00	0.04	0.043	O	|	|	|	|	0.03
89.333	0.00	0.04	0.043	O	|	|	|	|	0.03
89.417	0.00	0.04	0.042	O	|	|	|	|	0.03
89.500	0.00	0.03	0.042	O	|	|	|	|	0.03
89.583	0.00	0.03	0.042	O	|	|	|	|	0.03
89.667	0.00	0.03	0.042	O	|	|	|	|	0.02
89.750	0.00	0.03	0.041	O	|	|	|	|	0.02
89.833	0.00	0.03	0.041	O	|	|	|	|	0.02
89.917	0.00	0.03	0.041	O	|	|	|	|	0.02
90.000	0.00	0.03	0.041	O	|	|	|	|	0.02
90.083	0.00	0.03	0.041	O	|	|	|	|	0.02
90.167	0.00	0.03	0.040	O	|	|	|	|	0.02
90.250	0.00	0.03	0.040	O	|	|	|	|	0.02
90.333	0.00	0.03	0.040	O	|	|	|	|	0.02
90.417	0.00	0.03	0.040	O	|	|	|	|	0.02
90.500	0.00	0.03	0.039	O	|	|	|	|	0.02
90.583	0.00	0.03	0.039	O	|	|	|	|	0.02
90.667	0.00	0.03	0.039	O	|	|	|	|	0.02
90.750	0.00	0.03	0.039	O	|	|	|	|	0.02
90.833	0.00	0.03	0.038	O	|	|	|	|	0.02
90.917	0.00	0.03	0.038	O	|	|	|	|	0.02
91.000	0.00	0.03	0.038	O	|	|	|	|	0.02
91.083	0.00	0.03	0.038	O	|	|	|	|	0.02
91.167	0.00	0.03	0.038	O	|	|	|	|	0.02
91.250	0.00	0.03	0.037	O	|	|	|	|	0.02
91.333	0.00	0.03	0.037	O	|	|	|	|	0.02
91.417	0.00	0.03	0.037	O	|	|	|	|	0.02
91.500	0.00	0.03	0.037	O	|	|	|	|	0.02
91.583	0.00	0.03	0.037	O	|	|	|	|	0.02
91.667	0.00	0.03	0.036	O	|	|	|	|	0.02
91.750	0.00	0.03	0.036	O	|	|	|	|	0.02
91.833	0.00	0.03	0.036	O	|	|	|	|	0.02
91.917	0.00	0.03	0.036	O	|	|	|	|	0.02
92.000	0.00	0.03	0.036	O	|	|	|	|	0.02
92.083	0.00	0.03	0.035	O	|	|	|	|	0.02
92.167	0.00	0.03	0.035	O	|	|	|	|	0.02
92.250	0.00	0.03	0.035	O	|	|	|	|	0.02
92.333	0.00	0.03	0.035	O	|	|	|	|	0.02
92.417	0.00	0.03	0.035	O	|	|	|	|	0.02
92.500	0.00	0.03	0.034	O	|	|	|	|	0.02
92.583	0.00	0.03	0.034	O	|	|	|	|	0.02
92.667	0.00	0.03	0.034	O	|	|	|	|	0.02
92.750	0.00	0.03	0.034	O	|	|	|	|	0.02
92.833	0.00	0.03	0.034	O	|	|	|	|	0.02
92.917	0.00	0.03	0.033	O	|	|	|	|	0.02
93.000	0.00	0.03	0.033	O	|	|	|	|	0.02
93.083	0.00	0.03	0.033	O	|	|	|	|	0.02
93.167	0.00	0.03	0.033	O	|	|	|	|	0.02
93.250	0.00	0.03	0.033	O	|	|	|	|	0.02
93.333	0.00	0.03	0.032	O	|	|	|	|	0.02
93.417	0.00	0.03	0.032	O	|	|	|	|	0.02
93.500	0.00	0.03	0.032	O	|	|	|	|	0.02
93.583	0.00	0.03	0.032	O	|	|	|	|	0.02
93.667	0.00	0.03	0.032	O	|	|	|	|	0.02
93.750	0.00	0.03	0.031	O	|	|	|	|	0.02
93.833	0.00	0.03	0.031	O	|	|	|	|	0.02
93.917	0.00	0.03	0.031	O	|	|	|	|	0.02
94.000	0.00	0.03	0.031	O	|	|	|	|	0.02

94.083	0.00	0.03	0.031	O					0.02
94.167	0.00	0.03	0.031	O					0.02
94.250	0.00	0.03	0.030	O					0.02
94.333	0.00	0.03	0.030	O					0.02
94.417	0.00	0.02	0.030	O					0.02
94.500	0.00	0.02	0.030	O					0.02
94.583	0.00	0.02	0.030	O					0.02
94.667	0.00	0.02	0.030	O					0.02
94.750	0.00	0.02	0.029	O					0.02
94.833	0.00	0.02	0.029	O					0.02
94.917	0.00	0.02	0.029	O					0.02
95.000	0.00	0.02	0.029	O					0.02
95.083	0.00	0.02	0.029	O					0.02
95.167	0.00	0.02	0.029	O					0.02
95.250	0.00	0.02	0.028	O					0.02
95.333	0.00	0.02	0.028	O					0.02
95.417	0.00	0.02	0.028	O					0.02
95.500	0.00	0.02	0.028	O					0.02
95.583	0.00	0.02	0.028	O					0.02
95.667	0.00	0.02	0.028	O					0.02
95.750	0.00	0.02	0.027	O					0.02
95.833	0.00	0.02	0.027	O					0.02
95.917	0.00	0.02	0.027	O					0.02
96.000	0.00	0.02	0.027	O					0.02
96.083	0.00	0.02	0.027	O					0.02
96.167	0.00	0.02	0.027	O					0.02
96.250	0.00	0.02	0.027	O					0.02
96.333	0.00	0.02	0.026	O					0.02
96.417	0.00	0.02	0.026	O					0.02
96.500	0.00	0.02	0.026	O					0.02
96.583	0.00	0.02	0.026	O					0.02
96.667	0.00	0.02	0.026	O					0.02
96.750	0.00	0.02	0.026	O					0.02
96.833	0.00	0.02	0.025	O					0.02
96.917	0.00	0.02	0.025	O					0.02
97.000	0.00	0.02	0.025	O					0.02
97.083	0.00	0.02	0.025	O					0.02
97.167	0.00	0.02	0.025	O					0.01
97.250	0.00	0.02	0.025	O					0.01
97.333	0.00	0.02	0.025	O					0.01
97.417	0.00	0.02	0.024	O					0.01
97.500	0.00	0.02	0.024	O					0.01
97.583	0.00	0.02	0.024	O					0.01
97.667	0.00	0.02	0.024	O					0.01
97.750	0.00	0.02	0.024	O					0.01
97.833	0.00	0.02	0.024	O					0.01
97.917	0.00	0.02	0.024	O					0.01
98.000	0.00	0.02	0.024	O					0.01
98.083	0.00	0.02	0.023	O					0.01
98.167	0.00	0.02	0.023	O					0.01
98.250	0.00	0.02	0.023	O					0.01
98.333	0.00	0.02	0.023	O					0.01
98.417	0.00	0.02	0.023	O					0.01
98.500	0.00	0.02	0.023	O					0.01
98.583	0.00	0.02	0.023	O					0.01
98.667	0.00	0.02	0.022	O					0.01
98.750	0.00	0.02	0.022	O					0.01
98.833	0.00	0.02	0.022	O					0.01
98.917	0.00	0.02	0.022	O					0.01
99.000	0.00	0.02	0.022	O					0.01
99.083	0.00	0.02	0.022	O					0.01
99.167	0.00	0.02	0.022	O					0.01
99.250	0.00	0.02	0.022	O					0.01
99.333	0.00	0.02	0.021	O					0.01
99.417	0.00	0.02	0.021	O					0.01
99.500	0.00	0.02	0.021	O					0.01
99.583	0.00	0.02	0.021	O					0.01
99.667	0.00	0.02	0.021	O					0.01
99.750	0.00	0.02	0.021	O					0.01
99.833	0.00	0.02	0.021	O					0.01
99.917	0.00	0.02	0.021	O					0.01

100.000	0.00	0.02	0.021	O	|	|	|	|	0.01
100.083	0.00	0.02	0.020	O	|	|	|	|	0.01
100.167	0.00	0.02	0.020	O	|	|	|	|	0.01
100.250	0.00	0.02	0.020	O	|	|	|	|	0.01
100.333	0.00	0.02	0.020	O	|	|	|	|	0.01
100.417	0.00	0.02	0.020	O	|	|	|	|	0.01
100.500	0.00	0.02	0.020	O	|	|	|	|	0.01
100.583	0.00	0.02	0.020	O	|	|	|	|	0.01
100.667	0.00	0.02	0.020	O	|	|	|	|	0.01
100.750	0.00	0.02	0.019	O	|	|	|	|	0.01
100.833	0.00	0.02	0.019	O	|	|	|	|	0.01
100.917	0.00	0.02	0.019	O	|	|	|	|	0.01
101.000	0.00	0.02	0.019	O	|	|	|	|	0.01
101.083	0.00	0.02	0.019	O	|	|	|	|	0.01
101.167	0.00	0.02	0.019	O	|	|	|	|	0.01
101.250	0.00	0.02	0.019	O	|	|	|	|	0.01
101.333	0.00	0.02	0.019	O	|	|	|	|	0.01
101.417	0.00	0.02	0.019	O	|	|	|	|	0.01
101.500	0.00	0.02	0.019	O	|	|	|	|	0.01
101.583	0.00	0.02	0.018	O	|	|	|	|	0.01
101.667	0.00	0.02	0.018	O	|	|	|	|	0.01
101.750	0.00	0.02	0.018	O	|	|	|	|	0.01
101.833	0.00	0.02	0.018	O	|	|	|	|	0.01
101.917	0.00	0.01	0.018	O	|	|	|	|	0.01
102.000	0.00	0.01	0.018	O	|	|	|	|	0.01
102.083	0.00	0.01	0.018	O	|	|	|	|	0.01
102.167	0.00	0.01	0.018	O	|	|	|	|	0.01
102.250	0.00	0.01	0.018	O	|	|	|	|	0.01
102.333	0.00	0.01	0.017	O	|	|	|	|	0.01
102.417	0.00	0.01	0.017	O	|	|	|	|	0.01
102.500	0.00	0.01	0.017	O	|	|	|	|	0.01
102.583	0.00	0.01	0.017	O	|	|	|	|	0.01
102.667	0.00	0.01	0.017	O	|	|	|	|	0.01
102.750	0.00	0.01	0.017	O	|	|	|	|	0.01
102.833	0.00	0.01	0.017	O	|	|	|	|	0.01
102.917	0.00	0.01	0.017	O	|	|	|	|	0.01
103.000	0.00	0.01	0.017	O	|	|	|	|	0.01
103.083	0.00	0.01	0.017	O	|	|	|	|	0.01
103.167	0.00	0.01	0.017	O	|	|	|	|	0.01
103.250	0.00	0.01	0.016	O	|	|	|	|	0.01
103.333	0.00	0.01	0.016	O	|	|	|	|	0.01
103.417	0.00	0.01	0.016	O	|	|	|	|	0.01
103.500	0.00	0.01	0.016	O	|	|	|	|	0.01
103.583	0.00	0.01	0.016	O	|	|	|	|	0.01
103.667	0.00	0.01	0.016	O	|	|	|	|	0.01
103.750	0.00	0.01	0.016	O	|	|	|	|	0.01
103.833	0.00	0.01	0.016	O	|	|	|	|	0.01
103.917	0.00	0.01	0.016	O	|	|	|	|	0.01
104.000	0.00	0.01	0.016	O	|	|	|	|	0.01
104.083	0.00	0.01	0.016	O	|	|	|	|	0.01
104.167	0.00	0.01	0.015	O	|	|	|	|	0.01
104.250	0.00	0.01	0.015	O	|	|	|	|	0.01
104.333	0.00	0.01	0.015	O	|	|	|	|	0.01
104.417	0.00	0.01	0.015	O	|	|	|	|	0.01
104.500	0.00	0.01	0.015	O	|	|	|	|	0.01
104.583	0.00	0.01	0.015	O	|	|	|	|	0.01
104.667	0.00	0.01	0.015	O	|	|	|	|	0.01
104.750	0.00	0.01	0.015	O	|	|	|	|	0.01
104.833	0.00	0.01	0.015	O	|	|	|	|	0.01
104.917	0.00	0.01	0.015	O	|	|	|	|	0.01
105.000	0.00	0.01	0.015	O	|	|	|	|	0.01
105.083	0.00	0.01	0.014	O	|	|	|	|	0.01
105.167	0.00	0.01	0.014	O	|	|	|	|	0.01
105.250	0.00	0.01	0.014	O	|	|	|	|	0.01
105.333	0.00	0.01	0.014	O	|	|	|	|	0.01
105.417	0.00	0.01	0.014	O	|	|	|	|	0.01
105.500	0.00	0.01	0.014	O	|	|	|	|	0.01
105.583	0.00	0.01	0.014	O	|	|	|	|	0.01
105.667	0.00	0.01	0.014	O	|	|	|	|	0.01
105.750	0.00	0.01	0.014	O	|	|	|	|	0.01
105.833	0.00	0.01	0.014	O	|	|	|	|	0.01

105.917	0.00	0.01	0.014	O	|	|	|	|	0.01
106.000	0.00	0.01	0.014	O	|	|	|	|	0.01
106.083	0.00	0.01	0.014	O	|	|	|	|	0.01
106.167	0.00	0.01	0.013	O	|	|	|	|	0.01
106.250	0.00	0.01	0.013	O	|	|	|	|	0.01
106.333	0.00	0.01	0.013	O	|	|	|	|	0.01
106.417	0.00	0.01	0.013	O	|	|	|	|	0.01
106.500	0.00	0.01	0.013	O	|	|	|	|	0.01
106.583	0.00	0.01	0.013	O	|	|	|	|	0.01
106.667	0.00	0.01	0.013	O	|	|	|	|	0.01
106.750	0.00	0.01	0.013	O	|	|	|	|	0.01
106.833	0.00	0.01	0.013	O	|	|	|	|	0.01
106.917	0.00	0.01	0.013	O	|	|	|	|	0.01
107.000	0.00	0.01	0.013	O	|	|	|	|	0.01
107.083	0.00	0.01	0.013	O	|	|	|	|	0.01
107.167	0.00	0.01	0.013	O	|	|	|	|	0.01
107.250	0.00	0.01	0.012	O	|	|	|	|	0.01
107.333	0.00	0.01	0.012	O	|	|	|	|	0.01
107.417	0.00	0.01	0.012	O	|	|	|	|	0.01
107.500	0.00	0.01	0.012	O	|	|	|	|	0.01
107.583	0.00	0.01	0.012	O	|	|	|	|	0.01
107.667	0.00	0.01	0.012	O	|	|	|	|	0.01
107.750	0.00	0.01	0.012	O	|	|	|	|	0.01
107.833	0.00	0.01	0.012	O	|	|	|	|	0.01
107.917	0.00	0.01	0.012	O	|	|	|	|	0.01
108.000	0.00	0.01	0.012	O	|	|	|	|	0.01
108.083	0.00	0.01	0.012	O	|	|	|	|	0.01
108.167	0.00	0.01	0.012	O	|	|	|	|	0.01
108.250	0.00	0.01	0.012	O	|	|	|	|	0.01
108.333	0.00	0.01	0.012	O	|	|	|	|	0.01
108.417	0.00	0.01	0.012	O	|	|	|	|	0.01
108.500	0.00	0.01	0.011	O	|	|	|	|	0.01
108.583	0.00	0.01	0.011	O	|	|	|	|	0.01
108.667	0.00	0.01	0.011	O	|	|	|	|	0.01
108.750	0.00	0.01	0.011	O	|	|	|	|	0.01
108.833	0.00	0.01	0.011	O	|	|	|	|	0.01
108.917	0.00	0.01	0.011	O	|	|	|	|	0.01
109.000	0.00	0.01	0.011	O	|	|	|	|	0.01
109.083	0.00	0.01	0.011	O	|	|	|	|	0.01
109.167	0.00	0.01	0.011	O	|	|	|	|	0.01
109.250	0.00	0.01	0.011	O	|	|	|	|	0.01
109.333	0.00	0.01	0.011	O	|	|	|	|	0.01
109.417	0.00	0.01	0.011	O	|	|	|	|	0.01
109.500	0.00	0.01	0.011	O	|	|	|	|	0.01
109.583	0.00	0.01	0.011	O	|	|	|	|	0.01
109.667	0.00	0.01	0.011	O	|	|	|	|	0.01
109.750	0.00	0.01	0.011	O	|	|	|	|	0.01
109.833	0.00	0.01	0.010	O	|	|	|	|	0.01
109.917	0.00	0.01	0.010	O	|	|	|	|	0.01
110.000	0.00	0.01	0.010	O	|	|	|	|	0.01
110.083	0.00	0.01	0.010	O	|	|	|	|	0.01
110.167	0.00	0.01	0.010	O	|	|	|	|	0.01
110.250	0.00	0.01	0.010	O	|	|	|	|	0.01
110.333	0.00	0.01	0.010	O	|	|	|	|	0.01
110.417	0.00	0.01	0.010	O	|	|	|	|	0.01
110.500	0.00	0.01	0.010	O	|	|	|	|	0.01
110.583	0.00	0.01	0.010	O	|	|	|	|	0.01
110.667	0.00	0.01	0.010	O	|	|	|	|	0.01
110.750	0.00	0.01	0.010	O	|	|	|	|	0.01
110.833	0.00	0.01	0.010	O	|	|	|	|	0.01
110.917	0.00	0.01	0.010	O	|	|	|	|	0.01
111.000	0.00	0.01	0.010	O	|	|	|	|	0.01
111.083	0.00	0.01	0.010	O	|	|	|	|	0.01
111.167	0.00	0.01	0.010	O	|	|	|	|	0.01
111.250	0.00	0.01	0.009	O	|	|	|	|	0.01
111.333	0.00	0.01	0.009	O	|	|	|	|	0.01
111.417	0.00	0.01	0.009	O	|	|	|	|	0.01
111.500	0.00	0.01	0.009	O	|	|	|	|	0.01
111.583	0.00	0.01	0.009	O	|	|	|	|	0.01
111.667	0.00	0.01	0.009	O	|	|	|	|	0.01
111.750	0.00	0.01	0.009	O	|	|	|	|	0.01

111.833	0.00	0.01	0.009	O	|	|	|	|	0.01
111.917	0.00	0.01	0.009	O	|	|	|	|	0.01
112.000	0.00	0.01	0.009	O	|	|	|	|	0.01
112.083	0.00	0.01	0.009	O	|	|	|	|	0.01
112.167	0.00	0.01	0.009	O	|	|	|	|	0.01
112.250	0.00	0.01	0.009	O	|	|	|	|	0.01
112.333	0.00	0.01	0.009	O	|	|	|	|	0.01
112.417	0.00	0.01	0.009	O	|	|	|	|	0.01
112.500	0.00	0.01	0.009	O	|	|	|	|	0.01
112.583	0.00	0.01	0.009	O	|	|	|	|	0.01
112.667	0.00	0.01	0.009	O	|	|	|	|	0.01
112.750	0.00	0.01	0.009	O	|	|	|	|	0.01
112.833	0.00	0.01	0.009	O	|	|	|	|	0.01
112.917	0.00	0.01	0.008	O	|	|	|	|	0.01
113.000	0.00	0.01	0.008	O	|	|	|	|	0.01
113.083	0.00	0.01	0.008	O	|	|	|	|	0.01
113.167	0.00	0.01	0.008	O	|	|	|	|	0.00
113.250	0.00	0.01	0.008	O	|	|	|	|	0.00
113.333	0.00	0.01	0.008	O	|	|	|	|	0.00
113.417	0.00	0.01	0.008	O	|	|	|	|	0.00
113.500	0.00	0.01	0.008	O	|	|	|	|	0.00
113.583	0.00	0.01	0.008	O	|	|	|	|	0.00
113.667	0.00	0.01	0.008	O	|	|	|	|	0.00
113.750	0.00	0.01	0.008	O	|	|	|	|	0.00
113.833	0.00	0.01	0.008	O	|	|	|	|	0.00
113.917	0.00	0.01	0.008	O	|	|	|	|	0.00
114.000	0.00	0.01	0.008	O	|	|	|	|	0.00
114.083	0.00	0.01	0.008	O	|	|	|	|	0.00
114.167	0.00	0.01	0.008	O	|	|	|	|	0.00
114.250	0.00	0.01	0.008	O	|	|	|	|	0.00
114.333	0.00	0.01	0.008	O	|	|	|	|	0.00
114.417	0.00	0.01	0.008	O	|	|	|	|	0.00
114.500	0.00	0.01	0.008	O	|	|	|	|	0.00
114.583	0.00	0.01	0.008	O	|	|	|	|	0.00
114.667	0.00	0.01	0.008	O	|	|	|	|	0.00
114.750	0.00	0.01	0.007	O	|	|	|	|	0.00
114.833	0.00	0.01	0.007	O	|	|	|	|	0.00
114.917	0.00	0.01	0.007	O	|	|	|	|	0.00
115.000	0.00	0.01	0.007	O	|	|	|	|	0.00
115.083	0.00	0.01	0.007	O	|	|	|	|	0.00
115.167	0.00	0.01	0.007	O	|	|	|	|	0.00
115.250	0.00	0.01	0.007	O	|	|	|	|	0.00
115.333	0.00	0.01	0.007	O	|	|	|	|	0.00
115.417	0.00	0.01	0.007	O	|	|	|	|	0.00
115.500	0.00	0.01	0.007	O	|	|	|	|	0.00
115.583	0.00	0.01	0.007	O	|	|	|	|	0.00
115.667	0.00	0.01	0.007	O	|	|	|	|	0.00
115.750	0.00	0.01	0.007	O	|	|	|	|	0.00
115.833	0.00	0.01	0.007	O	|	|	|	|	0.00
115.917	0.00	0.01	0.007	O	|	|	|	|	0.00
116.000	0.00	0.01	0.007	O	|	|	|	|	0.00
116.083	0.00	0.01	0.007	O	|	|	|	|	0.00
116.167	0.00	0.01	0.007	O	|	|	|	|	0.00
116.250	0.00	0.01	0.007	O	|	|	|	|	0.00
116.333	0.00	0.01	0.007	O	|	|	|	|	0.00
116.417	0.00	0.01	0.007	O	|	|	|	|	0.00
116.500	0.00	0.01	0.007	O	|	|	|	|	0.00
116.583	0.00	0.01	0.007	O	|	|	|	|	0.00
116.667	0.00	0.01	0.007	O	|	|	|	|	0.00
116.750	0.00	0.01	0.007	O	|	|	|	|	0.00
116.833	0.00	0.01	0.006	O	|	|	|	|	0.00
116.917	0.00	0.01	0.006	O	|	|	|	|	0.00
117.000	0.00	0.01	0.006	O	|	|	|	|	0.00
117.083	0.00	0.01	0.006	O	|	|	|	|	0.00
117.167	0.00	0.01	0.006	O	|	|	|	|	0.00
117.250	0.00	0.01	0.006	O	|	|	|	|	0.00
117.333	0.00	0.01	0.006	O	|	|	|	|	0.00
117.417	0.00	0.01	0.006	O	|	|	|	|	0.00
117.500	0.00	0.01	0.006	O	|	|	|	|	0.00
117.583	0.00	0.01	0.006	O	|	|	|	|	0.00
117.667	0.00	0.01	0.006	O	|	|	|	|	0.00

117.750	0.00	0.01	0.006	O	|	|	|	|	0.00
117.833	0.00	0.01	0.006	O	|	|	|	|	0.00
117.917	0.00	0.00	0.006	O	|	|	|	|	0.00
118.000	0.00	0.00	0.006	O	|	|	|	|	0.00
118.083	0.00	0.00	0.006	O	|	|	|	|	0.00
118.167	0.00	0.00	0.006	O	|	|	|	|	0.00
118.250	0.00	0.00	0.006	O	|	|	|	|	0.00
118.333	0.00	0.00	0.006	O	|	|	|	|	0.00
118.417	0.00	0.00	0.006	O	|	|	|	|	0.00
118.500	0.00	0.00	0.006	O	|	|	|	|	0.00
118.583	0.00	0.00	0.006	O	|	|	|	|	0.00
118.667	0.00	0.00	0.006	O	|	|	|	|	0.00
118.750	0.00	0.00	0.006	O	|	|	|	|	0.00
118.833	0.00	0.00	0.006	O	|	|	|	|	0.00
118.917	0.00	0.00	0.006	O	|	|	|	|	0.00
119.000	0.00	0.00	0.006	O	|	|	|	|	0.00
119.083	0.00	0.00	0.006	O	|	|	|	|	0.00
119.167	0.00	0.00	0.006	O	|	|	|	|	0.00
119.250	0.00	0.00	0.005	O	|	|	|	|	0.00
119.333	0.00	0.00	0.005	O	|	|	|	|	0.00
119.417	0.00	0.00	0.005	O	|	|	|	|	0.00
119.500	0.00	0.00	0.005	O	|	|	|	|	0.00
119.583	0.00	0.00	0.005	O	|	|	|	|	0.00
119.667	0.00	0.00	0.005	O	|	|	|	|	0.00
119.750	0.00	0.00	0.005	O	|	|	|	|	0.00
119.833	0.00	0.00	0.005	O	|	|	|	|	0.00
119.917	0.00	0.00	0.005	O	|	|	|	|	0.00
120.000	0.00	0.00	0.005	O	|	|	|	|	0.00
120.083	0.00	0.00	0.005	O	|	|	|	|	0.00
120.167	0.00	0.00	0.005	O	|	|	|	|	0.00
120.250	0.00	0.00	0.005	O	|	|	|	|	0.00
120.333	0.00	0.00	0.005	O	|	|	|	|	0.00
120.417	0.00	0.00	0.005	O	|	|	|	|	0.00
120.500	0.00	0.00	0.005	O	|	|	|	|	0.00
120.583	0.00	0.00	0.005	O	|	|	|	|	0.00
120.667	0.00	0.00	0.005	O	|	|	|	|	0.00
120.750	0.00	0.00	0.005	O	|	|	|	|	0.00
120.833	0.00	0.00	0.005	O	|	|	|	|	0.00
120.917	0.00	0.00	0.005	O	|	|	|	|	0.00
121.000	0.00	0.00	0.005	O	|	|	|	|	0.00
121.083	0.00	0.00	0.005	O	|	|	|	|	0.00
121.167	0.00	0.00	0.005	O	|	|	|	|	0.00
121.250	0.00	0.00	0.005	O	|	|	|	|	0.00
121.333	0.00	0.00	0.005	O	|	|	|	|	0.00
121.417	0.00	0.00	0.005	O	|	|	|	|	0.00
121.500	0.00	0.00	0.005	O	|	|	|	|	0.00
121.583	0.00	0.00	0.005	O	|	|	|	|	0.00
121.667	0.00	0.00	0.005	O	|	|	|	|	0.00
121.750	0.00	0.00	0.005	O	|	|	|	|	0.00
121.833	0.00	0.00	0.005	O	|	|	|	|	0.00
121.917	0.00	0.00	0.005	O	|	|	|	|	0.00
122.000	0.00	0.00	0.005	O	|	|	|	|	0.00
122.083	0.00	0.00	0.005	O	|	|	|	|	0.00
122.167	0.00	0.00	0.004	O	|	|	|	|	0.00
122.250	0.00	0.00	0.004	O	|	|	|	|	0.00
122.333	0.00	0.00	0.004	O	|	|	|	|	0.00
122.417	0.00	0.00	0.004	O	|	|	|	|	0.00
122.500	0.00	0.00	0.004	O	|	|	|	|	0.00
122.583	0.00	0.00	0.004	O	|	|	|	|	0.00
122.667	0.00	0.00	0.004	O	|	|	|	|	0.00
122.750	0.00	0.00	0.004	O	|	|	|	|	0.00
122.833	0.00	0.00	0.004	O	|	|	|	|	0.00
122.917	0.00	0.00	0.004	O	|	|	|	|	0.00
123.000	0.00	0.00	0.004	O	|	|	|	|	0.00
123.083	0.00	0.00	0.004	O	|	|	|	|	0.00
123.167	0.00	0.00	0.004	O	|	|	|	|	0.00
123.250	0.00	0.00	0.004	O	|	|	|	|	0.00
123.333	0.00	0.00	0.004	O	|	|	|	|	0.00
123.417	0.00	0.00	0.004	O	|	|	|	|	0.00
123.500	0.00	0.00	0.004	O	|	|	|	|	0.00
123.583	0.00	0.00	0.004	O	|	|	|	|	0.00

123.667	0.00	0.00	0.004	O	|	|	|	0.00
123.750	0.00	0.00	0.004	O	|	|	|	0.00
123.833	0.00	0.00	0.004	O	|	|	|	0.00
123.917	0.00	0.00	0.004	O	|	|	|	0.00
124.000	0.00	0.00	0.004	O	|	|	|	0.00
124.083	0.00	0.00	0.004	O	|	|	|	0.00
124.167	0.00	0.00	0.004	O	|	|	|	0.00
124.250	0.00	0.00	0.004	O	|	|	|	0.00
124.333	0.00	0.00	0.004	O	|	|	|	0.00
124.417	0.00	0.00	0.004	O	|	|	|	0.00
124.500	0.00	0.00	0.004	O	|	|	|	0.00
124.583	0.00	0.00	0.004	O	|	|	|	0.00
124.667	0.00	0.00	0.004	O	|	|	|	0.00
124.750	0.00	0.00	0.004	O	|	|	|	0.00
124.833	0.00	0.00	0.004	O	|	|	|	0.00
124.917	0.00	0.00	0.004	O	|	|	|	0.00
125.000	0.00	0.00	0.004	O	|	|	|	0.00
125.083	0.00	0.00	0.004	O	|	|	|	0.00
125.167	0.00	0.00	0.004	O	|	|	|	0.00
125.250	0.00	0.00	0.004	O	|	|	|	0.00
125.333	0.00	0.00	0.004	O	|	|	|	0.00
125.417	0.00	0.00	0.004	O	|	|	|	0.00
125.500	0.00	0.00	0.004	O	|	|	|	0.00
125.583	0.00	0.00	0.004	O	|	|	|	0.00
125.667	0.00	0.00	0.004	O	|	|	|	0.00
125.750	0.00	0.00	0.004	O	|	|	|	0.00
125.833	0.00	0.00	0.003	O	|	|	|	0.00
125.917	0.00	0.00	0.003	O	|	|	|	0.00
126.000	0.00	0.00	0.003	O	|	|	|	0.00
126.083	0.00	0.00	0.003	O	|	|	|	0.00
126.167	0.00	0.00	0.003	O	|	|	|	0.00
126.250	0.00	0.00	0.003	O	|	|	|	0.00
126.333	0.00	0.00	0.003	O	|	|	|	0.00
126.417	0.00	0.00	0.003	O	|	|	|	0.00
126.500	0.00	0.00	0.003	O	|	|	|	0.00
126.583	0.00	0.00	0.003	O	|	|	|	0.00
126.667	0.00	0.00	0.003	O	|	|	|	0.00
126.750	0.00	0.00	0.003	O	|	|	|	0.00
126.833	0.00	0.00	0.003	O	|	|	|	0.00
126.917	0.00	0.00	0.003	O	|	|	|	0.00
127.000	0.00	0.00	0.003	O	|	|	|	0.00
127.083	0.00	0.00	0.003	O	|	|	|	0.00
127.167	0.00	0.00	0.003	O	|	|	|	0.00
127.250	0.00	0.00	0.003	O	|	|	|	0.00
127.333	0.00	0.00	0.003	O	|	|	|	0.00
127.417	0.00	0.00	0.003	O	|	|	|	0.00
127.500	0.00	0.00	0.003	O	|	|	|	0.00
127.583	0.00	0.00	0.003	O	|	|	|	0.00
127.667	0.00	0.00	0.003	O	|	|	|	0.00
127.750	0.00	0.00	0.003	O	|	|	|	0.00
127.833	0.00	0.00	0.003	O	|	|	|	0.00
127.917	0.00	0.00	0.003	O	|	|	|	0.00
128.000	0.00	0.00	0.003	O	|	|	|	0.00
128.083	0.00	0.00	0.003	O	|	|	|	0.00
128.167	0.00	0.00	0.003	O	|	|	|	0.00
128.250	0.00	0.00	0.003	O	|	|	|	0.00
128.333	0.00	0.00	0.003	O	|	|	|	0.00
128.417	0.00	0.00	0.003	O	|	|	|	0.00
128.500	0.00	0.00	0.003	O	|	|	|	0.00
128.583	0.00	0.00	0.003	O	|	|	|	0.00
128.667	0.00	0.00	0.003	O	|	|	|	0.00
128.750	0.00	0.00	0.003	O	|	|	|	0.00
128.833	0.00	0.00	0.003	O	|	|	|	0.00
128.917	0.00	0.00	0.003	O	|	|	|	0.00
129.000	0.00	0.00	0.003	O	|	|	|	0.00
129.083	0.00	0.00	0.003	O	|	|	|	0.00
129.167	0.00	0.00	0.003	O	|	|	|	0.00
129.250	0.00	0.00	0.003	O	|	|	|	0.00
129.333	0.00	0.00	0.003	O	|	|	|	0.00
129.417	0.00	0.00	0.003	O	|	|	|	0.00
129.500	0.00	0.00	0.003	O	|	|	|	0.00

129.583	0.00	0.00	0.003	O					0.00
129.667	0.00	0.00	0.003	O					0.00
129.750	0.00	0.00	0.003	O					0.00
129.833	0.00	0.00	0.003	O					0.00
129.917	0.00	0.00	0.003	O					0.00
130.000	0.00	0.00	0.003	O					0.00
130.083	0.00	0.00	0.003	O					0.00
130.167	0.00	0.00	0.003	O					0.00
130.250	0.00	0.00	0.003	O					0.00
130.333	0.00	0.00	0.003	O					0.00
130.417	0.00	0.00	0.003	O					0.00
130.500	0.00	0.00	0.003	O					0.00
130.583	0.00	0.00	0.003	O					0.00
130.667	0.00	0.00	0.003	O					0.00
130.750	0.00	0.00	0.002	O					0.00
130.833	0.00	0.00	0.002	O					0.00
130.917	0.00	0.00	0.002	O					0.00
131.000	0.00	0.00	0.002	O					0.00
131.083	0.00	0.00	0.002	O					0.00
131.167	0.00	0.00	0.002	O					0.00
131.250	0.00	0.00	0.002	O					0.00
131.333	0.00	0.00	0.002	O					0.00
131.417	0.00	0.00	0.002	O					0.00
131.500	0.00	0.00	0.002	O					0.00
131.583	0.00	0.00	0.002	O					0.00
131.667	0.00	0.00	0.002	O					0.00
131.750	0.00	0.00	0.002	O					0.00
131.833	0.00	0.00	0.002	O					0.00
131.917	0.00	0.00	0.002	O					0.00
132.000	0.00	0.00	0.002	O					0.00
132.083	0.00	0.00	0.002	O					0.00
132.167	0.00	0.00	0.002	O					0.00
132.250	0.00	0.00	0.002	O					0.00
132.333	0.00	0.00	0.002	O					0.00
132.417	0.00	0.00	0.002	O					0.00
132.500	0.00	0.00	0.002	O					0.00
132.583	0.00	0.00	0.002	O					0.00
132.667	0.00	0.00	0.002	O					0.00
132.750	0.00	0.00	0.002	O					0.00
132.833	0.00	0.00	0.002	O					0.00
132.917	0.00	0.00	0.002	O					0.00
133.000	0.00	0.00	0.002	O					0.00
133.083	0.00	0.00	0.002	O					0.00
133.167	0.00	0.00	0.002	O					0.00
133.250	0.00	0.00	0.002	O					0.00
133.333	0.00	0.00	0.002	O					0.00
133.417	0.00	0.00	0.002	O					0.00
133.500	0.00	0.00	0.002	O					0.00
133.583	0.00	0.00	0.002	O					0.00
133.667	0.00	0.00	0.002	O					0.00
133.750	0.00	0.00	0.002	O					0.00
133.833	0.00	0.00	0.002	O					0.00
133.917	0.00	0.00	0.002	O					0.00
134.000	0.00	0.00	0.002	O					0.00
134.083	0.00	0.00	0.002	O					0.00
134.167	0.00	0.00	0.002	O					0.00
134.250	0.00	0.00	0.002	O					0.00
134.333	0.00	0.00	0.002	O					0.00
134.417	0.00	0.00	0.002	O					0.00
134.500	0.00	0.00	0.002	O					0.00
134.583	0.00	0.00	0.002	O					0.00
134.667	0.00	0.00	0.002	O					0.00
134.750	0.00	0.00	0.002	O					0.00
134.833	0.00	0.00	0.002	O					0.00
134.917	0.00	0.00	0.002	O					0.00
135.000	0.00	0.00	0.002	O					0.00
135.083	0.00	0.00	0.002	O					0.00
135.167	0.00	0.00	0.002	O					0.00
135.250	0.00	0.00	0.002	O					0.00
135.333	0.00	0.00	0.002	O					0.00
135.417	0.00	0.00	0.002	O					0.00

```
135.500    0.00    0.00      0.002  O       |       |       |       |      0.00
135.583    0.00    0.00      0.002  O       |       |       |       |      0.00
135.667    0.00    0.00      0.002  O       |       |       |       |      0.00
135.750    0.00    0.00      0.002  O       |       |       |       |      0.00
135.833    0.00    0.00      0.002  O       |       |       |       |      0.00
135.917    0.00    0.00      0.002  O       |       |       |       |      0.00
136.000    0.00    0.00      0.002  O       |       |       |       |      0.00
136.083    0.00    0.00      0.002  O       |       |       |       |      0.00
136.167    0.00    0.00      0.002  O       |       |       |       |      0.00
136.250    0.00    0.00      0.002  O       |       |       |       |      0.00
136.333    0.00    0.00      0.002  O       |       |       |       |      0.00
136.417    0.00    0.00      0.002  O       |       |       |       |      0.00
136.500    0.00    0.00      0.002  O       |       |       |       |      0.00
136.583    0.00    0.00      0.002  O       |       |       |       |      0.00
136.667    0.00    0.00      0.002  O       |       |       |       |      0.00

        Remaining water in basin =    0.00 (Ac.Ft)


        ****************************HYDROGRAPH DATA****************************
                       Number of intervals =  1640
                       Time interval =    5.0 (Min.)
                       Maximum/Peak flow rate =       79.669 (CFS)
                       Total volume =      48.854 (Ac.Ft)
               Status of hydrographs being held in storage
                           Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
               Peak (CFS)      0.000     0.000     0.000     0.000     0.000
               Vol (Ac.Ft)     0.000     0.000     0.000     0.000     0.000
        ***********************************************************************

        ------------------------------------------------------------------
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SECTION 5 - Hydrology Maps

- Existing Condition Hydrology Map
- Proposed Condition Hydrology Map

PARCEL MAP NO. 2000-140
PMB 325/7-19

TRACT NO
MM 408/

BEACH BOULEVARD

DMA 'A'

DMA 'B'

DMA 'C'

DMA 'D'

DMA 'E'

DMA 'F'

DMA 'G'

BASIN 'A'

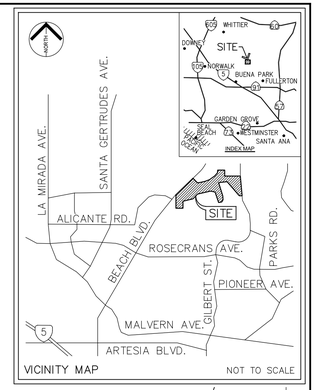
BASIN 'B'

BASIN 'C'

BASIN 'D'

PRODUCT 2

PRODUCT 3



ACREAGE SUMMARY:		
DRAINAGE MANAGEMENT AREA 'A'	=	27.4 AC.
DRAINAGE MANAGEMENT AREA 'B'	=	19.7 AC.
DRAINAGE MANAGEMENT AREA 'C'	=	73.6 AC.
DRAINAGE MANAGEMENT AREA 'D'	=	20.5 AC.
DRAINAGE MANAGEMENT AREA 'E'	=	5.8 AC.
DRAINAGE MANAGEMENT AREA 'F'	=	1.7 AC
DRAINAGE MANAGEMENT AREA 'G'	=	2.2 AC
TOTAL	=	150.9 AC.

TRACT NO. 15030
MM 766/20-34

TRACT NO. 15031
MM 766/35-46

N
W HUNSAKER E
S

1" = 160'
0 80 160 320 480 640

COUNTY OF ORANGE FLOOD DIVISION
W.Q.M.P. EXHIBIT

DRAINAGE MANAGEMENT AREA MAP
RANCHO LA HABRA
VESTING TENTATIVE TRACT MAP 17845

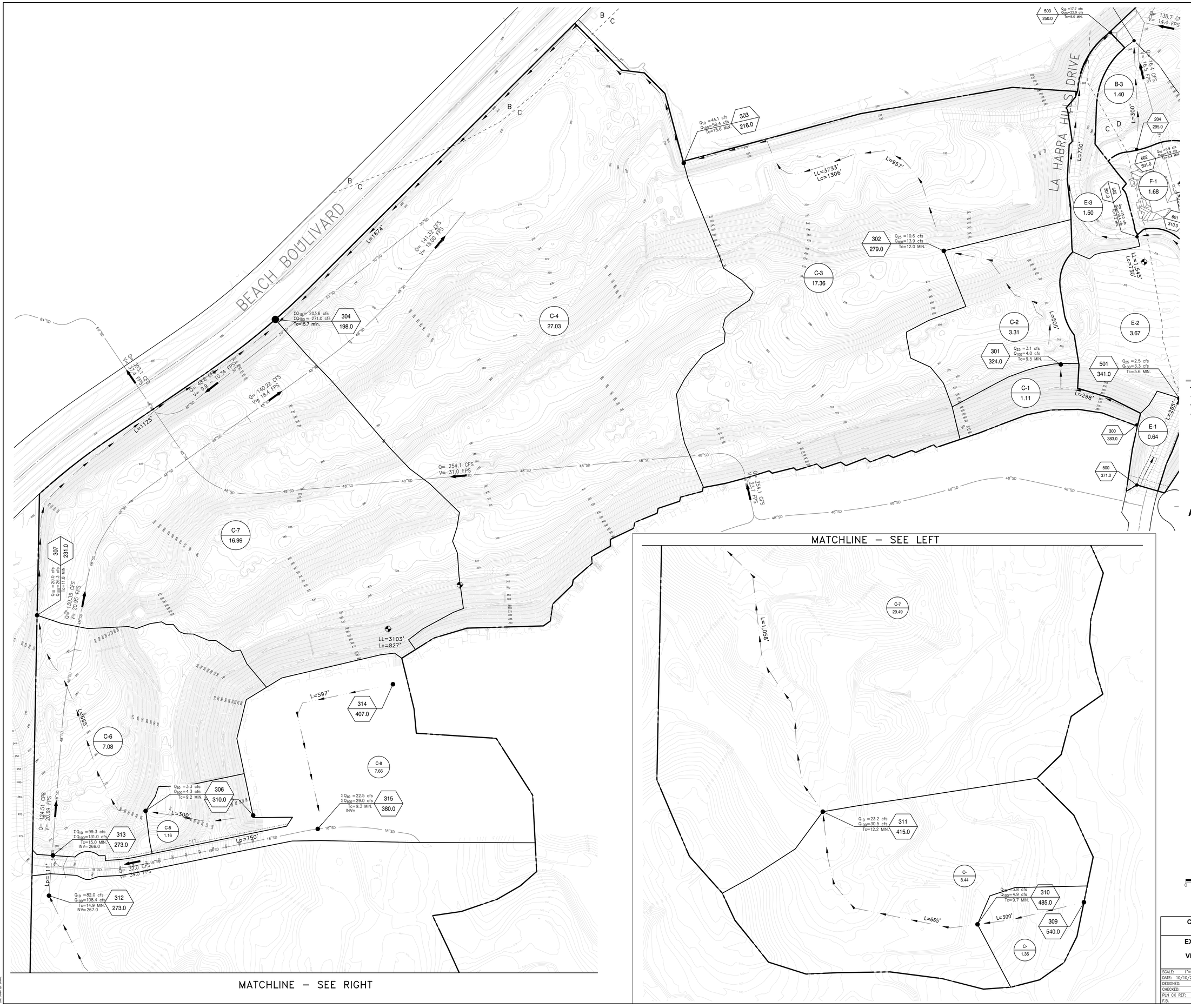
SCALE:	1"=160'
DATE:	03/23/2017
DESIGNED:	BRL
CHECKED:	BRL
PLN CK REF:	
F.B.	

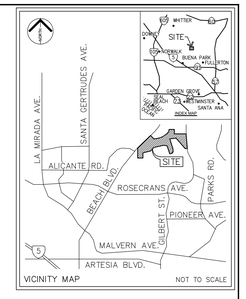
H&A
HUNSAKER & ASSOCIATES
IRVINE, INC
INLAND EMPIRE REGION
2900 ADAMS STREET, SUITE A-15
RIVERSIDE CA 92504 (951)352-7200
PLANNING/ENGINEERING/SURVEYING/GOVERNMENT RELATIONS

W.O.	0252-93X
SHEET	1
OF	1 SHEETS
DWG. NO.	

Last Saved By: BRANL

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LEGEND

- MAJOR DRAINAGE BOUNDARY
- MINOR DRAINAGE BOUNDARY
- TRACT BOUNDARY
- B/C SOILS GROUP BOUNDARY
- C SOILS GROUP
- 10 / 150.0 NODE NUMBER / NODE ELEVATION
- A–1 / 0.9 AREA DESIGNATION / AREA ACREAGE (IN ACRES)
- 10 YEAR STORM FLOW / 100 YEAR STORM FLOW / TIME OF CONCENTRATION (Q100) / STRUCTURE DESCRIPTION
- 10 YEAR STORM FLOW CONFLUENCE / 100 YEAR STORM FLOW CONFLUENCE / TIME OF CONCENTRATION (Q100) / STRUCTURE DESCRIPTION

AREA "B" AREA DESIGNATION

LL – LONGEST LENGTH OF FLOW

LC – LENGTH TO CENTROID

– CENTROID

N W E S

1" = 80'

0 40 80 160 240 320

COUNTY OF ORANGE FLOOD DIVISION
HYDROLOGY MAP

EXISTING CONDITION HYDROLOGY MAP
RANCHO LA HABRA
VESTING TENTATIVE TRACT MAP 17845

SCALE: 1"=120'	HUNSAKER & ASSOCIATES IRVINE, INC INLAND EMPIRE REGION 2900 ADAMS STREET, SUITE A-15 RIVERSIDE CA 92504 (951)352-7200 PLANNING/ENGINEERING/SURVEYING/GOVERNMENT RELATIONS	W.O. 0252-93X
DATE: 10/10/2016		SHEET 1
DESIGNED: BRL		OF 2 SHEETS
CHECKED: BRL		DWG. NO.
PLN CK REF:		
F.B.		

Last Saved By: BRIAN

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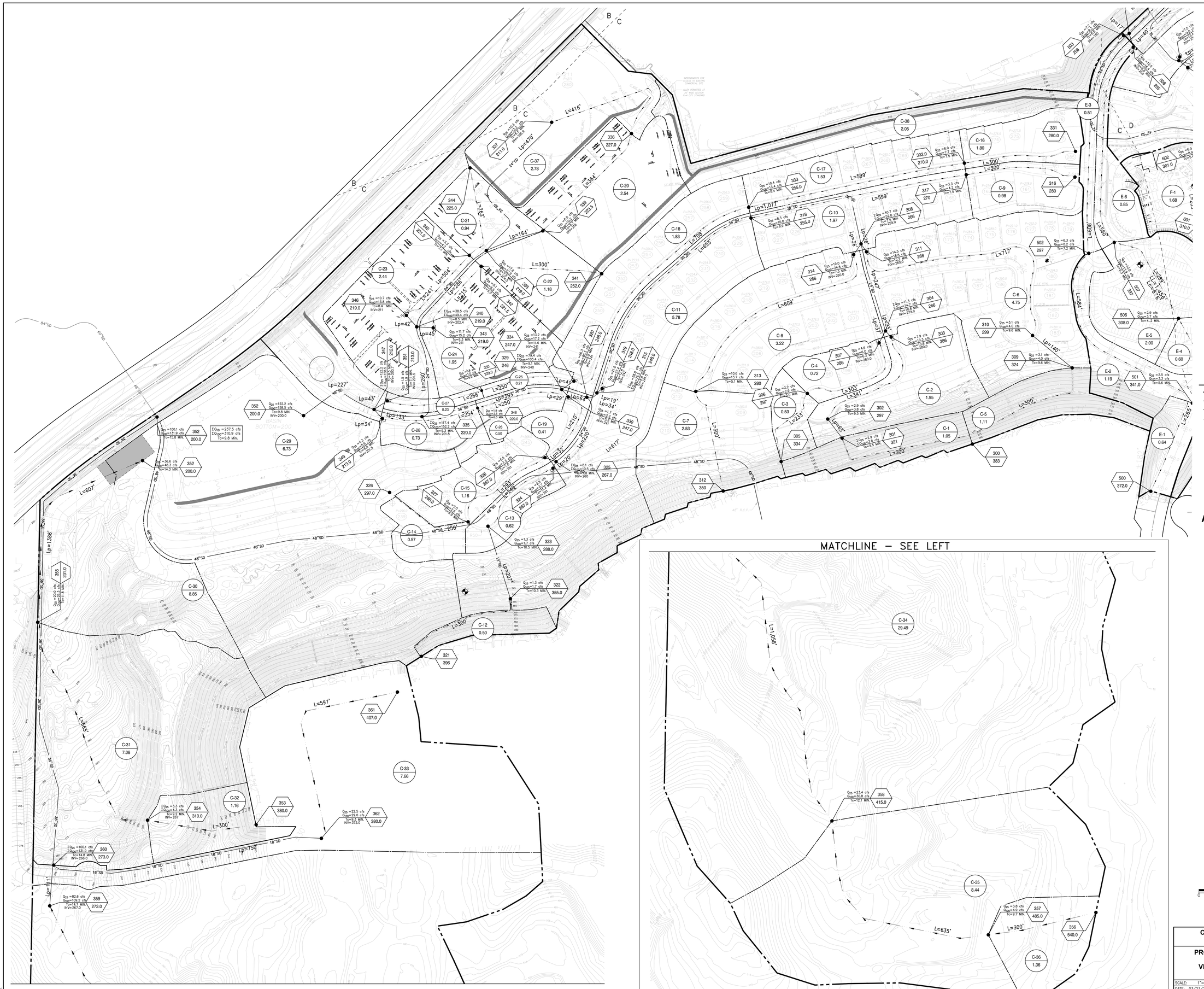


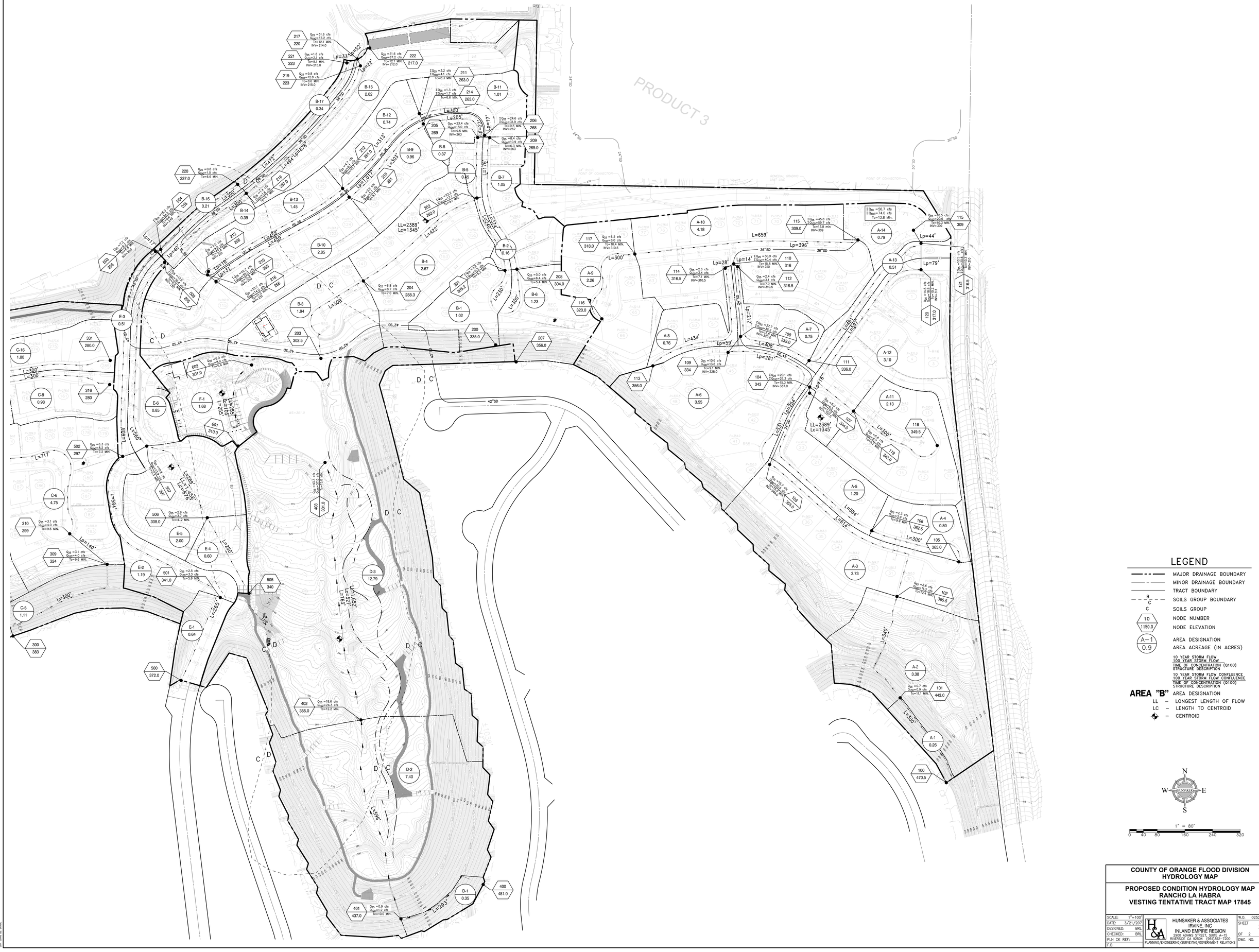
COUNTY OF ORANGE FLOOD DIVISION
HYDROLOGY MAP

EXISTING CONDITION HYDROLOGY MAP
RANCHO LA HABRA
VESTING TENTATIVE TRACT MAP 17845

SCALE: 1"=100'	HUNSAKER & ASSOCIATES IRVINE, INC INLAND EMPIRE REGION 2900 ADAMS STREET, SUITE A-15 RIVERSIDE CA 92504 (951)352-7200 PLANNING/ENGINEERING/SURVEYING/GOVERNMENT RELATIONS	W.O. 0252-93X
DATE: 11/16/2016		SHEET 2
DESIGNED: BRL		OF 2 SHEETS
CHECKED: BRL		DWG. NO.
PLN CK REF:		
F.B.		

R:\0700\Engineering\Hydrology\WATER\WATER-HYD-EX.dwg, 11/16/2016 4:23 PM


MATCHLINE – SEE RIGHT
MATCHLINE – SEE LEFT
C-1 1.05
C-2 1.95
C-3 0.53
C-4 0.72
C-5 1.11
C-6 4.75
C-7 2.53
C-8 3.22
C-9 0.98
C-10 1.97
C-11 5.78
C-12 0.50
C-13 0.62
C-14 0.57
C-15 1.16
C-16 1.80
C-17 1.53
C-18 1.83
C-19 0.41
C-20 2.54
C-21 0.94
C-22 1.18
C-23 2.44
C-24 1.95
C-25 0.21
C-26 0.50
C-27 0.23
C-28 0.73
C-29 6.73
C-30 8.85
C-31 7.08
C-32 1.16
C-33 7.66
C-34 29.49
C-35 8.44
C-36 1.36
C-37 2.78
C-38 2.05
E-1 0.64
E-2 1.19
E-3 0.51
E-4 0.60
E-5 2.00
E-6 0.85
F-1 1.68
L=416'
L=470'
L=364'
L=262'
L=164'
L=300'
L=241'
L=504'
L=286'
L=215'
L=42'
L=45'
L=227'
L=43'
L=34'
L=133'
L=260'
L=250'
L=393'
L=266'
L=254'
L=41'
L=64'
L=29'
L=19'
L=34'
L=210'
L=52'
L=70'
L=20'
L=617'
L=250'
L=207'
L=300'
L=1,077'
L=599'
L=700'
L=653'
L=609'
L=26'
L=247'
L=37'
L=303'
L=141'
L=63'
L=233'
L=300'
L=608'
L=560'
L=717'
L=584'
L=289'
L=155'
L=176'
L=140'
L=265'
L=500'
L=607'
L=1386'
L=665'
L=597'
L=111'
L=750'
L=1058'
L=635'
Lp=17'
Lp=40'
Lp=1,077'
Lp=26'
Lp=247'
Lp=37'
Lp=63'
Lp=207'
48"SD
36"SD
30"SD
24"SD
18"SD
12"SD
BOTTOM-Z00
05.0%
84"SD
60"SD
Q25 =122.2 cfs
Q100=156.5 cfs
Tc=9.8 MIN.
INV=200.0
Q25 =100.1 cfs
Q100=131.9 cfs
Tc=15.8 MIN.
Q25 =237.5 cfs
Q100=310.9 cfs
Tc=9.8 Mn.
Q25 =36.6 cfs
Q100=48.3 cfs
Tc=14.3 MIN.
Q25 =20.0 cfs
Q100=27.1 cfs
Tc=17.8 MIN.
Q25 =82.6 cfs
Q100=109.2 cfs
Tc=14.7 MIN.
INV=267.0
Q25 =100.1 cfs
Q100=131.9 cfs
Tc=14.8 MIN.
INV=266.0
Q25 =3.3 cfs
Q100=4.3 cfs
Tc=9.2 MIN.
INV=267
Q25 =22.5 cfs
Q100=29.0 cfs
Tc=9.3 MIN.
INV=372.0
Q25 =23.4 cfs
Q100=30.8 cfs
Tc=12.1 MIN.
Q25 =3.8 cfs
Q100=4.9 cfs
Tc=9.7 MIN.
Q25 =1.3 cfs
Q100=1.7 cfs
Tc=10.5 MIN.
Q25 =1.3 cfs
Q100=1.7 cfs
Tc=10.3 MIN.
Q25 =2.0 cfs
Q100=2.6 cfs
Tc=9.8 MIN.
Q25 =3.4 cfs
Q100=4.4


PRODUCT 3
LL=2389'
Lc=1345'
LL=2389'
Lc=1345'
LL=1652'
Lc=1527'
LL=763'
LL=1455'
Lc=1376'
LL=1455'
Lc=1376'
LL=1035'
Lc=1035'
LL=1035'
Lc=1035'
LL=1035'
Lc=1035