CONSENT AGENDA
DRAINAGE DISTRICT
BOARD OF DIRECTORS
February 3, 2016
9:00 A.M.

NOTICE is hereby given in accordance with Chapter 551, Texas Government Code, that a SPECIAL MEETING of the Drainage District #1 Board of Directors will be held in the Commissioners' Courtroom of the Administration Building, 100 E. Cano, 1st floor, Edinburg, Hidalgo County, Texas. Discussion and possible action relating to the following business will be transacted:

NOTICE TO THE PUBLIC
CONSENT AGENDA

The following items are of a routine or administrative nature. The Drainage District #1 Board has been furnished with background and support on each item, and/or it has been discussed at a previous meeting. All items will be acted upon by one vote without being discussed separately unless requested by a Board Member, in which event the item or items will immediately be withdrawn for individual consideration in its normal sequence after the items not requiring separate discussion have been acted upon. The remaining items will be adopted by one vote.

1. Approval of check register and payment of claims and bills - County Treasurer

2. **AI -53207** **Engineering Firm:** Tedsi Infrastructure Group

2013 Bonds
Budget 365
Rural Drainage Development Pct.1

A. Inv. No. 20152627 in the amount of $7,750.00 related to Work Authorization No. 16-Engineering Services for Ditch 23. PO#625166.

2013 Bonds
Budget 370
Control Structures Pct.1

B. Inv. No. 20152607 in the amount of $399.99 related to Work Authorization No. 4B-Construction Materials Testing for Weslaco North Lateral Control Structure. PO#626348.

C. Inv. No. 20152606 in the amount of $704.00 related to Work Authorization No. 4A-Construction Materials Testing for Monte Cristo Drain Control Structure. PO#626349.

3. **AI -53227** Approval to issue payment on the following items:

Engineering Firm: Javier Hinojosa Engineering

2013 Bonds
Budget 305
PSJA Lateral Drain Ditch

A. Inv. No. 15096 in the amount of #54,000.00 related to Work Authorization No. 1-Engineering Services for the PSJA Lateral Drain Ditch. PO#627762.

B. Inv. No. 15097 in the amount of $14,400.00 related to Work Authorization No. 2-Surveying Services for the PSJA Lateral Drain Ditch. PO#627763.

4. **AI -53217** Approval to issue payment on the following items:

Engineering Firm: Tedsi Infrastructure Group

2013 Bonds
Budget 360
Lower Rio Grande Valley Regional Water Management Plan

A. Inv#20152592 in the amount of $1,241.78 related to Work Authorization No. 8-General Management Consulting Services. PO#623578.

B. Inv#20152623 in the amount of $552.98 related to Work Authorization No. 14-Preliminary Planning & Development. PO#623576.

C. Inv#20152622 in the amount of $8,606.51 related to Work Authorization No. 13-Preliminary Engineering Report.
PO#623666.

D. Inv#20152593-R in the amount of $1,260.00 related to Work Authorization No. 13-Preliminary Engineering Report-Sub Surface Boring. PO#626177

E. Inv#20152624 in the amount of $2,760.00 related to Work Authorization No. 12-Legal Services. PO#623665.

5. **AI -53228** Approval to issue payment on the following items:

Engineering Firm: L&G Engineering

2013 Bonds
Budget 365
Rural Drainage Development Pct.3

Inv#11325360 in the amount of $15,000.00 related to Work Authorization No. 9-La Joya Watershed Project. PO#628203.

6. **AI -53234** Approval to issue payment on the following items:

Engineering Firm: L&G Engineering

2013 Bonds
Budget 365
Rural Drainage Development Pct.3

A. Inv. No. 11325442 in the amount of $13,401.16 related to Work Authorization No. 5.-La Joya Watershed Project. PO#625396.

B. Inv. No. 11325408 in the amount of $15,215.69 related to Work Authorization No. 2-Pharr McAllen Drain & South Flood Water Channel Watershed Imp. Project. PO#626939.

AI -53207 **2.**

DRAINAGE - CONSENT

Meeting Date: 02/03/2016

Submitted For: Claudette Guerrero

Submitted By: Claudette Guerrero, DRAINAGE DISTRICT

Department: DRAINAGE DISTRICT

Information

CAPTION

Engineering Firm: Tedsi Infrastructure Group

2013 Bonds
Budget 365
Rural Drainage Development Pct.1

A. Inv. No. 20152627 in the amount of $7,750.00 related to Work Authorization No. 16-Engineering Services for Ditch 23. PO#625166.

2013 Bonds
Budget 370
Control Structures Pct.1

B. Inv. No. 20152607 in the amount of $399.99 related to Work Authorization No. 4B-Construction Materials Testing for Weslaco North Lateral Control Structure. PO#626348.

C. Inv. No. 20152606 in the amount of $704.00 related to Work Authorization No. 4A-Construction Materials Testing for Monte Cristo Drain Control Structure. PO#626349.

BACKGROUND

Fiscal Impact

Attachments

Tedsi Inv#20152627
Tedsi Inv#20152607
Tedsi Inv#20152606

Form Review

Inbox	Reviewed By	Date
Budget & Management	Veronica Ortiz	01/29/2016 03:35 PM
Final Approval	Monica Badillo	01/29/2016 06:09 PM

Form Started By: Claudette Guerrero Started On: 01/29/2016 02:27 PM

Final Approval Date: 01/29/2016

Hidalgo County Drainage District No. 1

902 North Doolittle Road Edinburg, Texas 78542 Office: (956) 292-7080

Invoice Processing Checklist/Routing Slip

Invoice/ Backup

Date Received: 1/22/2016

Engineer/Firm Name: TEDSI

Project Name/Number: Ditch 23 WA No. 16

Invoice No.: 20152627

Purchase Order No.: 625166

Received By: Rosa Arce

Forwarded to: Nora D. Cavazos _____ Date: _____
Claudette Guerrero _____ Date: _____

Total # of Pages Submitted: 2

Attachments: CD

Forwarded to: Jose N. Saldivar _____ Date: _____

Forwarded to: Lora Briones _____ Date: _____

Additional Comments: $7,750.00

THIS ROUTING SLIP MUST BE KEPT WITH ORIGINAL INVOICE

1 of 2

TEDSI INFRASTRUCTURE GROUP
TEDSI
Consulting Engineers
1201 E. Expressway 83 ♦ Mission, Texas 78572
(956) 424-7898

Letter of Transmittal

TO:
Mr. Noe Saldivar PO#162516LE
Hidalgo County Drainage District No. 1
902 N. Doolittle Road
Edinburg, Texas 78542

DATE: January 21, 2016

REF.: Ditch 23 Novermber 01, 2015 to December 31, 2015 WA#1LE

TEDSI PROJECT NO.: 2013-1128-16

TRANSMITTED:

☒ For Your Use	☐ Please comment	☐ Approved as Noted
☐ As Requested	☐ Reply ASAP	☐ As Noted Below

VIA:

☐ US Mail	☐ Courier	☐ Hand Carry
☐ E-Mail	☒ LoneStar Overnight	☐ FedEx

COPIES	DESCRIPTION
1	Invoice No. 20152627 for Project No. 2013-1128-16 ✓
1	CD PDF Files ✓
	$7,750.00

REMARKS:

Thank you,

Signed: for: Clay
Mark W. Lupher, P.E., RPLS

If enclosures are not as stated, please notify us.

TEDSI INFRASTRUCTURE GROUP
Consulting Engineers
1201 East Expressway 83 ♦ Mission, Texas 78572
Tel: (956) 424-7898
Fax: (956) 424-7022
TBPE F-1640

January 21, 2016
Project No: 2013-1128-16
Invoice No: 20152627

Ms. Claudette Guerrero
Hidalgo County Drainage District No. 1
902 North Doolittle Road
Edinburg, TX 78542

Project 2013-1128-16 Ditch 23

Precinct 1 Bond Referendum - W.A. No. 16
Ditch 23, BOD Correction Approved on 7/29/2014
P. O. No. 625166
Account Number 14-133-433-365-43340-010-004

Professional Services from November 01, 2015 to December 31, 2015
Fee

Billing Phase	Fee	Percent Complete	Earned	Previous Fee Billing	Current Fee Billing
Coordination & Meetings	10,000.00	90.00	9,000.00	8,500.00	500.00
Preliminary H & H	30,000.00	90.00	27,000.00	25,500.00	1,500.00
Preliminary Utility Research	15,000.00	90.00	13,500.00	12,750.00	750.00
Dev of Pre Eng Report	100,000.00	90.00	90,000.00	85,000.00	5,000.00
Environmental Phase I	15,000.00	80.7857	12,117.86	12,117.86	0.00
Preliminary Field Survey	30,000.00	100.00	30,000.00	30,000.00	0.00
Total Fee	200,000.00		181,617.86	173,867.86	7,750.00
		Total Fee			**7,750.00**

Billing Summary	Current	Prior	To-Date
Total Billings	7,750.00	173,867.83	181,617.83
Total Fee			200,000.00
Remaining Fee			18,382.17

Total this Invoice **$7,750.00**

PLEASE REMIT PAYMENT TO:
TEDSI Infrastructure Group, Inc.
738 Highway 6 South, Suite 430
Houston, Texas 77079

Authorized By: Mark Corbitt Date: 01-21-2016
Mark D. Corbitt, P.E.
Project Manager


DITCH 023
2013-1128-16
INVOICE No. 20152627
TEDS!
STAPLES
DVD-R
DEC 2015
16X speed
1x - 16x compatible
ort-staples.com
120 min
4.7 GB

Hidalgo County Drainage District No. 1

902 North Doolittle Road Edinburg, Texas 78542 Office: (956) 292-7080

Invoice Processing Checklist/Routing Slip

Invoice/ Backup

Date Received: 12/22/2015

Engineer/Firm Name: TEDSI

Project Name/Number: Weslaco North Lateral WA No. 4B

Invoice No.: 20152607

Purchase Order No.: 623104, 626348

Received By: Rosa Arce

Forwarded to: Nora D. Cavazos _____ Date: _____
Claudette Guerrero _____ Date: _____

Total # of Pages Submitted: 2

Attachments: CD

Forwarded to: Jose N. Saldivar _____ Date: _____

Forwarded to: Lora Briones _____ Date: _____

Additional Comments: $399.99

THIS ROUTING SLIP MUST BE KEPT WITH ORIGINAL INVOICE

1 of 2
CD

TEDSI INFRASTRUCTURE GROUP
Consulting Engineers
1201 E. Expressway 83 ♦ Mission, Texas 78572
(956) 424-7898

Letter of Transmittal

TO:
Mr. Noe Saldivar
Hidalgo County Drainage District No. 1
902 N. Doolittle Road
Edinburg, Texas 78542

DATE: December 21, 2015

REF.: Weslaco North Lateral Feb. 2014 to Nov. 2015 Invoice

TEDSI PROJECT NO.: 2013-1128-04B

TRANSMITTED:

☒ For Your Use	☐ Please comment	☐ Approved as Noted
☐ As Requested	☐ Reply ASAP	☐ As Noted Below

VIA:

☐ US Mail	☐ Courier	☐ Hand Carry
☐ E-Mail	☒ LoneStar Overnight	☐ FedEx

COPIES	DESCRIPTION
1	Invoice No.20152607 for Project No. 2013-1128-04B
1	CD PDF Files

REMARKS:

Thank you,

RECEIVED
HIDALGO COUNTY
DRAINAGE DISTRICT #1
DEC 22 2015
4:28 AM / PM
BY: Rosa Cruz

Signed: for: Clay
Mark W. Lupher, P.E., RPLS

If enclosures are not as stated, please notify us.

TEDSI INFRASTRUCTURE GROUP
TEDSI
TBPE F-1840
Consulting Engineers
1201 East Expressway 83 ♦ Mission, Texas 78572
Tel: (956) 424-7898
Fax: (956) 424-7022

December 17, 2015
Project No: 2013-1128-4B
Invoice No: 20152607

Ms. Claudette Guerrero
Hidalgo County Drainage District No. 1
902 North Doolittle Road
Edinburg, TX 78542

Project 2013-1128-4B Weslaco North Lateral Control Structure

Precinct One 2012 Bond Referendum
P. O. No. 623104; 626348
Account No. 13-133-433-370-010-008-43340
W.A. No. 4B

Professional Services from February 1, 2014 to November 30, 2015
Fee

Billing Phase	Fee	Percent Complete	Earned	Previous Fee Billing	Current Fee Billing
P.O. 623104					
Design	21,436.62	90.00	19,292.96	19,292.96	0.00
Topo	6,445.15	100.00	6,445.15	6,445.15	0.00
Geotechnical	6,039.33	100.00	6,039.33	6,039.33	0.00
P.O. 626348 S.A. No. 2					
Material Testing	6,394.50	6.2552	399.99	0.00	399.99
Total Fee	40,315.60		32,177.43	31,777.44	399.99

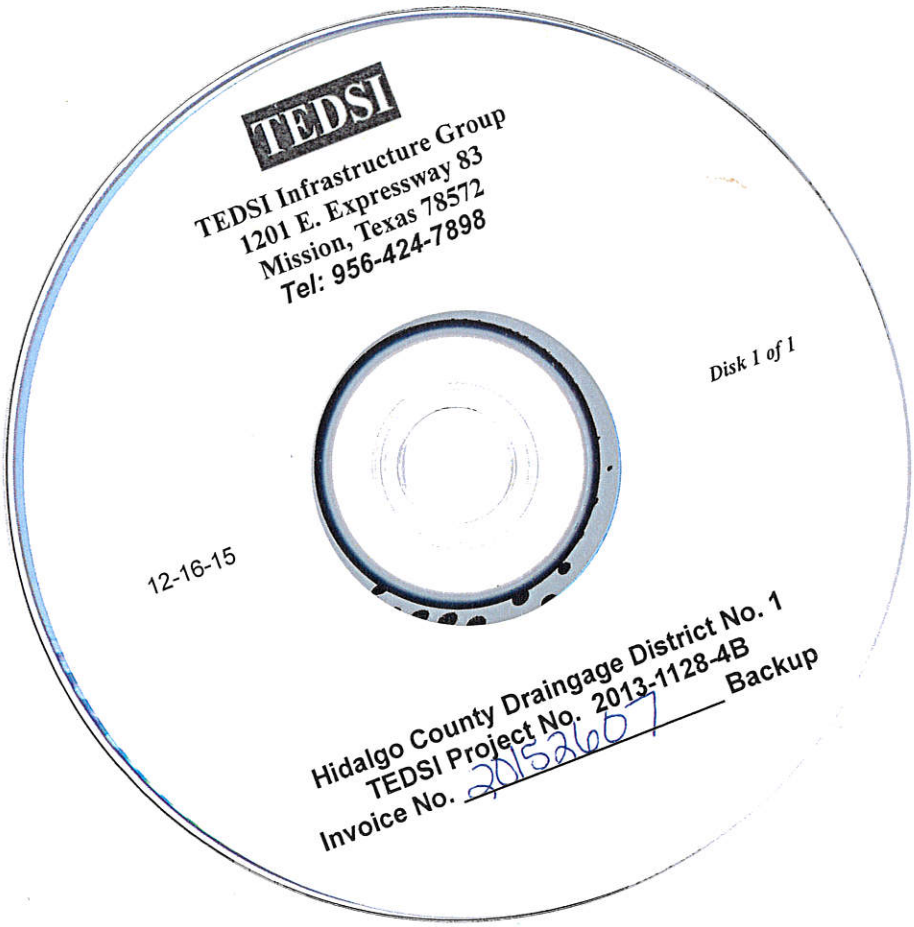
Total Fee **399.99**

Billing Summary	**Current**	**Prior**	**To-Date**
Total Billings	399.99	31,777.44	32,177.43
Total Fee			40,315.60
Remaining Fee			8,138.17

Total this Invoice **$399.99**

PLEASE REMIT PAYMENT TO:
TEDSI Infrastructure Group, Inc.
738 Highway 6 South, Suite 430
Houston, Texas 77079

Authorized By: for Jose A. Sanchez, P.E.
Project Manager
Date: 12.17.15


TEDSI
TEDSI Infrastructure Group
1201 E. Expressway 83
Mission, Texas 78572
Tel: 956-424-7898
Disk 1 of 1
12-16-15
Hidalgo County Draingage District No. 1
TEDSI Project No. 2013-1128-4B
Invoice No. 20152607 Backup

Hidalgo County Drainage District No. 1

902 North Doolittle Road Edinburg, Texas 78542 Office: (956) 292-7080

Invoice Processing Checklist/Routing Slip

Invoice/ Backup

Date Received: 12/22/2015

Engineer/Firm Name: TEDSI

Project Name/Number: Monte Cristo Drain WA No. 4A

Invoice No.: 20152606

Purchase Order No.: 623103, 626349

Received By: Rosa Arce

Forwarded to: Nora D. Cavazos _____ Date: _____
Claudette Guerrero _____ Date: _____

Total # of Pages Submitted: 2

Attachments: CD

Forwarded to: Jose N. Saldivar _____ Date: _____

Forwarded to: Lora Briones _____ Date: _____

Additional Comments: $704.00

THIS ROUTING SLIP MUST BE KEPT WITH ORIGINAL INVOICE

1 of 2
CD

TEDSI INFRASTRUCTURE GROUP
TEDSI
Consulting Engineers
1201 E. Expressway 83 ♦ Mission, Texas 78572
(956) 424-7898

Letter of Transmittal

TO:
Mr. Noe Saldivar
Hidalgo County Drainage District No. 1
902 N. Doolittle Road
Edinburg, Texas 78542

DATE: December 21, 2015

REF.: Monte Cristo Drain February 01, 2014 thru November 30, 2015

TEDSI PROJECT NO.: 2013-1128-04A

TRANSMITTED:

☒ For Your Use	☐ Please comment	☐ Approved as Noted
☐ As Requested	☐ Reply ASAP	☐ As Noted Below

VIA:

☐ US Mail	☐ Courier	☐ Hand Carry
☐ E-Mail	☒ LoneStar Overnight	☐ FedEx

COPIES	DESCRIPTION
1	Invoice No.20152606 for Project No. 2013-1128-04A
1	CD PDF Files

REMARKS:

Thank you,

RECEIVED
HIDALGO COUNTY
DRAINAGE DISTRICT #1
DEC 22 2015
4:28 AM / PM
BY: Rosa Inez

Signed: for: Clay
Jose A. Sanchez, P.E.

If enclosures are not as stated, please notify us.

TEDSI INFRASTRUCTURE GROUP
TEDSI
TBPE F-1640
Consulting Engineers
1201 East Expressway 83 ♦ Mission, Texas 78572
Tel: (956) 424-7898
Fax: (956) 424-7022

December 17, 2015
Project No: 2013-1128-4A
Invoice No: 20152606

Ms. Claudette Guerrero
Hidalgo County Drainage District No. 1
902 North Doolittle Road
Edinburg, TX 78542

Project 2013-1128-4A Monte Cristo Drain Control Structure

Precinct One 2012 Bond Referendum
P.O. No. 623103; 626349
Account No. 13-133-433-370-010-007-43340
W. A. No. 4A

Professional Services from February 1, 2014 to November 30, 2015
Fee

Billing Phase	Fee	Percent Complete	Earned	Previous Fee Billing	Current Fee Billing
P.O. 623103					
Design	21,536.62	90.00	19,382.96	19,382.96	0.00
Topo	5,451.75	100.00	5,451.75	5,451.75	0.00
Geotechnical	5,987.03	100.00	5,987.03	5,987.03	0.00
P.O. 626349 S.A. No. 2					
Material Testing	5,125.98	13.734	704.00	0.00	704.00
Total Fee	38,101.38		31,525.74	30,821.74	704.00

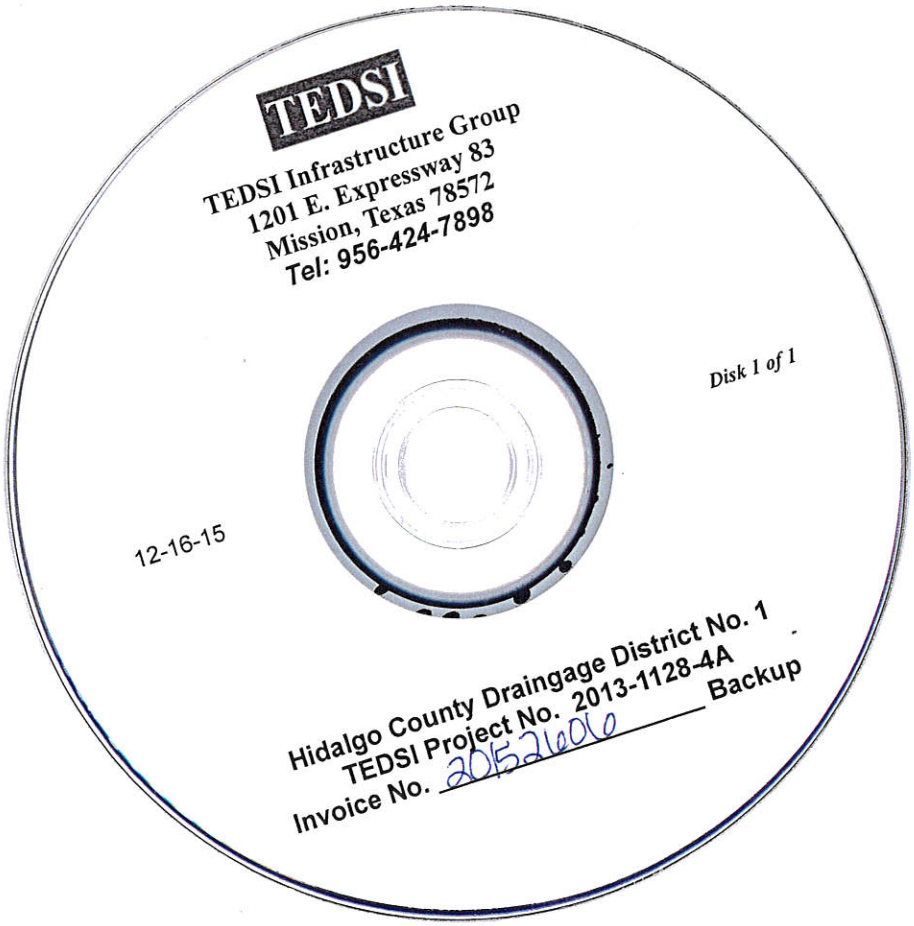
Total Fee **704.00**

Billing Summary	Current	Prior	To-Date
Total Billings	704.00	30,821.74	31,525.74
Total Fee			38,101.38
Remaining Fee			6,575.64

Total this Invoice **$704.00**

PLEASE REMIT PAYMENT TO:
TEDSI Infrastructure Group, Inc.
738 Highway 6 South, Suite 430
Houston, Texas 77079

Authorized By: Mark W. Sanchez Date: 12.17.15
for Jose A. Sanchez, P.E.
Project Manager


TEDSI
TEDSI Infrastructure Group
1201 E. Expressway 83
Mission, Texas 78572
Tel: 956-424-7898
Disk 1 of 1
12-16-15
Hidalgo County Drainage District No. 1
TEDSI Project No. 2013-1128-4A
Invoice No. 20521606 Backup

AI -53227 **3.**

DRAINAGE - CONSENT

Meeting Date: 02/03/2016

Submitted For: Claudette Guerrero Submitted By: Claudette Guerrero, DRAINAGE DISTRICT

Department: DRAINAGE DISTRICT

Information

CAPTION

Approval to issue payment on the following items:

Engineering Firm: Javier Hinojosa Engineering

2013 Bonds
Budget 305
PSJA Lateral Drain Ditch

A. Inv. No. 15096 in the amount of #54,000.00 related to Work Authorization No. 1-Engineering Services for the PSJA Lateral Drain Ditch. PO#627762.

B. Inv. No. 15097 in the amount of $14,400.00 related to Work Authorization No. 2-Surveying Services for the PSJA Lateral Drain Ditch. PO#627763.

BACKGROUND

Fiscal Impact

Attachments

Hinojosa Inv#15097
Hinojosa Inv#15096

Form Review

Inbox	Reviewed By	Date
Budget & Management	Veronica Ortiz	01/29/2016 05:14 PM
Final Approval	Monica Badillo	01/29/2016 06:09 PM

Form Started By: Claudette Guerrero Started On: 01/29/2016 04:16 PM

Final Approval Date: 01/29/2016

Hidalgo County Drainage District No. 1

902 North Doolittle Road Edinburg, Texas 78542 Office: (956) 292-7080

Invoice Processing Checklist/Routing Slip

Invoice/ Backup

Date Received: 11/12/2015

Engineer/Firm Name: Javier Hinojosa Engoneering

Project Name/Number: PSJA Lateral Drain Ditch in Pct. 2 WA No. 2

Invoice No.: 15097

Purchase Order No.: 627763

Received By: Rosa Arce

Forwarded to: Nora D. Cavazos _____ Date: _____
Claudette Guerrero _____ Date: _____

Total # of Pages Submitted: 1

Attachments: _____

Forwarded to: Jose N. Saldivar _____ Date: _____

Forwarded to: Lora Briones _____ Date: _____

Additional Comments: $14,400.00

THIS ROUTING SLIP MUST BE KEPT WITH ORIGINAL INVOICE

Javier Hinojosa Engineering
416 E. Dove Avenue
McAllen, TX 78504
956/668-1588 Fax: 956/994-8102

Invoice No. 15097

Customer

Name: Hidalgo County Drainage District No. 1
Address: 902 N. Doolittle
City: Edinburg State: Texas Zip: 78541
Attention: Mr. Raul Sesin, P.E., District Manager

Date: November 10, 2015

Project Name: PSJA Lateral Drain Ditch in Precinct No. 2

Description

Surveying services rendered towards completion of Phase I (Data Collection) and towards completion of Phase II (Preliminary Engineering & Design) and towards completion of Phase III (Final Design) for the PSJA Lateral Drain Ditch in Precinct No. 2.

P.O.#627763
Work Authorization No. 2
CONTRACT AMT.: $36,000.00

Task Description	Contract Amount	% Completed To Date	Total Due	Less Previous Payments	Amount Due This Request	Balance To Complete
Phase I - Data Collection	$5,400.00	75%	$4,050.00	$0.00	$4,050.00	$1,350.00
Phase II - Preliminary Engineering & Design	$5,400.00	75%	$4,050.00	$0.00	$4,050.00	$1,350.00
Phase III - Final Design	$18,000.00	35%	$6,300.00	$0.00	$6,300.00	$11,700.00
Phase IV - Construction	$7,200.00	0%	$0.00	$0.00	$0.00	$7,200.00
TOTAL	**$36,000.00**	**0%**	**$14,400.00**	**$0.00**	**$14,400.00**	**$21,600.00**

TOTAL AMOUNT DUE THIS INVOICE: $14,400.00

Javier Hinojosa

Submitted By: Javier Hinojosa Engineering

Office Use Only

We Appreciate Your Business.

Hidalgo County Drainage District No. 1

902 North Doolittle Road Edinburg, Texas 78542 Office: (956) 292-7080

Invoice Processing Checklist/Routing Slip

Invoice/ Backup

Date Received: 11/12/2015

Engineer/Firm Name: Javier Hinojosa Engoneering

Project Name/Number: PSJA Lateral Drain Ditch in Pct. 2 WA No. 1

Invoice No.: 15096

Purchase Order No.: 627762

Received By: Rosa Arce

Forwarded to: Nora D. Cavazos _____ Date: _____
Claudette Guerrero _____ Date: _____

Total # of Pages Submitted: 1

Attachments: _____

Forwarded to: Jose N. Saldivar _____ Date: _____

Forwarded to: Lora Briones _____ Date: _____

Additional Comments: $54,000.00

THIS ROUTING SLIP MUST BE KEPT WITH ORIGINAL INVOICE

Javier Hinojosa Engineering
416 E. Dove Avenue
McAllen, TX 78504
956/668-1588 Fax: 956/994-8102

Invoice No. 15096

Customer

Name: Hidalgo County Drainage District No. 1
Address: 902 N. Doolittle
City: Edinburg State: Texas Zip: 78541
Attention: Mr. Raul Sesin, P.E., District Manager

Date: November 10, 2015

Project Name: PSJA Lateral Drain Ditch in Precinct No. 2

Description

Engineering services rendered towards completion of the Phase I (Data Collection) and towards completion of Phase II (Preliminary Engineering & Design) and towards completion of Phase III (Final Design) for the PSJA Lateral Drain Ditch in Precinct No. 2.

P.O.#627762
Work Authorization No. 1
CONTRACT AMT.: $135,000.00

Task Description	Contract Amount	% Completed To Date	Total Due	Less Previous Payments	Amount Due This Request	Balance To Complete
Phase I - Data Collection	$20,250.00	75%	$15,187.50	$0.00	$15,187.50	$5,062.50
Phase II - Preliminary Engineering & Design	$20,250.00	75%	$15,187.50	$0.00	$15,187.50	$5,062.50
Phase III - Final Design	$67,500.00	35%	$23,625.00	$0.00	$23,625.00	$43,875.00
Phase IV - Construction	$27,000.00	0%	$0.00	$0.00	$0.00	$27,000.00
TOTAL	**$135,000.00**	**0%**	**$54,000.00**	**$0.00**	**$54,000.00**	**$81,000.00**

TOTAL AMOUNT DUE THIS INVOICE: $54,000.00

Javier Hinojosa

Submitted By: Javier Hinojosa Engineering

Office Use Only

We Appreciate Your Business.

AI -53217 **4.**

DRAINAGE - CONSENT

Meeting Date: 02/03/2016

Submitted For: Claudette Guerrero

Submitted By: Claudette Guerrero, DRAINAGE DISTRICT

Department: DRAINAGE DISTRICT

Information

CAPTION

Approval to issue payment on the following items:

Engineering Firm: Tedsi Infrastructure Group

2013 Bonds
Budget 360
Lower Rio Grande Valley Regional Water Management Plan

A. Inv#20152592 in the amount of $1,241.78 related to Work Authorization No. 8-General Management Consulting Services. PO#623578.

B. Inv#20152623 in the amount of $552.98 related to Work Authorization No. 14-Preliminary Planning & Development. PO#623576.

C. Inv#20152622 in the amount of $8,606.51 related to Work Authorization No. 13-Preliminary Engineering Report.
PO#623666.

D. Inv#20152593-R in the amount of $1,260.00 related to Work Authorization No. 13-Preliminary Engineering Report-Sub Surface Boring. PO#626177

E. Inv#20152624 in the amount of $2,760.00 related to Work Authorization No. 12-Legal Services. PO#623665.

BACKGROUND

Fiscal Impact

Attachments

Tedsi Inv#20152624
Tedsi Inv#20152593-R
Tedsi Inv#20152622
Tedsi Inv#20152623
Tedsi Inv#20152592

Form Review

Inbox	Reviewed By	Date
Budget & Management	Damaris San Miguel	01/29/2016 04:17 PM
Final Approval	Monica Badillo	01/29/2016 06:09 PM

Form Started By: Claudette Guerrero Started On: 01/29/2016 03:31 PM
Final Approval Date: 01/29/2016

Hidalgo County Drainage District No. 1

902 North Doolittle Road Edinburg, Texas 78542 Office: (956) 292-7080

Invoice Processing Checklist/Routing Slip

Invoice/ Backup

Date Received: 1/22/2016

Engineer/Firm Name: TEDSI

Project Name/Number: LRGVWMP-Legal

Invoice No.: 20152624

Purchase Order No.: 623665

Received By: Rosa Arce

Forwarded to: Nora D. Cavazos _____ Date: _____

Claudette Guerrero _____ Date: _____

Total # of Pages Submitted: 6

Attachments: CD

Forwarded to: Jose N. Saldivar _____ Date: _____

Forwarded to: Lora Briones _____ Date: _____

Additional Comments: $2,760.00

THIS ROUTING SLIP MUST BE KEPT WITH ORIGINAL INVOICE

TEDSI INFRASTRUCTURE GROUP
TEDSI
Consulting Engineers
1201 E. Expressway 83 ♦ Mission, Texas 78572
(956) 424-7898

Letter of Transmittal

TO:
Mr. Noe Saldivar PO#le23lel5
Hidalgo County Drainage District No. 1
902 N. Doolittle Road
Edinburg, Texas 78539

DATE: January 20, 2016

REF.: LRGVWMP-Legal
~~Delta Watershed Legal Water Rights Project December Invoice~~

TEDSI PROJECT NO.: 2013-1128-12

TRANSMITTED:

☒ For Your Use	☐ Please comment	☐ Approved as Noted
☐ As Requested	☐ Reply ASAP	☐ As Noted Below

VIA:

☐ US Mail	☐ Courier	☐ Hand Carry
☐ E-Mail	☒ LoneStar Overnight	☐ FedEx

COPIES	DESCRIPTION
	✓
1	TEDSI Invoice No. 20152624 for Project No. 2013-1128-12
1	CD Digital Backup ✓
	$2,760.00

REMARKS:

Thank you,

RECEIVED
HIDALGO COUNTY
DRAINAGE DISTRICT #1
JAN 22 2016
300 AM / PM
BY: Rosalee

Signed: for. Clay
Mark W. Lupher, P.E., RPLS

If enclosures are not as stated, please notify us.

TEDSI INFRASTRUCTURE GROUP
TEDSI
TBPE F-1640
Consulting Engineers
1201 East Expressway 83 • Mission, Texas 78572
Tel: (956) 424-7898
Fax: (956) 424-7022

January 19, 2016
Project No: 2013-1128-12
Invoice No: 20152624

Ms. Claudette Guerrero
Hidalgo County Drainage District No. 1
902 North Doolittle Road
Edinburg, TX 78542

Project 2013-1128-12 Lower Rio Grande Valley Regional Water Management Program - Legal

Precinct No. 1 - 2012 Bond Referendum
Account No. 13-133-433-360-43340-010-000
P.O. No. 623665

Professional Services from December 01, 2015 to December 31, 2015

Phase 200 Water Rights - BBS, PC

Consultants

Reimbursable Consultants Expense

12/31/2015	Beatty Bangle Strama, PC	Invoice No. 18567	900.00	
	Total Consultants		**900.00**	**900.00**
			Total this Phase	**$900.00**

Phase 300 Water Rights - BHDA, LLP

Consultants

Reimbursable Consultants Expense

12/31/2015	Bickerstaff Heath Delgado Acosta LLP	Invoice No. 99567	1,860.00	
	Total Consultants		**1,860.00**	**1,860.00**
			Total this Phase	**$1,860.00**

Billing Summary	**Current**	**Prior**	**To-Date**
Total Billings	2,760.00	180,506.05	183,266.05
Total Fee			206,463.14
Remaining Fee			23,197.09

Total this Invoice **$2,760.00**

Outstanding Invoices

Number	**Date**	**Balance**
20152561	11/16/2015	7,443.28
20152598	12/15/2015	90.00
Total		**7,533.28**

Total Now Due **$10,293.28**

PLEASE REMIT PAYMENT TO:
TEDSI Infrastructure Group, Inc.
738 Highway 6 South, Suite 430
Houston, Texas 77079

Authorized By: _____ Date: 1.19.16

Mark W. Lupher, P.E., RPLS
Executive Vice President

POSTED

BBS BEATTY BANGLE STRAMA PC

December 31, 2015

Jesse Salinas
TEDSI Infrastructure Group
1201 East Expressway 83
Mission, TX 78572

Invoice No. 18567

In Reference To: *Hidalgo County Delta Watershed Project and Hidalgo County Drainage District No. 1*

Professional Services

		Hours	Rate	Amount
12/01/15 ELIII	Water brief	3.00	300.00/hr	900.00
	For professional services rendered	3.00		$900.00

Previous balance	$9,150.00
Accounts receivable transactions	
11/9/2015 Payment - Thank You(No. 50252)	($7,650.00)
11/25/2015 Payment - Thank You(No. 50286)	($1,500.00)
Balance due	$900.00

TEDSI INFRASTRUCTURE GROUP
Project No. 2013-1128-12 Phase No. 200
☐ Lump Sum ☒ Approved ☐ Hold
☒ Hourly ☐ Rejected ☒ Process
Sign MLW Date 1/19/16

400 West 15th Street | Suite 1450 | Austin, Texas 78701

T (512) 879-5050 | F (512) 879-5040 | bbsfirm.com

Bickerstaff Heath Delgado Acosta LLP
3711 S. Mo-Pac Expy. Building One, Suite 300 Austin, Texas 78746 (512) 472-8021 Fax (512) 320-5638 Tax ID No 74-2153894

Hidalgo County Drainage District No. 1
c/o TEDSI Infrastructure Group, Inc.
1201 E. Expressway 83
Mission, TX 78572

January 15, 2016
Client: 003978
Matter: 000001
Invoice #: 99567
Bill Atty: DM

Page: 1

TEDSI INFRASTRUCTURE GROUP
Project No. 2013-1128-12 Phase No. 300
☐ Lump Sum ☒ Approved ☐ Hold
☒ Hourly ☐ Rejected ☒ Process
Sign MWL Date 1/19/16

RE: Drainage Improvements

For Professional Services Rendered Through December 31, 2015

SERVICES

Date	Person	Description of Services	Hours	
12/1/2015	EWR	Emails to team regarding TCEQ meeting.	0.1	
12/4/2015	EWR	Travel to and attend pre-meeting with team; attend meeting with TCEQ.	5.0	
12/16/2015	EWR	Evaluate adopted regional water plan for project consistency.	1.1	
		Total Professional Services	6.2	$1,860.00

BILLING RECAP

		Level	Hours	Rate	Amount
EWR	Emily Rogers	Partner	6.2	$300.00	$1,860.00

Total Services	$1,860.00	
Total Current Charges		$1,860.00

PAY THIS AMOUNT **$1,860.00**

PROJECT: Lower Rio Grande Valley Regional Water Supply Program - Legal
CLIENT: HCDD#1

TEDSI JOB NUMBER: 2013-1128-12

PROGRESS REPORT NO. 026

Progress Period December 01, 2015 Through December 31, 2015

DESCRIPTION	ESTIMATED COST	PERCENT COMPLETE	INVOICE TO DATE	PREVIOUS INVOICE	AMOUNT DUE
II. GCM FOR PRELIMINARY PROJECT PLANNING AND DEVELOPMENT					
(5) Water Rights, TEDSI	$39,063.14	99.99%	$39,060.95	$39,060.95	**$0.00**
(6) Water Rights Sub Consultant BBS, PC	$80,000.00	100.59%	$80,475.00	$79,575.00	**$900.00**
(7) Water Rights Sub Consultant BHDA, LLP	$65,400.00	97.45%	$63,730.10	$61,870.10	**$1,860.00**
Additional Expenses	$22,000.00	3.12%	$686.73	$686.73	**$0.00**
SUB TOTAL II	$206,463.14	89.10%	$183,952.78	$181,192.78	**$2,760.00**

TOTAL LABOR EXPENSES	$206,463.14	89.10%	$183,952.78	$181,192.78	**$2,760.00**

TOTAL INVOICE AMOUNT DUE: $2,760.00


TEDSI
Invoice No. 20152624
Project# 2013-1128-12
STAPLES
DVD-R
Dec. 2015
Backup
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www.product-support-staples.com

Hidalgo County Drainage District No. 1

902 North Doolittle Road Edinburg, Texas 78542 Office: (956) 292-7080

Invoice Processing Checklist/Routing Slip

Invoice/ Backup

Date Received: 12/17/2015

Engineer/Firm Name: TEDSI Infrastructure Group

Project Name/Number: LRGVRWMP-Preliminary Eng. Report

Invoice No.: 20152593-R

Purchase Order No.: 623666, 623958, 625152, 626144

Received By: Rosa Arce

Forwarded to: Nora D. Cavazos _____ Date: _____

Claudette Guerrero _____ Date: _____

Total # of Pages Submitted: 7

Attachments: CD

Forwarded to: Jose N. Saldivar _____ Date: _____

Forwarded to: Lora Briones _____ Date: _____

Additional Comments: $6,610.03

THIS ROUTING SLIP MUST BE KEPT WITH ORIGINAL INVOICE

TEDSI INFRASTRUCTURE GROUP
TEDSI
Consulting Engineers
1201 E. Expressway 83 ♦ Mission, Texas 78572
(956) 424-7898

Letter of Transmittal

TO:
Mr. Noe Saldivar 623446, 623958, 625152, 626144
Hidalgo County Drainage District No. 1
902 N. Doolittle Road
Edinburg, Texas 78542 LRGVRWMP- Preliminary Eng. Report.

DATE: December 16, 2015

REF.: ~~Delta Watershed~~ PER Revised November Invoice

TEDSI PROJECT NO.: 2013-1128-13

TRANSMITTED:

☒ For Your Use	☐ Please comment	☐ Approved as Noted
☐ As Requested	☐ Reply ASAP	☐ As Noted Below

VIA:

☐ US Mail	☐ Courier	☐ Hand Carry
☐ E-Mail	☒ LoneStar Overnight	☐ FedEx

COPIES	DESCRIPTION
	Revised ✓
1	Invoice No. 20152593-R for Project No. 2013-1128-13
1	Progress Report No. 022 Revised ✓
1	CD PDF Files (Invoice Backup) ✓
1	Monthly Progress Report ~~#14~~ #08 For WA #13-May 2015 (2pg.)
	$626,626.03

REMARKS:

Thank you,

RECEIVED
HIDALGO COUNTY
DRAINAGE DISTRICT #1
DEC 17 2015
4:44 AM / PM
BY: Rosa Ice

Signed: for: _____
Mark W. Lupher, P.E., RPLS

If enclosures are not as stated, please notify us.

TEDSI INFRASTRUCTURE GROUP
TEDSI
TBPE F-1640
Consulting Engineers
1201 East Expressway 83 ♦ Mission, Texas 78572
Tel: (956) 424-7898
Fax: (956) 424-7022

December 16, 2015
Project No: 2013-1128-13
Invoice No: 20152593-R

REVISED INVOICE

Ms. Claudette Guerrero
Hidalgo County Drainage District No. 1
902 North Doolittle Road
Edinburg, TX 78542

Project 2013-1128-13 Lower Rio Grande Valley Regional Water Management Program - Preliminary Engineering Report

Precinct No. 1 - 2012 Bond Referendum
P.O. Numbers 623666, 623958, 625152, 626144
Account Number 13-133-433-360-4330-010-000

Professional Services from November 01, 2015 to November 30, 2015

Billing Phase	Fee	Percent Complete	Earned	Previous Fee Billing	Current Fee Billing
P.O. 623666					
Preliminary Engineering Report	71,922.36	100.00	71,922.36	71,922.36	0.00
Data Collection	42,610.70	100.00	42,610.70	42,610.70	0.00
Geographical Information	80,256.16	100.00	80,256.16	80,256.16	0.00
Hydrologic Analysis Verification	68,952.49	100.00	68,952.49	68,952.49	0.00
Hydraulic Analysis Verification	68,952.49	100.00	68,952.49	68,952.49	0.00
H&H Subconsultant - CSE	685,957.00	91.1237	625,069.48	625,069.48	0.00
Flood Plain Mapping Verification	100,097.80	93.5238	93,615.27	93,615.27	0.00
Water Treatment & Distribution	161,061.24	100.00	161,061.24	161,061.24	0.00
Alternate Solutions	70,599.48	67.4104	47,591.39	47,591.39	0.00
Final Report	150,648.64	47.7652	71,957.67	66,607.64	5,350.03
P.O. 623958 – S.A. No. 1					
Field Surveying	9,854.44	45.3286	4,466.88	4,466.88	0.00
Geotechnical Investigations Report	51,639.65	100.00	51,639.65	51,639.65	0.00
P.O. 625152 – S.A. No. 2					
WAM Willicy County	163,471.94	95.00	155,298.34	155,298.34	0.00
WAM Hidalgo County	171,876.14	95.00	163,282.33	163,282.33	0.00
P.O. 626177 – S.A. No. 3					
Sub Surface Boring - TEDSI	23,500.00	5.9388	1,395.62	1,395.62	0.00
Sub Surface Boring - RABA	117,395.00	94.8098	111,302.00	110,042.00	1,260.00
Total Fee	2,038,795.53		1,819,374.07	1,812,764.04	6,610.03

Total Fee **6,610.03**

Project	2013-1128-13	LRGVRWMP - P.E.R.	Invoice	20152593-R

Billing Summary	Current	Prior	To-Date
Total Billings	6,610.03	1,812,764.04	1,819,374.07
Total Fee			2,038,795.53
Remaining Fee			219,421.46

Total this Invoice **$6,610.03**

Outstanding Invoices

Number	Date	Balance
20152563	11/16/2015	11,165.32
Total		**11,165.32**

Total Now Due **$17,775.35**

PLEASE REMIT PAYMENT TO:
TEDSI Infrastructure Group, Inc.
738 Highway 6 South, Suite 430
Houston, Texas 77079

RECEIVED
HIDALGO COUNTY
DRAINAGE DISTRICT #1
DEC 17 2015
4:41 AM / PM
BY: Rosa Lee

Authorized By: _____ Date: 12.16.15
Mark W. Lupher, P.E., RPLS
Executive Vice President

VISIT OUR WEBSITE AT:
www.rkci.com

INVOICE

INVOICE # :R025942

CONSULTANTS * ENVIRONMENTAL * FACILITIES * INFRASTRUCTURE

BILLING DATE :
11/22/2015

PROJECT :
AMA1406100
Delta Watershed - Geo

CLIENT :
12C05931 TEDSI Infrastructure Group

RABA KISTNER

Mr. Mark W. Lupher, P.E., RPLS
TEDSI Infrastructure Group
738 Highway 6 South
Suite 430
Houston, TX 77079

REMITTANCE ADDRESS:
RABA KISTNER, INC.
P.O. BOX 971037
DALLAS, TX 75397-1037

PHONE (210) 699-9090

CONSULTING SERVICES

RKCI Proposal No. PMA14-082-00

FOR PROFESSIONAL SERVICES RENDERED THROUGH: 11/14/2015

TOTAL FEE AUTHORIZED	114,567.00
PERCENT COMPLETE AS OF 11/14/2015	97.15%
FEE EARNED TO DATE	111,302.00
LESS PREVIOUS BILLINGS	110,042.00
AMOUNT DUE THIS INVOICE **	1,260.00

RK PROJECT MANAGER: KATRIN M LEONARD
CLIENT PHONE: 832-619-1000

RECEIVED DEC 16 2015

TEDSI INFRASTRUCTURE GROUP
Project No. 2013-1128-03 Phase No. 965
☒ Lump Sum ☒ Approved ☐ Hold
☐ Hourly ☐ Rejected ☐ Process
Sign MWL Date 12/16/15

PROJECT ACCOUNTS RECEIVABLE SUMMARY		
Amount Due This Invoice	$	1,260.00
Total of Previous Invoices - Currently Unpaid		0.00
Total Due And Payable	$	1,260.00

* Invoices are submitted monthly and are due on receipt. * Carrying charges may be assessed on invoices unpaid beyond 30 days from billing date.
AP Nov-15

PLEASE PAY FROM THIS INVOICE.

PROJECT: Lower Rio Grande Valley Regional Water Management Program - Preliminary Engineering
INVOICE No. 20152593-R

TEDSI JOB NUMBER: 2013-1128-13

PROGRESS REPORT NO. 022 Revised

Progress Period Nov. 1, 2015 Through Nov. 30, 2015

DESCRIPTION	ESTIMATED COST	PERCENT COMPLETE	INVOICE TO DATE	PREVIOUS INVOICE	AMOUNT DUE
III. PRELIMINARY ENGINEERING, DESIGN AND CONSTRUCTION					
(A) PRELIMINARY ENGINEERING					
(1) Preliminary Field Surveying	$71,922.36	100.00%	$71,922.36	$71,922.36	**$0.00**
(2) Data Collection	$42,610.70	100.00%	$42,610.70	$42,610.70	**$0.00**
(3) Geographical Information System	$80,256.16	100.00%	$80,256.16	$80,256.16	**$0.00**
(4) Hydrologic Analysis Verification	$68,952.49	100.00%	$68,952.49	$68,952.49	**$0.00**
(5) Hydraulic Analysis Verification	$68,952.49	100.00%	$68,952.49	$68,952.49	**$0.00**
H&H Sub Consultants - CSE	$685,957.00	91.12%	$625,069.48	$625,069.48	**$0.00**
(6) Flood Plain Mapping Verification	$100,097.80	93.52%	$93,615.27	$93,615.27	**$0.00**
(7) Water Treatment and Distribution	$161,061.24	100.00%	$161,061.24	$161,061.24	**$0.00**
(9) Alternate Solutions & Recommendations	$70,599.48	67.41%	$47,591.39	$47,591.39	**$0.00**
(10) Final Report- ***"Preliminary Engineering***	$150,648.64	47.77%	$71,957.67	$66,607.64	**$5,350.03**
SA # 1 Geotechnical Investigations	$61,494.09	91.24%	$56,106.53	$56,106.53	**$0.00**
SA #2 WAM Willacy County	$163,471.94	95.00%	$155,298.34	$155,298.34	**$0.00**
SA #2 WAM Hidalgo County	$171,876.14	95.00%	$163,282.33	$163,282.33	**$0.00**
SA # 3 Sub Surface Boring	$140,895.00	79.99%	$112,697.62	$111,437.62	**$1,260.00**
SUB TOTAL III.A	$2,038,795.53	89.24%	$1,819,374.07	$1,812,764.04	**$6,610.03**

TOTAL (LABOR AND DIRECT EXPENSES)	$2,038,795.53	89.24%	$1,819,374.07	$1,812,764.04	**$6,610.03**

TOTAL LABOR AND DIRECT EXPENSES	$2,038,795.53	89.24%	$1,819,374.07	$1,812,764.04	**$6,610.03**

TOTAL INVOICE AMOUNT DUE: $6,610.03

LRGVWMP – WA#13
Monthly Progress Report No. #08 – May 2015

Period of Coverage: May 01, 2015 to May 31, 2015
Date of Submittal: June 29, 2015
Submitted To: Claudette Guerrero, HCDD #1
PREPARED BY: Mark Lupher, P.E., TEDSI Infrastructure, Inc.
This study covers the following activities:

1. Coordination and meetings
2. Data collection and assimilation
3. Site visits/field reconnaissance
4. LiDAR topographic data processing
5. Watershed & subbasin delineations
6. Estimation of subwatershed & hydrologic parameters
7. Land use data processing
8. HEC-HMS modeling analysis
9. Main Floodwater Channel topographic data manipulation/ preparation
10. GeoRAS processing for HEC-RAS development
11. HEC-RAS model development and modeling analysis
12. Downstream flow requirements (downstream of Pachita Flood Gate).
13. Floodwater diversion and detention alternative analysis
14. Risk based economic analysis of flood damage analysis
15. Floodplain delineation/mapping
16. Water sources and water availability analysis.
17. Hydraulic analysis of preliminary alternative water development strategy
18. Draft H&H Report

PROGRESS TO REPORT FOR THIS PERIOD

Activity 1 – Coordination and Meetings

Coordination with project team members /Irrigation Districts/Region M & TWDB for discussions on collection & storage of Water. Attended Public Hearing on Region M -2012 SWP

Activity 2 – Data Collection and Assimilation

Activity 3 – Site Visits

Activity 4 – LiDAR topographic data processing

Activity 5 – Watershed & subbasin delineations

Activity 6 – Estimation of subwatershed & hydrologic parameters

Activity 7 – Land use data processing

Activity 8 –HEC-HMS Modeling Analysis

Activity 9 – Main Floodwater Channel cross section topographic data manipulation and preparation

Activity 10 – GeoRAS processing for HEC-RAS development

Activity 11 – HEC-RAS model development and modeling analysis

Activity 12 – Downstream flow requirements (downstream of Pachita Flood Gate).

Activity 13 – Floodwater diversion and detention alternative analysis

Activity 14 – Risk based economic analysis of flood damage analysis

Activity 15 – Floodplain delineation/mapping

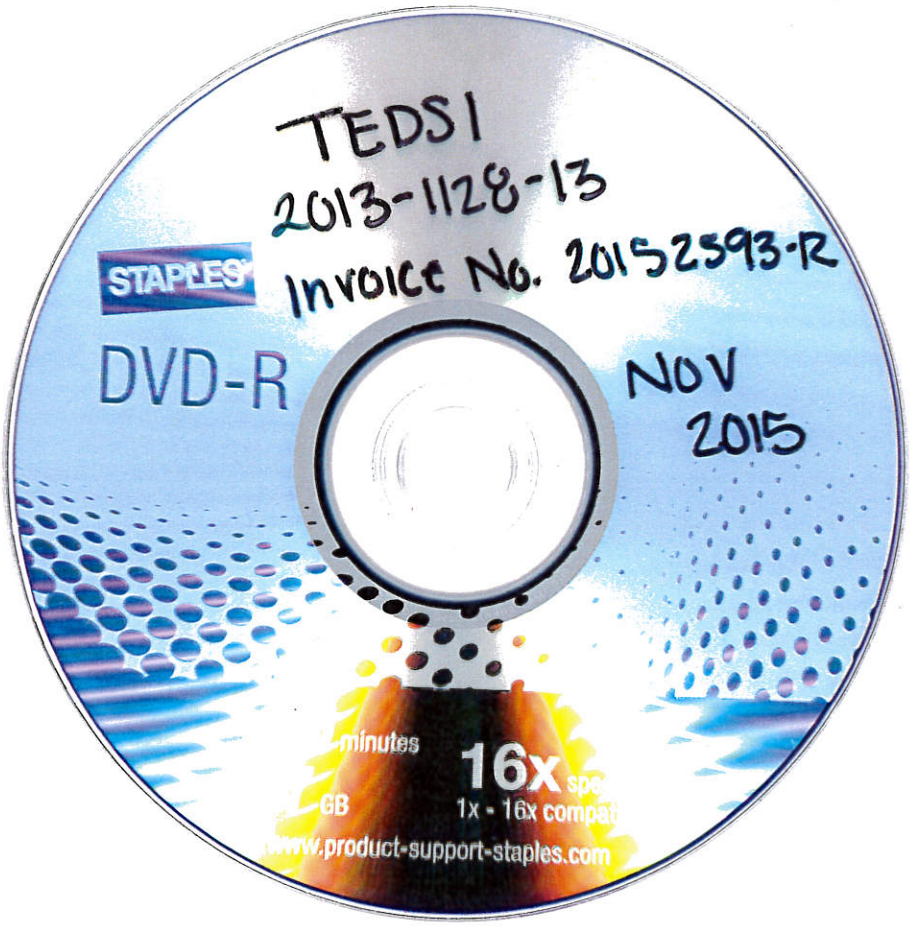
Continued efforts on delineating floodplain mapping

Activity 16 – Water sources and water availability analysis.

Activity 17 – Hydraulic analysis of preliminary alternative water development strategy

Continued alternative solutions and recommendations for capturing and storing water in various locations such as Santa Cruz Irrigation Reservoir, Engleman Irrigation Reservoir and the Proposed HCDD#1 Delta Reservoir. Also evaluation of Alternative Solutions needed to implement Phase I to begin pumping Raw Water quickly into the existing reservoirs both for recapturing and flood control measures. Coordinating Lease Agreement with Santa Cruz for long term Water storage lease

Activity 18 – Draft H&H report.


TEDSI
2013-1128-13
Invoice No. 20152593-R
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www.product-support-staples.com

Hidalgo County Drainage District No. 1

902 North Doolittle Road Edinburg, Texas 78542 Office: (956) 292-7080

Invoice Processing Checklist/Routing Slip

Invoice/ Backup

Date Received: 1/19/2016

Engineer/Firm Name: TEDSI

Project Name/Number: LRGVWMP-Preliminary Eng. Report

Invoice No.: 20152622

Purchase Order No.: 623666, 623958, 625152 & 626144

Received By: Rosa Arce

Forwarded to: Nora D. Cavazos _____ Date: _____
Claudette Guerrero _____ Date: _____

Total # of Pages Submitted: 6

Attachments: CD

Forwarded to: Jose N. Saldivar _____ Date: _____

Forwarded to: Lora Briones _____ Date: _____

Additional Comments: $8,606.51

THIS ROUTING SLIP MUST BE KEPT WITH ORIGINAL INVOICE

1 of 1e

TEDSI INFRASTRUCTURE GROUP
Consulting Engineers
1201 E. Expressway 83 ♦ Mission, Texas 78572
(956) 424-7898

Letter of Transmittal

TO:
Mr. Noe Saldivar P.O# 1e23611e, 1e23958, 1e25152 & 1e2e144
Hidalgo County Drainage District No. 1
902 N. Doolittle Road
Edinburg, Texas 78542

DATE: January 18, 2016

REF.: LRGVRWMP-Preliminary Eng. Report
~~Delta Watershed PER December Invoice~~

TEDSI PROJECT NO.: 2013-1128-13

TRANSMITTED:

☒ For Your Use	☐ Please comment	☐ Approved as Noted
☐ As Requested	☐ Reply ASAP	☐ As Noted Below

VIA:

☐ US Mail	☐ Courier	☐ Hand Carry
☐ E-Mail	☒ LoneStar Overnight	☐ FedEx

COPIES	DESCRIPTION
	✓
1	Invoice No. 20152622 for Project No. 2013-1128-13
1	Progress Report No. 023 ✓
1	CD PDF Files (Invoice Backup) ✓
1	Monthly Progress Report #15
	$8,1e0e.51

REMARKS:

RECEIVED
HIDALGO COUNTY
DRAINAGE DISTRICT #1
JAN 19 2016
11:44 AM/PM
BY: RosaOrce

Thank you,

Signed: for: Clay
Mark W. Lupher, P.E., RPLS

If enclosures are not as stated, please notify us.

TEDSI INFRASTRUCTURE GROUP
TEDSI
TBPE F-1640
Consulting Engineers
1201 East Expressway 83 ♦ Mission, Texas 78572
Tel: (956) 424-7898
Fax: (956) 424-7022

January 15, 2016
Project No: 2013-1128-13
Invoice No: 20152622

Ms. Claudette Guerrero
Hidalgo County Drainage District No. 1
902 North Doolittle Road
Edinburg, TX 78542

Project 2013-1128-13 Lower Rio Grande Valley Regional Water Management Program - Preliminary Engineering Report

Precinct No. 1 - 2012 Bond Referendum
P.O. Numbers 623666, 623958, 625152, 626144
Account Number 13-133-433-360-4330-010-000

Professional Services from December 01, 2015 to December 31, 2015

Billing Phase	Fee	Percent Complete	Earned	Previous Fee Billing	Current Fee Billing
P.O. 623666					
Preliminary Engineering Report	71,922.36	100.00	71,922.36	71,922.36	0.00
Data Collection	42,610.70	100.00	42,610.70	42,610.70	0.00
Geographical Information	80,256.16	100.00	80,256.16	80,256.16	0.00
Hydrologic Analysis Verification	68,952.49	100.00	68,952.49	68,952.49	0.00
Hydraulic Analysis Verification	68,952.49	100.00	68,952.49	68,952.49	0.00
H&H Subconsultant - CSE	685,957.00	91.1237	625,069.48	625,069.48	0.00
Flood Plain Mapping Verification	100,097.80	93.5238	93,615.27	93,615.27	0.00
Water Treatment & Distribution	161,061.24	100.00	161,061.24	161,061.24	0.00
Alternate Solutions	70,599.48	67.4104	47,591.39	47,591.39	0.00
Final Report	150,648.64	53.4782	80,564.18	71,957.67	8,606.51
P.O. 623958 – S.A. No. 1					
Field Surveying	9,854.44	45.3286	4,466.88	4,466.88	0.00
Geotechnical Investigations Report	51,639.65	100.00	51,639.65	51,639.65	0.00
P.O. 625152 – S.A. No. 2					
WAM Willicy County	163,471.94	95.00	155,298.34	155,298.34	0.00
WAM Hidalgo County	171,876.14	95.00	163,282.33	163,282.33	0.00
P.O. 626177 – S.A. No. 3					
Sub Surface Boring - TEDSI	23,500.00	5.9388	1,395.62	1,395.62	0.00
Sub Surface Boring - RABA	117,395.00	94.8098	111,302.00	111,302.00	0.00
Total Fee	2,038,795.53		1,827,980.58	1,819,374.07	8,606.51
		Total Fee			**8,606.51**

Project	2013-1128-13	LRGVRWMP - P.E.R.	Invoice	20152622

Billing Summary	Current	Prior	To-Date
Total Billings	8,606.51	1,819,374.07	1,827,980.58
Total Fee			2,038,795.53
Remaining Fee			210,814.95

Total this Invoice **$8,606.51**

Outstanding Invoices

Number	Date	Balance
20152593-R	12/16/2015	6,610.03
Total		**6,610.03**

Total Now Due **$15,216.54**

PLEASE REMIT PAYMENT TO:
TEDSI Infrastructure Group, Inc.
738 Highway 6 South, Suite 430
Houston, Texas 77079

Authorized By: _____ Date: 1.15.16

Mark W. Lupher, P.E., RPLS
Executive Vice President

PROJECT: Lower Rio Grande Valley Regional Water Management Program - Preliminary Engineering
INVOICE No. 20152622

TEDSI JOB NUMBER: 2013-1128-13

PROGRESS REPORT NO. 023

Progress Period Dec. 1, 2015 Through Dec. 31, 2015

DESCRIPTION	ESTIMATED COST	PERCENT COMPLETE	INVOICE TO DATE	PREVIOUS INVOICE	AMOUNT DUE
III. PRELIMINARY ENGINEERING, DESIGN AND CONSTRUCTION					
(A) PRELIMINARY ENGINEERING					
(1) Preliminary Field Surveying	$71,922.36	100.00%	$71,922.36	$71,922.36	**$0.00**
(2) Data Collection	$42,610.70	100.00%	$42,610.70	$42,610.70	**$0.00**
(3) Geographical Information System	$80,256.16	100.00%	$80,256.16	$80,256.16	**$0.00**
(4) Hydrologic Analysis Verification	$68,952.49	100.00%	$68,952.49	$68,952.49	**$0.00**
(5) Hydraulic Analysis Verification	$68,952.49	100.00%	$68,952.49	$68,952.49	**$0.00**
H&H Sub Consultants - CSE	$685,957.00	91.12%	$625,069.48	$625,069.48	**$0.00**
(6) Flood Plain Mapping Verification	$100,097.80	93.52%	$93,615.27	$93,615.27	**$0.00**
(7) Water Treatment and Distribution	$161,061.24	100.00%	$161,061.24	$161,061.24	**$0.00**
(9) Alternate Solutions & Recommendations	$70,599.48	67.41%	$47,591.39	$47,591.39	**$0.00**
(10) Final Report- ***"Preliminary Engineering***	$150,648.64	53.48%	$80,564.18	$71,957.67	**$8,606.51**
SA # 1 Geotechnical Investigations	$61,494.09	91.24%	$56,106.53	$56,106.53	**$0.00**
SA #2 WAM Willacy County	$163,471.94	95.00%	$155,298.34	$155,298.34	**$0.00**
SA #2 WAM Hidalgo County	$171,876.14	95.00%	$163,282.33	$163,282.33	**$0.00**
SA # 3 Sub Surface Boring	$140,895.00	79.99%	$112,697.62	$112,697.62	**$0.00**
SUB TOTAL III.A	$2,038,795.53	89.66%	$1,827,980.58	$1,819,374.07	**$8,606.51**

TOTAL (LABOR AND DIRECT EXPENSES)	$2,038,795.53	89.66%	$1,827,980.58	$1,819,374.07	**$8,606.51**

TOTAL LABOR AND DIRECT EXPENSES	$2,038,795.53	89.66%	$1,827,980.58	$1,819,374.07	**$8,606.51**

TOTAL INVOICE AMOUNT DUE: $8,606.51

LRGVWMP – WA#13
Monthly Progress Report No. #15 – December 2015

Period of Coverage: December 01, 2015 to December 31, 2015
Date of Submittal: January 15, 2015
Submitted To: Claudette Guerrero, HCDD #1
PREPARED BY: Mark Lupher, P.E., TEDSI Infrastructure, Inc.
This study covers the following activities:

1. Preliminary Field Surveying
2. Data Collection
3. Geographical Information System
4. Hydrologic Analysis Verification
5. Hydraulic Analysis Verification
6. Flood Plain Mapping Verification
7. Water Treatment and Distribution
8. Alternate Solutions & Recommendations
9. Final Report-"Preliminary Engineering"
10. SA #1 Geotechnical Investigation
11. SA #2 WAM Willacy County
12. SA#2 WAM Hidalgo County
13. SA#3 Sub Surface Boring

PROGRESS TO REPORT FOR THIS PERIOD

Activity 1 – Preliminary Field Surveying

This task is 100% Complete

Activity 2 – Data Collection

This task is 100% Complete

Activity 3 – Geographical Information System

This task is 100% Complete

Activity 4 – Hydrologic Analysis Verification

This task is 100% Complete

Activity 5 – Hydraulic Analysis Verification

This task is 100% Complete

Activity 6 – Flood Plain Mapping Verification

Completed (95%) to date

Activity 7 – Water Treatment and Distribution

This task is 100% Complete

Activity 8 –Alternate Solutions & Recommendations

Completed (67%) to date

Activity 9 – Final Report – "Preliminary Engineering"

53.4782% to date – TEDSI continues to revise the PER based on revised design concepts and feedback from the client and stakeholders.

Activity 10 – SA#1 Geotechnical Investigations

This task is 100% Complete

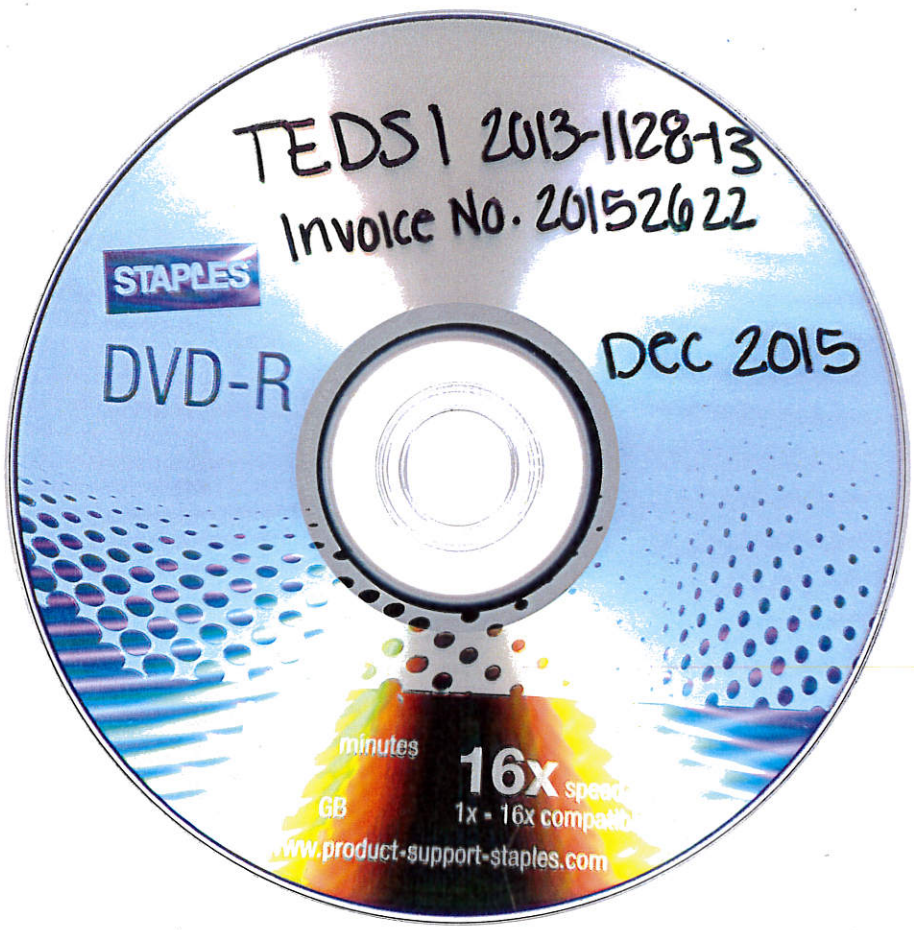
Activity 11 – SA#2 WAM Willacy County

Completed (95%) awaiting final approval to finalize

Activity 12 – SA#2 WAM Hidalgo County

Completed (95%) awaiting final approval to finalize

Activity 13 – SA#3 Sub Surface Boring


TEDS1 2013-112813
Invoice No. 20152622
STAPLES
DVD-R
DEC 2015
minutes
GB
16x speed
1x - 16x compatible
www.product-support-staples.com

Hidalgo County Drainage District No. 1

902 North Doolittle Road Edinburg, Texas 78542 Office: (956) 292-7080

Invoice Processing Checklist/Routing Slip

Invoice/ Backup

Date Received: 1/19/2016

Engineer/Firm Name: TEDSI

Project Name/Number: LRGVWMP-Preliminary Planning & Dev. WA No. 14

Invoice No.: 20152623

Purchase Order No.: 623576

Received By: Rosa Arce

Forwarded to: Nora D. Cavazos _____ Date: _____
Claudette Guerrero _____ Date: _____

Total # of Pages Submitted: 5

Attachments: CD

Forwarded to: Jose N. Saldivar _____ Date: _____

Forwarded to: Lora Briones _____ Date: _____

Additional Comments: $552.98

THIS ROUTING SLIP MUST BE KEPT WITH ORIGINAL INVOICE

TEDSI INFRASTRUCTURE GROUP
TEDSI
Consulting Engineers
1201 E. Expressway 83 ♦ Mission, Texas 78572
(956) 424-7898

Letter of Transmittal

TO:
Mr. Noe Saldivar PO#1623574
Hidalgo County Drainage District No. 1
902 N. Doolittle Road
Edinburg, Texas 78542

DATE: January 18, 2016

REF.: ~~LRGVWMP-Preliminary Planning & Dev.~~ ~~Delta Watershed PPD December Invoice~~ WA#14

TEDSI PROJECT NO.: 2013-1128-14

TRANSMITTED:

☒ For Your Use	☐ Please comment	☐ Approved as Noted
☐ As Requested	☐ Reply ASAP	☐ As Noted Below

VIA:

☐ US Mail	☐ Courier	☐ Hand Carry
☐ E-Mail	☒ LoneStar Overnight	☐ FedEx

COPIES	DESCRIPTION
	✓
1	Invoice No. 20152623 for Project No. 2013-1128-14
1	Progress Report No. 020. ✓
1	CD (digital files) ✓
1	Labor Detail ✓
1	Project Progress Report ✓
	$552.98
	.

REMARKS:

Thank you,

RECEIVED
HIDALGO COUNTY
DRAINAGE DISTRICT #1
JAN 19 2016
11:44 AM / PM
BY: Rosa Cruz

Signed: for. Clay
Mark W. Lupher, P.E., RPLS

If enclosures are not as stated, please notify us.

TEDSI INFRASTRUCTURE GROUP
TEDSI
TBPE F-1640
Consulting Engineers
1201 East Expressway 83 ♦ Mission, Texas 78572
Tel: (956) 424-7898
Fax: (956) 424-7022

January 15, 2016
Project No: 2013-1128-14
Invoice No: 20152623

Ms. Claudette Guerrero
Hidalgo County Drainage District No. 1
902 North Doolittle Road
Edinburg, TX 78542

Project 2013-1128-14 LRGVRWMP - Preliminary Planning & Development

Precinct No. 1 2012 Bond Referendum
Field Surveying, Water Quality and Architectural Services
Account No. 13-133-433-360-010-000-43340
P. O. No. 623576
Work Authorization No. 14

Professional Services from December 01, 2015 to December 31, 2015

Billing Phase	Fee	Percent Complete	Earned	Previous Fee Billing	Current Fee Billing	
Field Surveying-TEDSI	81,571.20	40.5107	33,045.06	33,045.06	0.00	
Water Quality Samples & Analysis *	140,280.76	68.5863	96,213.38	95,660.40	552.98	
Architectural Services	70,128.10	0.00	0.00	0.00	0.00	
Total Fee	291,980.06		129,258.44	128,705.46	552.98	
		Total Fee				**552.98**
				Total this Phase		**$552.98**

Billing Summary	Current	Prior	To-Date	
Total Billings	552.98	128,705.46	129,258.44	
Total Fee			291,980.06	
Remaining Fee			162,721.62	
			Total this Invoice	**$552.98**

Outstanding Invoices

Number	Date	Balance
20152594	12/14/2015	737.18
Total		**737.18**

Total Now Due **$1,290.16**

PLEASE REMIT PAYMENT TO:
TEDSI Infrastructure Group, Inc.
738 Highway 6 South, Suite 430
Houston, Texas 77079

Authorized By: _____ Date: 1.15.16
Mark W. Lupher, P.E., RPLS
Executive Vice President

PROJECT: Lower Rio Grande Valley Regional Water Management Program
CLIENT: Hidalgo County Drainage District No. 1

TEDSI JOB NUMBER: 2013-1128-14

PROGRESS REPORT NO. 020

Progress Period December 01, 2015 Through December 31, 2015

DESCRIPTION	ESTIMATED COST	PERCENT COMPLETE	INVOICE TO DATE	PREVIOUS INVOICE	AMOUNT DUE
II. GCM FOR PRELIMINARY PROJECT PLANNING AND DEVELOPMENT					
(5) Architect Services	$70,128.10	0.00%	$0.00	$0.00	**$0.00**
SUB TOTAL II	$70,128.10	0.00%	$0.00	$0.00	**$0.00**
III. PRELIMINARY ENGINEERING, DESIGN AND CONSTRUCTION					
(A) PRELIMINARY ENGINEERING					
(1) Preliminary Field Surveying	$81,571.20	40.51%	$33,045.06	$33,045.06	**$0.00**
(7) Raw Water Sampling and Analysis	$64,293.76	74.41%	$47,841.51	$47,288.53	**$552.98**
Water Analysis Sub	$75,987.00	63.66%	$48,371.87	$48,371.87	**$0.00**
SUB TOTAL III.A	$221,851.96	58.26%	$129,258.44	$128,705.46	**$552.98**

TOTAL LABOR EXPENSES	$291,980.06	44.27%	$129,258.44	$128,705.46	**$552.98**

TOTAL INVOICE AMOUNT DUE: $552.98

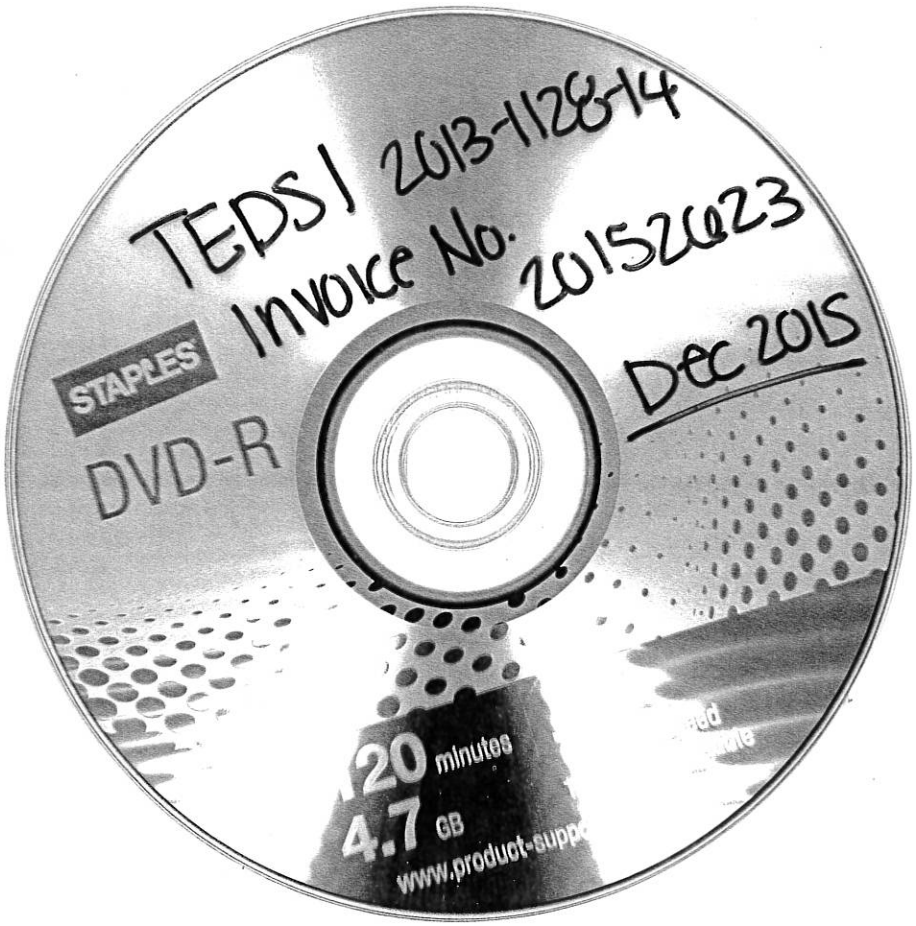
WORK AUTHORIZATION #14
LABOR DETAIL
DELTA AREA WATERSHED

Dec. 2015	Principal Engineer	Project Manager (VIII)	Sr. Engineer (V)	Sr. Engineer (V)	Project Engineer (III)	Project Engineer (II)	Engr. In Training (E.I.T.)	Sr. Engr. Designer	Engr. Designer	CADD Operator	Sr. GIS Designer	GIS Designer	GIS System Manager	IT System Manager	Project Admin	Assistant Admin
	J. Salinas	M. Lupher	M. Corbitt	J. Sanchez	E. Dietrich		S. DeLeon/J.Adams		R. Cavazos	J. Adams/R. Villarreal	J. Perez		M. Manzano	A. Bray	D. Castillo	C. Garza
	$266.62	$232.61	$187.37	$187.37	$159.15	$144.56	$122.87	$117.57	$109.24	$104.61	$135.00	$90.00	$175.00	$180.00	$178.37	$73.13
Dates:																
12/21/2015							4.5									
Total	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$552.92	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
	0	0	0	0	0	0	4.5	0	0	0	0	0	0	0	0	0

	Total This Month $552.92

TEDSI INFRASTRUCTURE GROUP *Consulting Engineers* TEDSI TBPE F-1640	Project Progress Report
TO: Hidalgo County Drainage District No. 1	**DATE:** January 15, 2016
FROM: Mr. Mark Lupher, P.E., Project Manager	**TEDSI PROJECT NO.:** 2013-1128-14
REFERENCE: Hourly Progress Report	
Progress Report for Invoice No. 20152623, December 01, 2015 to December 31, 2015	

- Week Report by Week for Samantha DeLeon
  - Week of: 12-26-15
    - Collection of Water Samples at Proposed Reservoir, Lake Edinburg, and Engleman Reservoir


TEDS1 2013-1128-14
Invoice No. 20152023
Dec 2015
STAPLES
DVD-R
120 minutes
4.7 GB

Hidalgo County Drainage District No. 1

902 North Doolittle Road Edinburg, Texas 78542 Office: (956) 292-7080

Invoice Processing Checklist/Routing Slip

Invoice/ Backup

Date Received: 12/15/2015

Engineer/Firm Name: TEDSI Infrastructure Group

Project Name/Number: LRGVRWMP-General Management Consultant WA No. 8

Invoice No.: 20152592

Purchase Order No.: 623578

Received By: Rosa Arce

Forwarded to: Nora D. Cavazos _____ Date: _____

Claudette Guerrero _____ Date: _____

Total # of Pages Submitted: 17

Attachments: _____

Forwarded to: Jose N. Saldivar _____ Date: _____

Forwarded to: Lora Briones _____ Date: _____

Additional Comments: $ 2, 821.34

THIS ROUTING SLIP MUST BE KEPT WITH ORIGINAL INVOICE

1 of 17 pages

TEDSI INFRASTRUCTURE GROUP
Consulting Engineers
1201 E. Expressway 83 ♦ Mission, Texas 78572
(956) 424-7898

Letter of Transmittal

TO:
Mr. Noe Saldivar
Hidalgo County Drainage District No. 1
902 N. Doolittle Road
Edinburg, Texas 78542

DATE: December 14, 2015

REF.: ~~Delta Area Watershed November~~ Invoice — LRGVRWMP-General Management Consultant

TEDSI PROJECT NO.: 2013-1128-08

TRANSMITTED:

☒ For Your Use	☐ Please comment	☐ Approved as Noted
☐ As Requested	☐ Reply ASAP	☐ As Noted Below

VIA:

☐ US Mail	☐ Courier	☐ Hand Carry
☐ E-Mail	☒ LoneStar Overnight	☐ FedEx

COPIES	DESCRIPTION
1	TEDSI Invoice No. 20152592 along with needed backup ✓
	$ 2,821.34

REMARKS:

Thank you,

RECEIVED
HIDALGO COUNTY
DRAINAGE DISTRICT #1
DEC 15 2015
11:30 AM / PM
BY: Rosa Orce

Signed: for: Clay
Mark W. Lupher, P.E., RPLS

If enclosures are not as stated, please notify us.

TEDSI INFRASTRUCTURE GROUP
TEDSI
TBPE F-1640
Consulting Engineers
1201 East Expressway 83 ♦ Mission, Texas 78572
Tel: (956) 424-7898
Fax: (956) 424-7022

December 14, 2015
Project No: 2013-1128-08
Invoice No: 20152592

Ms. Claudette Guerrero
Hidalgo County Drainage District No. 1
902 North Doolittle Road
Edinburg, TX 78542

Project 2013-1128-08 Lower Rio Grande Valley Regional Water Management Program - General Management Consultant

Precinct No. 1 2012 Bond Referendum
General Engineering Management Services
Account No. 13-133-433-360-010-000-43340
P. O. No. 623578
Work Authorization No. 8

Professional Services from November 01, 2015 to November 30, 2015

Billing Phase	Fee	Percent Complete	Earned	Previous Fee Billing	Current Fee Billing
Preliminary Planning & Development	856,165.48	90.2857	772,995.00	772,995.00	0.00
Preliminary Engineering	261,709.66	54.8292	143,493.31	143,493.31	0.00
Expenses	524,590.34	38.7458	203,256.63	200,435.29	2,821.34
Total Fee	1,642,465.48		1,119,744.94	1,116,923.60	2,821.34

Total Fee **2,821.34**

Billing Summary	Current	Prior	To-Date
Total Billings	2,821.34	1,116,923.38	1,119,744.72
Total Fee			1,642,465.48
Remaining Fee			522,720.76

Total this Invoice **$2,821.34**

Outstanding Invoices

Number	Date	Balance
20152562	11/16/2015	30,935.87
Total		**30,935.87**

Total Now Due **$33,757.21**

PLEASE REMIT PAYMENT TO:
TEDSI Infrastructure Group, Inc.
738 Highway 6 South, Suite 430
Houston, Texas 77079

Authorized By: _____ Date: 12.14.15
Mark W. Lupher, P.E., RPLS
Executive Vice President

You're all set for your trip!

2013-1128-08
(300)

Southwest

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Upcoming Trip: 09/22/15 - Harlingen

AIR Itinerary

AIR Confirmation: HXCJC5

Confirmation Date: 09/22/2015

Passenger(s)	Rapid Rewards #	Ticket #	Expiration	Est. Points Earned
LUPHER/MARK W	125740112	5262145214832	Sep 21, 2016	5022

Rapid Rewards points earned are only estimates. Visit your (MySouthwest, Southwest.com or Rapid Rewards) account for the most accurate totals - including A-List & A-List Preferred bonus points.

Date	Flight	Departure/Arrival
Tue Sep 22	39	Depart **HOUSTON (HOBBY), TX** (HOU) on Southwest Airlines at **6:00 PM** Arrive in **HARLINGEN, TX** (HRL) at **7:00 PM** Travel Time 1 hrs 0 mins Business Select
Wed Sep 23	1283	Depart **HARLINGEN, TX** (HRL) on Southwest Airlines at **8:00 PM** Arrive in **HOUSTON (HOBBY), TX** (HOU) at **9:05 PM** Travel Time 1 hrs 5 mins Business Select

What you need to know to travel:

- Don't forget to check in for your flight(s) 24 hours before your trip on southwest.com or your mobile device. This will secure your boarding position on your flights.
- Southwest Airlines does not have assigned seats, so you can choose your seat when you board the plane. You will be assigned a boarding position based on your checkin time. The earlier you check in, within 24 hours of your flight, the earlier you get to board.

forfeited.

Air Cost: 478.00

Carryon Items: 1 Bag + small personal item are free. See full details. Checked Items: First and second bags fly free. Weight and size limits apply.

Fare Rule(s): 5262145214832: NONTRANSFERABLE.
Valid only on Southwest Airlines. All travel involving funds from this Confirmation Number must be completed by the expiration date. Unused travel funds may only be applied toward the purchase of future travel for the individual named on the ticket. Any changes to this itinerary may result in a fare increase.

HOU WN HRL209.21KZBP WN HOU209.21KZBP 418.42 END ZPHOUHRL
XFHOU4.5HRL4.5 AY11.20$HOU5.60 HRL5.60

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Get EarlyBird Check-In® Details »

Cost and Payment Summary

AIR - HXCJC5

Base Fare	$ 418.42
Excise Taxes	$ 31.38
Segment Fee	$ 8.00
Passenger Facility Charge	$ 9.00
September 11th Security Fee	$ 11.20
Total Air Cost	**$ 478.00**

Payment Information
Payment Type: Amer Express
XXXXXXXXXX7003
Date: Sep 22, 2015
Payment Amount: $478.00

Flight Status Alerts

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PO BOX 35250
TULSA, OK 74153-1167

TAX Id: 73-1389882

DOLLAR RENT A CAR

CHARGE DETAIL

Rental Agreement No: 598716985
Date: 09/24/2015
Document: 955000177268

Renter: MARK LUPHER
Account No.: **********2004 AMX

2013-1128-08
300

MARK LUPHER
17406 MASONRIDGE DR
HOUSTON, TX 77095

RENTAL REFERENCE

Rental Agreement No: 598716985
Reservation ID: G7012439187
Frequent Traveler: WN00000125740112

RENTAL DETAILS

Rate Plan: IN: RCHD1 OUT: RCHD1
Rented On: 09/22/2015 19:04 LOC# 064212
HARLINGEN AP, TX
Returned On: 09/23/2015 19:04 LOC# 064212
HARLINGEN AP, TX
Car Description: FIESTA 5D FGP8890
Veh. No.: 8072829
CAR CLASS Charged: B MILEAGE In: 18,476
Rented: B Out: 18,362
Reserved: B Driven: 114

MISCELLANEOUS INFORMATION

CC AUTH: 533591 DATE: 2015/09/22 AMT: 265.00

RENTAL CHARGES

DAYS	1 @	36.80	36.80
SUBTOTAL			36.80
CONCESSION FEE RECOVERY			4.02
FF SURCHARGE			1.00
VEHICLE LICENSE FEE			1.85
CUSTOMER FACILITY CHARGE			3.00
ENERGY SURCHARGE			1.49
TAX		10.00%	4.82

TOTAL CHARGES 52.98 USD

E-RETURN RECEIPT

THANK YOU FOR RENTING FROM DOLLAR

ALL CHARGES HAVE BEEN BILLED TO YOUR ACCOUNT.

Rental Agreement No: 598716985
Date: 09/24/2015
Document: 955000177268

Renter: MARK LUPHER
Account No.: **********2004 AMX

Direct All Inquiries To:
DOLLAR RENT A CAR
PO BOX 35250
TULSA, OK 74153-1167
UNITED STATES

Phone: 800-800-5252
Web: www.dollar.com

TOTAL CHARGES 52.98 USD

GTHR02P 0095 GC

Welcome To
Stripes # 2194
2305 Loop 499 N.
Harlingen Texas
1

DATE 09/23/15 18:4
TRAN# 9036369
PUMP# 03
SERVICE LEVEL: SELF
PRODUCT: UNLD
GALLONS: 3.94
PRICE/G: $ 2.02
FUEL SALE $ 8.0
CREDIT $8.0

AMEX
XXXXXXXXXXX2004
Auth #: 582032
Resp Code: 0
Stan: 03912013464
Invoice #: 238768
SITE ID: TP48570617
01

Diesel Fuel Contain
Up To 20% BioDiesel
or Renewable Diesel
State Diesel Tax
0.19 per Gallon Inc

William P. Hobby Airport
P.O. Box 60751
Houston, TX 77205
(713) 641-7770
www.newsouthparking-tx.com

New South Parking

CUSTOMER RECEIPT

Toledo Ticket Co., Toledo, OH
www.toledoticket.com

2116-520

Tran	In Time	Out Time	Fee	CC#
870	09/22 16:36	09/23 21:13	$29.00	2004

2013-1128-08
(200)

2013-1128-08 (300)

THE HERTZ CORPORATION
Phone: 800-654-4173
Web: www.hertz.com

Direct All Inquiries To:
THE HERTZ CORPORATION
PO BOX 26120
OKLAHOMA CITY, OK 73126-0120

Hertz®

CHARGE DETAIL

Rental Agreement No.: 102148690
Date: 10/14/2015
Document: 945002221452

Renter: MARK LUPHER
Account No.: **********7003 AMX

MR MARK W LUPHER
17406 MASONRIDGE DR
HOUSTON, TX 77095

RENTAL REFERENCE

Rental Agreement No: 102148690
Reservation ID: G71229806B5
Frequent Traveler: WN00000125740112

RENTAL DETAILS

Rate Plan: IN: JLEDT OUT: JLEDT
Rented On: 10/11/2015 14:24 LOC# 167510
HARLINGEN, TX
Returned On: 10/14/2015 13:30 LOC# 167510
HARLINGEN, TX
Car Description: COROLLA FSS0668
Veh. No.: 5588637
CAR CLASS Charged: C MILEAGE In: 13,903
Rented: C Out: 13,693
Reserved: C Driven: 210

MISCELLANEOUS INFORMATION

CC AUTH: 198098 DATE: 2015/10/11 AMT: 293.00

RENTAL CHARGES

DAYS	3 @	47.95	143.85
SUBTOTAL			143.85
CONCESSION FEE RECOVERY			15.10
FF SURCHARGE			3.00
VEHICLE LICENSE FEE			5.55
CUSTOMER FACILITY CHARGE			9.00
ENERGY SURCHARGE			1.49
TAX		10.00%	17.81

TOTAL CHARGES 195.80 USD

E-RETURN RECEIPT

THANK YOU FOR RENTING FROM HERTZ

ALL CHARGES HAVE BEEN BILLED TO YOUR ACCOUNT.

Rental Agreement No: 102148690
Date: 10/14/2015
Document: 945002221452

Renter: MARK LUPHER
Account No.: **********7003 AMX

Direct All Inquiries To:
THE HERTZ CORPORATION
PO BOX 26120
OKLAHOMA CITY, OK 73126-0120
UNITED STATES

Phone: 800-654-4173
Web: www.hertz.com

TOTAL CHARGES 195.80 USD

Español

Southwest

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Southwest

Thank you for your purchase!

Houston (Hobby), TX - HOU to Harlingen, TX - HRL

New Purchases in Trip

Air

Confirmation #HF9VW4

Houston (Hobby), TX - HOU to Harlingen, TX - HRL
Sunday, October 11, 2015 - Wednesday, October 14, 2015

Air Total: $478.00

Amount Paid
$478.00

Trip Total
$478.00

OCT 11
SUN **10/11/15 - Harlingen**

New purchases added to your trip.

AIR

Houston (Hobby), TX - HOU to Harlingen, TX - HRL
10/11/2015 - 10/14/2015

Confirmation #
HF9VW4

Adult Passenger(s)
MARK LUPHER

Rapid Rewards #
00000125740112

Subscribe to Flight Status Messaging

Travel Date		Flight Segments		Flight Summary
DEPART OCT 11 SUN	01:10 PM	Depart **Houston (Hobby), TX (HOU)** on Southwest Airlines	Flight #3082 Southwest	**Sunday, October 11, 2015**
	02:10 PM	Arrive in **Harlingen, TX (HRL)**		Travel Time 1 h 00 m (Nonstop) Business Select
RETURN OCT 14 WED	02:45 PM	Depart **Harlingen, TX (HRL)** on Southwest Airlines	Flight #545 Southwest	**Wednesday, October 14, 2015**
	03:45 PM	Arrive in **Houston (Hobby), TX (HOU)**		Travel Time 1 h 00 m (Nonstop) Business Select

What you need to know to travel:

Check-in: Be sure to arrive at the departure gate with your boarding pass at least 10 minutes before your scheduled departure time. Otherwise, your reserved space may be cancelled and you won't be eligible for denied booking compensation.

No Show Policy: If you are not planning to travel on any portion of this itinerary, please cancel your reservation at least 10 minutes prior to scheduled departure of the flight. For tickets purchased on or after May 10, 2013 and travel beginning September 13, 2013, Customers who fail to cancel reservations for a Wanna Get Away or DING! fare segment at least ten (10) minutes prior to travel and who do not board the flight will be considered a no show, and all remaining, unused funds on this reservation will be forfeited, including Business Select and Anytime funds.

PRICE: ADULT

Trip	Routing	Fare Type | View Fare Rules	Fare Details	Quantity	Total
Depart	HOU-HRL	**Business Select** Superior Benefits	• Priority Boarding • Maximum Rapid Rewards® Points • Fully Refundable • Fly By® Security Lane • Free Same-Day Changes • Premium Drink	1	$239.00
Return	HRL-HOU	**Business Select** Superior Benefits	• Priority Boarding • Maximum Rapid Rewards® Points • Fully Refundable • Fly By® Security Lane • Free Same-Day Changes • Premium Drink	1	$239.00

Subtotal **$478.00**

Fare Breakdown

Carry-on Items: 1 bag + 1 small personal item are free, see full details.
Checked Items: First and second bags are free, size and weight limits apply.

Bag Charge $0.00

Air Total: $478.00

Gov't taxes & fees now included

Purchaser Name Mark Lupher

Billing Address 738 Highway 6 South Suite 430
Houston, TX US 77079

Form of Payment	Amount Applied
American Express - XXXXXXXXXX-7003	**$478.00**

Amount Paid
$478.00

Trip Total
$478.00

MWL AMEX
2013-1128-08 (LS)
Phase 300 Expenses

INVOICE

ASAP Printing Solutions
(956) 630-6116
(956) 668-1669
310 S 23rd St.
McAllen, TX 78501

Date	Invoice #
10/6/2015	4709-A

Bill To

TEDSI Infrastructure Group
1201 E. Expressway 83
Mission, TX 78572

Project

Description	Qty	Rate	Amount
16 oz Patry Cup w/ matching blue lid - Double-wall construction - Blue cup - 1 color imprint - White Delta Round logo - Standard ink Color - Setup and Ground Shipping Included	300	4.71	1,413.00T

ASAP PRINTING SOLUTIONS
310 S 23RD
MCALLEN, TX 78501
956-630-6116
5436845556747441

Merchant ID: 555674744100 Ref #: 0072

Sale

XXXXXXXXXXX2004
AMEX Entry Method: Manual

Total: $ 764.79

10/06/15 15:32:34
Inv #: 000007 Appr Code: 251174
Transaction ID: 003478771269086
Apprvd: Online Batch#: 000299
AVS Code: ZIP MATCH Z
CID Code: MATCH M

Customer Copy

THANK YOU

IMPORTANT:
- All orders require a 50% deposit unless arrangements have been made with approved credit.
- Custom Embroidered Items require Pre-payment in Full.
- ASAP Printing Solutions will have your order ready for delivery/pick-up in a timely manner. If your order is delayed, we will notify you.
- All customers will be provided with a proof(s) of their order. Please note this is your chance to preview and make any last changes to your order prior to production.
- You MUST approve and sign proof(s) before production can begin. At your request, ASAP Printing Solutions may complete production without approved proof(s). However, ASAP Printing Solutions is not responsible for customer dis-satisfaction with the finished product.
- Errors such as misspelled word(s), incorrect numbers, layout, etc., will be corrected at no additional charge if the finished product conflicts with an approved proof.
- Rush Orders will be charged an Extra 25% of the total amount due.
- Merchandise Shipped as ordered is not subject to return for credit or exchange without written permission. We take care in packing our merchandise and all items are double-checked before shipping. Our responsibility ceases when goods are delivered, inspected and/or accepted by an authorized person of the respective company or individual. All claims for damage, breakage or shortage should be made immediately upon receipt of goods.
- The customer acknowledges receipt of the above merchandise and agrees to pay in accordance with your regular terms. Net 10 days with approved credit. 1.5% interest will be charged on past due accounts per month. All accounts not paid within 10 days of delivery date are past due.

Subtotal	$1,413.00
Sales Tax	$116.57
Total	$1,529.57
Payments/Credits	$0.00
Balance Due	$1,529.57

Received By____________________ Date____________________

ASAP Printing Solutions
(956) 630-6116
(956) 668-1669
310 S 23rd St.
McAllen, Tx 78501

Invoice

Date	Invoice #
10/6/2015	4709-A

Bill To

TEDSI Infrastructure Group
1201 E. Expressway 83
Mission, TX 78572

Project

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ASAP PRINTING SOLUTIONS
310 S 23RD
MCALLEN, TX 78501
956-630-6116
5436894555674974l

Merchant ID: 555674744100 Ref #: 0072

Sale

XXXXXXXXXXX2004 Entry Method: Manual
AMEX

Total: $ 764.79

10/06/15 15:32:34
Inv #: 000007 Appr Code: 251174
Transaction ID: 000478771269005
Approvd: Online Batch#: 000299
AVS Code: ZIP MATCH Z
CID Code: MATCH M

Customer Copy
THANK YOU

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Received By_____ Date_____

ASAP Printing Solutions
(956) 630-6116
(956) 668-1669
310 S 23rd St.
McAllen, Tx 78501

Invoice

Date	Invoice #
10/6/2015	4709-A

PAID 10/28/2015

Bill To

TEDSI Infrastructure Group
1201 E. Expressway 83
Mission, TX 78572

Project

Description	Qty	Rate	Amount
16 oz Patry Cup w/ matching blue lid - Double-wall construction - Blue cup - 1 color imprint - White Delta Round logo - Standard ink Color - Setup and Ground Shipping Included	300	4.71	1,413.00T

ASAP PRINTING SOLUTIONS
310 S 23RD
MCALLEN, TX 78501
956-630-6116
5436845555647441
Merchant ID: 555674744100 Ref #: 0022
Sale
XXXXXXXXXXX2004 Entry Method: Manual
AMEX
Amount: $ 764.78
Total: $ 764.78
10/28/15 12:40:44
Inv #: 000002 Appr Code: 229325
Transaction ID: 000322555672575
Approval: Online Batch#: 000317
AVS Code: ZIP MATCH Z
CID Code: MATCH M
Zip Code: 77079
Order #:
Zip Code: 77079
Customer Copy
THANK YOU

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Total	$1,529.57
Payments/Credits	-$764.79
Balance Due	$764.78

Received By_____ Date_____

MWL Amex
2013-1128-08 (LS)
Phase 300 Expenses

Claudia Garza

From: Adobe Creative Cloud [custsupp@adobe.com]
Sent: Saturday, October 10, 2015 8:54 AM
To: Claudia Garza
Subject: Thank you for your order for Tedsi

Manage Your Account Customer Support Forums

Adobe Creative Cloud

Adobe

Invoice
Thanks for your order, CLAUDIA

Total: USD 54.11
Due:

To view or print your full invoice, open your **Billing History** or follow the instructions at the bottom of this email. Please send payment, with your invoice number, to:

Adobe Systems Incorporated

Order details:

Purchase Order:
Adobe Order: 10
Billing period: 10-October-2015 (PT) – 09-November-2015 (PT)

Product:	**Number of licenses / Price:**	**Total:**
Creative Cloud Complete	1 / USD 49.99	USD 49.99

Order Subtotal: USD 49.99
Tax/VAT: USD 4.12
Order Total: USD 54.11

Print Invoice

View step-by-step **instructions** for viewing and printing your invoice online.

Install Adobe Reader

You'll need a PDF viewer to open online invoices. If you don't have one installed, download **Adobe Reader** for free.

Get Assistance

If you find you still need help, we offer a number of **Customer Support** options.

PROJECT: Delta Watershed Project - GCM
CLIENT: Hidalgo County Drainage District No. 1

TEDSI JOB NUMBER: 2013-1128-08

PROGRESS REPORT NO. 024

Progress Period November 01, 2015 Through November 30, 2015

DESCRIPTION	ESTIMATED COST	PERCENT COMPLETE	INVOICE TO DATE	PREVIOUS INVOICE	AMOUNT DUE
I. GCM FOR ENGINEERING MANAGEMENT					
(A) PRELIMINARY PROJECT PLANNING AND DEVELOPMENT					
(1) Administrative Policy & Procedures	$105,432.80	95.00%	$100,164.28	$100,164.28	**$0.00**
(2) Project Development Schedule	$53,143.60	92.63%	$49,225.16	$49,225.16	**$0.00**
(3) Construction Estimate	$50,894.20	93.64%	$47,659.64	$47,659.64	**$0.00**
(4) QC/QA Program Development	$51,885.22	90.00%	$46,695.19	$46,695.19	**$0.00**
(5) Subcontract Administration	$49,684.28	90.00%	$44,715.85	$44,715.85	**$0.00**
(6) Funding Source	$119,911.08	90.00%	$107,919.97	$107,919.97	**$0.00**
(7) Capital Improvement Program	$129,253.80	90.00%	$116,328.33	$116,328.33	**$0.00**
(8) Management/ Coordination of Engineering Activities	$133,975.80	80.00%	$107,185.33	$107,185.33	**$0.00**
(9) Implementation of QC/QA Program	$46,927.50	95.89%	$45,000.00	$45,000.00	**$0.00**
(10) Computer Database Development Platform	$115,057.20	93.95%	$108,101.25	$108,101.25	**$0.00**
SUB TOTAL I.A	$856,165.48	90.29%	$772,995.00	$772,995.00	**$0.00**
(B) PRELIMINARY ENGINEERING					
(1) Preliminary Concept Conference	$57,250.80	100.00%	$57,250.80	$57,250.80	**$0.00**
(2) Management/Coordination of Engineering	$42,799.96	80.00%	$34,239.97	$34,239.97	**$0.00**
(3) Implementation of QA/QC Program	$36,624.10	90.00%	$32,961.69	$32,961.69	**$0.00**
(4) Preparation of "***Preliminary Engineering***	$84,677.60	5.78%	$4,897.97	$4,897.97	**$0.00**
(5) Coordination with all Reviewing Agencies	$40,357.20	35.04%	$14,142.88	$14,142.88	**$0.00**
SUB TOTAL I.B	$261,709.66	54.83%	$143,493.31	$143,493.31	$0.00
TOTAL LABOR COSTS	$1,117,875.14	55%	$916,488.31	$916,488.31	**$0.00**

PROGRESS REPORT NO. 024

Progress Period November 01, 2015 Through November 30, 2015

DESCRIPTION	ESTIMATED COST	PERCENT COMPLETE	INVOICE TO DATE	PREVIOUS INVOICE	AMOUNT DUE
DIRECT EXPENSES					
TRAVEL					
Lodging/Hotel (Austin)	$648.00	0.00%	$0.00	$0.00	**$0.00**
Lodging/Hotel Taxes/fees (Austin @ 9%)	$58.32	0.00%	$0.00	$0.00	**$0.00**
Per Diem (Austin)	$426.00	0.00%	$0.00	$0.00	**$0.00**
Lodging/Hotel (Washington DC)	$1,356.00	0.00%	$0.00	$0.00	**$0.00**
Lodging/Hotel Taxes/fees (Washington DC @	$196.62	0.00%	$0.00	$0.00	**$0.00**
Per Diem (Washington DC)	$426.00	0.00%	$0.00	$0.00	**$0.00**
Mileage	$5,650.00	0.00%	$0.00	$0.00	**$0.00**
Rental Car (Taxes/Fees not included; Insurance	$450.00	55.28%	$248.78	$0.00	**$248.78**
Rental Car Fuel	$299.40	2.67%	$8.00	$0.00	**$8.00**
Air Travel -In State- Short Notice (Coach)	$6,000.00	15.93%	$956.00	$0.00	**$956.00**
Air Travel - Out of State - Short Notice (Coach)	$9,000.00	0.00%	$0.00	$0.00	**$0.00**
Luggage (with air travel)	$1,200.00	0.00%	$0.00	$0.00	**$0.00**
Parking	$420.00	6.90%	$29.00	$0.00	**$29.00**
Taxi/Cab fare	$480.00	0.00%	$0.00	$0.00	**$0.00**
Internet	$270.00	0.00%	$0.00	$0.00	**$0.00**
Telephone	$2,700.00	0.00%	$0.00	$0.00	**$0.00**
Conference Calls	$12,000.00	0.00%	$0.00	$0.00	**$0.00**
Postage & Shipping	$9,600.00	0.00%	$0.00	$0.00	**$0.00**
Overnight Mail - letter size	$1,800.00	0.00%	$0.00	$0.00	**$0.00**
Overnight Mail - oversized box	$3,000.00	0.00%	$0.00	$0.00	**$0.00**
Courier Services	$1,200.00	0.00%	$0.00	$0.00	**$0.00**
COMPUTER SYSTEM					
GIS Server, Web Hosting, Work Stations, Software, Licensing, Plotter, Printers, etc.	$382,990.00	51.66%	$197,851.50	$197,801.51	**$49.99**

PROGRESS REPORT NO. 024

Progress Period November 01, 2015 Through November 30, 2015

DESCRIPTION	ESTIMATED COST	PERCENT COMPLETE	INVOICE TO DATE	PREVIOUS INVOICE	AMOUNT DUE
PRINTING					
Photocopies B/W (8 1/2" X 11")	$1,050.00	0.00%	$0.00	$0.00	**$0.00**
Photocopies B/W (11" X 17")	$1,650.00	0.00%	$0.00	$0.00	**$0.00**
Photocopies Color (8 1/2" X 11")	$1,800.00	0.00%	$0.00	$0.00	**$0.00**
Photocopies Color (11" X 17")	$6,250.00	0.00%	$0.00	$0.00	**$0.00**
Digital Ortho Plotting (on bond)	$8,000.00	0.00%	$0.00	$0.00	**$0.00**
Bond Paper Plot (Blueline/Blackline)	$4,500.00	0.00%	$0.00	$0.00	**$0.00**
Plots (B/W on Bond)	$10,000.00	0.00%	$0.00	$0.00	**$0.00**
Plots (Color on Bond)	$8,000.00	0.00%	$0.00	$0.00	**$0.00**
Plots (Color on Photographic Paper)	$5,000.00	0.00%	$0.00	$0.00	**$0.00**
Mounting Color Graphics on Foam Board	$10,000.00	0.00%	$0.00	$0.00	**$0.00**
Presentation Boards 30" X 40" Color Mounted	$4,200.00	0.00%	$0.00	$0.00	**$0.00**
Report Binding	$1,200.00	0.00%	$0.00	$0.00	**$0.00**
Notebooks	$720.00	0.00%	$0.00	$0.00	**$0.00**
Reproduction of CD/DVD	$10,000.00	0.00%	$0.00	$0.00	**$0.00**
CDs	$1,550.00	0.00%	$0.00	$0.00	**$0.00**
4" X 6" Digital Color Print	$500.00	0.00%	$0.00	$0.00	**$0.00**
Miscellaneous Project Marketing	$10,000.00	41.63%	$4,163.35	$2,633.78	**$1,529.57**

TOTAL DIRECT EXPENSES	$524,590.34	38.746%	$203,256.63	$200,435.29	$2,821.34

TOTAL (LABOR AND DIRECT EXPENSES)	$1,642,465.48	68.17%	$1,119,744.94	$1,116,923.60	$2,821.34

TOTAL INVOICE AMOUNT DUE: $2,821.34

AI -53228 **5.**

DRAINAGE - CONSENT

Meeting Date: 02/03/2016

Submitted By: Claudette Guerrero, DRAINAGE DISTRICT

Department: DRAINAGE DISTRICT

Information

CAPTION

Approval to issue payment on the following items:

Engineering Firm: L&G Engineering

2013 Bonds
Budget 365
Rural Drainage Development Pct.3

Inv#11325360 in the amount of $15,000.00 related to Work Authorization No. 9-La Joya Watershed Project. PO#628203.

BACKGROUND

Fiscal Impact

Attachments

L&G Inv#11325360

Form Review

Inbox	**Reviewed By**	**Date**
Budget & Management	Veronica Ortiz	01/29/2016 05:14 PM
Final Approval	Monica Badillo	01/29/2016 06:09 PM

Form Started By: Claudette Guerrero Started On: 01/29/2016 04:25 PM

Final Approval Date: 01/29/2016

Hidalgo County Drainage District No. 1

902 North Doolittle Road Edinburg, Texas 78542 Office: (956) 292-7080

Invoice Processing Checklist/Routing Slip

Invoice/ Backup

Date Received: 12/2/2015

Engineer/Firm Name: L&G Engineering

Project Name/Number: La Joya Watershed Improvements Proj. Phase 1

Invoice No.: 11325360

Purchase Order No.: 628203

Received By: Rosa Arce

Forwarded to: Nora D. Cavazos _____ Date: _____
Claudette Guerrero _____ Date: _____

Total # of Pages Submitted: 4

Attachments: Final Waiver & Line Release, NO CD!

Forwarded to: Jose N. Saldivar _____ Date: _____

Forwarded to: Lora Briones _____ Date: _____

Additional Comments: $15,000.00

THIS ROUTING SLIP MUST BE KEPT WITH ORIGINAL INVOICE

L&G Engineering
Transportation Consultants

November 30, 2015

Mr. Raul Sesin
District Manager
Hidalgo County Drainage District #1
902 N. Doolittle Rd.
Edinburg, TX 78541

RE: La Joya Watershed Improvement Project Phase I
PO# 628203

Dear Mr. Sesin:

Three (3) bound hardcopies of the La Joya Watershed Improvement Project Phase I were submitted to your office on November 20, 2015 (transmittal letter attached). Enclosed, please find one (1) CD copy of the document and the invoice for our services.

No CO 12/2/15 Rose

Should you have any questions, please do not hesitate to contact me at (956) 565-9813.

Sincerely,

Velma N. Garcia
Project Manager

Attachments

2100 W. Expressway 83 • Mercedes, TX 78570 • Office (956) 565-9813 • Fax (956) 565-9018
900 S. Stewart Rd., Ste. 9 • Mission, TX 78572 • Office (956) 585-1909 • Fax (956) 585-1927

L & G Consulting Engineers Inc
2100 W. Expressway 83
Mercedes, TX 78570
(956) 565-9813 Fax (956) 565-9018

INVOICE #: 11325360
INVOICE DATE: 11/30/15

BILL TO: 87
Hidalgo County Drainage Dist#1
902 N. Doolittle
Edinburg, TX 78542

JOB: 130109
La Joya Watershed Improvement
WA#9 - PO#628203

Engineering services for the month of November 2015.

DESCRIPTION	CONTRACT	PREVIOUS APPLICATIONS	CURRENT COMPLETED	TOTAL COMPLETED	% COMPL	BALANCE TO FINISH
Direct Expenes	650.28		650.28	650.28	100.0	
12001-EA Reports	3,564.00		3,564.00	3,564.00	100.0	
12003-Site Reconniss	512.72		512.72	512.72	100.0	
12004-Comp/Review Pu	4,858.28		4,858.28	4,858.28	100.0	
16401-Contract Mgmnt	5,414.72		5,414.72	5,414.72	100.0	
TOTALS:	15,000.00	0.00	15,000.00	15,000.00	100.0	0.00

ORIGINAL CONTRACT SUM	$	15,000.00
CHANGE BY CHANGE ORDER	$	0.00
CONTRACT SUM TO DATE	$	15,000.00
TOTAL COMPLETED TO DATE	$	15,000.00
LESS PREVIOUS INVOICES	$	0.00
CURRENT PAYMENT DUE	$	15,000.00

PROJECT MANAGER'S SIGNATURE

L&G Engineering
Transportation Consultants

November 20, 2015

Mr. Raul Sesin, District Manager
Hidalgo County Drainage District No. 1
902 N. Doolittle Rd.
Edinburg, TX 78541

RE: La Joya Watershed Improvement Project Phase I
PO# 628203

Dear Mr. Sesin:

Attached, please find three (3) bound hardcopies of the La Joya Watershed Improvement Project Phase I Environmental Site Assessment as stated in our work authorization.

Based on the findings of the Phase I Assessment, there does not appear to be sufficient environmental concerns associated with the property to warrant further investigation. L&G does recommend coordination with the utility companies associated with the gas lines found within the property before excavation begins.

We appreciate the opportunity to work with you on this project. Should you have any questions, please do not hesitate to contact me at (956) 565-9813.

Sincerely,
L&G Engineering

Velma N. Garcia
Environmental Manager

Attachments

cc: Reza Badiozzamani, P.E.

2100 W. Expressway 83 • Mercedes, TX 78570 • Office (956) 565-9813 • Fax (956) 565-9018
900 S. Stewart Rd., Ste. 9 • Mission, TX 78572 • Office (956) 585-1909 • Fax (956) 585-1927

L&G Consulting Engineers INC
2100 W. Expressway 83
Mercedes, TX 78570
956-565-9813 fax 956-565-9018

FINAL WAIVER AND LIEN RELEASE

DATE: 11/30/2015
PROJECT: WA #9 La Joya Watershed Improvement Project. PO # 628203
OWNER: HCDD #1
FINAL PAYMENT: $15,000.00

UPON RECEIPT OF THIS PAYMENT, Owner does hereby certify and acknowledge that Subcontractor has been fully paid for all work and labor done by Owner and for all materials and services supplied by Subcontractor on the above project and that this payment, which includes all retainage released to the Subcontractor, represents the FINAL AND COMPLETE payment for work and/or labor done and all materials and services supplied on the above described project.

The undersigned hereby further certifies: There are no known mechanics, materialmen's, or laborer's liens or claims or any other liens or claims, legal or equitable, contractual, statutory, or constitutional, outstanding or known to exist as of the date referenced above and if any should arise in the future, the undersigned agrees to indemnify and hold the Owner and Contractor harmless from any and all such liens or claims, including attorney's fees and expenses; all due and payable bills with respect to the real property referenced above have been paid to date or are included in the amount requested in the current application and will be paid from this payment, and there is no known basis for the filing of any mechanics', materialman's, or laborer's lien or claim, or any other lien or claim, legal or equitable, contractual, statutory, or constitutional, on the real property referenced above. Subcontractor certifies that all waivers and releases from all subcontractors, laborers, and material men for work done and materials furnished have been obtained in such form as to constitute an effective waiver and release of all such liens under the Laws of the State of Texas.

SUBCONTRACTOR SWEARS THAT, WITH RECEIPT OF THE PAYMENT ASSOCIATED WITH THIS LIEN RELEASE, ALL OUTSTANDING BILLS ASSOCIATED WITH THIS LIEN RELEASE WILL BE PAID AT THIS TIME. FURTHER, SUBCONTRACTOR ACKNOWLEDGES THAT ALL FUNDS RECEIVED, TO THE APPROPRIATE AMOUNT, ARE RECEIVED IN TRUST FOR ALL SUBCONTRACTORS/SUPPLIERS THAT ARE OWED FUNDS BY HIM ON THIS PROJECT. SUBCONTRACTOR AGREES TO INDEMNIFY ANY PARTY RELYING UPON THIS AFFIDAVIT FOR ANY LOSS OR EXPENSE RESULTING FROM FALSE OR INCORRECT STATEMENTS IN THIS AFFIDAVIT.

UPON RECEIPT OF THIS PAYMENT, Subcontractor hereby releases in full all claims and liens Subcontractor has heretofore filed, if any, on such property for such work and/or material. Subcontractor hereby waives all rights, claims and liens on this project forever for such work done and all materials supplied by Subcontractor.

L&G CONSULTING ENGINEERS, INC

Marisela G. Marin Sec/Treas

Signature

11/30/2015
Date

Printed Name/Title Secretary/Treasurer

STATE OF TEXAS

KNOW ALL MEN BY THESE PRESENTS:

COUNTY OF HIDLAGO

Before me, the undersigned authority, on this day personally appeared Marisela G. Marin, the Secretary / Treasurer (title) of L&G Consulting Engineers, known to me to be the person and officer whose name is subscribed to the foregoing instrument and acknowledged to me that he/she executed the same for the purposes therein expressed and in the capacity therein stated.

Marie C. Bustamante

NOTARY PUBLIC in and for
THE STATE OF TEXAS

Printed Name: Marie C. Bustamante

My Commission Expires: April 14, 2017

MARIE C. BUSTAMANTE
Notary Public, State of Texas
My Commission Expires
April 14, 2017

AI -53234 **6.**

DRAINAGE - CONSENT

Meeting Date: 02/03/2016

Submitted For: Claudette Guerrero Submitted By: Claudette Guerrero, DRAINAGE DISTRICT

Department: DRAINAGE DISTRICT

Information

CAPTION

Approval to issue payment on the following items:

Engineering Firm: L&G Engineering

2013 Bonds
Budget 365
Rural Drainage Development Pct.3

A. Inv. No. 11325442 in the amount of $13,401.16 related to Work Authorization No. 5.-La Joya Watershed Project. PO#625396.

B. Inv. No. 11325408 in the amount of $15,215.69 related to Work Authorization No. 2-Pharr McAllen Drain & South Flood Water Channel Watershed Imp. Project. PO#626939.

BACKGROUND

Fiscal Impact

Attachments

L&G Inv#11325408
L&G Invoice 11325408
L&G Inv#11325442

Form Review

Inbox	Reviewed By	Date
Budget & Management	Veronica Ortiz	01/29/2016 05:21 PM
Final Approval	Monica Badillo	01/29/2016 06:09 PM

Form Started By: Claudette Guerrero Started On: 01/29/2016 04:51 PM

Final Approval Date: 01/29/2016

Hidalgo County Drainage District No. 1

902 North Doolittle Road Edinburg, Texas 78542 Office: (956) 292-7080

Invoice Processing Checklist/Routing Slip

Invoice/ Backup

Date Received: 1/19/2016

Engineer/Firm Name: L&G Engineering

Project Name/Number: Pharr McAllen & South Floodwater Ch.

Invoice No.: CD ONLY

Purchase Order No.:

Received By: Rosa Arce

Forwarded to: Nora D. Cavazos Date:
Claudette Guerrero Date:

Total # of Pages Submitted: 1

Attachments: CD

Forwarded to: Jose N. Saldivar Date:

Forwarded to: Lora Briones Date:

Additional Comments: Backup for Invoice No. 11325408 (Original Submittal on 1/4/2016)

THIS ROUTING SLIP MUST BE KEPT WITH ORIGINAL INVOICE

L&G Engineering
Transportation Consulting Engineers

2100 W. Expressway 83
Mercedes, TX 78570
Phone: (956) 565-9813
Fax: (956) 565-9018
Toll Free: (888) 565-9813

900 S. Stewart Rd., Ste. 10
Mission, TX 78572
Phone: (956) 585-1909
Fax: (956) 585-1927
Toll Free: (866) 585-1909

Firm No. F-4105

Letter of Transmittal

Mr. Jose "Noe" Saldivar – HCDD#1 Engineer
Attn: Ms. Esther Layton – Administrative Clerk
Hidalgo County Drainage District #1
902 N. Doolittle Rd.
Edinburg, Texas 78542

DATE: January 19, 2016

Project: Pharr McAllen Drain & South Floodwater Channel Watershed Improvement Project

L&G PROJECT NO.:

TRANSMITTED:

☒	For Your Use	☐	Please comment	☐	Approved as Noted
☐	As Requested	☐	Reply ASAP	☐	As Noted Below

VIA:

☐	US Mail	☐	Courier	☒	Hand Carry
☐	E-Mail	☐	Lonestar Overnight	☐	Pick up

COPIES	DESCRIPTION
1	CD w/Electronic Files for the following Project:
	• Work Authorization #2 on Pharr McAllen Drain & South Floodwater Channel
	○ P.O. #626939, Invoice #11325408
	NOTE: Original Invoice submitted on 1/4/16 -Rose

REMARKS:

If you have any questions or comments, please feel free to contact me, Mr. David Saenz, P.E. at (956) 585-1909.

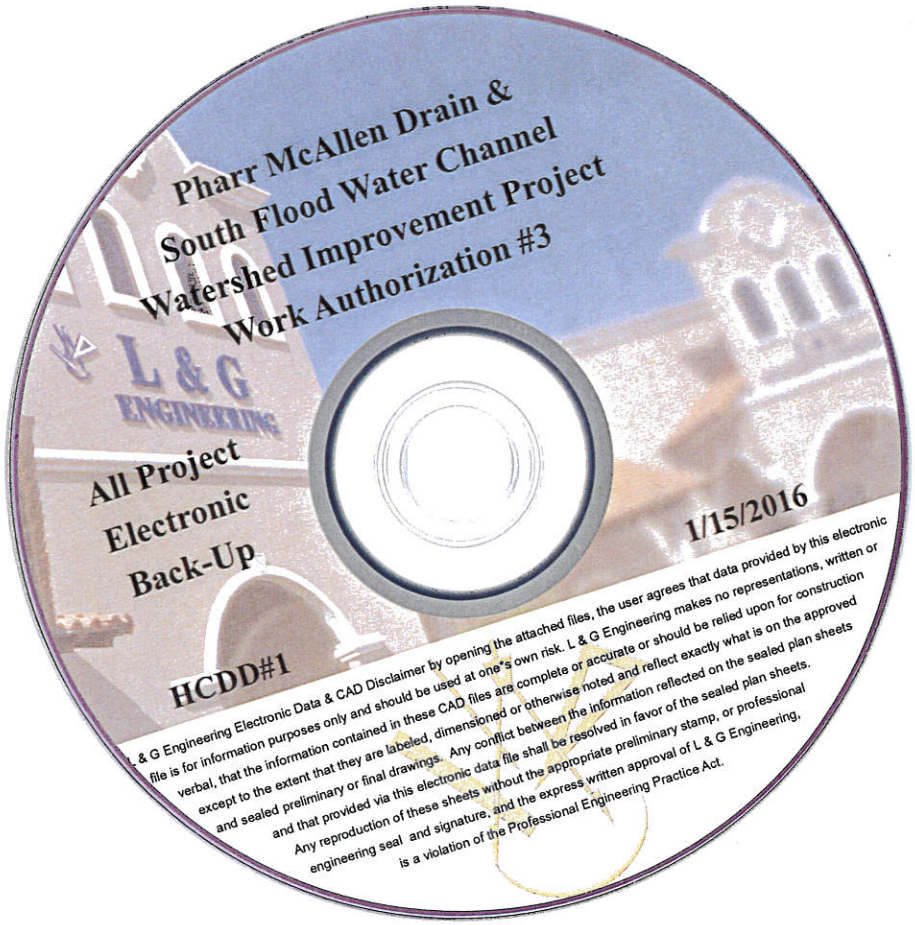
Thank you,

RECEIVED
HIDALGO COUNTY
DRAINAGE DISTRICT #1
JAN 19 2016
10:40 AM / PM
BY: Rosa Diaz

Received By:_____

Date:_____ **Time:**_____

If enclosures are not as stated, please notify us.


Pharr McAllen Drain &
South Flood Water Channel
Watershed Improvement Project
Work Authorization #3
L & G
ENGINEERING
All Project
Electronic
Back-Up
1/15/2016
HCDD#1
L & G Engineering Electronic Data & CAD Disclaimer by opening the attached files, the user agrees that data provided by this electronic file is for information purposes only and should be used at one's own risk. L & G Engineering makes no representations, written or verbal, that the information contained in these CAD files are complete or accurate or should be relied upon for construction except to the extent that they are labeled, dimensioned or otherwise noted and reflect exactly what is on the approved and sealed preliminary or final drawings. Any conflict between the information reflected on the sealed plan sheets and that provided via this electronic data file shall be resolved in favor of the sealed plan sheets. Any reproduction of these sheets without the appropriate preliminary stamp, or professional engineering seal and signature, and the express written approval of L & G Engineering, is a violation of the Professional Engineering Practice Act.

Hidalgo County Drainage District No. 1

902 North Doolittle Road Edinburg, Texas 78542 Office: (956) 292-7080

Invoice Processing Checklist/Routing Slip

Invoice/ Backup

Date Received: 1/5/2016

Engineer/Firm Name: L&G Engineering

Project Name/Number: Pharr McAllen Drain & S. Floodwater Ch WA No. 2

Invoice No.: 11325408

Purchase Order No.: 626939

Received By: Rosa Arce

Forwarded to: Nora D. Cavazos _____ Date: _____

Claudette Guerrero _____ Date: _____

Total # of Pages Submitted: 9 + 3 Study Books

Attachments: CD

Forwarded to: Jose N. Saldivar _____ Date: _____

Forwarded to: Lora Briones _____ Date: _____

Additional Comments: $15,215.69

THIS ROUTING SLIP MUST BE KEPT WITH ORIGINAL INVOICE

1 of 9

L&G Engineering

Transportation Consultants

January 4, 2016

RECEIVED
HIDALGO COUNTY
DRAINAGE DISTRICT #1

JAN 04 2016
4:30 AM / PM
BY: Rosa Ane

Mr. Raul Sesin, P.E. – District Manager
Hidalgo County Drainage District #1
902 N. Doolittle
Edinburg, Texas 78542

RE: Work Authorization #2 on Pharr McAllen Drain & South Flood Water Channel Watershed Improvement Project
Job # 150302
P.O. # 626939

Dear Mr. Sesin,

Attached for your review and approval is our FINAL invoice for the services rendered during December 2015 on the subject referenced project.

The following is attached:

- L&G's Invoice #11325408
- Affidavit and Waiver of Lien
- CD w/ Electronic Files of Data for:
  - Task 4, 5, 5a, 6 & Direct Expenses

TASK		% COMPL
Pharr-McAllen Drain & South Flood Water Channel Watershed Improvement Project		
Task 1 ~ Coordination with Hidalgo Co. Irrigation District #2 on Existing Drainage Facilities & Ownership	L&G	100.0%
Task Complete – See progress report dated November 2, 2015		
Task 2 ~ Gather Information Regarding Existing Hydraulic Structures within South Floodwater Channel Watershed	L&G	100.0%
Task Complete – See progress report dated August 3, 2015		
Task 3 ~ Field Reconnaissance for Identification and Logging of Existing Conditions Along South Floodwater Channel	L&G	100.0%
Task Complete – See progress report dated August 3, 2015		
Task 4 ~ Overall Drainage Area Map (Based on CSE Analysis/Model/Report)	L&G	100.0%
Update – Task Complete – L&G has completed the overall drainage area map of the South Floodwater Channel based on CSE delineations. The map identifies a master drainage area and contributing sub-watersheds as well the Las Milpas Lateral's drainage areas. This task has been completed.		

2100 W. Expressway 83 • Mercedes, TX 78570 • Office (956) 565-9813 • Fax (956) 565-9018
900 S. Stewart Rd., Ste. 9 • Mission, TX 78572 • Office (956) 585-1909 • Fax (956) 585-1927

Task 5 ~ Coordination & Support to Hydraulic Engineer for South Pharr/Las Milpas – S. Floodwater Channel Study	L&G	100.0%
Update – Task Complete – L&G has coordinated with CSE through the completion of the South Pharr – Las Milpas Lateral Drainage Study. This task has been completed.		
Task 5a ~ (SUB): CSE ~ South Pharr/Las Milpas – S. Floodwater Channel Study	CSE	100.0%
Update – Task Complete – See progress report from CSE dated December 25, 2015		
Task 6 ~ Meetings & Coordination with County, HCDD#1, HCID#2, City of McAllen, City of Pharr	L&G	100.0%
Update – Task Complete –L&G completed work with the County and the City of Pharr to identifying all alternative improvements to the Las Milpas laterals. L&G has developed the preliminary construction cost estimates based on these alternative improvements. This task has been completed.		
Direct Expenses	L&G	100.0%
Update – Task Complete – Direct Expenses is intended to cover all printed documents internal or otherwise completed at various intervals of the project and billed out as a percentage complete basis of the overall project. L&G has exhausted all expenses for this project. This task has been completed.		

Should you have any questions regarding this submittal or would like clarification on any aspect of the project, please do not hesitate to call me at (956) 585-1909.

Sincerely,

David Saenz, P.E., C.F.M.
Project Manager
L&G Engineering

L &G Consulting Engineers Inc
2100 W. Expressway 83
Mercedes, TX 78570
(956)565-9813 Fax (956)565-9018

INVOICE#: 11325408
INVOICE DATE: 12/31/2015

RECEIVED
HIDALGO COUNTY
DRAINAGE DISTRICT #1
JAN 04 2016
4:30 AM / PM
BY: Rosa Arce

BILL TO:
Hidalgo County Drainage District#1
902 N. Doolittle
Edinburg, TX 78542

JOB:150302
Pharr McAllen Drain & South Flood Water Channel Watershed Imp. Project
WA#2 - PO#626939

DESCRIPTION	CONTRACT	PREVIOUS APPLICATIONS	CURRENT COMPLETED	TOTAL COMPLETED	% COMPL	BALANCE TO FINISH
Engineering services for the month of December 2015.						
FC 161 - HYDROLOGY						
16107-Task 1-Coordination with TxDOT-County-City to	17,443.20	17,443.20		17,443.20	100.0	-
16101-Task 2-Gater/Verify Information Regarding Exhisting	56,492.08	56,492.08		56,492.08	100.0	-
16102-Task 3-Field Reconnaissance for Identification and I	46,225.28	46,225.28		46,225.28	100.0	-
16103-Task 4-Overall Drainage Area Map (Based on S&B & CSI	24,420.74	21,984.90	2,435.84	24,420.74	100.0	-
16106-Task 5-Coordination & Support to Hydraulic Engineer	12,235.32	10,877.23	1,358.09	12,235.32	100.0	-
16140-Task 5a-South Pharr/Las Milpas-S. Floodwater Channe	92,266.16	81,932.46	10,333.70	92,266.16	100.0	-
16105-Task 6-Meetings & Coordination with County	16,353.00	15,564.94	788.06	16,353.00	100.0	-
	265,435.78	250,520.09	14,915.69	265,435.78		-
Direct Expenses	4,500.00	4,200.00	300.00	4,500.00	100.0	-
	4,500.00	4,200.00	300.00	4,500.00		-
TOTALS:	269,935.78	254,720.09	15,215.69	269,935.78	100.0	-

PROJECT MANAGER'S SIGNATURE

ORIGINAL CONTRACT SUM	$	269,935.78
CHANGE BY CHANGE ORDER	$	0.00
CONTRACT SUM TO DATE	$	269,935.78
TOTAL COMPLETED TO DATE	$	269,935.78
LESS PREVIOUS INVOICES	$	254,720.09
CURRENT PAYMENT DUE	$	15,215.69

L&G Consulting Engineers, Inc
2100 W. Expressway 83
Mercedes, Texas 78570
(956) 565-9813

Project Workhour Report
Pharr McAllen Drain & South Flood Water Channel Warshed Improvement Project WA#2
Reference:Inv#11325408
Date: 12/31/2015
P.O.#626939

	Hrs		Rate	Total
Senior Project Manager	8.00	X	218.04	$1,744.32
Senior Engineer	7.00	X	180.66	$1,264.62
Project Engineer	5.00	X	133.94	$669.70
Senior Engineer Tech	7.00	X	93.45	$654.15
Admin/Clerical	4.00	X	62.3	$249.20

Grand Total of Hours	$	4,581.99
(Difference due to rounding hours)	$	-

Invoice Summary

Man Hours	$	4,581.99
Sub Contract	$	10,333.70
(See Attached Sub Invoice for Man Hour Breakdown)		

Direct Expenses	Current Units		Rate			
20 ft. Long by 3 ft. Tall Exhibits (60sq.ft.)@5.00/sq.ft (15 total Prints)	1	X	300.00	$	300.00	
					$	300.00
			(Difference due to rounding)		$	-

Total Per Invoice Submitted	**$**	**15,215.69**

South Pharr/Las Milpas-South Floodwater Channel Study
WA No. 10
Monthly Progress Report No. #4 – December 2015

Period of Coverage:	December 2015
Date of Submittal:	December 25, 2015
Submitted To:	David Saenz, P.E.
Prepared By:	Civil Systems Engineering Inc.

The purpose of this study is to assist L&G and HCDD1 to evaluate the existing drainage systems conditions and alternative improvement plans to provide outfall and drainage relief to existing storm drainage systems within the South Pharr/Las Milpas area.

Specific Tasks

1. Coordinate meetings L&G, HCDD1, and City of Pharr.
2. Gather information on the existing hydraulic structures, including size, type, and flow line (upstream & downstream) elevations of structures from previous projects.
3. Obtain and review previous study reports.
4. Field visits.
5. LiDAR data processing and recondition.
6. Drainage area delineations using GeoHMS.
7. Drainage and hydrologic parameters estimation.
8. Unit hydrograph generation for subbasins.
9. HEC-HMS model development and modeling analysis for multiple frequencies.
10. Update drainage area delineation, parameters and HEC-HMS modeling for City of Pharr laterals and project specific analyses.
11. South Floodwater Channel HEC-RAS development using HEC-GeoRAS.
12. Integration of LiDAR data and channel cross section survey data.
13. Update South Floodwater Channel HEC-RAS model for surveyed cross-sections and structures
14. 2D-mesh generation for 2D-unsteady overbank areas and laterals.
15. South Floodwater Channel 1D/2D unsteady HEC-RAS model development.
16. Create HEC-RAS models for City of Pharr existing laterals.
17. Existing conditions HEC-RAS modeling analysis to identify system constraints, identify flood problem areas, and improvement opportunities.
18. Analyze City of Pharr proposed lateral configurations.
19. Alternative analysis to optimize alternative improvements to relieve existing flooding problems and provide outfall needs – channel improvement, detention basin, and underground box.
20. Report preparation.

21. Presentation

Progress of Project

1. Coordinate meetings L&G, HCDD1, City of Pharr, and IBWC – coordination with L&G regarding presentation and report.

2. Gather information on the existing hydraulic structures, including size, type, and flow line (upstream & downstream) elevations of structures from previous projects – complete.

3. Obtain and review previous study reports – complete.

4. Field visits – complete.

5. LiDAR data processing and recondition – complete.

6. Drainage area delineations using GeoHMS – complete.

7. Drainage and hydrologic parameters estimation – complete.

8. User defined hydrographs - complete.

9. HEC-HMS model development and modeling analysis for multiple frequencies – complete.

10. Update drainage area delineation, parameters and HEC-HMS modeling for City of Pharr/Las Milpas for existing lateral drainage ditches – updated HEC-HMS modeling parameters by comparing with other methods for time of concentration calculation – complete.

11. South Floodwater Channel HEC-RAS development using HEC-GeoRAS – complete.

12. Integration of LiDAR data and channel cross section survey data - complete

13. Update South Floodwater Channel HEC-RAS model for surveyed cross-sections and structures – complete.

14. 2D-mesh generation for 2D-unsteady overbank areas and laterals – complete

15. South Floodwater Channel 1D/2D unsteady HEC-RAS model development – complete.

16. Create HEC-RAS models for City of Pharr/La Milpas area existing laterals – complete.

17. Existing conditions HEC-RAS modeling analysis to identify system constraints, identify flood problem areas, and improvement opportunities – performed HEC-RAS modeling analysis for each outfall lateral for both existing to identify constraints and improvement opportunities such channel modifications and hydraulic structure replacements for various frequencies of storm events – complete.

18. Analyze City of Pharr proposed lateral ditch configuration – complete.

19. Alternative analysis to optimize alternative improvements to relieve existing flooding problems and provide outfall needs – complete.

20. Report preparation – complete draft report.

Civil Systems Engineering, Inc.

1202 Lake Pointe Parkway
Sugar Land, Texas77478
(713) 782-3811

INVOICE

Engineering Services
South Pharr/Las Milpas -South Floodwater Channel Study _WA No. 10

L&G Engineering
2100 W. Expressway 83
Mercedes, Texas 78570
Attention: Mr. David Saenz, P.E.

CSE Invoice Number: LG201516
CSE Project Number: LG201503
Invoice Period: 11/26/2015 Through 12/25/2015
Invoice Date: December 25, 2015

Contract Amount	Contract Amount Remaining
$92,266.16	$0.00

Employee Classfication	Rate	Previous		This Period		To Date	
		Hr	Total	Hr	Total	Hr	Total
Project Manager	$205.80	100.0	$20,580.00	32.0	$6,585.60	132.0	$27,165.60
Project Engineer	$178.30	285.0	$50,815.50	13.6	$2,430.98	298.6	$53,246.48
GIS Specialist	$164.64	64.0	$10,536.96	8.0	$1,317.12	72.0	$11,854.08
Subtotal			**$81,932.46**		**$10,333.70**		**$92,266.16**

Deren Li, Ph.D., P.E., D.WRE
Project Manager

TOTAL FEE EARNED:	$92,266.16
LESS PREVIOUSLY INVOICED:	$81,932.46
TOTAL AMOUNT DUE THIS INVOICE:	**$10,333.70**

L&G CONSULTING ENGINEERS INC
2100 W. Expressway 83
Mercedes, TX 78570
956-565-9813 fax 956-565-9018

FINAL WAIVER AND LIEN RELEASE

DATE: 12/31/2015
PROJECT: Pharr McAllen Drain & South Flood Water Channel Watershed Improvement WA#2 (PO#626939)
OWNER: Hidalgo County Drainage District #1
FINAL PAYMENT: $ 15,215.69

UPON RECEIPT OF THIS PAYMENT, Owner does hereby certify and acknowledge that Engineer has been fully paid for all work and labor done by Owner and for all materials and services supplied by Engineer on the above project and that this payment, which includes all retainage released to the Engineer, represents the FINAL AND COMPLETE payment for work and/or labor done and all materials and services supplied on the above described project.

The undersigned hereby further certifies: There are no known mechanics, materialmen's, or laborer's liens or claims or any other liens or claims, legal or equitable, contractual, statutory, or constitutional, outstanding or known to exist as of the date referenced above and if any should arise in the future, the undersigned agrees to indemnify and hold the Owner and Contractor harmless from any and all such liens or claims, including attorney's fees and expenses; all due and payable bills with respect to the real property referenced above have been paid to date or are included in the amount requested in the current application and will be paid from this payment, and there is no known basis for the filing of any mechanics', materialman's, or laborer's lien or claim, or any other lien or claim, legal or equitable, contractual, statutory, or constitutional, on the real property referenced above. Engineer certifies that all waivers and releases from all Engineers, laborers, and material men for work done and materials furnished have been obtained in such form as to constitute an effective waiver and release of all such liens under the Laws of the State of Texas.

ENGINEER SWEARS THAT, WITH RECEIPT OF THE PAYMENT ASSOCIATED WITH THIS LIEN RELEASE, ALL OUTSTANDING BILLS ASSOCIATED WITH THIS LIEN RELEASE WILL BE PAID AT THIS TIME. FURTHER, ENGINEER ACKNOWLEDGES THAT ALL FUNDS RECEIVED, TO THE APPROPRIATE AMOUNT, ARE RECEIVED IN TRUST FOR ALL ENGINEERS/SUPPLIERS THAT ARE OWED FUNDS BY HIM ON THIS PROJECT. ENGINEER AGREES TO INDEMNIFY ANY PARTY RELYING UPON THIS AFFIDAVIT FOR ANY LOSS OR EXPENSE RESULTING FROM FALSE OR INCORRECT STATEMENTS IN THIS AFFIDAVIT.

UPON RECEIPT OF THIS PAYMENT, Engineer hereby releases in full all claims and liens Engineer has heretofore filed, if any, on such property for such work and/or material. Engineer hereby waives all rights, claims and liens on this project forever for such work done and all materials supplied by Engineer.

L&G CONSULTING ENGINEERS, INC

Marisela G Marin
Signature

12/31/2015
Date

Printed Name/Title Marisela G. Marin Secretary/Treasurer

STATE OF TEXAS

KNOW ALL MEN BY THESE PRESENTS:

COUNTY OF HIDLAGO

Before me, the undersigned authority, on this day personally appeared Marisela G. Marin, the Secretary/Treasurer (title) of L&G Consulting Engineers, known to me to be the person and officer whose name is subscribed to the foregoing instrument and acknowledged to me that he executed the same for the purposes therein expressed and in the capacity therein stated.

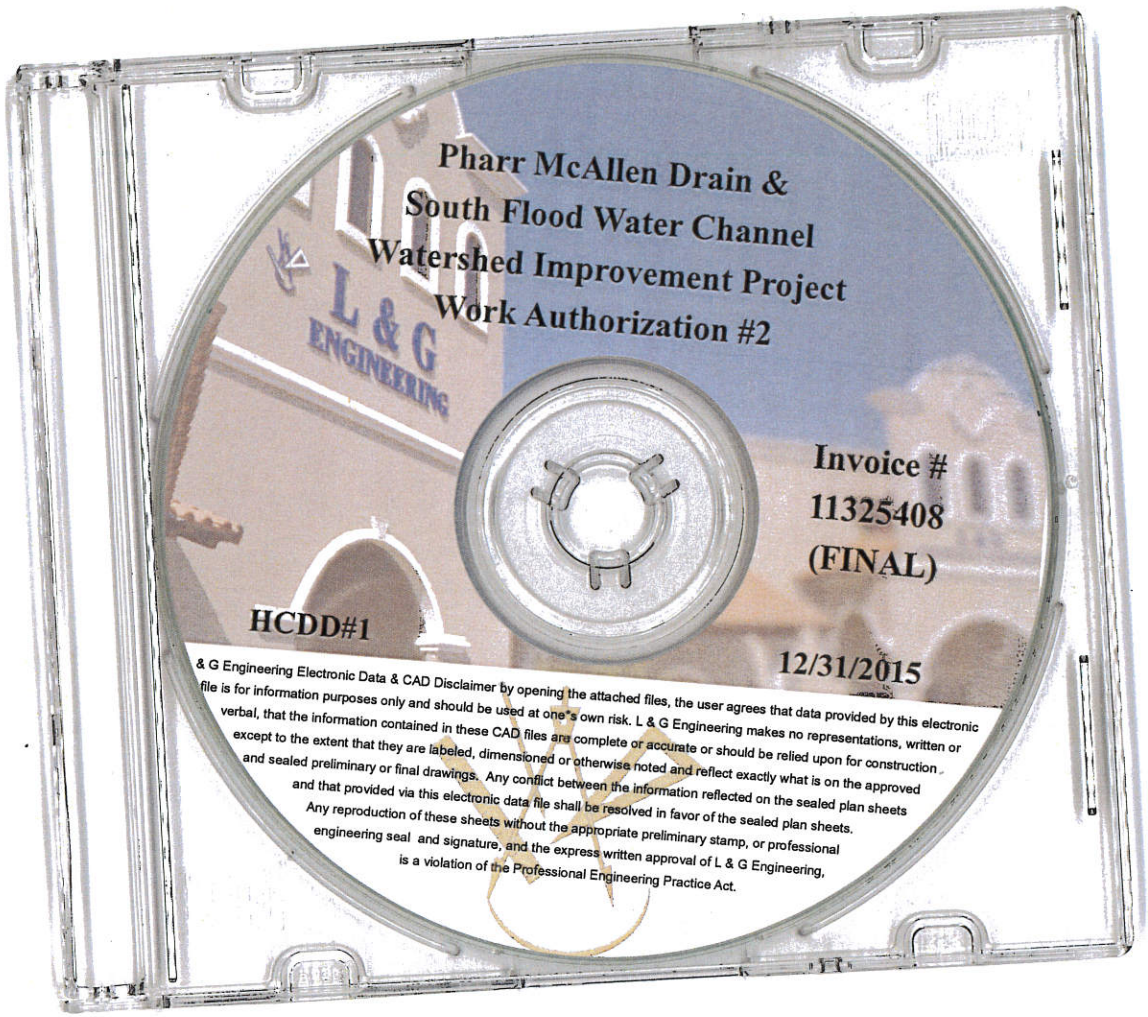
Alicia Rodriguez

ALICIA RODRIGUEZ
Notary Public, State of Texas
My Commission Expires
August 28, 2017

NOTARY PUBLIC in and for
THE STATE OF TEXAS

Printed Name: Alicia Rodriguez

My Commission Expires: August 28, 2017


Pharr McAllen Drain &
South Flood Water Channel
Watershed Improvement Project
Work Authorization #2
L & G
ENGINEERING
Invoice #
11325408
(FINAL)
HCDD#1
12/31/2015
& G Engineering Electronic Data & CAD Disclaimer by opening the attached files, the user agrees that data provided by this electronic
file is for information purposes only and should be used at one"s own risk. L & G Engineering makes no representations, written or
verbal, that the information contained in these CAD files are complete or accurate or should be relied upon for construction
except to the extent that they are labeled, dimensioned or otherwise noted and reflect exactly what is on the approved
and sealed preliminary or final drawings. Any conflict between the information reflected on the sealed plan sheets
and that provided via this electronic data file shall be resolved in favor of the sealed plan sheets.
Any reproduction of these sheets without the appropriate preliminary stamp, or professional
engineering seal and signature, and the express written approval of L & G Engineering,
is a violation of the Professional Engineering Practice Act.

SOUTH PHARR - LAS MILPAS LATERAL DRAINAGE STUDY

PREPARED FOR

HIDALGO COUNTY DRAINAGE DISTRICT NO. 1

&

CITY OF PHARR

STATE OF TEXAS
DEREN LI
83158
LICENSED
PROFESSIONAL ENGINEER

Deren Li, Ph.D., P.E., CFM
F-5246
December 18, 2015

PREPARED BY:

CSE Civil Systems Engineering, Inc.
TPBE# F-5246

STATE OF TEXAS
KURT E. KILLIAN
95742
LICENSED
PROFESSIONAL ENGINEER

Kurt E. Killian, P.E., CFM
F-5246
December 18, 2015

IN COOPERATION WITH:

L&G CONSULTING ENGINEERS, INC.

DECEMBER 2015

TABLE OF CONTENTS

TABLES

FIGURES

1.0 EXECUTIVE SUMMARY

The Las Milpas area is located north of South Floodwater Channel between Cage Blvd. (SH 281) and McColl Road (FM 2061). The area consists of mostly residential and commercial development. Internal drainage of the area is served by local storm sewers and roadside ditches that outfall into three lateral drainage ditches, which ultimately outfall into the South Floodwater Channel. The contributing area to the lateral ditches experience frequent flooding due to high tailwater conditions within the receiving lateral ditches during a storm event. The existing lateral ditches and crossing structures have limited capacity to serve the contributing area drainage needs.

Civil Systems Engineering, Inc. (CSE) was subcontracted to L&G Consulting Engineers, Inc. as part of a contract with Hidalgo County to provide engineering services to analyze the existing drainage systems, identify constraints, and recommend drainage improvements to provide drainage needs for the area to relieve the frequent flooding problems.

The drainage study included investigation of potential improvements to the South Floodwater Channel and the Las Milpas Lateral System ditches. Improvements to South Floodwater Channel were investigated to lower the tailwater conditions of the lateral ditches outfalls. Modeling of the South Floodwater Channel showed significant improvements would be involved to provide only minor reduction (less than one feet) of tailwater elevations at the lateral ditch outfalls. Also it would require significant right-of-way acquisition and endure substantial cost for limited benefit to the study area. Improvements to the lateral ditch systems were investigated by proposing channel improvements and culvert replacements within existing available drainage easements to increase the ditches capacity and lower the tailwater conditions for the adjacent subdivisions drainage and storm sewer systems.

The proposed plan consisted of improvements to the lateral ditch systems. The proposed channel improvements and culvert replacements were recommended as the preferred solution given the benefit to the study area, cost, and no acquisition of right-of-way. The proposed improvements consist of: 18,200 feet of channel improvements, 1300 feet of diversion culvert pipe, nine (9) cross-drainage structure replacements, and two (2) outlet control structure removals. The channel improvements include a typical earthen, trapezoidal section consisting of 3:1 side slopes (H:V), 8 – 10 depth, 10 to 20 foot bottom width, and a minimum 0.05-percent channel slope.

These drainage improvements will increase the conveyance capacity of the lateral ditch systems and lower the tailwater conditions to improve the drainage from the adjacent residential areas. The diversion pipe component consists of approximately 1300 feet of 36" RCP along the north side of Thomas Drive to divert partial flow from the East Lateral Tributary No. 1 to the West

Lateral. Currently pipe culvert structures are located at the outlets of the West Lateral and East Lateral ditches. The removal of these structures reduce the headlosses within the laterals and increase the ditches' capacity. The majority of the existing culvert crossings are undersized and require replacement to provide sufficient conveyance capacity within the proposed channel sections. These drainage improvements will increase the conveyance capacity of the lateral ditch systems and lower the tailwater conditions to improve the drainage from the adjacent residential areas.

The proposed plan implements a 100-year capacity to the East Lateral and West Lateral ditches and a 25-year capacity to the East Lateral Trib. 1. A comparison of the existing and proposed plan HEC-RAS modeling results showed an average reduction to the 100-year water surface elevation of 1.5 feet with the following specific ranges for each lateral ditch:

- East Lateral: 1.2 ft at Dicker Road to 2.1 ft at Juan Balli Road
- East Lateral Trib 1: 1.6 ft at confluence with East Lateral to 0.7 ft at Juan Balli Road
- West Lateral: 0.7 ft at Dicker Road to 3.5 ft at Juan Balli Road

2.0 INTRODUCTION

2.1 PURPOSE OF THE PROJECT

The Las Milpas area is located north of South Floodwater Channel between Cage Blvd. (SH 281) and McColl Road (FM 2061). The area consists of mostly residential and commercial development. Internal drainage of the area is served by local storm sewers and roadside ditches that outfall into three lateral drainage ditches, which ultimately outfall into the South Floodwater Channel. The contributing area to the lateral ditches experience frequent flooding due to high tailwater conditions within the receiving lateral ditches. The existing lateral ditches and crossing structures have limited capacity to serve the contributing area drainage needs.

The purpose of the South Pharr – Las Milpas Lateral Drainage Study is to develop a drainage improvement plan to provide flood relief within Las Milpas area. Civil Systems Engineering, Inc. (CSE) was subcontracted to L&G Consulting Engineers, Inc. as part of a contract with Hidalgo County to provide engineering services to analyze the existing drainage systems, identify constraints, flooding problem areas, and recommend improvements to provide lateral outfall capacity and relieve the frequent flooding problems within the Las Milpas study area.

2.2 PROJECT AREA

The Las Milpas Lateral Systems project area consists of mostly urbanized, residential area of City of Pharr within Hidalgo County, Texas. The area is located north of South Floodwater Channel between Cage Blvd. (SH 281) and Jackson Road (FM 2061). The study area and drainage channels are shown in **Figure 1**. The internal drainage of the area is served by local storm sewers and roadside ditches that outfall into three lateral drainage ditches, which ultimately outfall into the South Floodwater Channel. The contributing area to the lateral ditches experience frequent flooding due to rising water from the receiving lateral ditches. The lateral ditches have been identified as having insufficient capacity and inadequate crossing structures to serve the contributing area drainage needs.

FIGURE 2-1. PROJECT AREA

2.3 LAS MILPAS AREA TOPOGRAPHY

The topography of the area runs in a general north to south direction from the HCID2 canal, which lies along the IBWC Main Floodway south levee to the South Floodwater Channel. The natural ground ranges from 93 feet to 86 feet at an overland approximate slope of 9-percent, as shown in **Figure 2-2**.

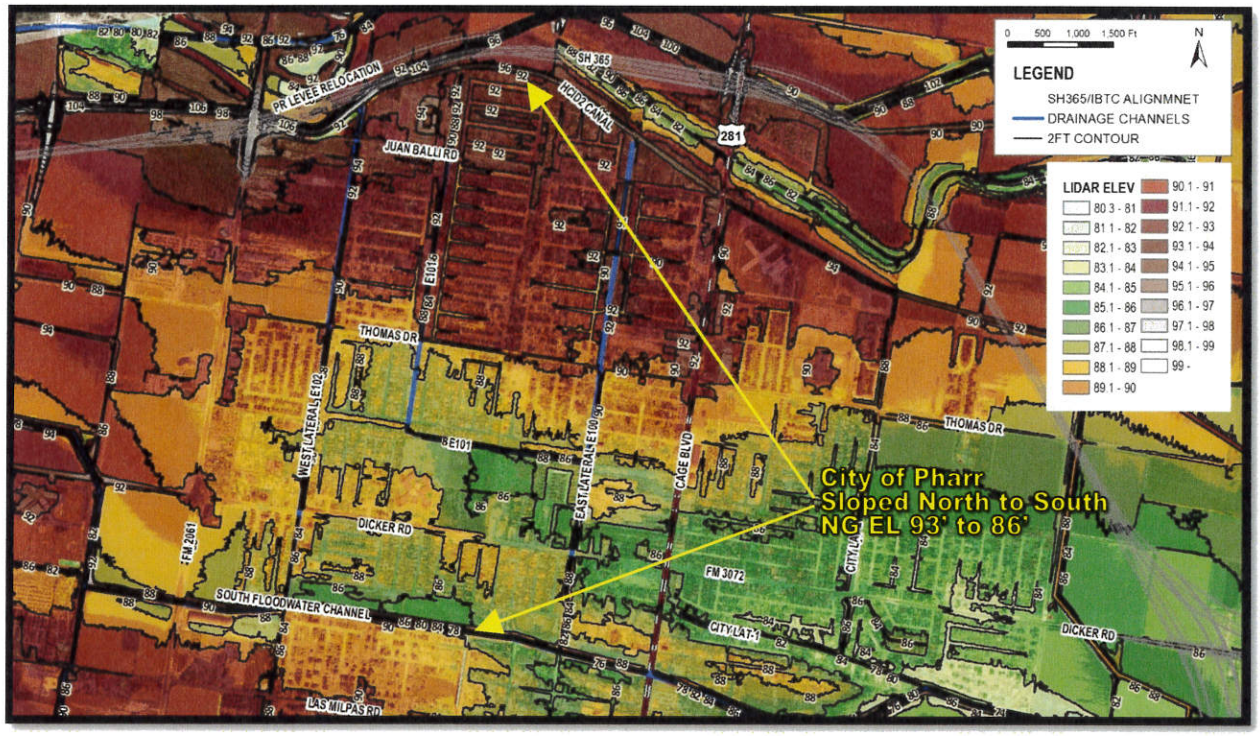


FIGURE 2-2. LAS MILPAS OVERLAND TOPOGRAPHY

2.4 SURVEYED DATA

Survey topographic data for lateral cross-culvert structures was collected by L&G Consulting Engineers, Inc. The culvert structure survey was used within the HEC-RAS modeling. The lateral system cross-drainage structural inventory is provided in **Table 2-1**.

TABLE 2-1. CROSS-DRAINAGE STRUCTURE INVENTORY

STRUCTURE LOCATION	SIZE	LENGTH
WEST LATERAL		
JUAN BALLI RD	30"	100
THOMAS DR	24"	80
DICKER RD	7'X4' RCB	136
OUTLET TO SFC	54" RCP	30
EAST LATERAL TRIB 1		
JUAN BALLI RD	30"	158
THOMAS DR	36"	1350
EAST LATERAL		
JUAN BALLI RD	24"	120
LA QUINTA DR	24"	100
BLUE JAY AVE	24"	125
THOMAS DR	24"	230
LONGORIA DR	48"	90
DICKER RD	7'X6' RCB	130
OUTLET TO SFC	2-48" RCP	40

3.0 SOUTH FLOODWATER CHANNEL

The South Floodwater Channel (SFC) serves as the receiving channel for the internal drainage systems of the Las Milpas study area. As part of the Las Milpas analysis, the South Floodwater Channel was investigated to determine the flooding and backwater effects of the channel within the study area. This section presents the hydraulic modeling of the South Floodwater Channel (SFC) and discusses the potential hydraulic impacts of the South Floodwater Channel on the Las Milpas laterals and potential improvement opportunities.

3.1 SFC WATERSHED DESCRIPTION

The South Floodwater runs from the Main Floodway to its confluence with Hidalgo Drain, a length of approximately 54,000 feet, as shown in **Figure 3-1**. The stream runs generally in a west-to-east direction. The study reach includes the entire channel length. The stream includes sixteen (16) roadway crossings as well as the levee structure at its outfall into the Main Floodway. The roadway crossings include McColl Road, Dicker Road, Jackson Road, Cage Boulevard (US 281), I Road, Las Milpas Road, San Juan Road, Anaya Road, Stewart Road, Morningside, Alamo Road, Tower Road, Juan Balli Road, and Border Road.

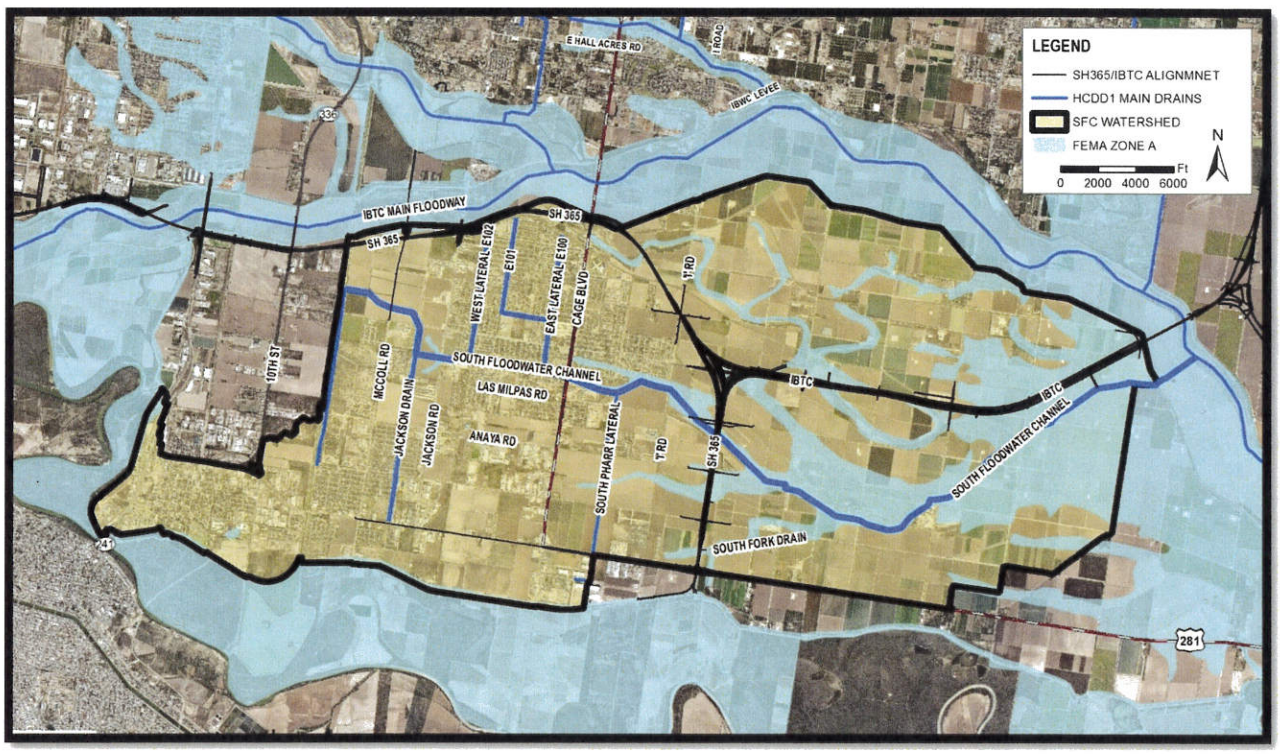


FIGURE 3-1. SOUTH FLOODWATER CHANNEL WATERSHED

The South Floodwater Channel Watershed is approximately 36.6 square miles. The drainage area includes the subareas for Hidalgo Drain and South Pharr Lateral. The overland slope of the

drainage area is mild, less than 0.1 percent. The downstream portion of the watershed from 'I' Road to IBWC Floodway are undeveloped. Upper portion of the watershed west of 'I' Road consists of residential and commercial developments. The upper portion of the watershed includes the Las Milpas project area, located north of the South Floodwater Channel between Cage Blvd and Jackson Road. The Las Milpas area laterals outfall into the South Floodwater Channel.

The South Floodwater Channel is an earthen, trapezoidal section channel. The downstream reaches of the channel are approximately 16 feet in depth with the upper reaches of the channel being approximately 13 feet in depth. The channel invert is consistent for the entire channel reach with a slope of approximately 0.02 percent. The SFC Watershed LiDAR topography is in **Figure 3-5**, later in this section.

3.2 HEC-HMS Runoff Computations

The South Floodwater Channel runoff computations were performed using HEC-HMS (v.4.0). The model is based on the FEMA Hidalgo County Map Mod Project hydrology and HEC-HMS modeling for the South Hidalgo Watershed. The Map Mod model was updated to separate the Jackson Drain subarea ("SH_SFC-JACK"), which is located within the upper reaches of the SFC watershed. ThE subarea was split from the SFC-A and SFC-B subareas. The HEC-HMS computed runoff hydrographs for each storm event were directly referenced within the HEC-RAS model. The updated HEC-HMS model layout is shown in **Figure 3-2**. Within the figure, the SFC Watershed subareas are labeled with the following nomenclature: "SH_SFC", "SH_SPL", and "SF_HID".

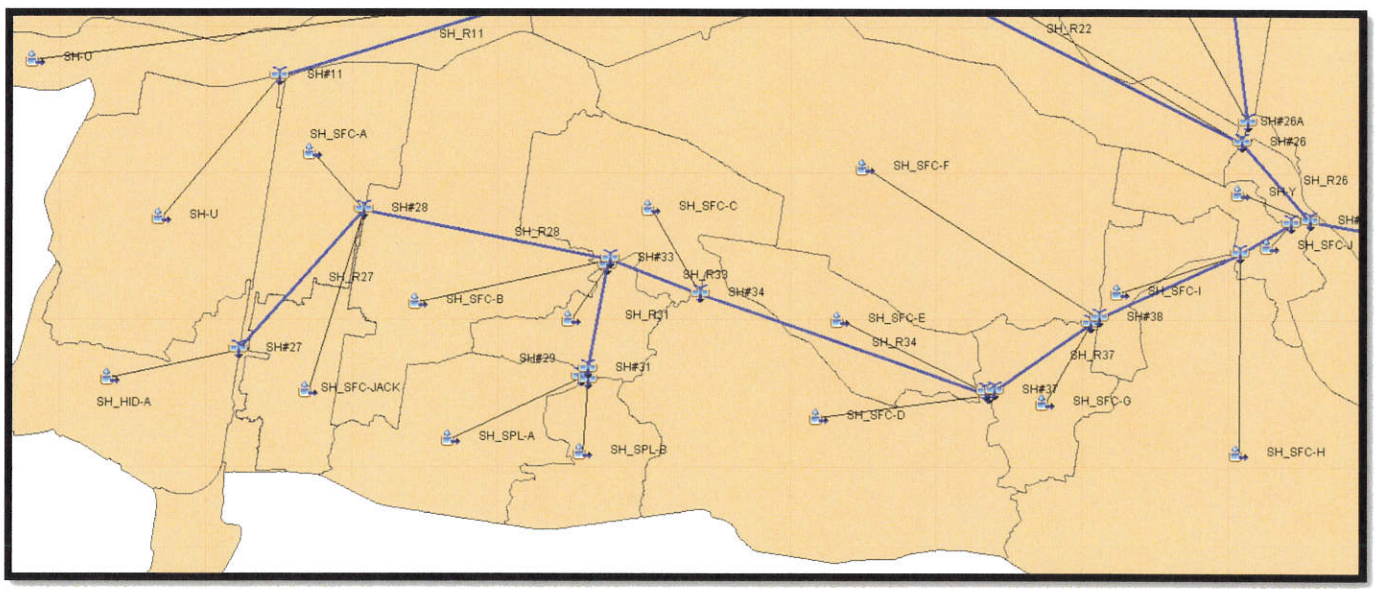


Figure 3-2. SFC HEC-HMS Model Layout Schematic

3.3 HEC-RAS 1D/2D Unsteady Modeling Analysis

With consideration of the very flat topography of South Floodwater Channel Watershed as well the evaluation of the potential closure of the floodgate at the IBWC floodway, HEC-RAS 1D/2D unsteady flow model was developed for this project. The 1D/2D HEC-RAS model was developed based on the 1D unsteady HEC-RAS model for the FEMA Hidalgo County Map Mod Project.

The Map Mod HEC-RAS model was updated to convert the 1D unsteady model to a 1D/2D unsteady model. This included regenerating cross-sectional geometry based on the Map Mod model and overland LiDAR topography, and the additional of overbank 2D storage areas using LiDAR topography. Additional modifications to the model included updating the outlet structure at the IBWC Main Floodwater Levee based on the proposed South Fork Channel construction project plans, updating the Jackson Road Bridge based on L&G field survey, incorporating updated HEC-HMS runoff hydrographs based on Jackson Drain subarea analysis, and inclusion of the Jackson Drain proposed channel improvements as a tributary reach to South Floodwater Channel. The HEC-RAS geometry layout for the updated South Floodwater Channel model is shown in **Figure 3-3**. The South Floodwater Channel 100-year and 25-year computed floodplain areas, based on an open-gated condition at the outlet structure into the IBWC Main Floodway, are shown in **Figures 3-4, 3-5,** and **3-6**.

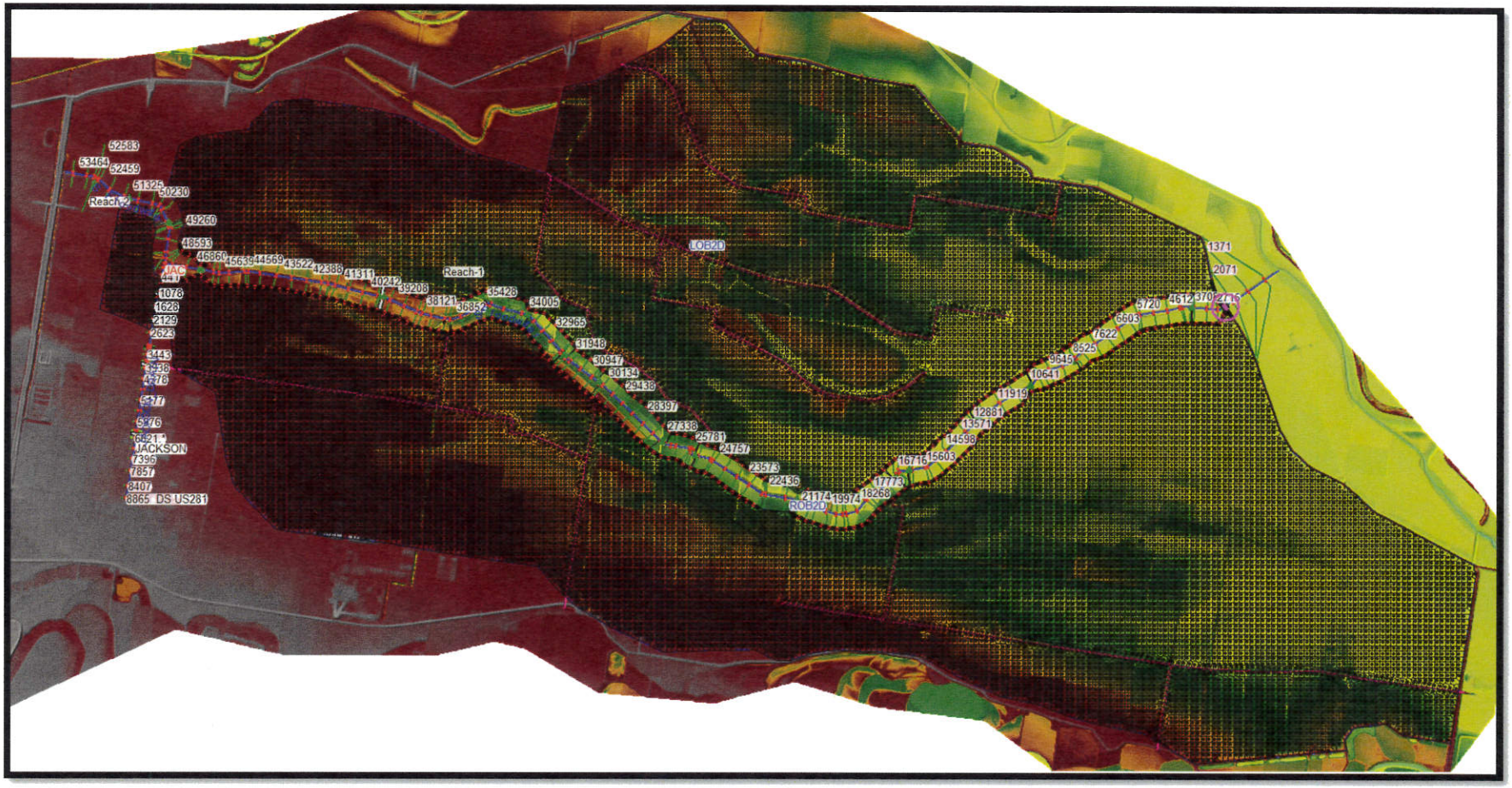


FIGURE 3-3. SFC 1D/2D HEC-RAS MODEL LAYOUT

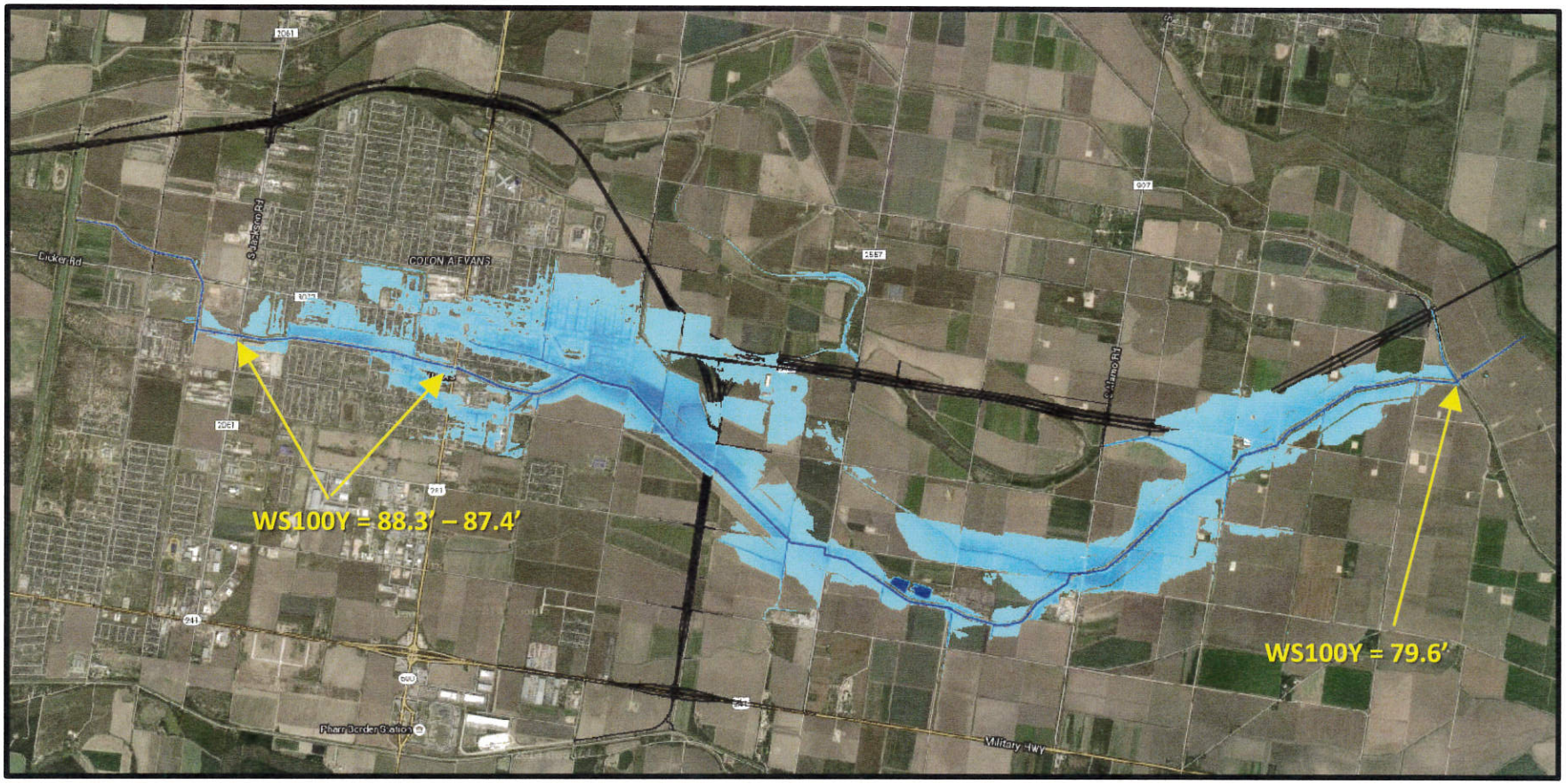


FIGURE 3-4. SFC 100-YEAR FLOODPLAIN (OPEN GATED CONDITION)

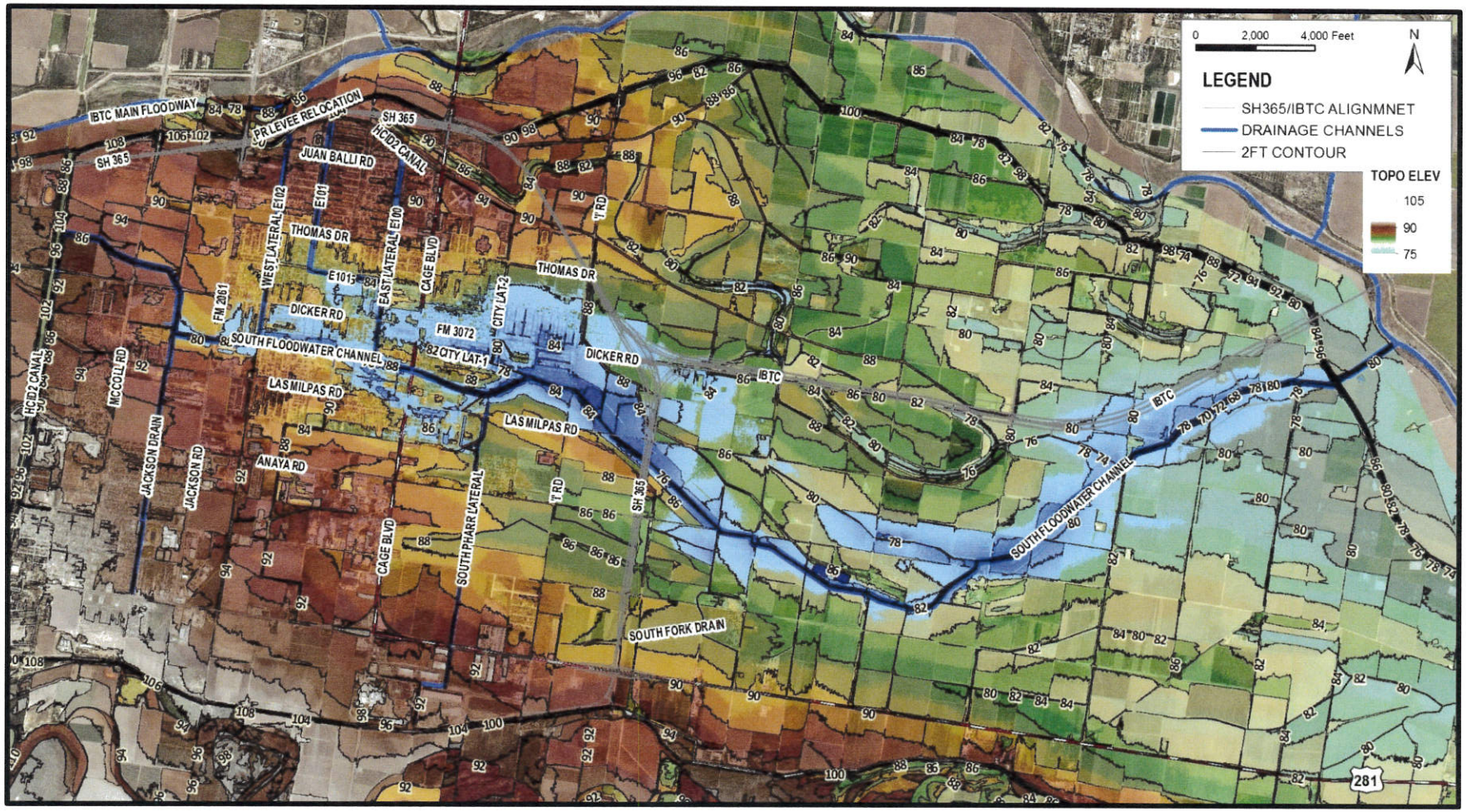


FIGURE 3-5. SFC 100-YEAR FLOODPLAIN LIDAR OVERLAY

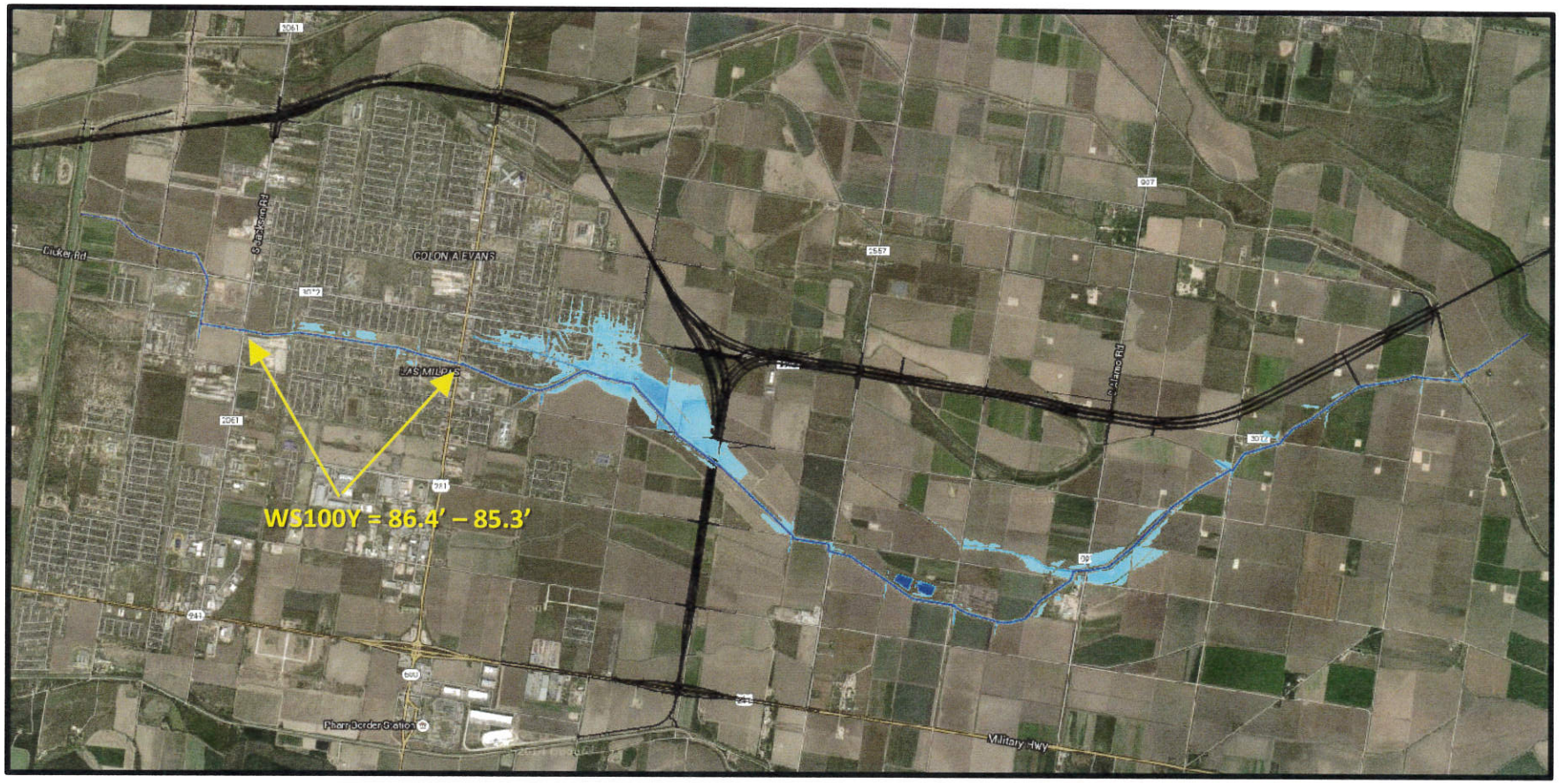


FIGURE 3-6. SFC 25-YEAR FLOODPLAIN (OPEN GATED CONDITION)

3.4 SFC Modeling Conclusions

The HEC-RAS modeling results and floodplain mapping show that the South Floodwater Channel inundates the developed area south of Thomas Drive during 50- or 100-year storm events. The 100-year SFC inundation area for the Las Milpas area is shown in **Figure 3-7**. South Floodwater Channel will affect the water surface elevation within the Las Milpas Laterals downstream of Thomas Drive during 25-year storm event. The South Floodwater Channel has limited impact on water surface elevations with the Las Milpas Laterals during 10-year storm event.

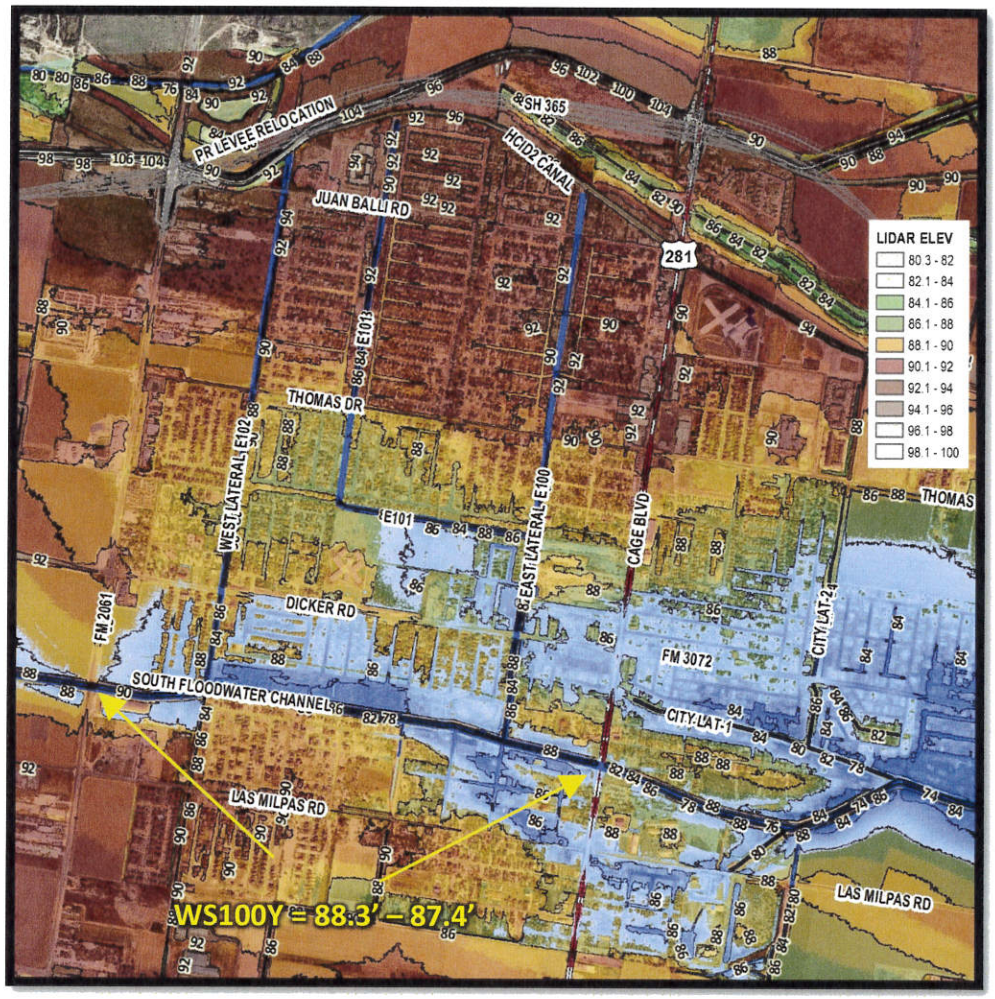


Figure 3-7. SFC 100-Year Floodplain Las Milpas Reach

Based on the HEC-RAS modeling, improvement to South Foodwater Chanel will have limited reduction to water surface elevation within the Las Milpas study area reach; therefore no significant benefit for flood reduction within the Las Milpas area. No improvements are proposed along South Floodwater Channel in conjunction with the Las Milpas proposed project.

4.0 HYDROLOGY ANALYSIS

Runoff computations were performed for the lateral systems using the Hidalgo County approved hydrologic method, which utilizes the NRCS Hydrograph Method, NRCS CN Loss Method, NRCS TR-55 time of concentration, and user defined unit hydrographs to generate peak flows and runoff hydrographs within HEC-HMS. This section presents the hydrologic computations for determining runoff flows for the Las Milpas Lateral Systems.

4.1 DRAINAGE AREA DELINEATION

The drainage areas were delineated based on LiDAR topography, drainage systems, and physical features. The East Lateral has a total drainage area of 833 acres. The West Lateral has a total drainage area of 170 acres. The drainage area delineations are provided in **Figure 4-1**. Drainage ID "W" is for West Lateral, "E" is for East Lateral, and "EA" is for East Lateral Trib. 1.

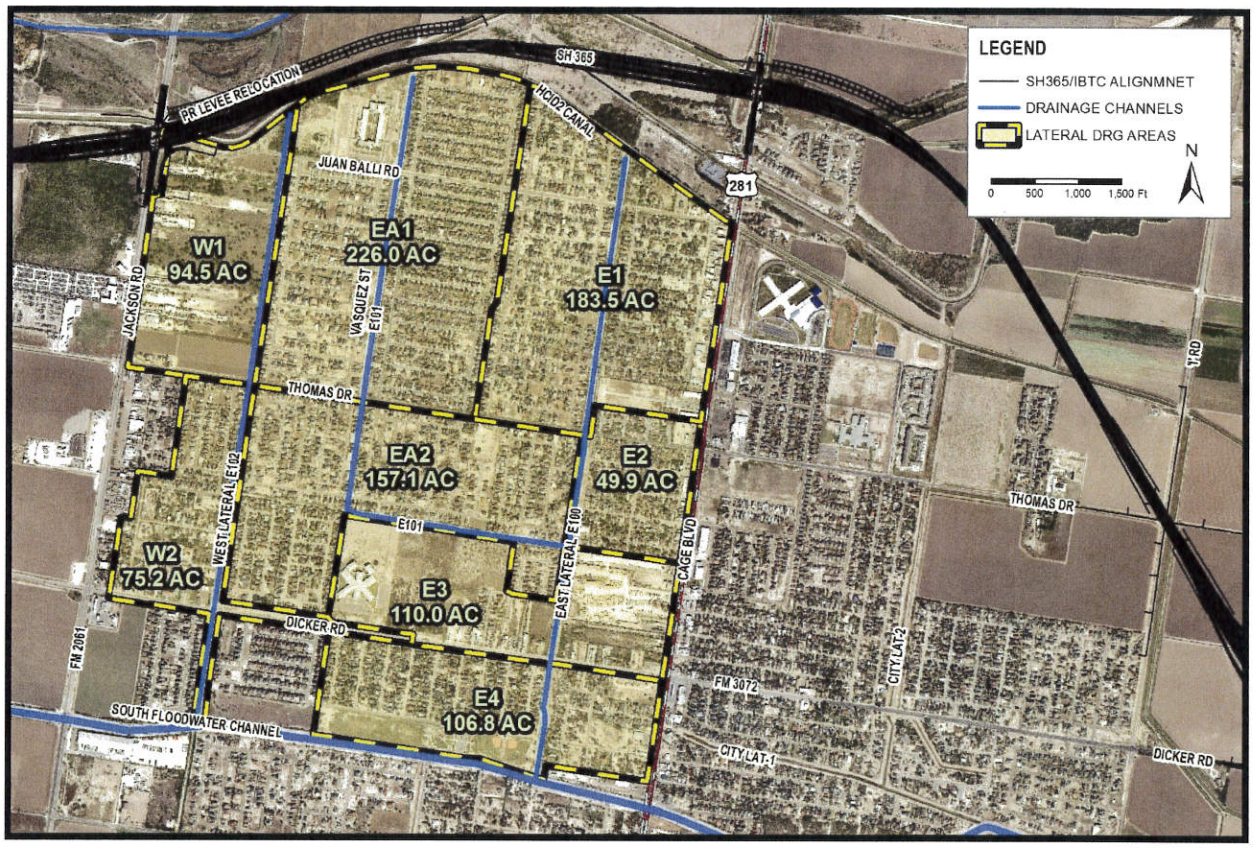


FIGURE 4-1. DRAINAGE AREA DELINEATION

4.2 HYDROLOGIC PARAMETERS

The drainage area runoffs were computed within HEC-HMS (v.4.0) using NRCS Unit Hydrographs based on a PRF = 150. The time of concentrations, which is used to compute the NRCS lag time parameter, were calculated using SCS Upland Method as described within TR-55. The NRCS Curve

Number (CN) Loss Rate Method was used to estimate rainfall losses in HEC-HMS. Based on the soil maps for Hidalgo County and utilization of Antecedent Moisture Conditions (AMC) I conditions, an average NRCS Curve Number of CN=74 was determined to represent the overall soil conditions and residential development within the project drainage areas. In order to account for the runoff impacts associated with the proposed roadway, the existing and proposed condition percent imperviousness was calculated for each drainage area. Based on the soil conditions and overland flow and internal ponding conditions within the subareas, an initial abstraction value of 1.5 was utilized. The hydrologic parameters used to develop the unit hydrographs and HEC-HMS input parameters are provided in **Table 4-1**.

TABLE 4.1 - DRAINAGE AREA PARAMETERS

DAREA ID	LATERAL SYSTEM	ACRE (AC)	AREA (S.MI)	CN (DEVT)	IMPERV (%)	TC (MIN)	NRCS PRF	LAG (HR)
E1	EL-100	184	0.2867	74	40	158.4	150	1.584
E2	EL-100	50	0.0780	74	40	78.8	150	0.788
E3	EL-100	110	0.1719	74	40	155.1	150	1.551
E4	EL-100	107	0.1669	74	40	145.6	150	1.456
EA1	EL-101	226	0.3531	74	40	177.6	150	1.776
EA2	EL-101	157	0.2455	74	40	153.7	150	1.537
W1	WL-100	95	0.1477	74	40	118.9	150	1.189
W2	WL-100	75	0.1175	74	40	80.6	150	0.806

4.3 HYDROLOGIC MODELING

HEC-HMS model (v.4.0) was developed for the lateral systems subareas based on the estimated hydrologic parameters (subbasin area, initial loss, percent imperviousness, curve number, and lag time), generated unit hydrographs, routing data, and rainfall data. The HEC-HMS computation layout schematic is shown in **Figure 4-2**.

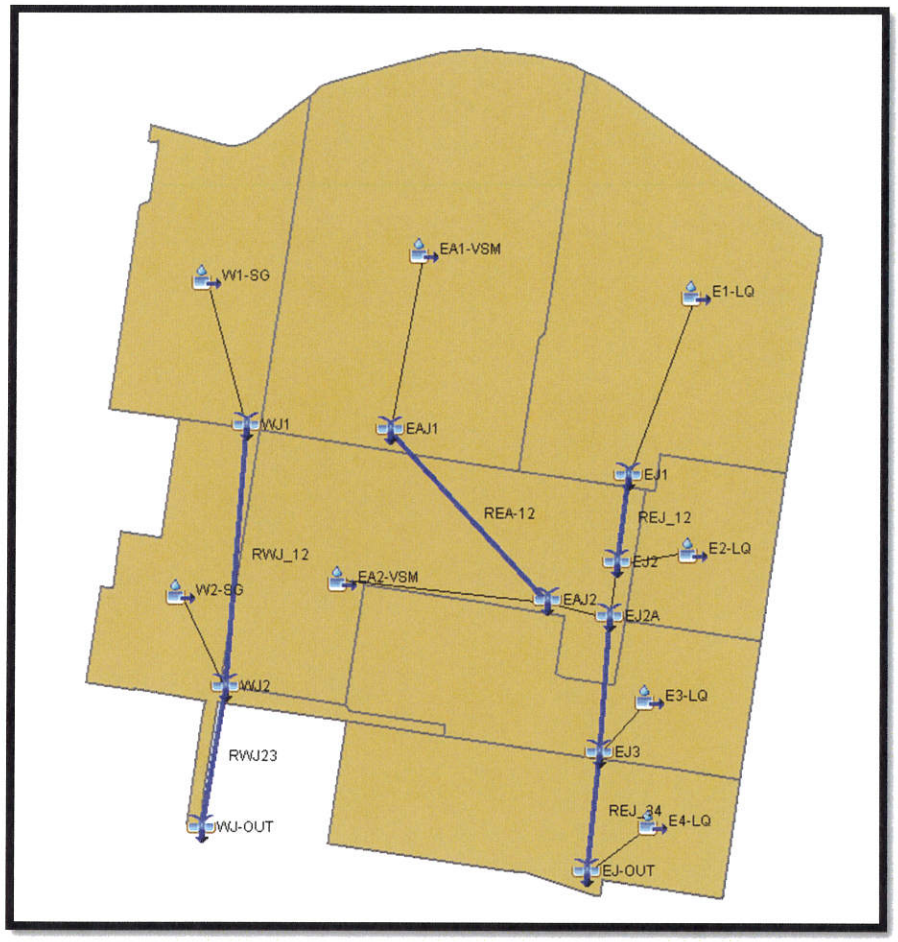


FIGURE 4-2. HEC-HMS LAYOUT SCHEMATIC

4.4 COMPUTED FLOW RESULTS

Peak discharges for each subarea, junction node, and outfall were generated for the 100-, 25-, and 10-year storm events. **Table 4-2** summarizes the computed peak flows for the lateral systems. The computed flows at junction nodes were used as input values for the HEC-RAS modeling.

TABLE 4.2 – HEC-HMS COMPUTED PEAK FLOWS

HEC-HMS ELEMENT	CONTR AREA (SQ.MI.)	COMPUTED PEAK FLOWS			
		10Y (CFS)	25Y (CFS)	50Y (CFS)	100Y (CFS)
EAST LATERAL					
E1-LQ	0.2867	34.4	54.0	76.2	99.7
EJ1	0.2867	34.4	54.0	76.2	99.7
E2-LQ	0.0780	14.7	23.9	32.7	42.7
EJ2	0.3647	47.0	74.1	104.3	136.4
EJ2A	0.9633	113.6	179.7	253.5	331.9
E3-LQ	0.1719	20.9	32.9	46.4	60.6
EJ3	1.1352	133.3	208.6	294.4	386.0
E4-LQ	0.1669	21.2	33.3	47.0	61.5
EJ-OUT	1.3021	152.8	238.2	336.9	439.9
EAST LATERAL TRIB. 1					
EA1-VSM	0.3531	38.9	61.1	86.3	113.0
EAJ1	0.3531	38.9	61.1	86.3	113.0
EA2-VSM	0.2455	30.1	47.2	66.7	87.2
EAJ2	0.5986	67.8	105.7	149.2	195.5
WEST LATERAL					
W1-SG	0.1477	21.3	34.3	47.3	61.9
WJ1	0.1477	21.3	34.3	47.3	61.9
W2-SG	0.1175	21.9	35.6	48.8	63.7
WJ-OUT	0.2652	40.0	63.5	89.6	117.0

REPRESENTS JUNCTION LOCATION FLOWS

5.0 HYDRAULIC ANALYSIS

Hydraulic modeling was performed for this analysis to determine existing conditions along the drain as well as proposed alternative benefits and impacts. The resulting hydrographs from HEC-HMS modeling analysis were incorporated into the HEC-RAS model to compute water surface elevations along the channels. This section presents the hydraulic modeling performed for this study.

5.1 EXISTING LATERAL SYSTEMS

The Las Milpas lateral system within the study area consist of three drainage laterals: East Lateral, East Lateral Trib. 1, and West Lateral. Runoff is conveyed to these laterals by residential storm sewer systems, roadside ditches, and overland sheetflow.

The East Lateral is located west of Cage Blvd. (US 281). The contributing drainage area served by the East Lateral is mostly residential with some commercial just west of Cage Blvd. (US 281). It conveys runoff from the HCID2 Canal, north of Juan Balli Road, south to the South Floodwater Channel.

The East Lateral Tributary 1 is located between the East Lateral and West Lateral, between Vasquez St. and Rivera St. The contributing drainage area served by the East Lateral Trib 1 is mostly residential. It conveys runoff from HCID2 Canal, north of Juan Balli Road, south to Thomas Road where it continues south through a long 36" pipe along residential easement to the open ditch north of the South Pharr Elementary School. Here the ditch continues east to its confluence with the East Lateral north of Dicker Road.

The West Lateral is located east of Jackson Road, adjacent to Valdivia St. The contributing drainage area served by the West Lateral is mostly residential areas with some commercial/industrial areas northwest of Thomas Drive. The ditch conveys runoff from the HCID2 Canal, north of Juan Balli Road, south to the South Floodwater Channel.

The laterals south of Thomas Drive typically consist of earthen, trapezoidal manmade ditches approximately 6 to 8 feet in depth. North of Thomas Drive, the laterals are much shallower with constricting cross-drainage structures.

5.2 HEC-RAS MODELING

These drainage ditches were analyzed using HEC-RAS (v.4.1) to determined existing capacity, identify conveyance problem reaches, and generate potential improvement alternatives. The HEC-RAS model for the laterals was generated within ArcGIS using HEC-GeoRAS tools based on LiDAR topography, aerials, and survey data. The cross-sections were generated from LiDAR topography, and the crossing structures were modeled using field survey data. Computed HEC-

HMS flows for multiple storm events were input as peak flows along the ditches. A layout of the HEC-RAS modeling is provided in **Figure 5-1**.

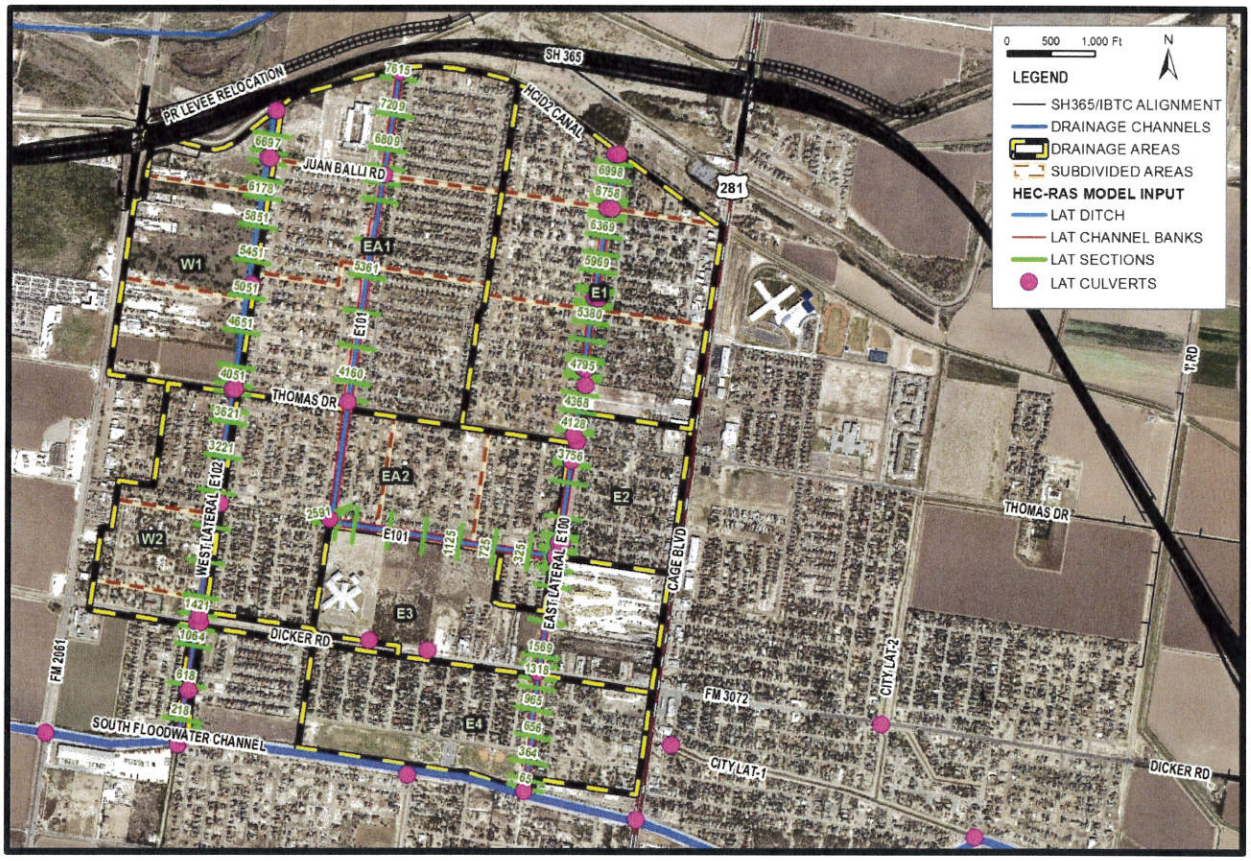


FIGURE 5-1. HEC-RAS MODEL LAYOUT

5.2.1 Existing Results

The existing condition modeling results show that there substantial out-of-bank flooding during the 100-year event. A comparison the lateral modeling results from the South Floodwater Channel water surface elevations showed that the South Floodwater Channel backwater effects is limited to the area within the lateral system near Dicker Road. The majority of the inundation area within the lateral system subarea is shown to be the result of limited ditch capacity and restrictive culverts. The existing 100-year inundation areas based on the lateral ditches and the South Floodwater Channel floodplain are shown in **Figure 5-2**.

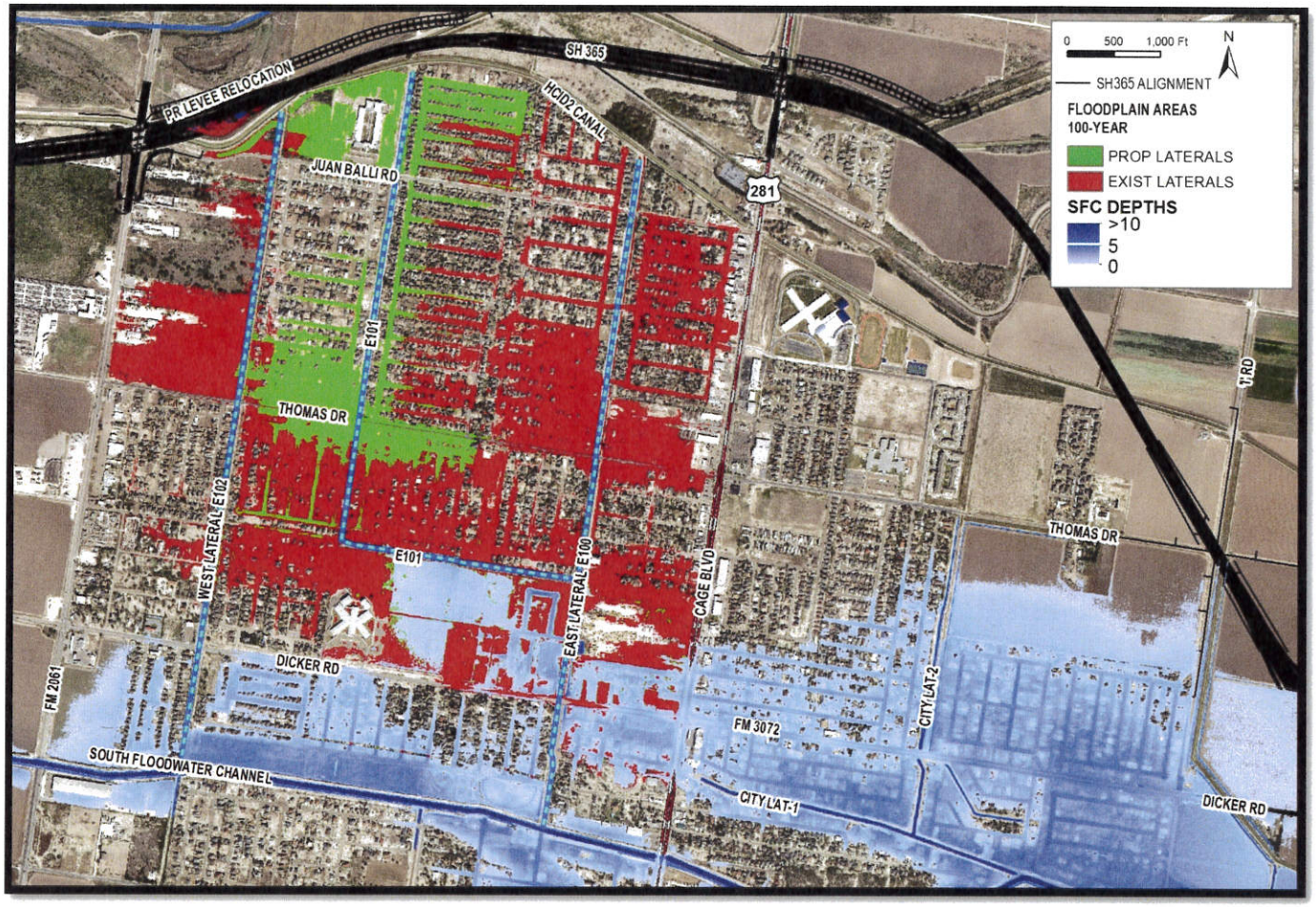


FIGURE 5-2. EXISTING 100-YEAR OVERBANK FLOODING AREAS

5.3 PROPOSED ALTERNATIVES

Based on the review of the existing condition hydraulic modeling analysis, multiple proposed improvement components were considered to provide flood relief for the project area. These components included channel improvements, culvert replacements, and flow diversions. Detention was considered a viable option due to the limited availability of undeveloped land within the study area. Also replacement of the existing 36" x 1300' RCP along East Lateral Trib. 1 south of Thomas Drive was not considered practical since the pipe lied within a small-width easement between residential lots.

The proposed components were analyzed using HEC-RAS to determine effectiveness and to optimize the components. The following list the proposed improvements components recommended for this project:

- Improve the East Lateral from upstream of Juan Balli Road to South Floodwater Channel
- Improve the West Lateral from upstream of Juan Balli Road to South Floodwater Channel
- Improve East Lateral Trib. 1 from upstream of Juan Balli Road to Thomas Drive.
- Replace various cross-culvert structures within the lateral ditches.
- Provide a diversion pipe along Thomas Drive from the East Lateral Trib. 1 to West Lateral.
- Remove outlet control structures at the West Lateral and East Lateral confluences with South Floodwater Channel

The channel improvements typical section include an earthen, trapezoidal section consisting of 3:1 side slopes (H:V), 8 – 10 depth, 10 to 20 foot bottom width, and a minimum 0.05-percent channel slope. All channel typical sections include a 10-foot bottom width except for along the East Lateral from Thomas Drive downstream to South Floodwater Channel, which is a 20-foot bottom width section.

Each of the above components will provide a benefit by increasing the overall conveyance capacity of the system and lowering the tailwater condition for the City of Pharr storm sewer systems. The removal and/or enlargement of the existing culvert crossings will result in reduced headlosses within the channel system. The channel improvements will increase the conveyance of the laterals. The diverting partial flow from the East Lateral Trib. 1 will reduce the headlosses through the existing long culvert south of Thomas Drive. The proposed improvement components are shown in **Figure 5-3**.

FIGURE 5-3. PROPOSED IMPROVEMENT PLAN

5.4 PROPOSED HEC-RAS RESULTS

The recommended proposed improvements were incorporated into the lateral systems HEC-RAS model. The proposed water surface elevations and overbank inundation areas were compared with existing conditions to show the proposed increase system capacity and reduction of flooding within the adjacent developed areas. The proposed condition increases the conveyance capacity of the West Lateral and East Lateral to a 100-year storm event and the East Lateral Trib. 1 to a 25-year storm event.

A comparison of the existing and proposed computed water surface elevations at roadway crossing locations along each lateral is shown in **Table 5-1**. A comparison of flooding depths during the 100-year storm event within the study area is shown in **Figure 5-4**.

TABLE 5-1 - WATER SURFACE ELEVATION COMPARISON

LOCATION	RAS XSN STA	EXIST WS 25Y (FT)	PROP WS 25Y (FT)	EXIST WS 100Y (FT)	PROP WS 100Y (FT)
EAST LATERAL					
U/S OF SFC	162	84.73	84.61	85.83	85.62
DICKER RD	1469	86.32	84.87	88.01	86.28
LONGORIA	2916	87.58	85.16	88.55	86.81
THOMAS	4128	91.04	85.49	91.16	87.76
BLUE JAY	4940	91.05	85.71	91.18	88.44
LA QUINTA	5729	91.05	85.89	91.19	89.07
JUAN BALLI	6758	91.35	85.99	91.49	89.36
EAST LATERAL TRIB. 1					
U/S OF EAST	125	86.42	84.98	88.05	86.43
D/S OF THOMAS	2591	86.64	85.38	88.18	86.95
THOMAS	3961	89.97	89.03	90.2	90.34
JUAN BALLI	6609	90.64	89.32	92.08	91.32
WEST LATERAL					
U/S OF SFC	218	84.63	84.62	85.63	85.62
DICKER	1338	85.75	85.20	87.04	86.67
THOMAS	4000	90.44	86.84	90.61	88.08
JUAN BALLI	6697	91.67	87.55	91.93	88.32

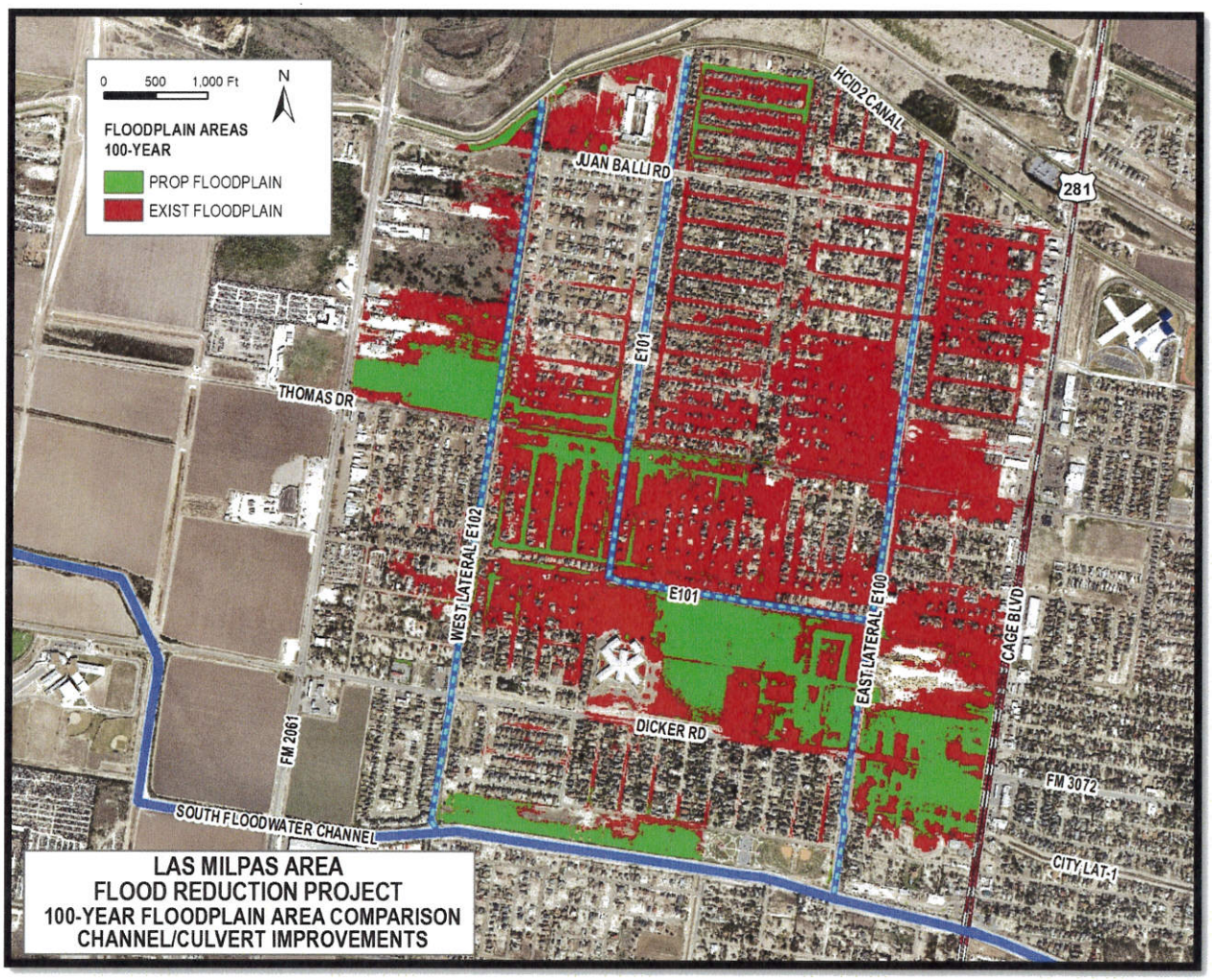


FIGURE 5-4. 100-YEAR FLOODING AREA COMPARISON

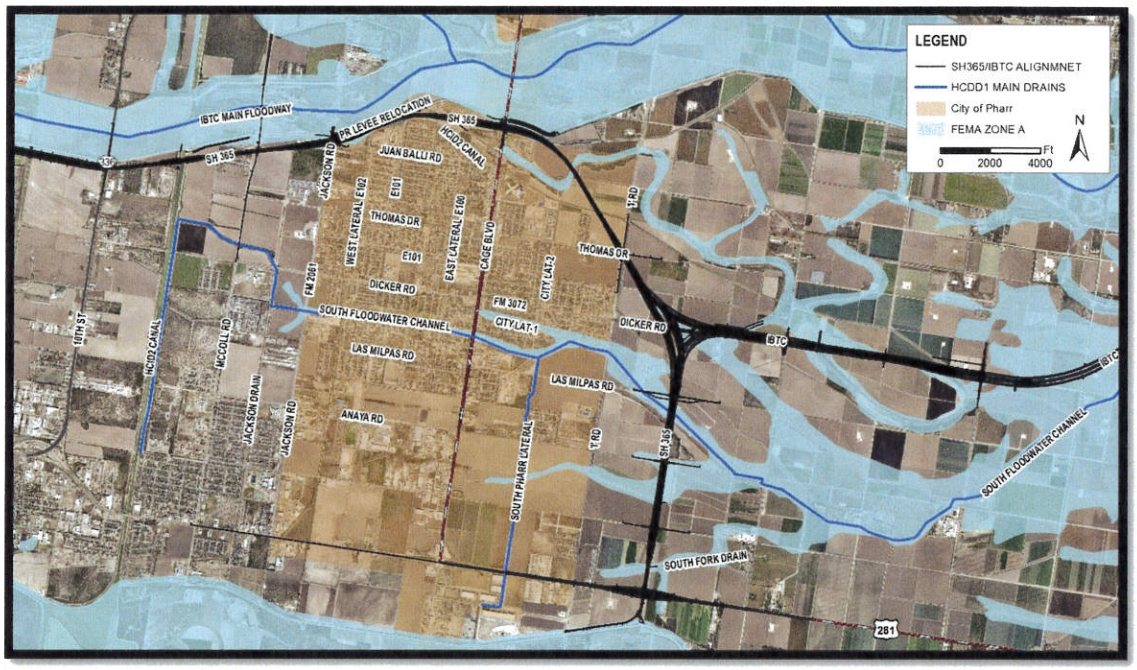
6.0 CONCLUSION

The Las Milpas study area is subjected to flooding and drainage problems. This drainage study investigated causes of these drainage problems by analyzing the lateral drainage ditches and the receiving South Floodwater Channel. Based on the analyses presented within the report, the South Floodwater Channel effects within the project area are mostly limited to areas south of Thomas Drive and during extreme events. The investigation concluded that drainage problems associated within the study area, especially north of Thomas Drive, are directly related to the lateral ditches insufficient capacity and inadequate cross-drainage structures.

In order to relieve flooding within the study area, channel improvements and proposed culvert replacements are proposed. The recommended improvements include: 1) channel improvements consisting of an earthern, trapezoidal section for the East Lateral, West Lateral, and upstream reaches of the East Lateral Tributary No. 1; 2) replacing six (6) crossing structures along the East Lateral; 3) replacing two (2) crossing structures along the West Lateral; 4) replacement one (1) crossing along the East Lateral Tributary No 1; 5) providing a diversion culvert along Thomas Drive from the East Lateral Tributary No. 1 to the West Lateral; and 6) removing of existing outlet control structures at the West Lateral and East Lateral confluences with South Floodwater Channel.

The proposed alternative would reduce the 100-year water surface elevations along the three ditches by an average of 1.5 feet, which would provide a 100-year design capacity for the West Lateral and East Lateral and a 25-year design capacity for the East Lateral Tributary No. 1.

SOUTH PHARR - LAS MILPAS LATERAL DRAINAGE STUDY



PREPARED FOR

HIDALGO COUNTY DRAINAGE DISTRICT NO. 1

&

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IN COOPERATION WITH:

L&G CONSULTING ENGINEERS, INC.

DECEMBER 2015

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1.0 EXECUTIVE SUMMARY

The Las Milpas area is located north of South Floodwater Channel between Cage Blvd. (SH 281) and McColl Road (FM 2061). The area consists of mostly residential and commercial development. Internal drainage of the area is served by local storm sewers and roadside ditches that outfall into three lateral drainage ditches, which ultimately outfall into the South Floodwater Channel. The contributing area to the lateral ditches experience frequent flooding due to high tailwater conditions within the receiving lateral ditches during a storm event. The existing lateral ditches and crossing structures have limited capacity to serve the contributing area drainage needs.

Civil Systems Engineering, Inc. (CSE) was subcontracted to L&G Consulting Engineers, Inc. as part of a contract with Hidalgo County to provide engineering services to analyze the existing drainage systems, identify constraints, and recommend drainage improvements to provide drainage needs for the area to relieve the frequent flooding problems.

The drainage study included investigation of potential improvements to the South Floodwater Channel and the Las Milpas Lateral System ditches. Improvements to South Floodwater Channel were investigated to lower the tailwater conditions of the lateral ditches outfalls. Modeling of the South Floodwater Channel showed significant improvements would be involved to provide only minor reduction (less than one feet) of tailwater elevations at the lateral ditch outfalls. Also it would require significant right-of-way acquisition and endure substantial cost for limited benefit to the study area. Improvements to the lateral ditch systems were investigated by proposing channel improvements and culvert replacements within existing available drainage easements to increase the ditches capacity and lower the tailwater conditions for the adjacent subdivisions drainage and storm sewer systems.

The proposed plan consisted of improvements to the lateral ditch systems. The proposed channel improvements and culvert replacements were recommended as the preferred solution given the benefit to the study area, cost, and no acquisition of right-of-way. The proposed improvements consist of: 18,200 feet of channel improvements, 1300 feet of diversion culvert pipe, nine (9) cross-drainage structure replacements, and two (2) outlet control structure removals. The channel improvements include a typical earthen, trapezoidal section consisting of 3:1 side slopes (H:V), 8 – 10 depth, 10 to 20 foot bottom width, and a minimum 0.05-percent channel slope.

These drainage improvements will increase the conveyance capacity of the lateral ditch systems and lower the tailwater conditions to improve the drainage from the adjacent residential areas. The diversion pipe component consists of approximately 1300 feet of 36" RCP along the north side of Thomas Drive to divert partial flow from the East Lateral Tributary No. 1 to the West

Lateral. Currently pipe culvert structures are located at the outlets of the West Lateral and East Lateral ditches. The removal of these structures reduce the headlosses within the laterals and increase the ditches' capacity. The majority of the existing culvert crossings are undersized and require replacement to provide sufficient conveyance capacity within the proposed channel sections. These drainage improvements will increase the conveyance capacity of the lateral ditch systems and lower the tailwater conditions to improve the drainage from the adjacent residential areas.

The proposed plan implements a 100-year capacity to the East Lateral and West Lateral ditches and a 25-year capacity to the East Lateral Trib. 1. A comparison of the existing and proposed plan HEC-RAS modeling results showed an average reduction to the 100-year water surface elevation of 1.5 feet with the following specific ranges for each lateral ditch:

- East Lateral: 1.2 ft at Dicker Road to 2.1 ft at Juan Balli Road
- East Lateral Trib 1: 1.6 ft at confluence with East Lateral to 0.7 ft at Juan Balli Road
- West Lateral: 0.7 ft at Dicker Road to 3.5 ft at Juan Balli Road

2.0 INTRODUCTION

2.1 PURPOSE OF THE PROJECT

The Las Milpas area is located north of South Floodwater Channel between Cage Blvd. (SH 281) and McColl Road (FM 2061). The area consists of mostly residential and commercial development. Internal drainage of the area is served by local storm sewers and roadside ditches that outfall into three lateral drainage ditches, which ultimately outfall into the South Floodwater Channel. The contributing area to the lateral ditches experience frequent flooding due to high tailwater conditions within the receiving lateral ditches. The existing lateral ditches and crossing structures have limited capacity to serve the contributing area drainage needs.

The purpose of the South Pharr – Las Milpas Lateral Drainage Study is to develop a drainage improvement plan to provide flood relief within Las Milpas area. Civil Systems Engineering, Inc. (CSE) was subcontracted to L&G Consulting Engineers, Inc. as part of a contract with Hidalgo County to provide engineering services to analyze the existing drainage systems, identify constraints, flooding problem areas, and recommend improvements to provide lateral outfall capacity and relieve the frequent flooding problems within the Las Milpas study area.

2.2 PROJECT AREA

The Las Milpas Lateral Systems project area consists of mostly urbanized, residential area of City of Pharr within Hidalgo County, Texas. The area is located north of South Floodwater Channel between Cage Blvd. (SH 281) and Jackson Road (FM 2061). The study area and drainage channels are shown in **Figure 1**. The internal drainage of the area is served by local storm sewers and roadside ditches that outfall into three lateral drainage ditches, which ultimately outfall into the South Floodwater Channel. The contributing area to the lateral ditches experience frequent flooding due to rising water from the receiving lateral ditches. The lateral ditches have been identified as having insufficient capacity and inadequate crossing structures to serve the contributing area drainage needs.

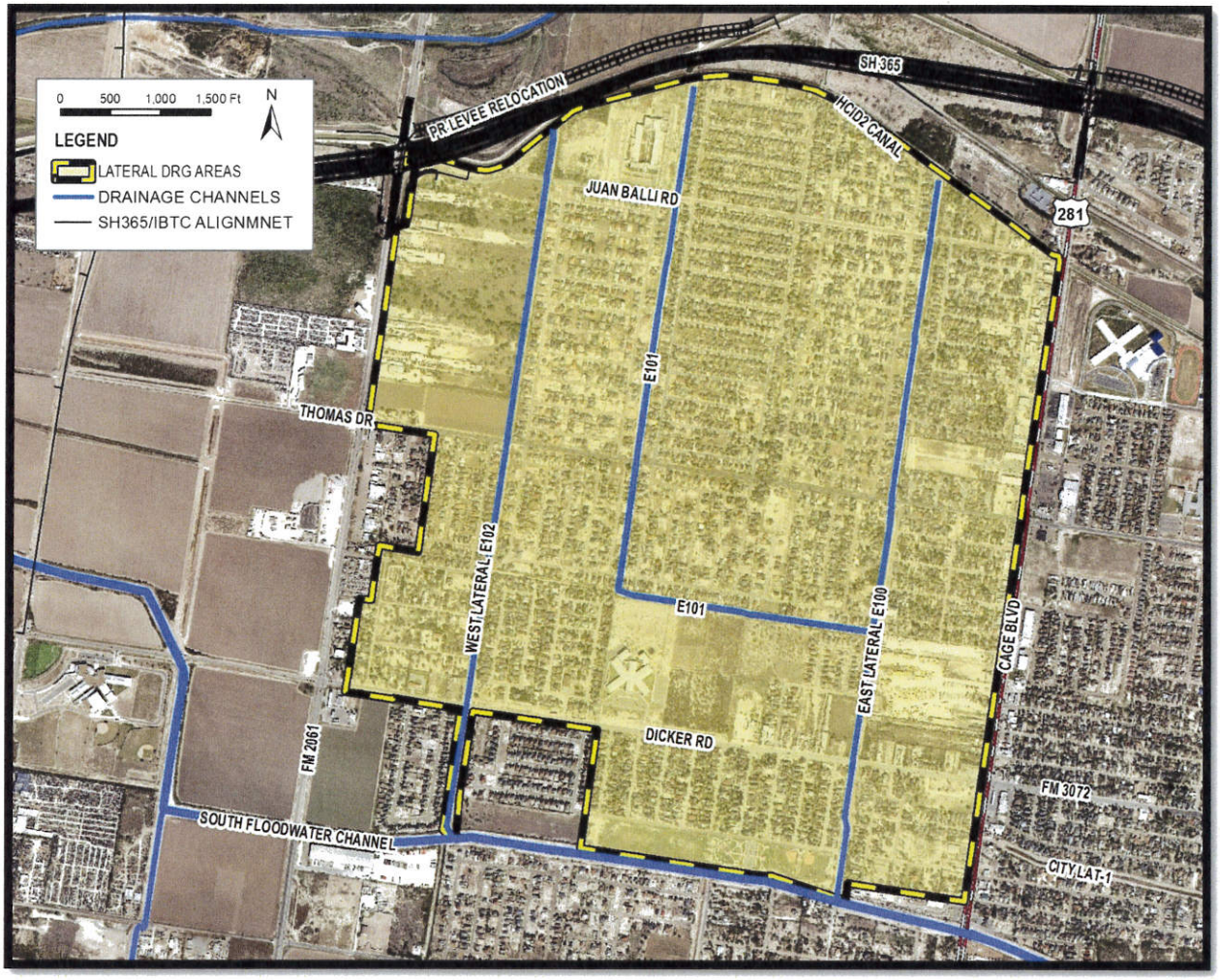

FIGURE 2-1. PROJECT AREA

2.3 LAS MILPAS AREA TOPOGRAPHY

The topography of the area runs in a general north to south direction from the HCID2 canal, which lies along the IBWC Main Floodway south levee to the South Floodwater Channel. The natural ground ranges from 93 feet to 86 feet at an overland approximate slope of 9-percent, as shown in **Figure 2-2**.

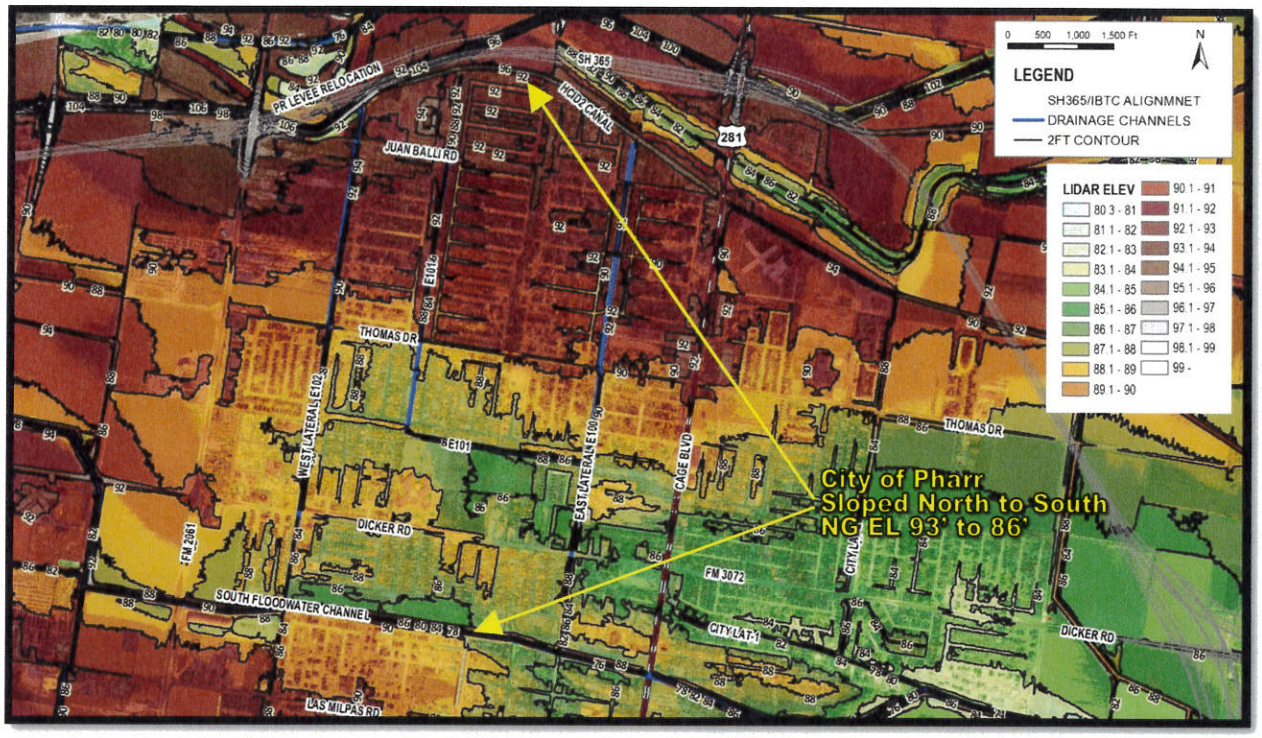

FIGURE 2-2. LAS MILPAS OVERLAND TOPOGRAPHY

2.4 SURVEYED DATA

Survey topographic data for lateral cross-culvert structures was collected by L&G Consulting Engineers, Inc. The culvert structure survey was used within the HEC-RAS modeling. The lateral system cross-drainage structural inventory is provided in **Table 2-1**.

TABLE 2-1. CROSS-DRAINAGE STRUCTURE INVENTORY

STRUCTURE LOCATION	SIZE	LENGTH
WEST LATERAL		
JUAN BALLI RD	30"	100
THOMAS DR	24"	80
DICKER RD	7'X4' RCB	136
OUTLET TO SFC	54" RCP	30
EAST LATERAL TRIB 1		
JUAN BALLI RD	30"	158
THOMAS DR	36"	1350
EAST LATERAL		
JUAN BALLI RD	24"	120
LA QUINTA DR	24"	100
BLUE JAY AVE	24"	125
THOMAS DR	24"	230
LONGORIA DR	48"	90
DICKER RD	7'X6' RCB	130
OUTLET TO SFC	2-48" RCP	40

3.0 SOUTH FLOODWATER CHANNEL

The South Floodwater Channel (SFC) serves as the receiving channel for the internal drainage systems of the Las Milpas study area. As part of the Las Milpas analysis, the South Floodwater Channel was investigated to determine the flooding and backwater effects of the channel within the study area. This section presents the hydraulic modeling of the South Floodwater Channel (SFC) and discusses the potential hydraulic impacts of the South Floodwater Channel on the Las Milpas laterals and potential improvement opportunities.

3.1 SFC WATERSHED DESCRIPTION

The South Floodwater runs from the Main Floodway to its confluence with Hidalgo Drain, a length of approximately 54,000 feet, as shown in **Figure 3-1**. The stream runs generally in a west-to-east direction. The study reach includes the entire channel length. The stream includes sixteen (16) roadway crossings as well as the levee structure at its outfall into the Main Floodway. The roadway crossings include McColl Road, Dicker Road, Jackson Road, Cage Boulevard (US 281), I Road, Las Milpas Road, San Juan Road, Anaya Road, Stewart Road, Morningside, Alamo Road, Tower Road, Juan Balli Road, and Border Road.

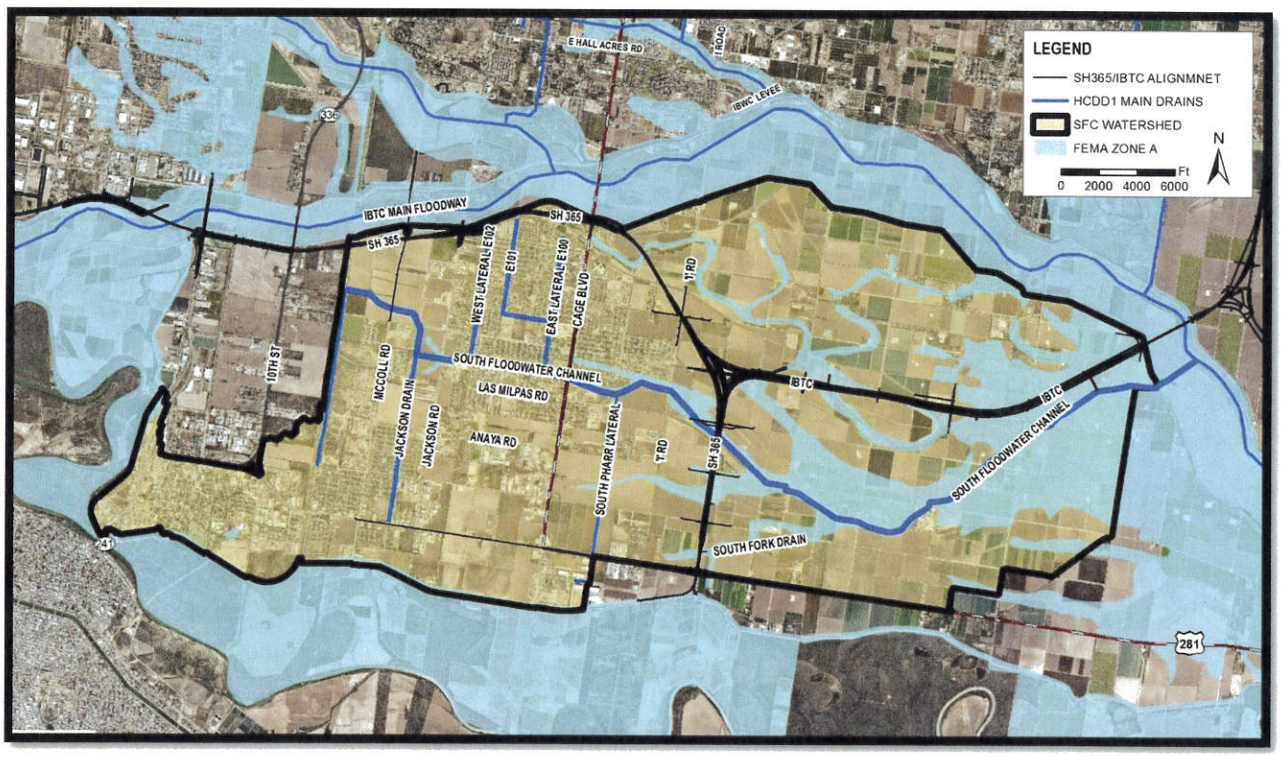

FIGURE 3-1. SOUTH FLOODWATER CHANNEL WATERSHED

The South Floodwater Channel Watershed is approximately 36.6 square miles. The drainage area includes the subareas for Hidalgo Drain and South Pharr Lateral. The overland slope of the

drainage area is mild, less than 0.1 percent. The downstream portion of the watershed from 'I' Road to IBWC Floodway are undeveloped. Upper portion of the watershed west of 'I' Road consists of residential and commercial developments. The upper portion of the watershed includes the Las Milpas project area, located north of the South Floodwater Channel between Cage Blvd and Jackson Road. The Las Milpas area laterals outfall into the South Floodwater Channel.

The South Floodwater Channel is an earthen, trapezoidal section channel. The downstream reaches of the channel are approximately 16 feet in depth with the upper reaches of the channel being approximately 13 feet in depth. The channel invert is consistent for the entire channel reach with a slope of approximately 0.02 percent. The SFC Watershed LiDAR topography is in **Figure 3-5**, later in this section.

3.2 HEC-HMS Runoff Computations

The South Floodwater Channel runoff computations were performed using HEC-HMS (v.4.0). The model is based on the FEMA Hidalgo County Map Mod Project hydrology and HEC-HMS modeling for the South Hidalgo Watershed. The Map Mod model was updated to separate the Jackson Drain subarea ("SH_SFC-JACK"), which is located within the upper reaches of the SFC watershed. ThE subarea was split from the SFC-A and SFC-B subareas. The HEC-HMS computed runoff hydrographs for each storm event were directly referenced within the HEC-RAS model. The updated HEC-HMS model layout is shown in **Figure 3-2**. Within the figure, the SFC Watershed subareas are labeled with the following nomenclature: "SH_SFC", "SH_SPL", and "SF_HID".

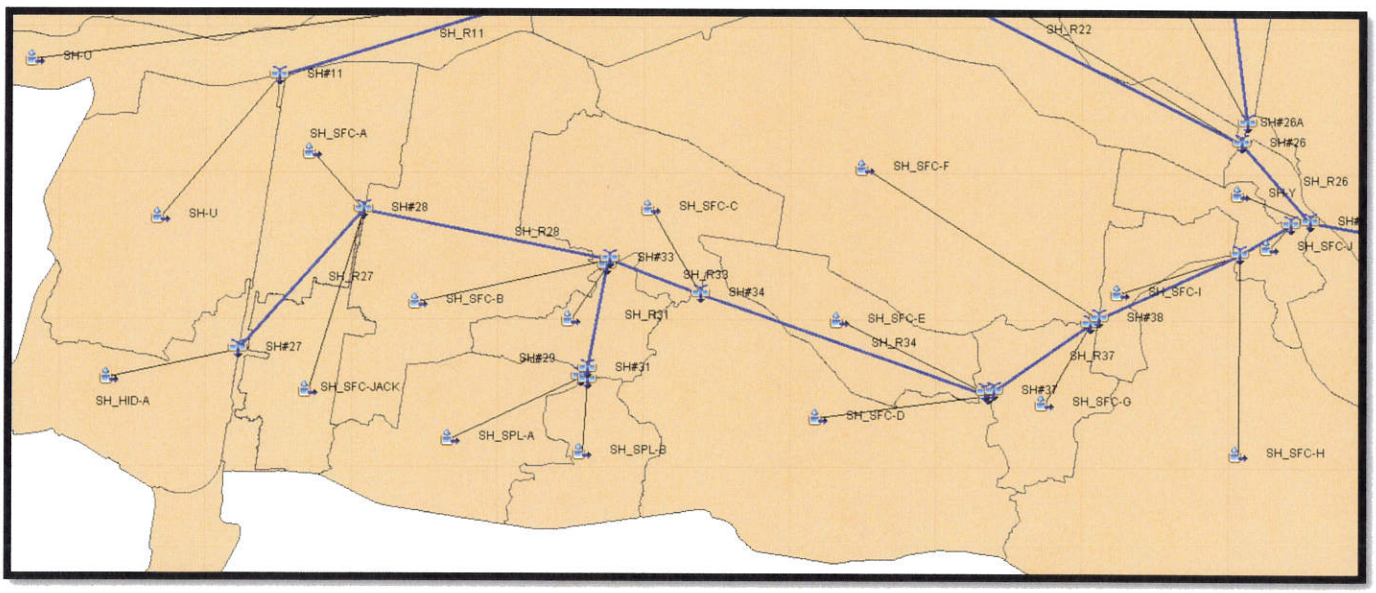

FIGURE 3-2. SFC HEC-HMS MODEL LAYOUT SCHEMATIC

3.3 HEC-RAS 1D/2D Unsteady Modeling Analysis

With consideration of the very flat topography of South Floodwater Channel Watershed as well the evaluation of the potential closure of the floodgate at the IBWC floodway, HEC-RAS 1D/2D unsteady flow model was developed for this project. The 1D/2D HEC-RAS model was developed based on the 1D unsteady HEC-RAS model for the FEMA Hidalgo County Map Mod Project.

The Map Mod HEC-RAS model was updated to convert the 1D unsteady model to a 1D/2D unsteady model. This included regenerating cross-sectional geometry based on the Map Mod model and overland LiDAR topography, and the additional of overbank 2D storage areas using LiDAR topography. Additional modifications to the model included updating the outlet structure at the IBWC Main Floodwater Levee based on the proposed South Fork Channel construction project plans, updating the Jackson Road Bridge based on L&G field survey, incorporating updated HEC-HMS runoff hydrographs based on Jackson Drain subarea analysis, and inclusion of the Jackson Drain proposed channel improvements as a tributary reach to South Floodwater Channel. The HEC-RAS geometry layout for the updated South Floodwater Channel model is shown in **Figure 3-3**. The South Floodwater Channel 100-year and 25-year computed floodplain areas, based on an open-gated condition at the outlet structure into the IBWC Main Floodway, are shown in **Figures 3-4, 3-5,** and **3-6**.

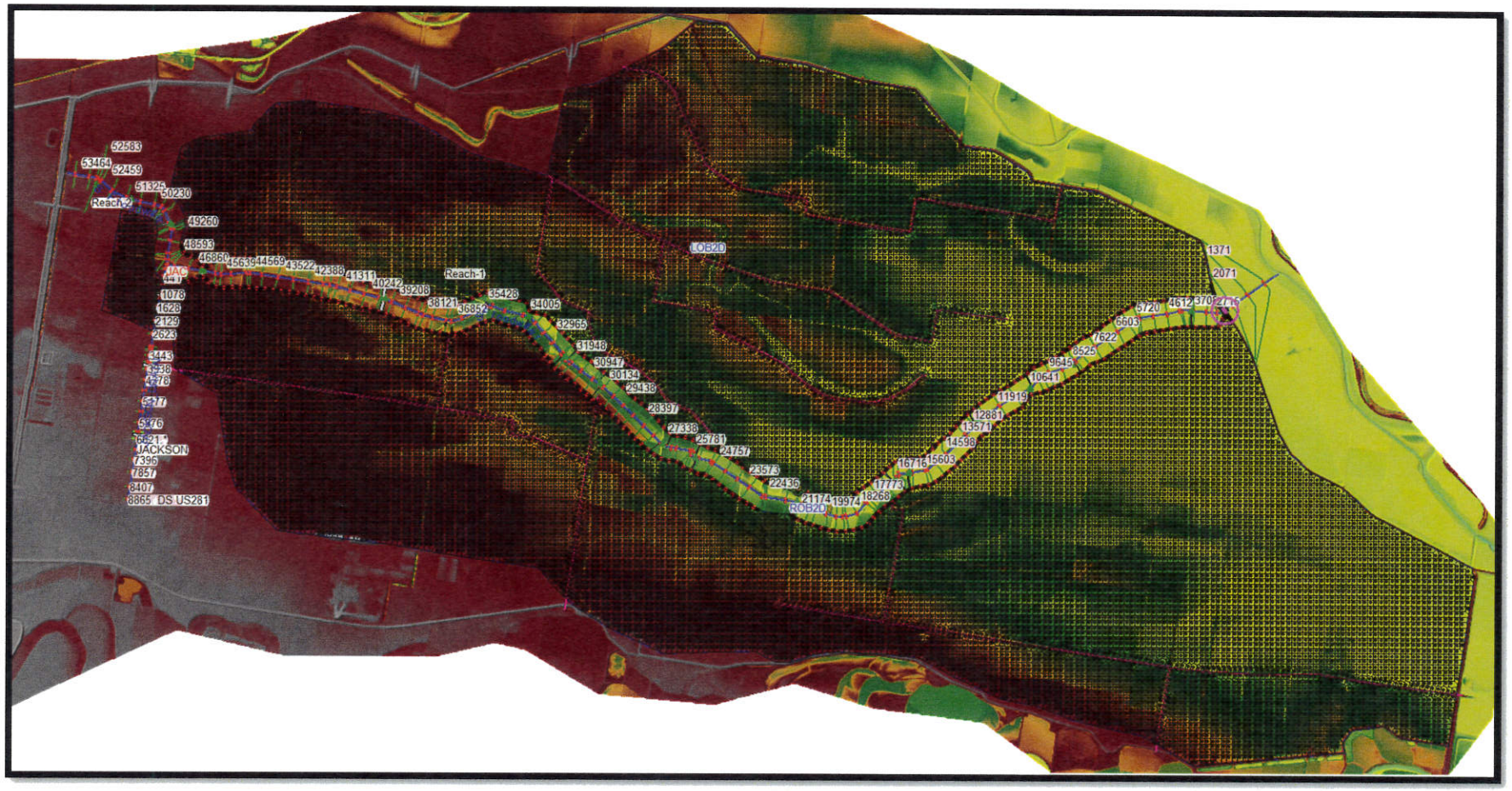

FIGURE 3-3. SFC 1D/2D HEC-RAS MODEL LAYOUT

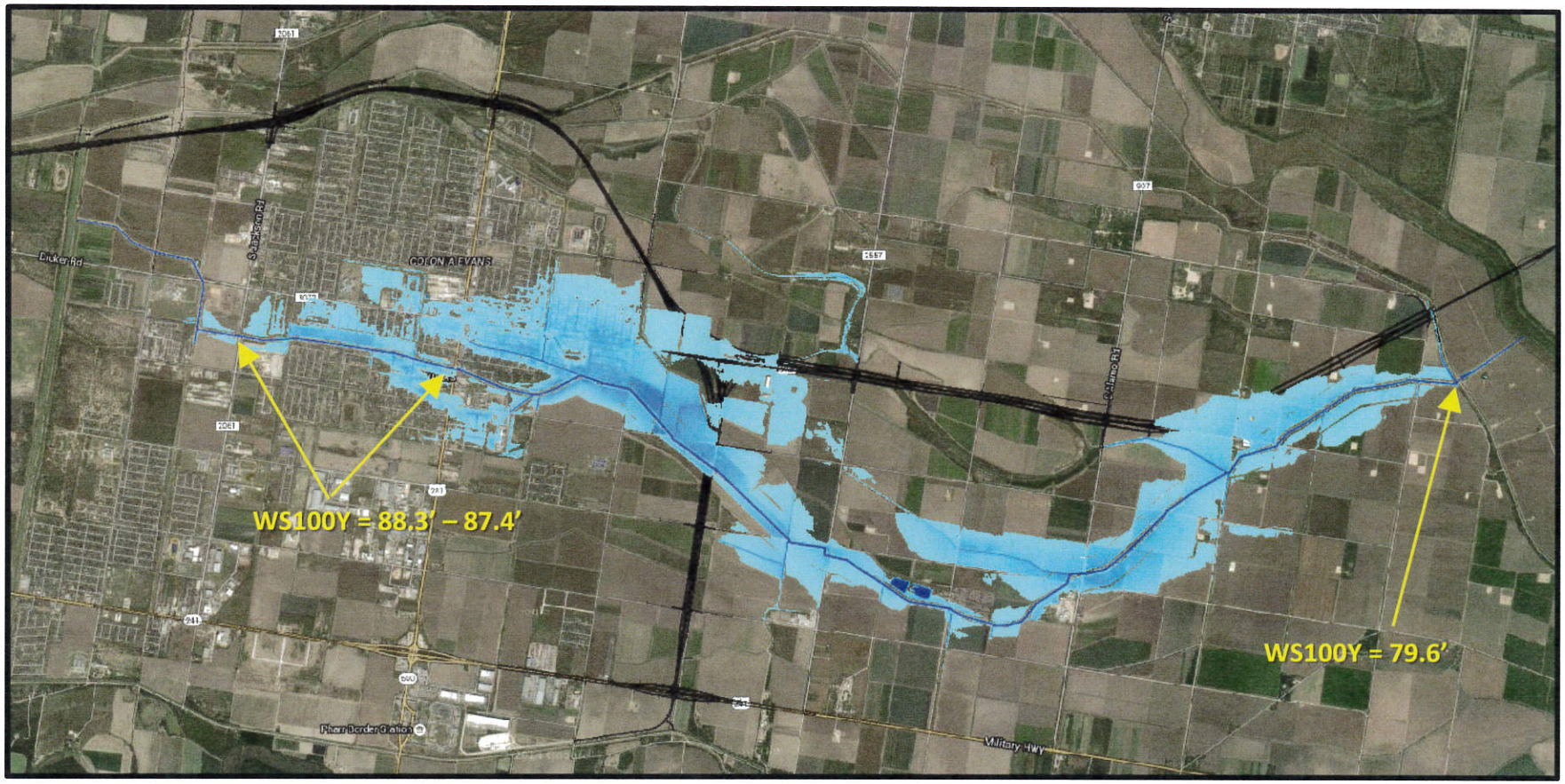

FIGURE 3-4. SFC 100-YEAR FLOODPLAIN (OPEN GATED CONDITION)

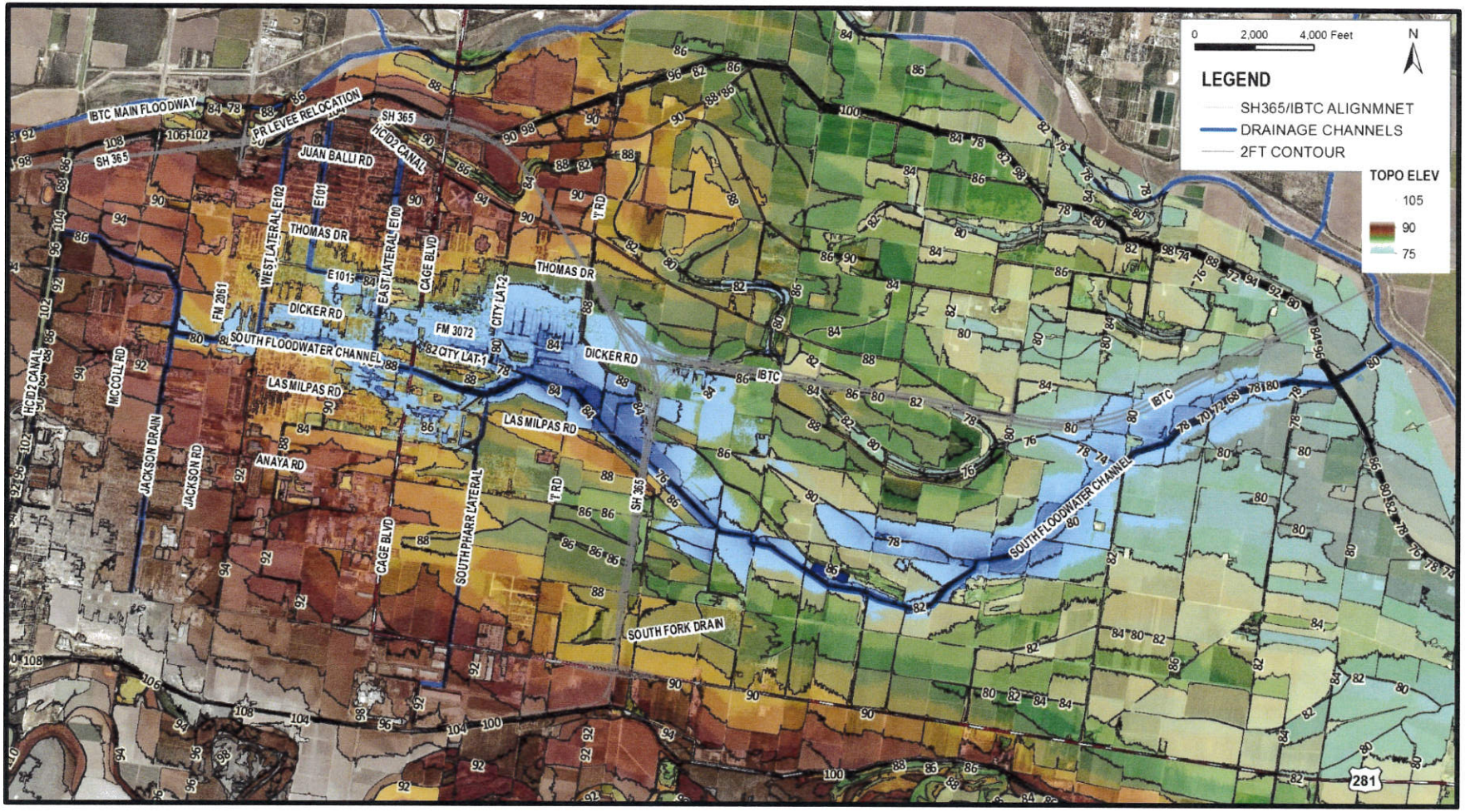

FIGURE 3-5. SFC 100-YEAR FLOODPLAIN LIDAR OVERLAY

FIGURE 3-6. SFC 25-YEAR FLOODPLAIN (OPEN GATED CONDITION)

3.4 SFC Modeling Conclusions

The HEC-RAS modeling results and floodplain mapping show that the South Floodwater Channel inundates the developed area south of Thomas Drive during 50- or 100-year storm events. The 100-year SFC inundation area for the Las Milpas area is shown in **Figure 3-7**. South Floodwater Channel will affect the water surface elevation within the Las Milpas Laterals downstream of Thomas Drive during 25-year storm event. The South Floodwater Channel has limited impact on water surface elevations with the Las Milpas Laterals during 10-year storm event.

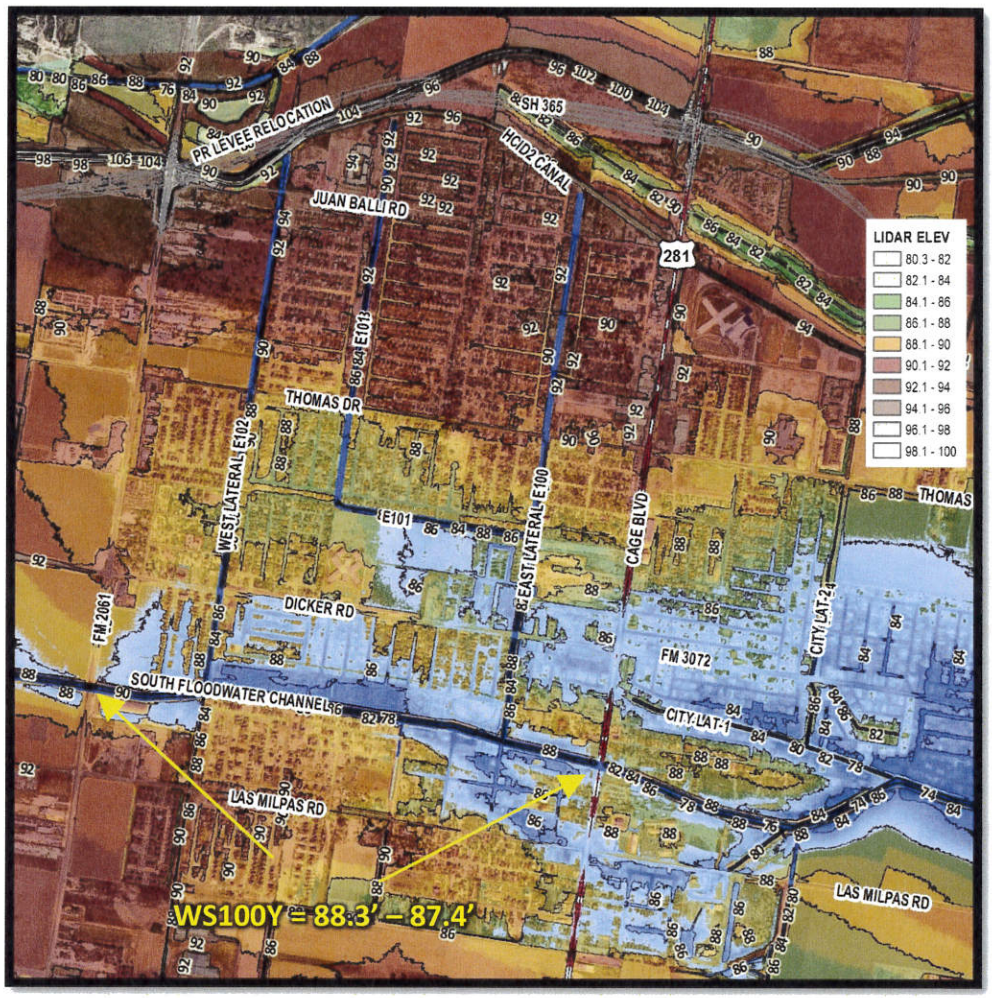

Figure 3-7. SFC 100-Year Floodplain Las Milpas Reach

Based on the HEC-RAS modeling, improvement to South Foodwater Chanel will have limited reduction to water surface elevation within the Las Milpas study area reach; therefore no significant benefit for flood reduction within the Las Milpas area. No improvements are proposed along South Floodwater Channel in conjunction with the Las Milpas proposed project.

4.0 HYDROLOGY ANALYSIS

Runoff computations were performed for the lateral systems using the Hidalgo County approved hydrologic method, which utilizes the NRCS Hydrograph Method, NRCS CN Loss Method, NRCS TR-55 time of concentration, and user defined unit hydrographs to generate peak flows and runoff hydrographs within HEC-HMS. This section presents the hydrologic computations for determining runoff flows for the Las Milpas Lateral Systems.

4.1 DRAINAGE AREA DELINEATION

The drainage areas were delineated based on LiDAR topography, drainage systems, and physical features. The East Lateral has a total drainage area of 833 acres. The West Lateral has a total drainage area of 170 acres. The drainage area delineations are provided in **Figure 4-1**. Drainage ID "W" is for West Lateral, "E" is for East Lateral, and "EA" is for East Lateral Trib. 1.

FIGURE 4-1. DRAINAGE AREA DELINEATION

4.2 HYDROLOGIC PARAMETERS

The drainage area runoffs were computed within HEC-HMS (v.4.0) using NRCS Unit Hydrographs based on a PRF = 150. The time of concentrations, which is used to compute the NRCS lag time parameter, were calculated using SCS Upland Method as described within TR-55. The NRCS Curve

Number (CN) Loss Rate Method was used to estimate rainfall losses in HEC-HMS. Based on the soil maps for Hidalgo County and utilization of Antecedent Moisture Conditions (AMC) I conditions, an average NRCS Curve Number of CN=74 was determined to represent the overall soil conditions and residential development within the project drainage areas. In order to account for the runoff impacts associated with the proposed roadway, the existing and proposed condition percent imperviousness was calculated for each drainage area. Based on the soil conditions and overland flow and internal ponding conditions within the subareas, an initial abstraction value of 1.5 was utilized. The hydrologic parameters used to develop the unit hydrographs and HEC-HMS input parameters are provided in **Table 4-1**.

TABLE 4.1 - DRAINAGE AREA PARAMETERS

DAREA ID	LATERAL SYSTEM	ACRE (AC)	AREA (S.MI)	CN (DEVT)	IMPERV (%)	TC (MIN)	NRCS PRF	LAG (HR)
E1	EL-100	184	0.2867	74	40	158.4	150	1.584
E2	EL-100	50	0.0780	74	40	78.8	150	0.788
E3	EL-100	110	0.1719	74	40	155.1	150	1.551
E4	EL-100	107	0.1669	74	40	145.6	150	1.456
EA1	EL-101	226	0.3531	74	40	177.6	150	1.776
EA2	EL-101	157	0.2455	74	40	153.7	150	1.537
W1	WL-100	95	0.1477	74	40	118.9	150	1.189
W2	WL-100	75	0.1175	74	40	80.6	150	0.806

4.3 HYDROLOGIC MODELING

HEC-HMS model (v.4.0) was developed for the lateral systems subareas based on the estimated hydrologic parameters (subbasin area, initial loss, percent imperviousness, curve number, and lag time), generated unit hydrographs, routing data, and rainfall data. The HEC-HMS computation layout schematic is shown in **Figure 4-2**.

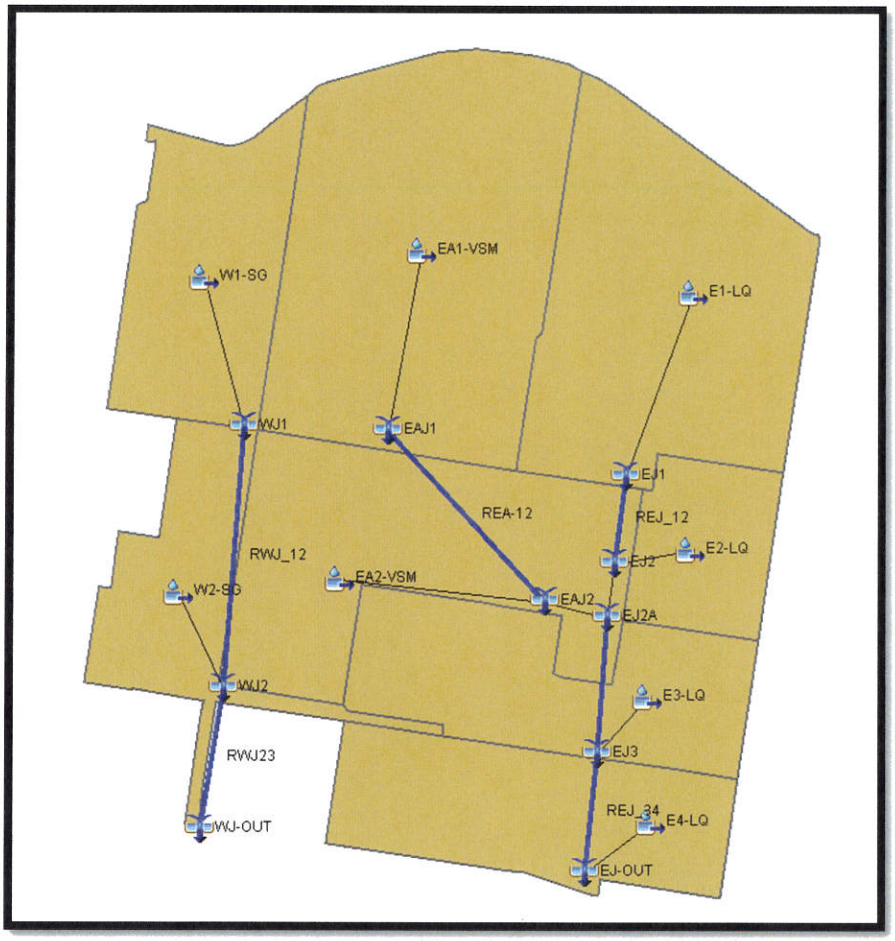

FIGURE 4-2. HEC-HMS LAYOUT SCHEMATIC

4.4 COMPUTED FLOW RESULTS

Peak discharges for each subarea, junction node, and outfall were generated for the 100-, 25-, and 10-year storm events. **Table 4-2** summarizes the computed peak flows for the lateral systems. The computed flows at junction nodes were used as input values for the HEC-RAS modeling.

TABLE 4.2 – HEC-HMS COMPUTED PEAK FLOWS

HEC-HMS ELEMENT	CONTR AREA (SQ.MI.)	COMPUTED PEAK FLOWS			
		10Y (CFS)	25Y (CFS)	50Y (CFS)	100Y (CFS)
EAST LATERAL					
E1-LQ	0.2867	34.4	54.0	76.2	99.7
EJ1	0.2867	34.4	54.0	76.2	99.7
E2-LQ	0.0780	14.7	23.9	32.7	42.7
EJ2	0.3647	47.0	74.1	104.3	136.4
EJ2A	0.9633	113.6	179.7	253.5	331.9
E3-LQ	0.1719	20.9	32.9	46.4	60.6
EJ3	1.1352	133.3	208.6	294.4	386.0
E4-LQ	0.1669	21.2	33.3	47.0	61.5
EJ-OUT	1.3021	152.8	238.2	336.9	439.9
EAST LATERAL TRIB. 1					
EA1-VSM	0.3531	38.9	61.1	86.3	113.0
EAJ1	0.3531	38.9	61.1	86.3	113.0
EA2-VSM	0.2455	30.1	47.2	66.7	87.2
EAJ2	0.5986	67.8	105.7	149.2	195.5
WEST LATERAL					
W1-SG	0.1477	21.3	34.3	47.3	61.9
WJ1	0.1477	21.3	34.3	47.3	61.9
W2-SG	0.1175	21.9	35.6	48.8	63.7
WJ-OUT	0.2652	40.0	63.5	89.6	117.0

REPRESENTS JUNCTION LOCATION FLOWS

5.0 HYDRAULIC ANALYSIS

Hydraulic modeling was performed for this analysis to determine existing conditions along the drain as well as proposed alternative benefits and impacts. The resulting hydrographs from HEC-HMS modeling analysis were incorporated into the HEC-RAS model to compute water surface elevations along the channels. This section presents the hydraulic modeling performed for this study.

5.1 EXISTING LATERAL SYSTEMS

The Las Milpas lateral system within the study area consist of three drainage laterals: East Lateral, East Lateral Trib. 1, and West Lateral. Runoff is conveyed to these laterals by residential storm sewer systems, roadside ditches, and overland sheetflow.

The East Lateral is located west of Cage Blvd. (US 281). The contributing drainage area served by the East Lateral is mostly residential with some commercial just west of Cage Blvd. (US 281). It conveys runoff from the HCID2 Canal, north of Juan Balli Road, south to the South Floodwater Channel.

The East Lateral Tributary 1 is located between the East Lateral and West Lateral, between Vasquez St. and Rivera St. The contributing drainage area served by the East Lateral Trib 1 is mostly residential. It conveys runoff from HCID2 Canal, north of Juan Balli Road, south to Thomas Road where it continues south through a long 36" pipe along residential easement to the open ditch north of the South Pharr Elementary School. Here the ditch continues east to its confluence with the East Lateral north of Dicker Road.

The West Lateral is located east of Jackson Road, adjacent to Valdivia St. The contributing drainage area served by the West Lateral is mostly residential areas with some commercial/industrial areas northwest of Thomas Drive. The ditch conveys runoff from the HCID2 Canal, north of Juan Balli Road, south to the South Floodwater Channel.

The laterals south of Thomas Drive typically consist of earthen, trapezoidal manmade ditches approximately 6 to 8 feet in depth. North of Thomas Drive, the laterals are much shallower with constricting cross-drainage structures.

5.2 HEC-RAS MODELING

These drainage ditches were analyzed using HEC-RAS (v.4.1) to determined existing capacity, identify conveyance problem reaches, and generate potential improvement alternatives. The HEC-RAS model for the laterals was generated within ArcGIS using HEC-GeoRAS tools based on LiDAR topography, aerials, and survey data. The cross-sections were generated from LiDAR topography, and the crossing structures were modeled using field survey data. Computed HEC-

HMS flows for multiple storm events were input as peak flows along the ditches. A layout of the HEC-RAS modeling is provided in **Figure 5-1**.

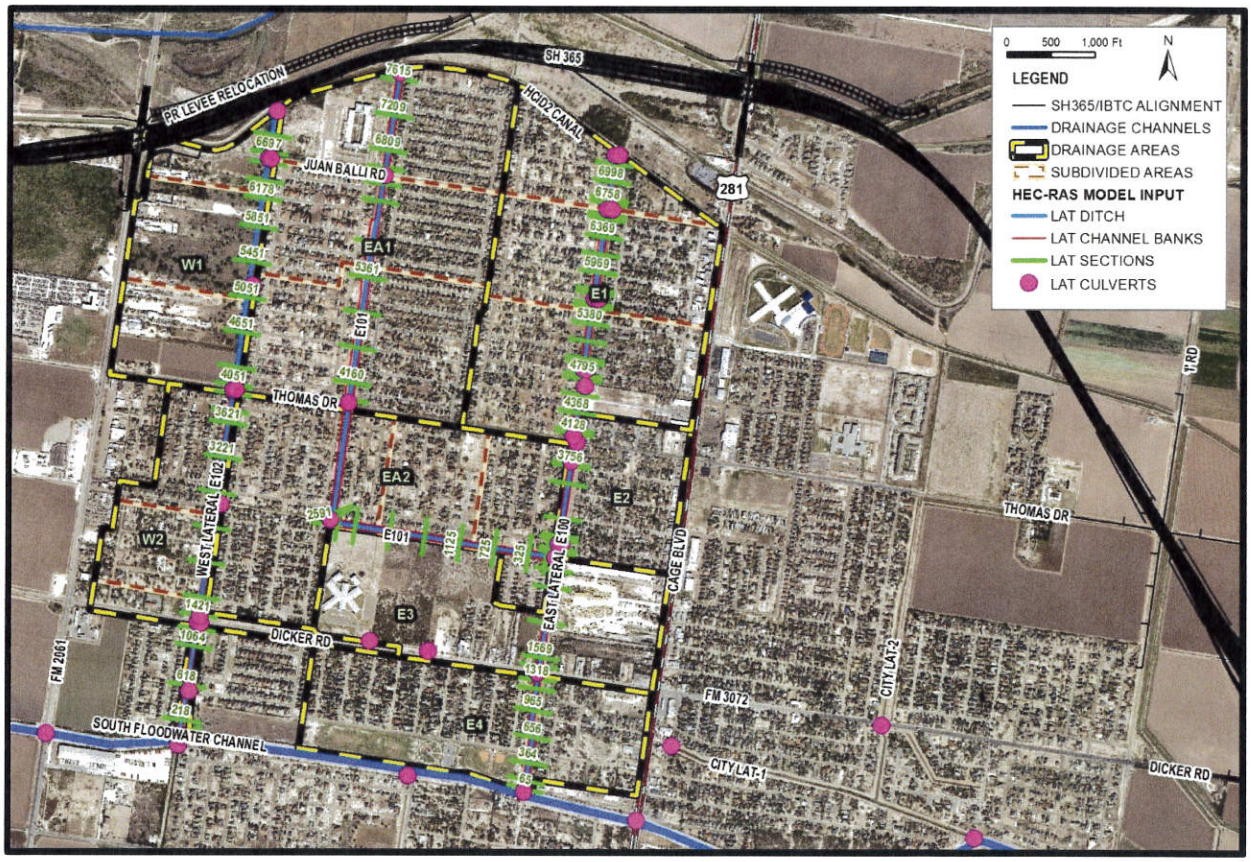

FIGURE 5-1. HEC-RAS MODEL LAYOUT

5.2.1 Existing Results

The existing condition modeling results show that there substantial out-of-bank flooding during the 100-year event. A comparison the lateral modeling results from the South Floodwater Channel water surface elevations showed that the South Floodwater Channel backwater effects is limited to the area within the lateral system near Dicker Road. The majority of the inundation area within the lateral system subarea is shown to be the result of limited ditch capacity and restrictive culverts. The existing 100-year inundation areas based on the lateral ditches and the South Floodwater Channel floodplain are shown in **Figure 5-2**.

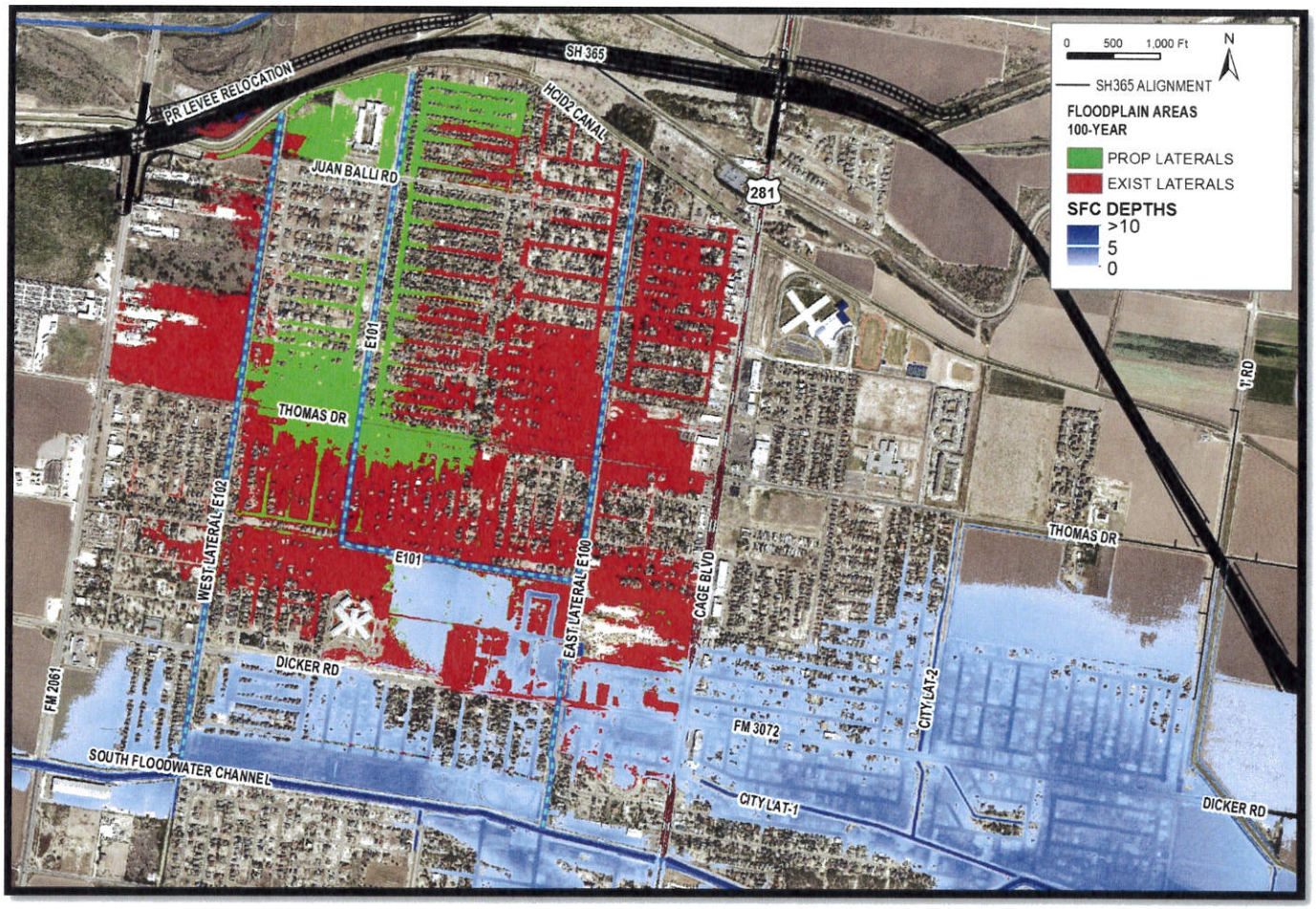

FIGURE 5-2. EXISTING 100-YEAR OVERBANK FLOODING AREAS

5.3 PROPOSED ALTERNATIVES

Based on the review of the existing condition hydraulic modeling analysis, multiple proposed improvement components were considered to provide flood relief for the project area. These components included channel improvements, culvert replacements, and flow diversions. Detention was considered a viable option due to the limited availability of undeveloped land within the study area. Also replacement of the existing 36" x 1300' RCP along East Lateral Trib. 1 south of Thomas Drive was not considered practical since the pipe lied within a small-width easement between residential lots.

The proposed components were analyzed using HEC-RAS to determine effectiveness and to optimize the components. The following list the proposed improvements components recommended for this project:

- Improve the East Lateral from upstream of Juan Balli Road to South Floodwater Channel
- Improve the West Lateral from upstream of Juan Balli Road to South Floodwater Channel
- Improve East Lateral Trib. 1 from upstream of Juan Balli Road to Thomas Drive.
- Replace various cross-culvert structures within the lateral ditches.
- Provide a diversion pipe along Thomas Drive from the East Lateral Trib. 1 to West Lateral.
- Remove outlet control structures at the West Lateral and East Lateral confluences with South Floodwater Channel

The channel improvements typical section include an earthen, trapezoidal section consisting of 3:1 side slopes (H:V), 8 – 10 depth, 10 to 20 foot bottom width, and a minimum 0.05-percent channel slope. All channel typical sections include a 10-foot bottom width except for along the East Lateral from Thomas Drive downstream to South Floodwater Channel, which is a 20-foot bottom width section.

Each of the above components will provide a benefit by increasing the overall conveyance capacity of the system and lowering the tailwater condition for the City of Pharr storm sewer systems. The removal and/or enlargement of the existing culvert crossings will result in reduced headlosses within the channel system. The channel improvements will increase the conveyance of the laterals. The diverting partial flow from the East Lateral Trib. 1 will reduce the headlosses through the existing long culvert south of Thomas Drive. The proposed improvement components are shown in **Figure 5-3**.

FIGURE 5-3. PROPOSED IMPROVEMENT PLAN

5.4 PROPOSED HEC-RAS RESULTS

The recommended proposed improvements were incorporated into the lateral systems HEC-RAS model. The proposed water surface elevations and overbank inundation areas were compared with existing conditions to show the proposed increase system capacity and reduction of flooding within the adjacent developed areas. The proposed condition increases the conveyance capacity of the West Lateral and East Lateral to a 100-year storm event and the East Lateral Trib. 1 to a 25-year storm event.

A comparison of the existing and proposed computed water surface elevations at roadway crossing locations along each lateral is shown in **Table 5-1**. A comparison of flooding depths during the 100-year storm event within the study area is shown in **Figure 5-4**.

TABLE 5-1 - WATER SURFACE ELEVATION COMPARISON

LOCATION	RAS XSN STA	EXIST WS 25Y (FT)	PROP WS 25Y (FT)	EXIST WS 100Y (FT)	PROP WS 100Y (FT)
EAST LATERAL					
U/S OF SFC	162	84.73	84.61	85.83	85.62
DICKER RD	1469	86.32	84.87	88.01	86.28
LONGORIA	2916	87.58	85.16	88.55	86.81
THOMAS	4128	91.04	85.49	91.16	87.76
BLUE JAY	4940	91.05	85.71	91.18	88.44
LA QUINTA	5729	91.05	85.89	91.19	89.07
JUAN BALLI	6758	91.35	85.99	91.49	89.36
EAST LATERAL TRIB. 1					
U/S OF EAST	125	86.42	84.98	88.05	86.43
D/S OF THOMAS	2591	86.64	85.38	88.18	86.95
THOMAS	3961	89.97	89.03	90.2	90.34
JUAN BALLI	6609	90.64	89.32	92.08	91.32
WEST LATERAL					
U/S OF SFC	218	84.63	84.62	85.63	85.62
DICKER	1338	85.75	85.20	87.04	86.67
THOMAS	4000	90.44	86.84	90.61	88.08
JUAN BALLI	6697	91.67	87.55	91.93	88.32

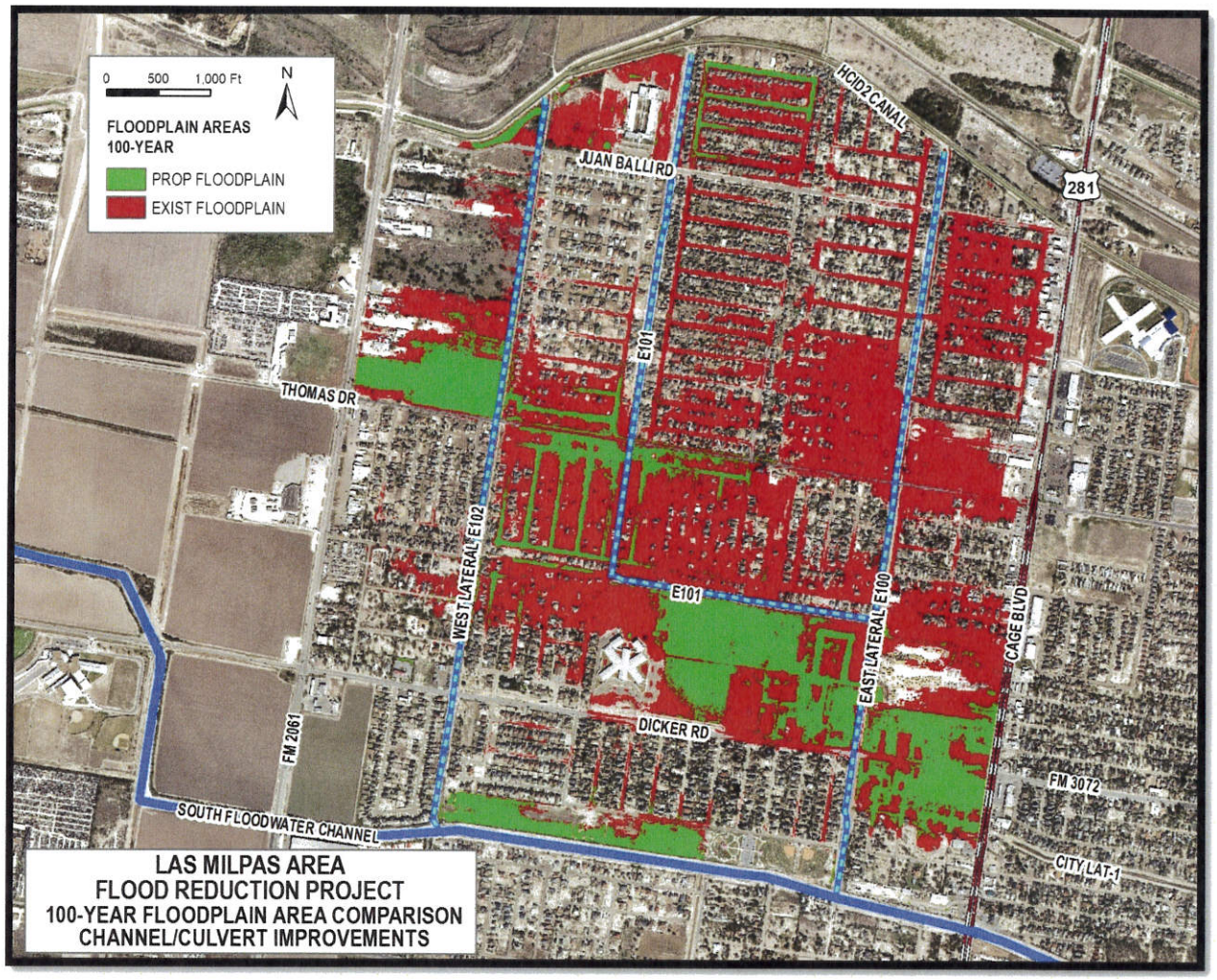

FIGURE 5-4. 100-YEAR FLOODING AREA COMPARISON

6.0 CONCLUSION

The Las Milpas study area is subjected to flooding and drainage problems. This drainage study investigated causes of these drainage problems by analyzing the lateral drainage ditches and the receiving South Floodwater Channel. Based on the analyses presented within the report, the South Floodwater Channel effects within the project area are mostly limited to areas south of Thomas Drive and during extreme events. The investigation concluded that drainage problems associated within the study area, especially north of Thomas Drive, are directly related to the lateral ditches insufficient capacity and inadequate cross-drainage structures.

In order to relieve flooding within the study area, channel improvements and proposed culvert replacements are proposed. The recommended improvements include: 1) channel improvements consisting of an earthern, trapezoidal section for the East Lateral, West Lateral, and upstream reaches of the East Lateral Tributary No. 1; 2) replacing six (6) crossing structures along the East Lateral; 3) replacing two (2) crossing structures along the West Lateral; 4) replacement one (1) crossing along the East Lateral Tributary No 1; 5) providing a diversion culvert along Thomas Drive from the East Lateral Tributary No. 1 to the West Lateral; and 6) removing of existing outlet control structures at the West Lateral and East Lateral confluences with South Floodwater Channel.

The proposed alternative would reduce the 100-year water surface elevations along the three ditches by an average of 1.5 feet, which would provide a 100-year design capacity for the West Lateral and East Lateral and a 25-year design capacity for the East Lateral Tributary No. 1.

SOUTH PHARR - LAS MILPAS LATERAL DRAINAGE STUDY

PREPARED FOR

HIDALGO COUNTY DRAINAGE DISTRICT NO. 1
&
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IN COOPERATION WITH:

L&G CONSULTING ENGINEERS, INC.

DECEMBER 2015

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1.0 EXECUTIVE SUMMARY

The Las Milpas area is located north of South Floodwater Channel between Cage Blvd. (SH 281) and McColl Road (FM 2061). The area consists of mostly residential and commercial development. Internal drainage of the area is served by local storm sewers and roadside ditches that outfall into three lateral drainage ditches, which ultimately outfall into the South Floodwater Channel. The contributing area to the lateral ditches experience frequent flooding due to high tailwater conditions within the receiving lateral ditches during a storm event. The existing lateral ditches and crossing structures have limited capacity to serve the contributing area drainage needs.

Civil Systems Engineering, Inc. (CSE) was subcontracted to L&G Consulting Engineers, Inc. as part of a contract with Hidalgo County to provide engineering services to analyze the existing drainage systems, identify constraints, and recommend drainage improvements to provide drainage needs for the area to relieve the frequent flooding problems.

The drainage study included investigation of potential improvements to the South Floodwater Channel and the Las Milpas Lateral System ditches. Improvements to South Floodwater Channel were investigated to lower the tailwater conditions of the lateral ditches outfalls. Modeling of the South Floodwater Channel showed significant improvements would be involved to provide only minor reduction (less than one feet) of tailwater elevations at the lateral ditch outfalls. Also it would require significant right-of-way acquisition and endure substantial cost for limited benefit to the study area. Improvements to the lateral ditch systems were investigated by proposing channel improvements and culvert replacements within existing available drainage easements to increase the ditches capacity and lower the tailwater conditions for the adjacent subdivisions drainage and storm sewer systems.

The proposed plan consisted of improvements to the lateral ditch systems. The proposed channel improvements and culvert replacements were recommended as the preferred solution given the benefit to the study area, cost, and no acquisition of right-of-way. The proposed improvements consist of: 18,200 feet of channel improvements, 1300 feet of diversion culvert pipe, nine (9) cross-drainage structure replacements, and two (2) outlet control structure removals. The channel improvements include a typical earthen, trapezoidal section consisting of 3:1 side slopes (H:V), 8 – 10 depth, 10 to 20 foot bottom width, and a minimum 0.05-percent channel slope.

These drainage improvements will increase the conveyance capacity of the lateral ditch systems and lower the tailwater conditions to improve the drainage from the adjacent residential areas. The diversion pipe component consists of approximately 1300 feet of 36" RCP along the north side of Thomas Drive to divert partial flow from the East Lateral Tributary No. 1 to the West

Lateral. Currently pipe culvert structures are located at the outlets of the West Lateral and East Lateral ditches. The removal of these structures reduce the headlosses within the laterals and increase the ditches' capacity. The majority of the existing culvert crossings are undersized and require replacement to provide sufficient conveyance capacity within the proposed channel sections. These drainage improvements will increase the conveyance capacity of the lateral ditch systems and lower the tailwater conditions to improve the drainage from the adjacent residential areas.

The proposed plan implements a 100-year capacity to the East Lateral and West Lateral ditches and a 25-year capacity to the East Lateral Trib. 1. A comparison of the existing and proposed plan HEC-RAS modeling results showed an average reduction to the 100-year water surface elevation of 1.5 feet with the following specific ranges for each lateral ditch:

- East Lateral: 1.2 ft at Dicker Road to 2.1 ft at Juan Balli Road
- East Lateral Trib 1: 1.6 ft at confluence with East Lateral to 0.7 ft at Juan Balli Road
- West Lateral: 0.7 ft at Dicker Road to 3.5 ft at Juan Balli Road

2.0 INTRODUCTION

2.1 PURPOSE OF THE PROJECT

The Las Milpas area is located north of South Floodwater Channel between Cage Blvd. (SH 281) and McColl Road (FM 2061). The area consists of mostly residential and commercial development. Internal drainage of the area is served by local storm sewers and roadside ditches that outfall into three lateral drainage ditches, which ultimately outfall into the South Floodwater Channel. The contributing area to the lateral ditches experience frequent flooding due to high tailwater conditions within the receiving lateral ditches. The existing lateral ditches and crossing structures have limited capacity to serve the contributing area drainage needs.

The purpose of the South Pharr – Las Milpas Lateral Drainage Study is to develop a drainage improvement plan to provide flood relief within Las Milpas area. Civil Systems Engineering, Inc. (CSE) was subcontracted to L&G Consulting Engineers, Inc. as part of a contract with Hidalgo County to provide engineering services to analyze the existing drainage systems, identify constraints, flooding problem areas, and recommend improvements to provide lateral outfall capacity and relieve the frequent flooding problems within the Las Milpas study area.

2.2 PROJECT AREA

The Las Milpas Lateral Systems project area consists of mostly urbanized, residential area of City of Pharr within Hidalgo County, Texas. The area is located north of South Floodwater Channel between Cage Blvd. (SH 281) and Jackson Road (FM 2061). The study area and drainage channels are shown in **Figure 1**. The internal drainage of the area is served by local storm sewers and roadside ditches that outfall into three lateral drainage ditches, which ultimately outfall into the South Floodwater Channel. The contributing area to the lateral ditches experience frequent flooding due to rising water from the receiving lateral ditches. The lateral ditches have been identified as having insufficient capacity and inadequate crossing structures to serve the contributing area drainage needs.

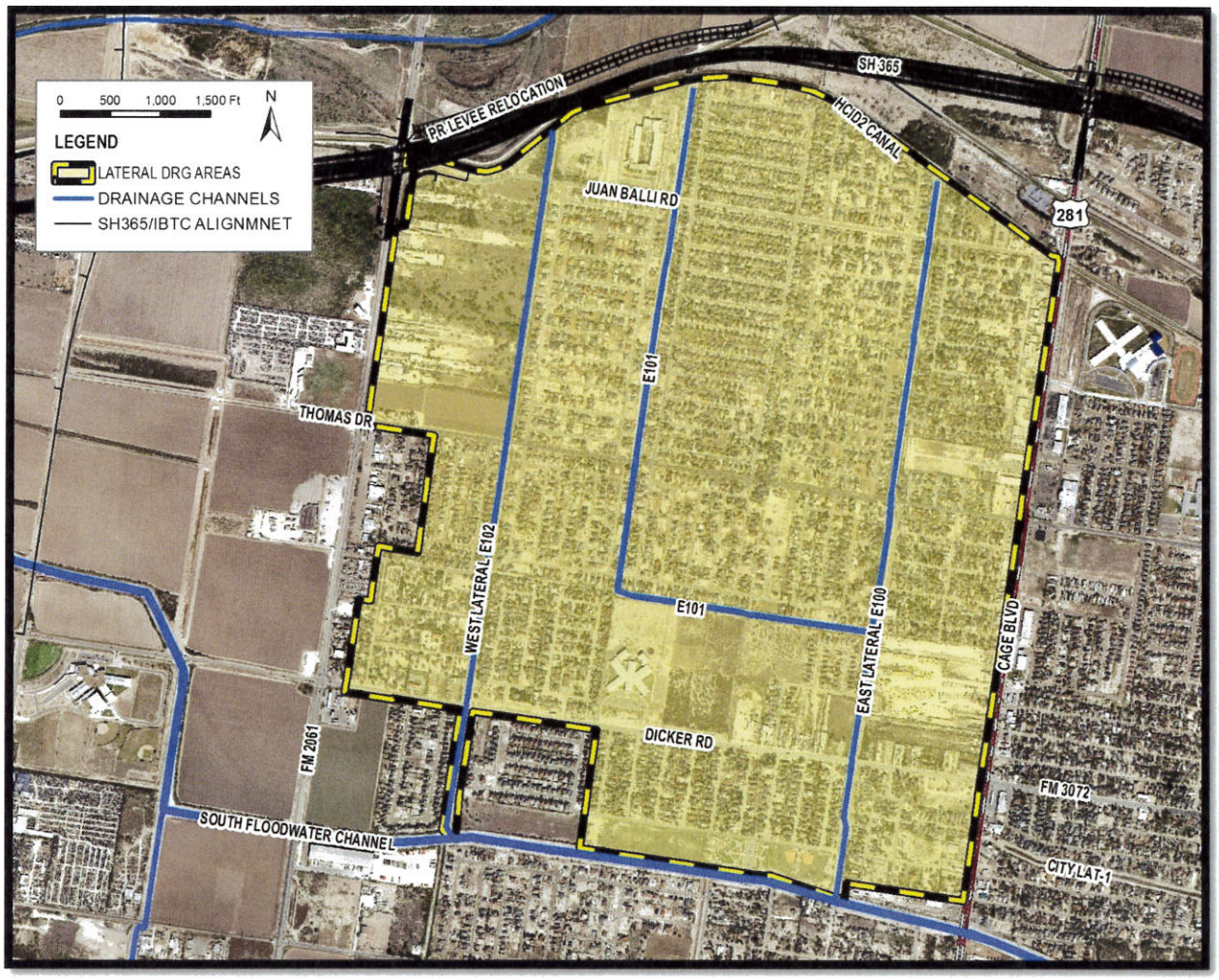

FIGURE 2-1. PROJECT AREA

2.3 LAS MILPAS AREA TOPOGRAPHY

The topography of the area runs in a general north to south direction from the HCID2 canal, which lies along the IBWC Main Floodway south levee to the South Floodwater Channel. The natural ground ranges from 93 feet to 86 feet at an overland approximate slope of 9-percent, as shown in **Figure 2-2**.

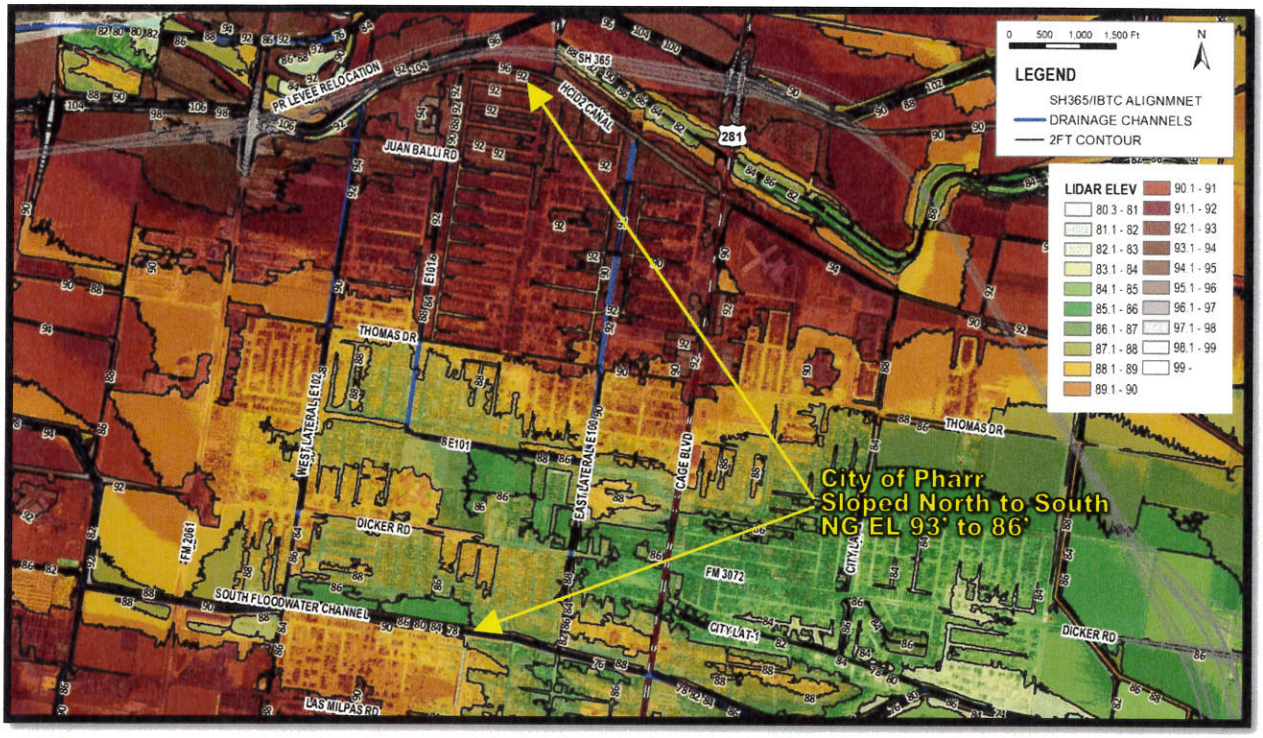

FIGURE 2-2. LAS MILPAS OVERLAND TOPOGRAPHY

2.4 SURVEYED DATA

Survey topographic data for lateral cross-culvert structures was collected by L&G Consulting Engineers, Inc. The culvert structure survey was used within the HEC-RAS modeling. The lateral system cross-drainage structural inventory is provided in **Table 2-1**.

TABLE 2-1. CROSS-DRAINAGE STRUCTURE INVENTORY

STRUCTURE LOCATION	SIZE	LENGTH
WEST LATERAL		
JUAN BALLI RD	30"	100
THOMAS DR	24"	80
DICKER RD	7'X4' RCB	136
OUTLET TO SFC	54" RCP	30
EAST LATERAL TRIB 1		
JUAN BALLI RD	30"	158
THOMAS DR	36"	1350
EAST LATERAL		
JUAN BALLI RD	24"	120
LA QUINTA DR	24"	100
BLUE JAY AVE	24"	125
THOMAS DR	24"	230
LONGORIA DR	48"	90
DICKER RD	7'X6' RCB	130
OUTLET TO SFC	2-48" RCP	40

3.0 SOUTH FLOODWATER CHANNEL

The South Floodwater Channel (SFC) serves as the receiving channel for the internal drainage systems of the Las Milpas study area. As part of the Las Milpas analysis, the South Floodwater Channel was investigated to determine the flooding and backwater effects of the channel within the study area. This section presents the hydraulic modeling of the South Floodwater Channel (SFC) and discusses the potential hydraulic impacts of the South Floodwater Channel on the Las Milpas laterals and potential improvement opportunities.

3.1 SFC WATERSHED DESCRIPTION

The South Floodwater runs from the Main Floodway to its confluence with Hidalgo Drain, a length of approximately 54,000 feet, as shown in **Figure 3-1**. The stream runs generally in a west-to-east direction. The study reach includes the entire channel length. The stream includes sixteen (16) roadway crossings as well as the levee structure at its outfall into the Main Floodway. The roadway crossings include McColl Road, Dicker Road, Jackson Road, Cage Boulevard (US 281), I Road, Las Milpas Road, San Juan Road, Anaya Road, Stewart Road, Morningside, Alamo Road, Tower Road, Juan Balli Road, and Border Road.

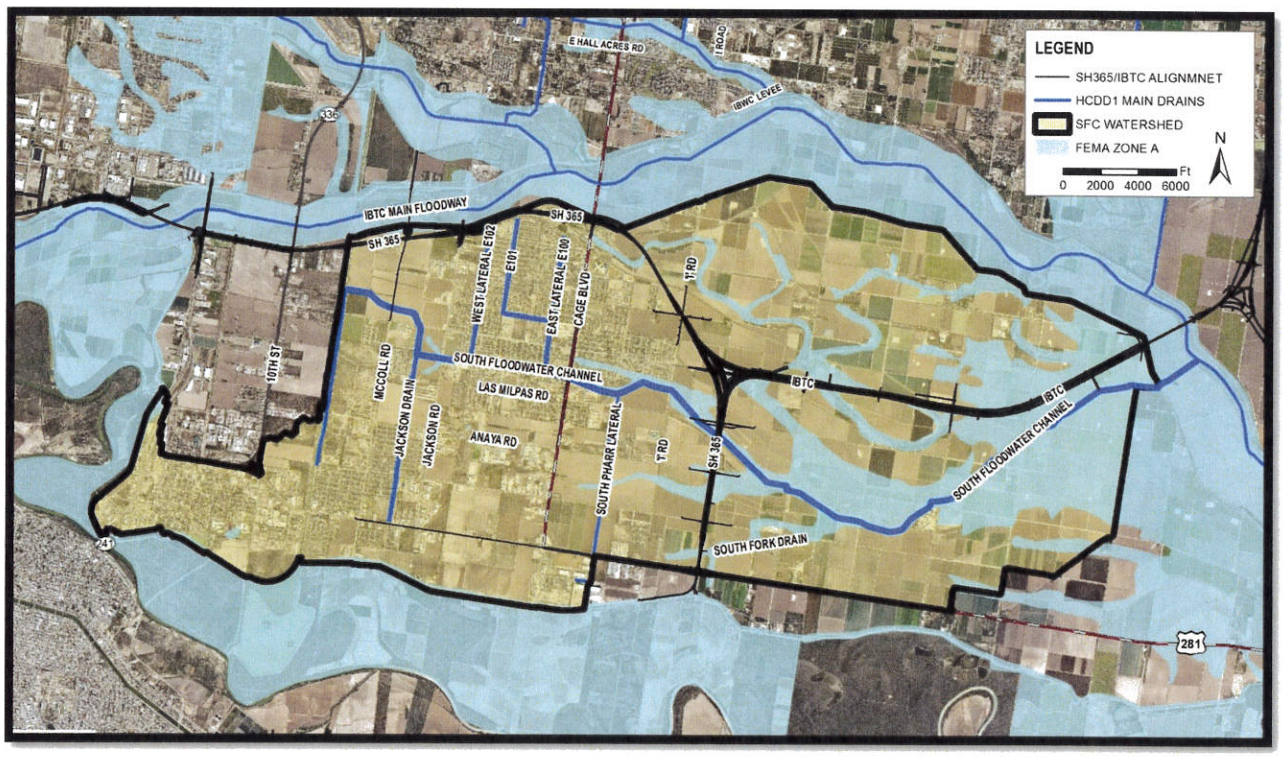

FIGURE 3-1. SOUTH FLOODWATER CHANNEL WATERSHED

The South Floodwater Channel Watershed is approximately 36.6 square miles. The drainage area includes the subareas for Hidalgo Drain and South Pharr Lateral. The overland slope of the

drainage area is mild, less than 0.1 percent. The downstream portion of the watershed from 'I' Road to IBWC Floodway are undeveloped. Upper portion of the watershed west of 'I' Road consists of residential and commercial developments. The upper portion of the watershed includes the Las Milpas project area, located north of the South Floodwater Channel between Cage Blvd and Jackson Road. The Las Milpas area laterals outfall into the South Floodwater Channel.

The South Floodwater Channel is an earthen, trapezoidal section channel. The downstream reaches of the channel are approximately 16 feet in depth with the upper reaches of the channel being approximately 13 feet in depth. The channel invert is consistent for the entire channel reach with a slope of approximately 0.02 percent. The SFC Watershed LiDAR topography is in **Figure 3-5**, later in this section.

3.2 HEC-HMS Runoff Computations

The South Floodwater Channel runoff computations were performed using HEC-HMS (v.4.0). The model is based on the FEMA Hidalgo County Map Mod Project hydrology and HEC-HMS modeling for the South Hidalgo Watershed. The Map Mod model was updated to separate the Jackson Drain subarea ("SH_SFC-JACK"), which is located within the upper reaches of the SFC watershed. ThE subarea was split from the SFC-A and SFC-B subareas. The HEC-HMS computed runoff hydrographs for each storm event were directly referenced within the HEC-RAS model. The updated HEC-HMS model layout is shown in **Figure 3-2**. Within the figure, the SFC Watershed subareas are labeled with the following nomenclature: "SH_SFC", "SH_SPL", and "SF_HID".

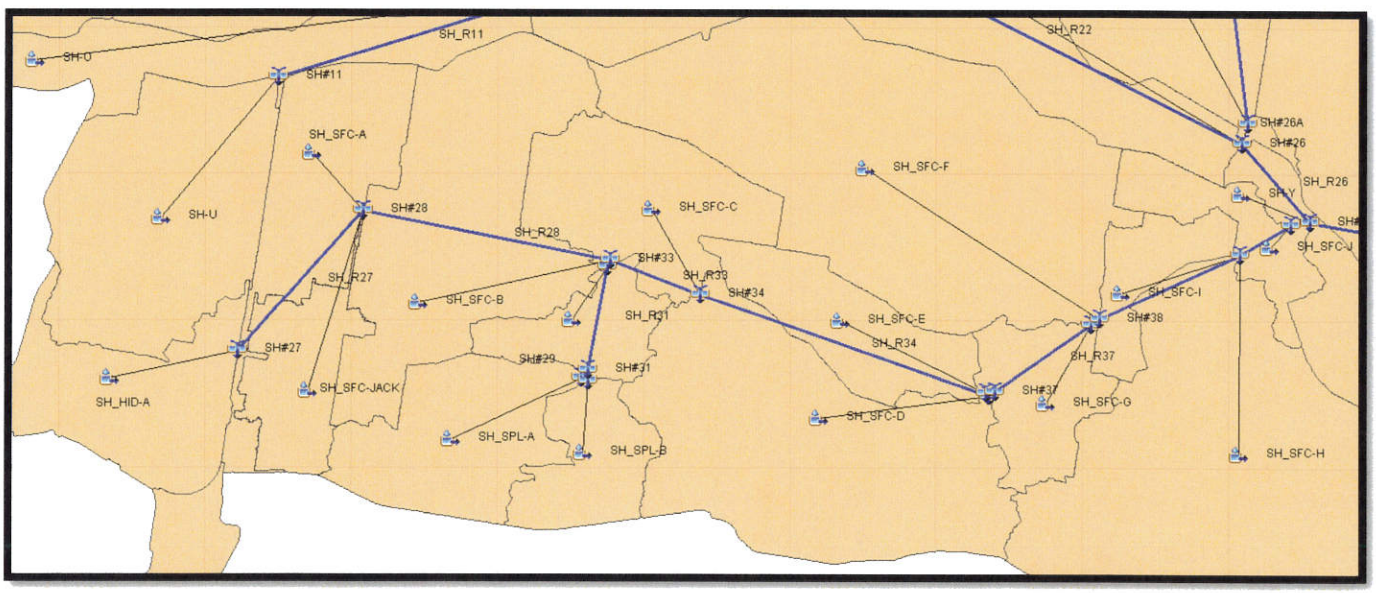

Figure 3-2. SFC HEC-HMS Model Layout Schematic

3.3 HEC-RAS 1D/2D Unsteady Modeling Analysis

With consideration of the very flat topography of South Floodwater Channel Watershed as well the evaluation of the potential closure of the floodgate at the IBWC floodway, HEC-RAS 1D/2D unsteady flow model was developed for this project. The 1D/2D HEC-RAS model was developed based on the 1D unsteady HEC-RAS model for the FEMA Hidalgo County Map Mod Project.

The Map Mod HEC-RAS model was updated to convert the 1D unsteady model to a 1D/2D unsteady model. This included regenerating cross-sectional geometry based on the Map Mod model and overland LiDAR topography, and the additional of overbank 2D storage areas using LiDAR topography. Additional modifications to the model included updating the outlet structure at the IBWC Main Floodwater Levee based on the proposed South Fork Channel construction project plans, updating the Jackson Road Bridge based on L&G field survey, incorporating updated HEC-HMS runoff hydrographs based on Jackson Drain subarea analysis, and inclusion of the Jackson Drain proposed channel improvements as a tributary reach to South Floodwater Channel. The HEC-RAS geometry layout for the updated South Floodwater Channel model is shown in **Figure 3-3**. The South Floodwater Channel 100-year and 25-year computed floodplain areas, based on an open-gated condition at the outlet structure into the IBWC Main Floodway, are shown in **Figures 3-4, 3-5,** and **3-6**.

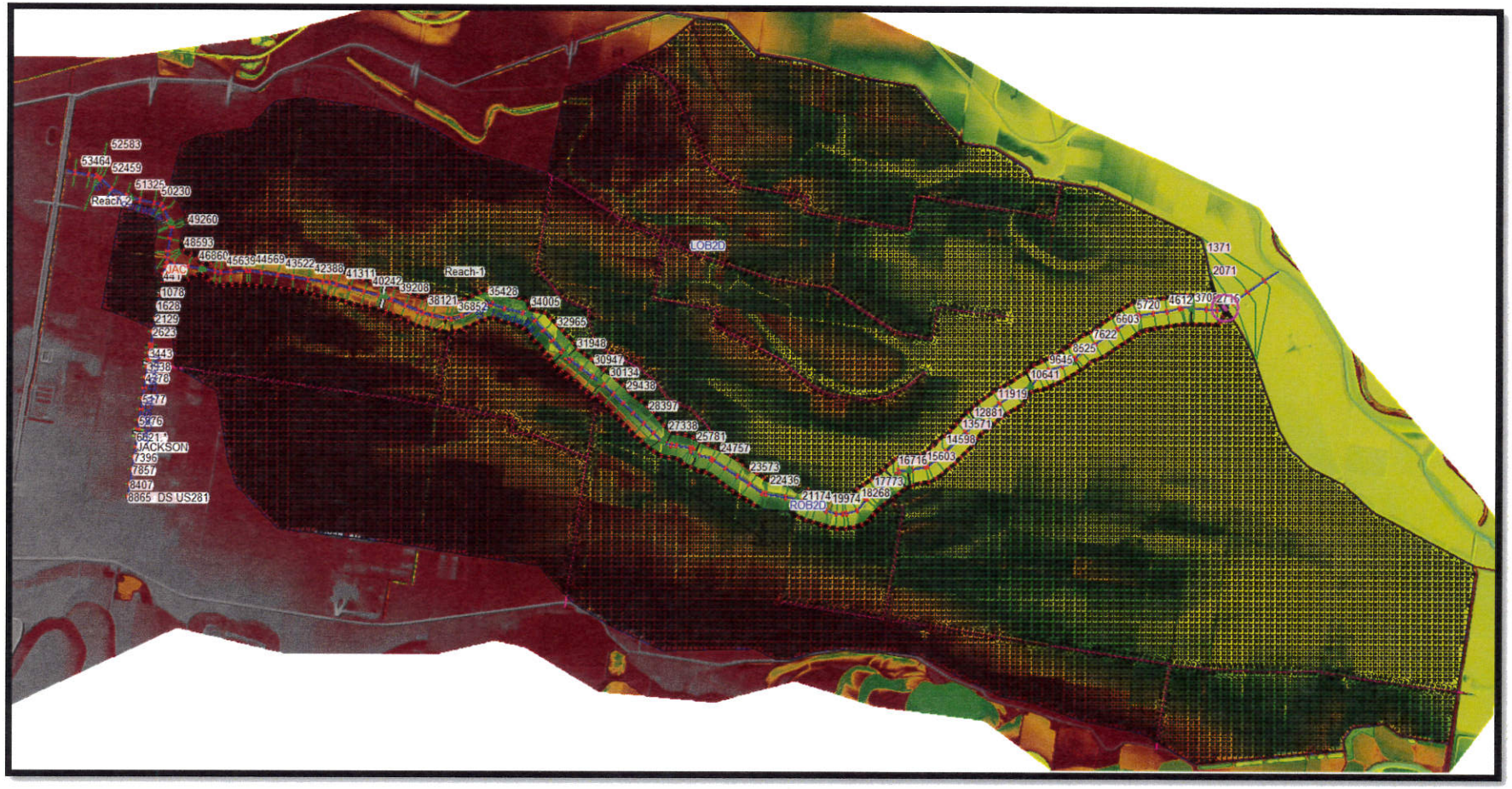

FIGURE 3-3. SFC 1D/2D HEC-RAS MODEL LAYOUT

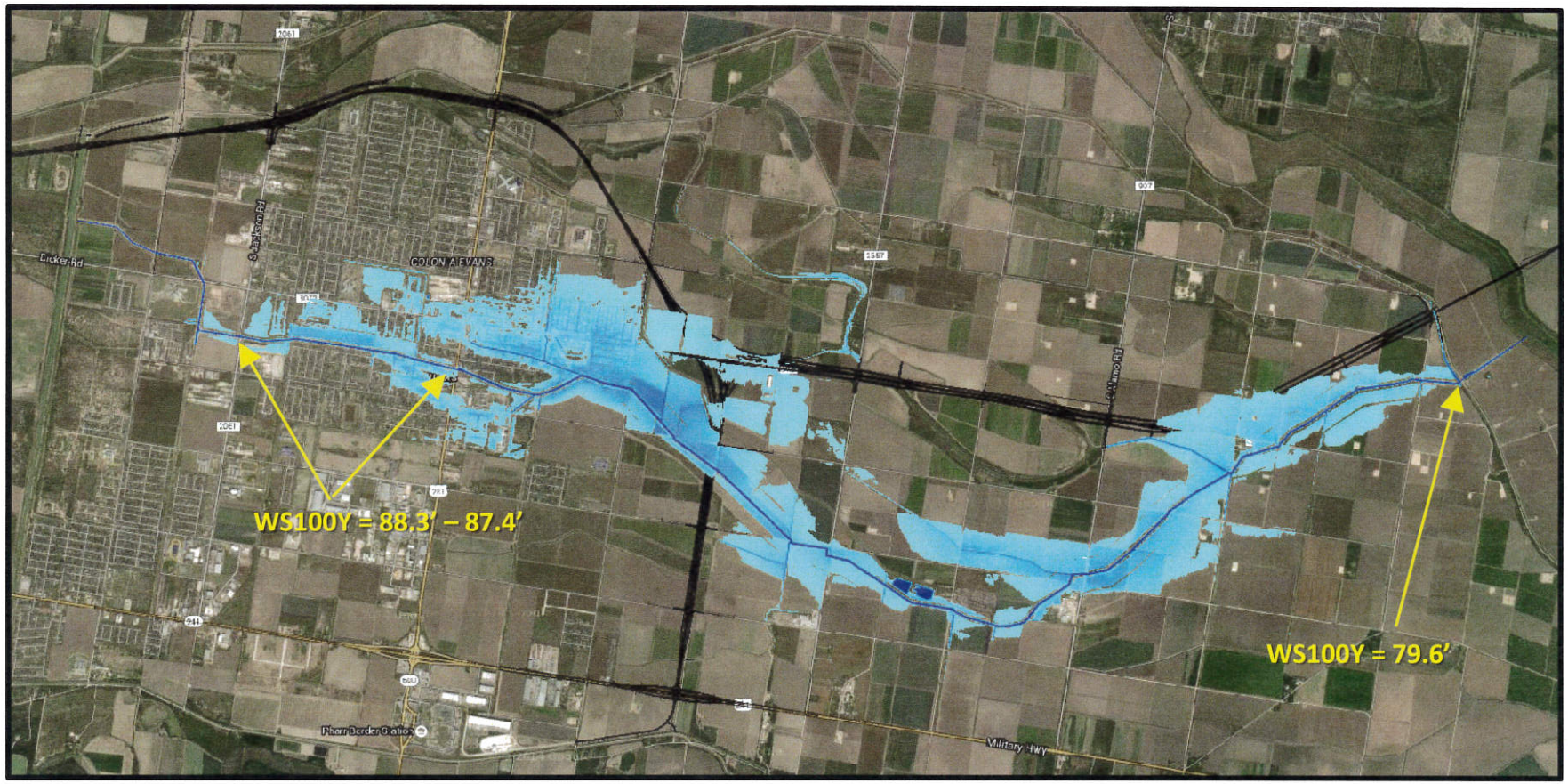

FIGURE 3-4. SFC 100-YEAR FLOODPLAIN (OPEN GATED CONDITION)

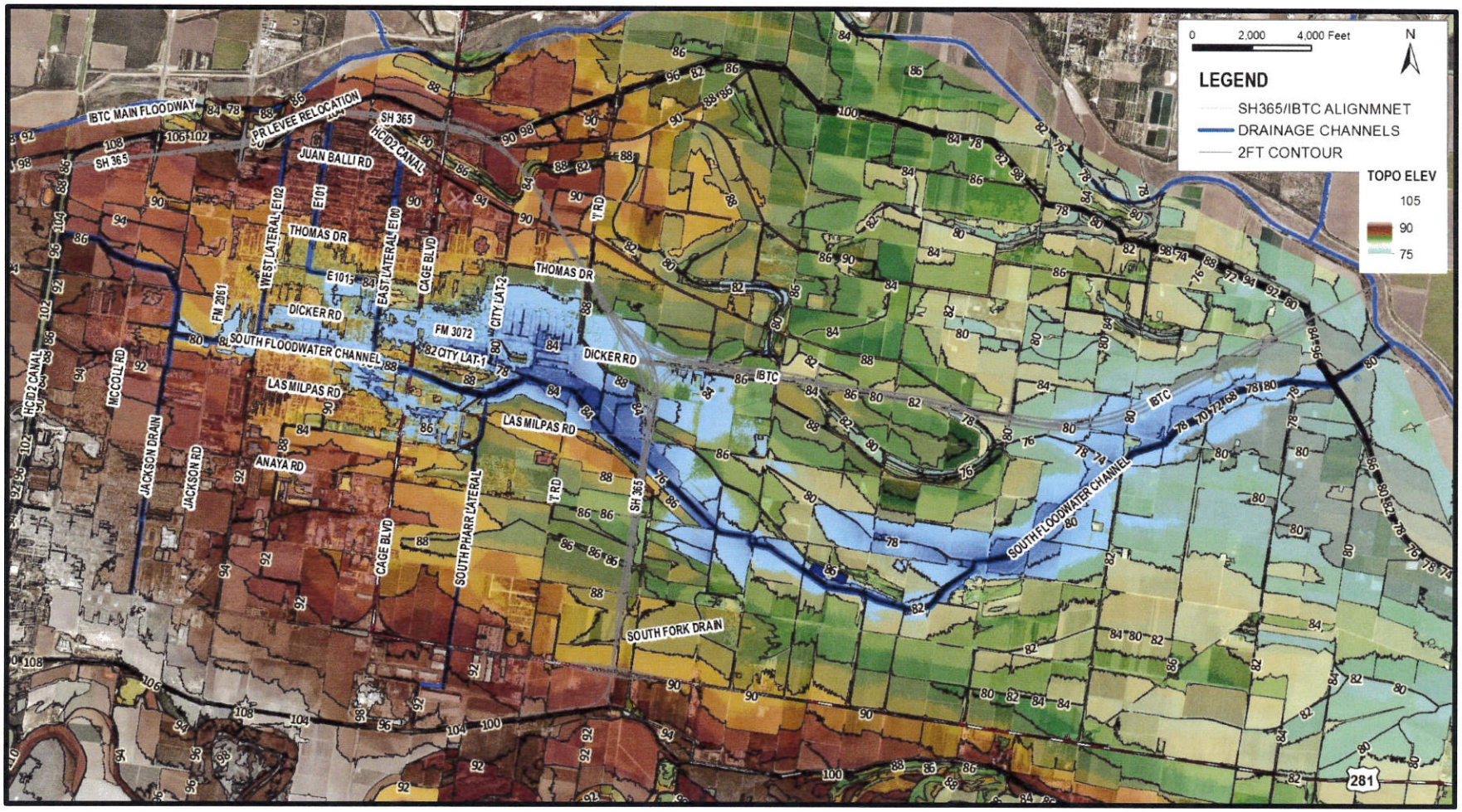

FIGURE 3-5. SFC 100-YEAR FLOODPLAIN LIDAR OVERLAY

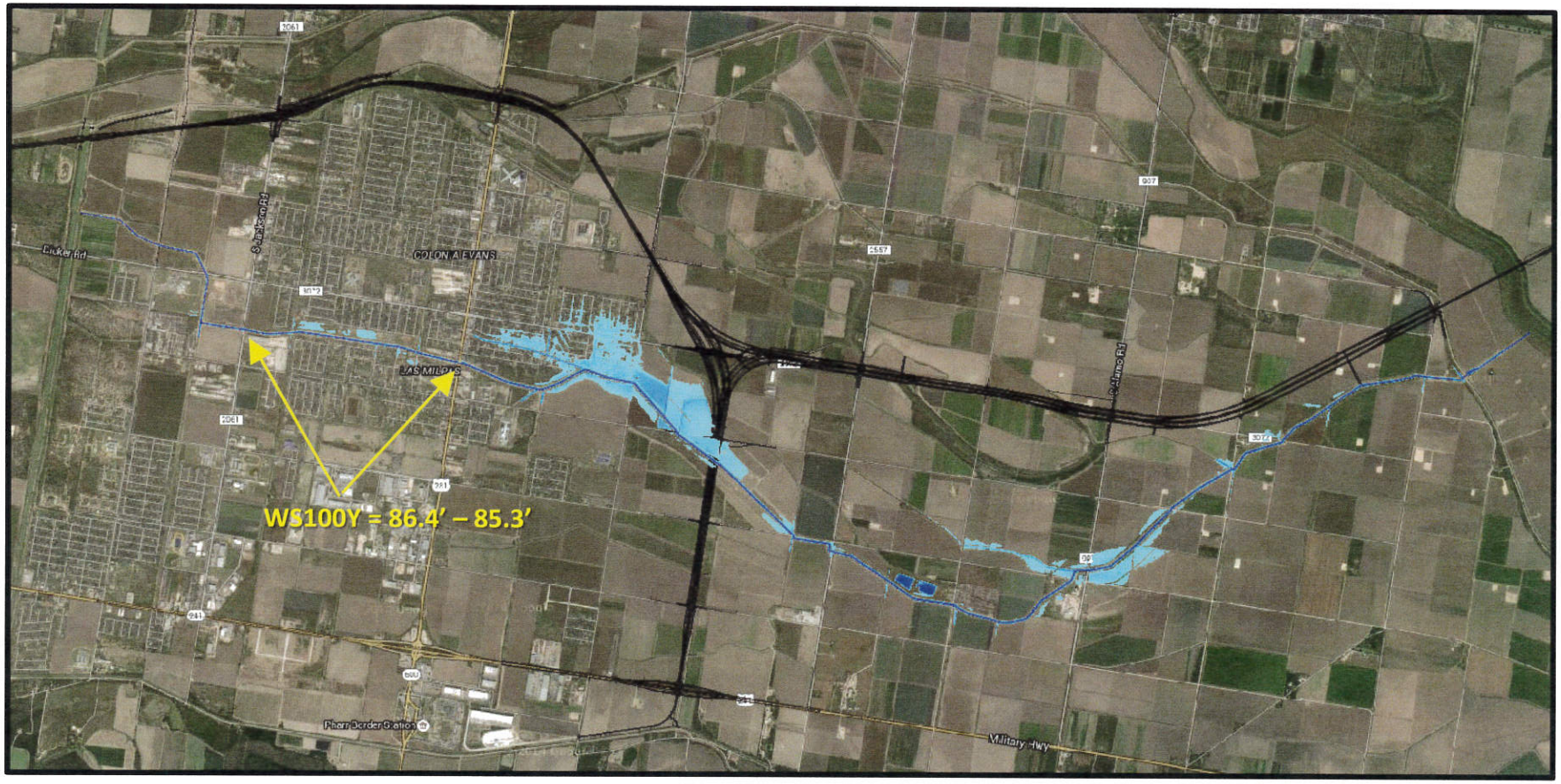

FIGURE 3-6. SFC 25-YEAR FLOODPLAIN (OPEN GATED CONDITION)

3.4 SFC Modeling Conclusions

The HEC-RAS modeling results and floodplain mapping show that the South Floodwater Channel inundates the developed area south of Thomas Drive during 50- or 100-year storm events. The 100-year SFC inundation area for the Las Milpas area is shown in **Figure 3-7**. South Floodwater Channel will affect the water surface elevation within the Las Milpas Laterals downstream of Thomas Drive during 25-year storm event. The South Floodwater Channel has limited impact on water surface elevations with the Las Milpas Laterals during 10-year storm event.

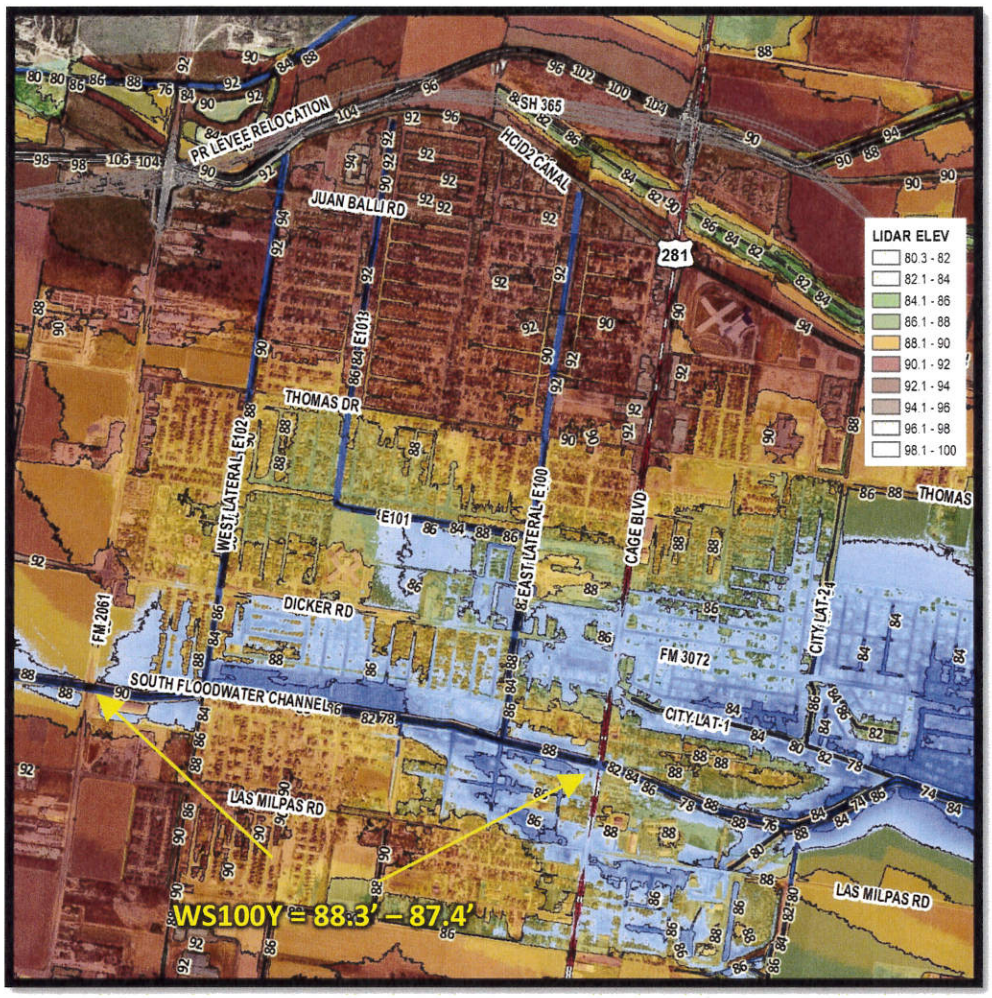

Figure 3-7. SFC 100-Year Floodplain Las Milpas Reach

Based on the HEC-RAS modeling, improvement to South Foodwater Chanel will have limited reduction to water surface elevation within the Las Milpas study area reach; therefore no significant benefit for flood reduction within the Las Milpas area. No improvements are proposed along South Floodwater Channel in conjunction with the Las Milpas proposed project.

4.0 HYDROLOGY ANALYSIS

Runoff computations were performed for the lateral systems using the Hidalgo County approved hydrologic method, which utilizes the NRCS Hydrograph Method, NRCS CN Loss Method, NRCS TR-55 time of concentration, and user defined unit hydrographs to generate peak flows and runoff hydrographs within HEC-HMS. This section presents the hydrologic computations for determining runoff flows for the Las Milpas Lateral Systems.

4.1 DRAINAGE AREA DELINEATION

The drainage areas were delineated based on LiDAR topography, drainage systems, and physical features. The East Lateral has a total drainage area of 833 acres. The West Lateral has a total drainage area of 170 acres. The drainage area delineations are provided in **Figure 4-1**. Drainage ID "W" is for West Lateral, "E" is for East Lateral, and "EA" is for East Lateral Trib. 1.

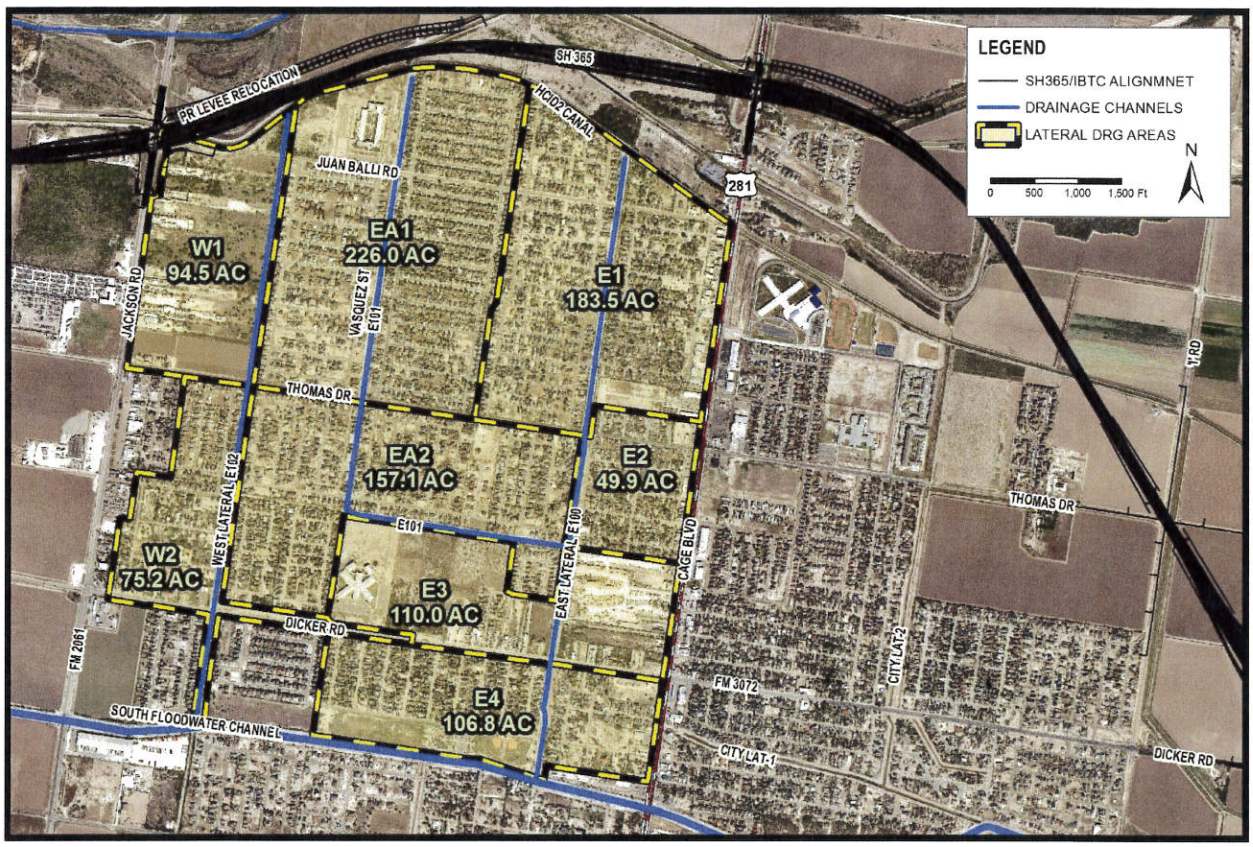

FIGURE 4-1. DRAINAGE AREA DELINEATION

4.2 HYDROLOGIC PARAMETERS

The drainage area runoffs were computed within HEC-HMS (v.4.0) using NRCS Unit Hydrographs based on a PRF = 150. The time of concentrations, which is used to compute the NRCS lag time parameter, were calculated using SCS Upland Method as described within TR-55. The NRCS Curve

Number (CN) Loss Rate Method was used to estimate rainfall losses in HEC-HMS. Based on the soil maps for Hidalgo County and utilization of Antecedent Moisture Conditions (AMC) I conditions, an average NRCS Curve Number of CN=74 was determined to represent the overall soil conditions and residential development within the project drainage areas. In order to account for the runoff impacts associated with the proposed roadway, the existing and proposed condition percent imperviousness was calculated for each drainage area. Based on the soil conditions and overland flow and internal ponding conditions within the subareas, an initial abstraction value of 1.5 was utilized. The hydrologic parameters used to develop the unit hydrographs and HEC-HMS input parameters are provided in **Table 4-1**.

TABLE 4.1 - DRAINAGE AREA PARAMETERS

DAREA ID	LATERAL SYSTEM	ACRE (AC)	AREA (S.MI)	CN (DEVT)	IMPERV (%)	TC (MIN)	NRCS PRF	LAG (HR)
E1	EL-100	184	0.2867	74	40	158.4	150	1.584
E2	EL-100	50	0.0780	74	40	78.8	150	0.788
E3	EL-100	110	0.1719	74	40	155.1	150	1.551
E4	EL-100	107	0.1669	74	40	145.6	150	1.456
EA1	EL-101	226	0.3531	74	40	177.6	150	1.776
EA2	EL-101	157	0.2455	74	40	153.7	150	1.537
W1	WL-100	95	0.1477	74	40	118.9	150	1.189
W2	WL-100	75	0.1175	74	40	80.6	150	0.806

4.3 HYDROLOGIC MODELING

HEC-HMS model (v.4.0) was developed for the lateral systems subareas based on the estimated hydrologic parameters (subbasin area, initial loss, percent imperviousness, curve number, and lag time), generated unit hydrographs, routing data, and rainfall data. The HEC-HMS computation layout schematic is shown in **Figure 4-2**.

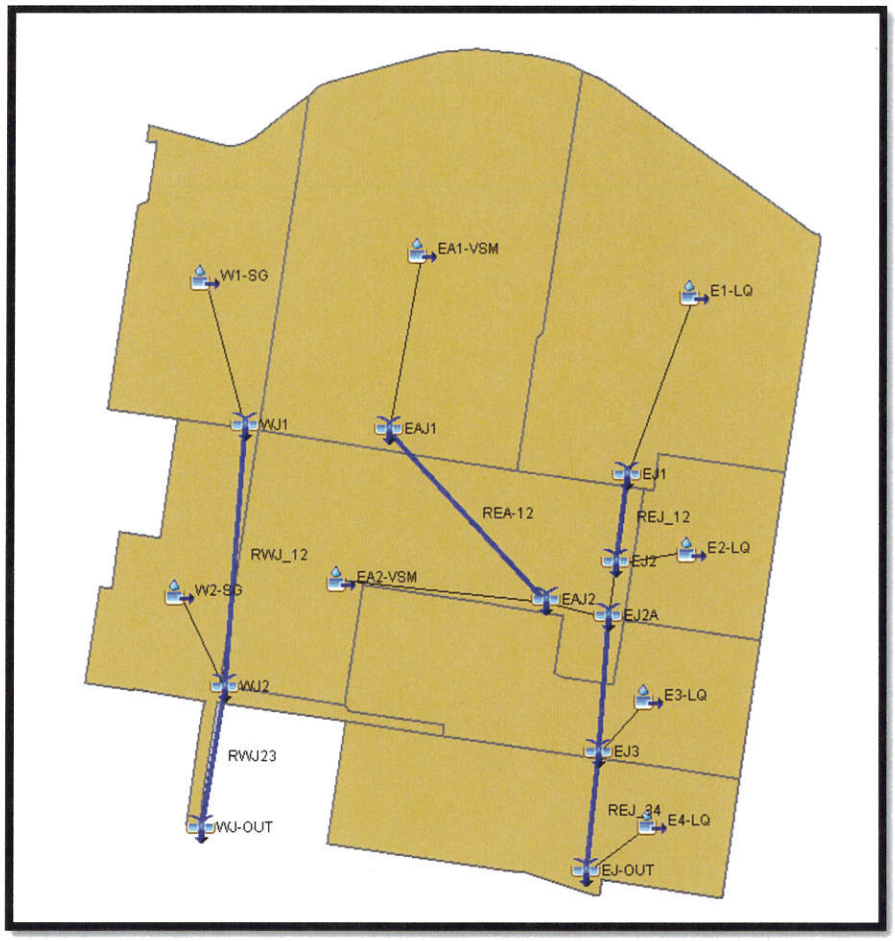

FIGURE 4-2. HEC-HMS LAYOUT SCHEMATIC

4.4 COMPUTED FLOW RESULTS

Peak discharges for each subarea, junction node, and outfall were generated for the 100-, 25-, and 10-year storm events. **Table 4-2** summarizes the computed peak flows for the lateral systems. The computed flows at junction nodes were used as input values for the HEC-RAS modeling.

TABLE 4.2 – HEC-HMS COMPUTED PEAK FLOWS

HEC-HMS ELEMENT	CONTR AREA (SQ.MI.)	COMPUTED PEAK FLOWS			
		10Y (CFS)	25Y (CFS)	50Y (CFS)	100Y (CFS)
EAST LATERAL					
E1-LQ	0.2867	34.4	54.0	76.2	99.7
EJ1	0.2867	34.4	54.0	76.2	99.7
E2-LQ	0.0780	14.7	23.9	32.7	42.7
EJ2	0.3647	47.0	74.1	104.3	136.4
EJ2A	0.9633	113.6	179.7	253.5	331.9
E3-LQ	0.1719	20.9	32.9	46.4	60.6
EJ3	1.1352	133.3	208.6	294.4	386.0
E4-LQ	0.1669	21.2	33.3	47.0	61.5
EJ-OUT	1.3021	152.8	238.2	336.9	439.9
EAST LATERAL TRIB. 1					
EA1-VSM	0.3531	38.9	61.1	86.3	113.0
EAJ1	0.3531	38.9	61.1	86.3	113.0
EA2-VSM	0.2455	30.1	47.2	66.7	87.2
EAJ2	0.5986	67.8	105.7	149.2	195.5
WEST LATERAL					
W1-SG	0.1477	21.3	34.3	47.3	61.9
WJ1	0.1477	21.3	34.3	47.3	61.9
W2-SG	0.1175	21.9	35.6	48.8	63.7
WJ-OUT	0.2652	40.0	63.5	89.6	117.0

REPRESENTS JUNCTION LOCATION FLOWS

5.0 HYDRAULIC ANALYSIS

Hydraulic modeling was performed for this analysis to determine existing conditions along the drain as well as proposed alternative benefits and impacts. The resulting hydrographs from HEC-HMS modeling analysis were incorporated into the HEC-RAS model to compute water surface elevations along the channels. This section presents the hydraulic modeling performed for this study.

5.1 EXISTING LATERAL SYSTEMS

The Las Milpas lateral system within the study area consist of three drainage laterals: East Lateral, East Lateral Trib. 1, and West Lateral. Runoff is conveyed to these laterals by residential storm sewer systems, roadside ditches, and overland sheetflow.

The East Lateral is located west of Cage Blvd. (US 281). The contributing drainage area served by the East Lateral is mostly residential with some commercial just west of Cage Blvd. (US 281). It conveys runoff from the HCID2 Canal, north of Juan Balli Road, south to the South Floodwater Channel.

The East Lateral Tributary 1 is located between the East Lateral and West Lateral, between Vasquez St. and Rivera St. The contributing drainage area served by the East Lateral Trib 1 is mostly residential. It conveys runoff from HCID2 Canal, north of Juan Balli Road, south to Thomas Road where it continues south through a long 36" pipe along residential easement to the open ditch north of the South Pharr Elementary School. Here the ditch continues east to its confluence with the East Lateral north of Dicker Road.

The West Lateral is located east of Jackson Road, adjacent to Valdivia St. The contributing drainage area served by the West Lateral is mostly residential areas with some commercial/industrial areas northwest of Thomas Drive. The ditch conveys runoff from the HCID2 Canal, north of Juan Balli Road, south to the South Floodwater Channel.

The laterals south of Thomas Drive typically consist of earthen, trapezoidal manmade ditches approximately 6 to 8 feet in depth. North of Thomas Drive, the laterals are much shallower with constricting cross-drainage structures.

5.2 HEC-RAS MODELING

These drainage ditches were analyzed using HEC-RAS (v.4.1) to determined existing capacity, identify conveyance problem reaches, and generate potential improvement alternatives. The HEC-RAS model for the laterals was generated within ArcGIS using HEC-GeoRAS tools based on LiDAR topography, aerials, and survey data. The cross-sections were generated from LiDAR topography, and the crossing structures were modeled using field survey data. Computed HEC-

HMS flows for multiple storm events were input as peak flows along the ditches. A layout of the HEC-RAS modeling is provided in **Figure 5-1**.

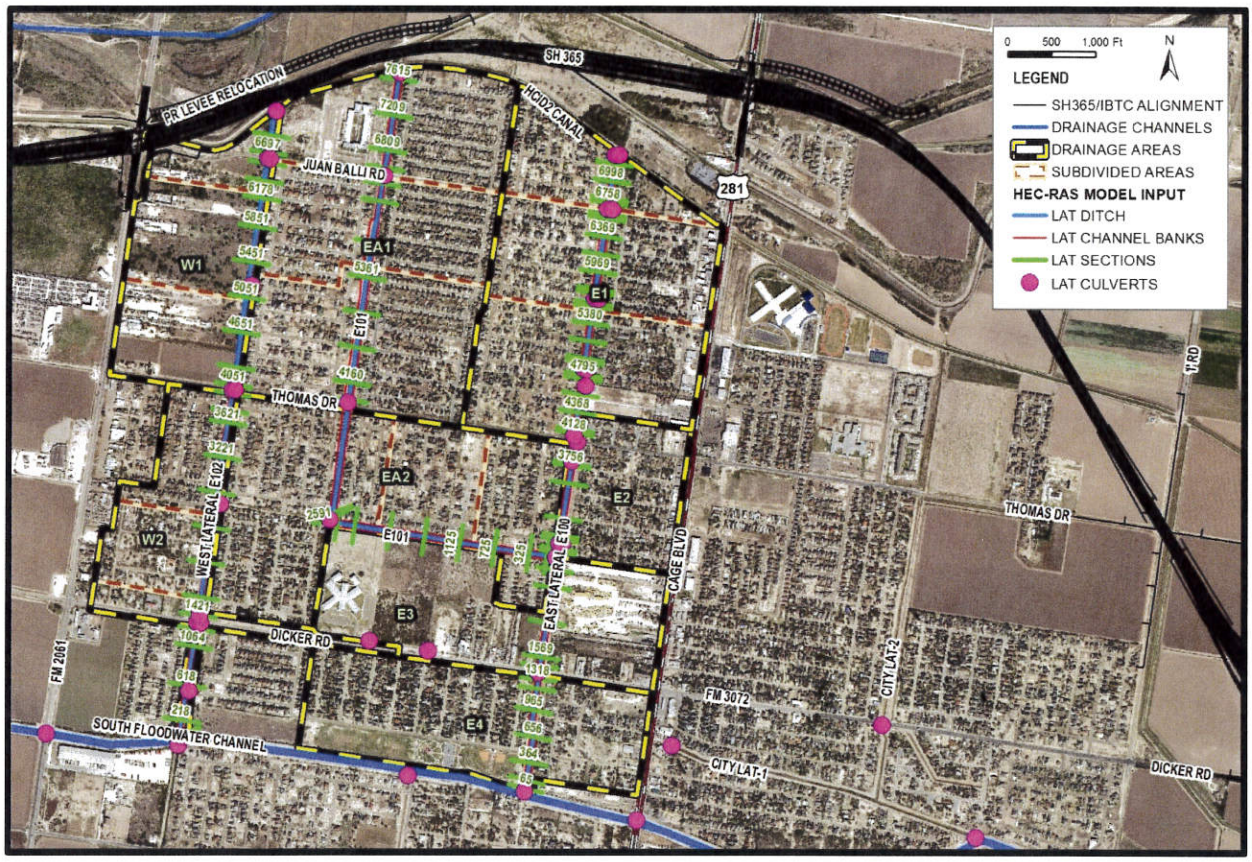

FIGURE 5-1. HEC-RAS MODEL LAYOUT

5.2.1 Existing Results

The existing condition modeling results show that there substantial out-of-bank flooding during the 100-year event. A comparison the lateral modeling results from the South Floodwater Channel water surface elevations showed that the South Floodwater Channel backwater effects is limited to the area within the lateral system near Dicker Road. The majority of the inundation area within the lateral system subarea is shown to be the result of limited ditch capacity and restrictive culverts. The existing 100-year inundation areas based on the lateral ditches and the South Floodwater Channel floodplain are shown in **Figure 5-2**.

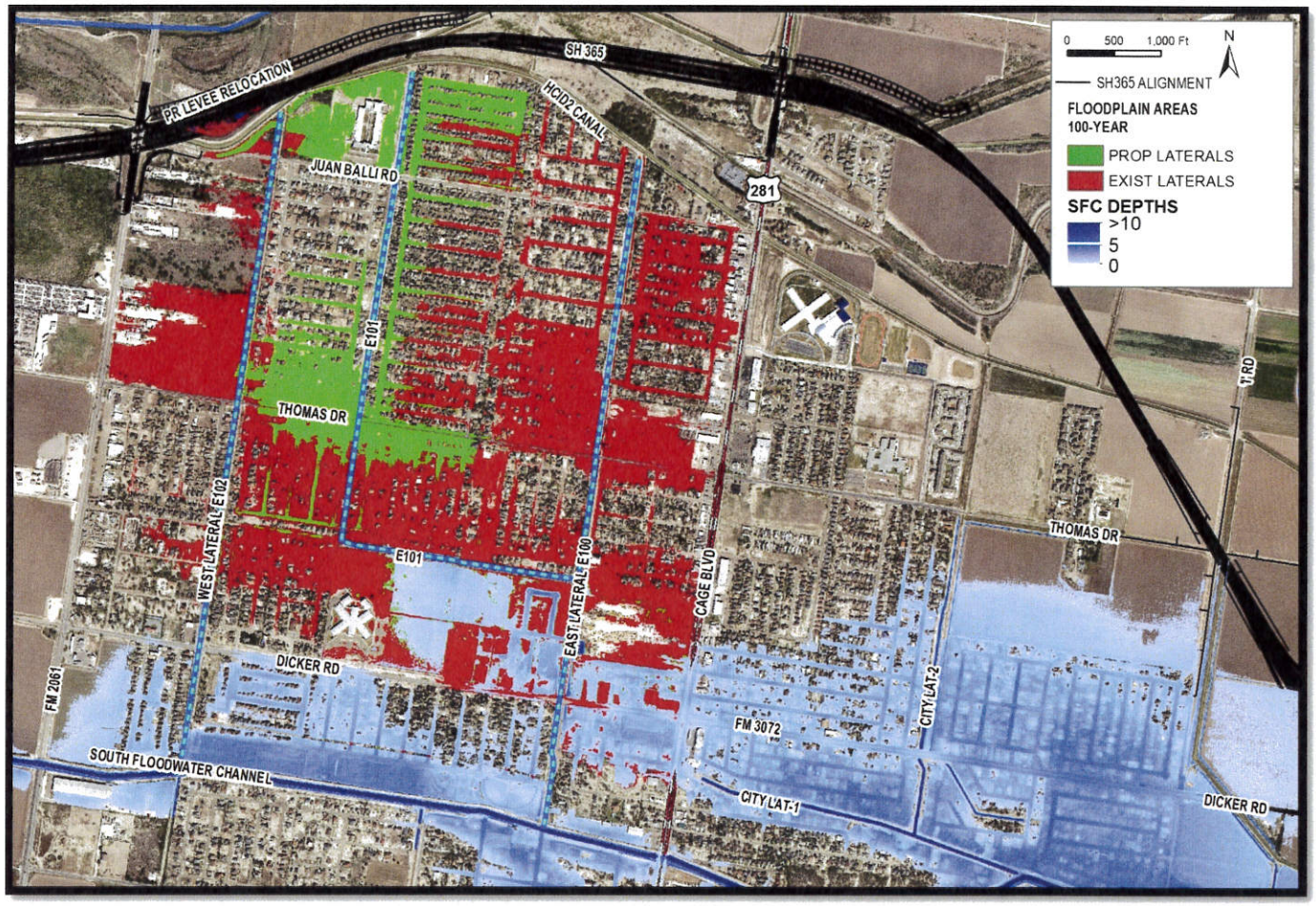

FIGURE 5-2. EXISTING 100-YEAR OVERBANK FLOODING AREAS

5.3 PROPOSED ALTERNATIVES

Based on the review of the existing condition hydraulic modeling analysis, multiple proposed improvement components were considered to provide flood relief for the project area. These components included channel improvements, culvert replacements, and flow diversions. Detention was considered a viable option due to the limited availability of undeveloped land within the study area. Also replacement of the existing 36" x 1300' RCP along East Lateral Trib. 1 south of Thomas Drive was not considered practical since the pipe lied within a small-width easement between residential lots.

The proposed components were analyzed using HEC-RAS to determine effectiveness and to optimize the components. The following list the proposed improvements components recommended for this project:

- Improve the East Lateral from upstream of Juan Balli Road to South Floodwater Channel
- Improve the West Lateral from upstream of Juan Balli Road to South Floodwater Channel
- Improve East Lateral Trib. 1 from upstream of Juan Balli Road to Thomas Drive.
- Replace various cross-culvert structures within the lateral ditches.
- Provide a diversion pipe along Thomas Drive from the East Lateral Trib. 1 to West Lateral.
- Remove outlet control structures at the West Lateral and East Lateral confluences with South Floodwater Channel

The channel improvements typical section include an earthen, trapezoidal section consisting of 3:1 side slopes (H:V), 8 – 10 depth, 10 to 20 foot bottom width, and a minimum 0.05-percent channel slope. All channel typical sections include a 10-foot bottom width except for along the East Lateral from Thomas Drive downstream to South Floodwater Channel, which is a 20-foot bottom width section.

Each of the above components will provide a benefit by increasing the overall conveyance capacity of the system and lowering the tailwater condition for the City of Pharr storm sewer systems. The removal and/or enlargement of the existing culvert crossings will result in reduced headlosses within the channel system. The channel improvements will increase the conveyance of the laterals. The diverting partial flow from the East Lateral Trib. 1 will reduce the headlosses through the existing long culvert south of Thomas Drive. The proposed improvement components are shown in **Figure 5-3**.

FIGURE 5-3. PROPOSED IMPROVEMENT PLAN

5.4 PROPOSED HEC-RAS RESULTS

The recommended proposed improvements were incorporated into the lateral systems HEC-RAS model. The proposed water surface elevations and overbank inundation areas were compared with existing conditions to show the proposed increase system capacity and reduction of flooding within the adjacent developed areas. The proposed condition increases the conveyance capacity of the West Lateral and East Lateral to a 100-year storm event and the East Lateral Trib. 1 to a 25-year storm event.

A comparison of the existing and proposed computed water surface elevations at roadway crossing locations along each lateral is shown in **Table 5-1**. A comparison of flooding depths during the 100-year storm event within the study area is shown in **Figure 5-4**.

TABLE 5-1 - WATER SURFACE ELEVATION COMPARISON

LOCATION	RAS XSN STA	EXIST WS 25Y (FT)	PROP WS 25Y (FT)	EXIST WS 100Y (FT)	PROP WS 100Y (FT)
EAST LATERAL					
U/S OF SFC	162	84.73	84.61	85.83	85.62
DICKER RD	1469	86.32	84.87	88.01	86.28
LONGORIA	2916	87.58	85.16	88.55	86.81
THOMAS	4128	91.04	85.49	91.16	87.76
BLUE JAY	4940	91.05	85.71	91.18	88.44
LA QUINTA	5729	91.05	85.89	91.19	89.07
JUAN BALLI	6758	91.35	85.99	91.49	89.36
EAST LATERAL TRIB. 1					
U/S OF EAST	125	86.42	84.98	88.05	86.43
D/S OF THOMAS	2591	86.64	85.38	88.18	86.95
THOMAS	3961	89.97	89.03	90.2	90.34
JUAN BALLI	6609	90.64	89.32	92.08	91.32
WEST LATERAL					
U/S OF SFC	218	84.63	84.62	85.63	85.62
DICKER	1338	85.75	85.20	87.04	86.67
THOMAS	4000	90.44	86.84	90.61	88.08
JUAN BALLI	6697	91.67	87.55	91.93	88.32

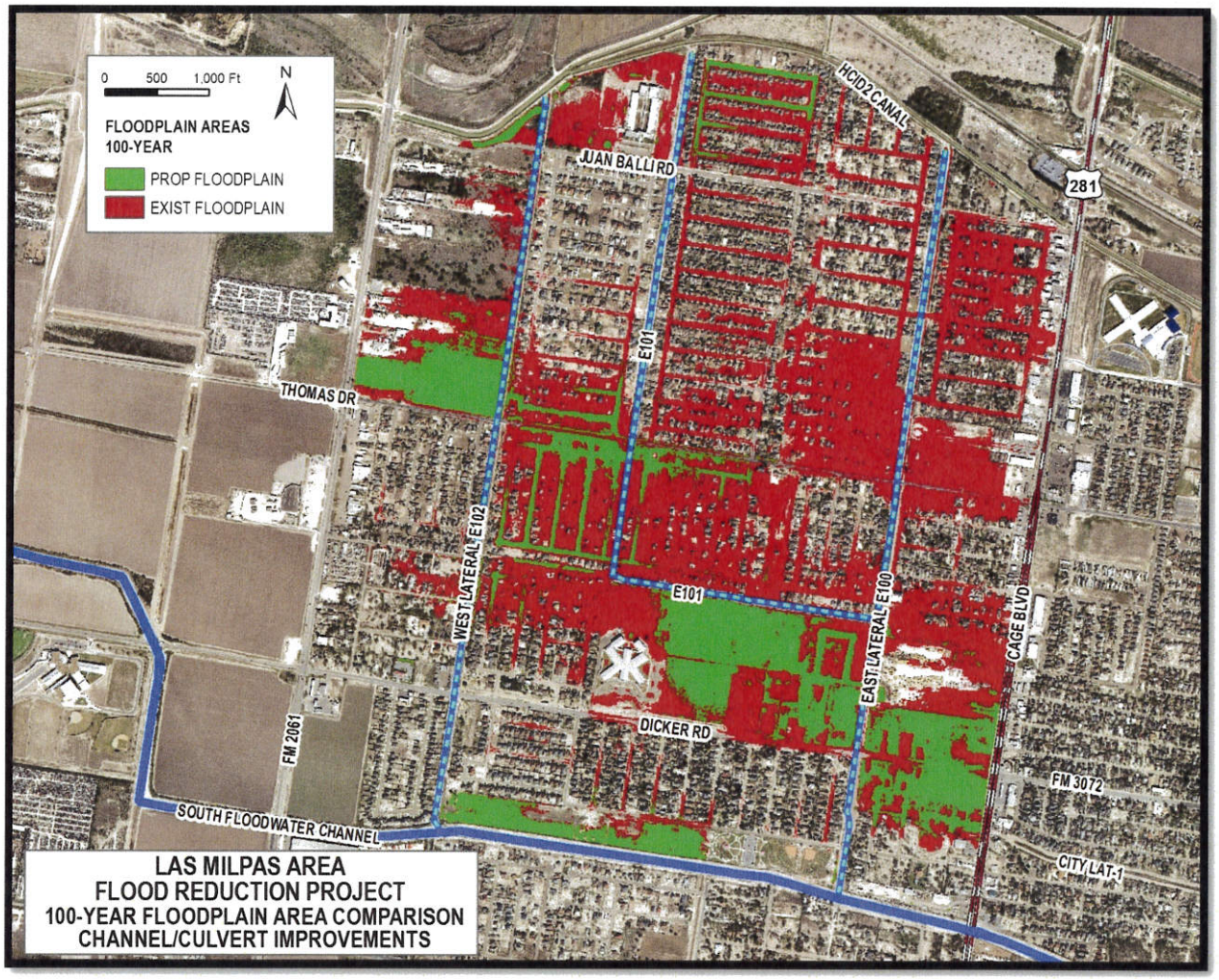

FIGURE 5-4. 100-YEAR FLOODING AREA COMPARISON

6.0 CONCLUSION

The Las Milpas study area is subjected to flooding and drainage problems. This drainage study investigated causes of these drainage problems by analyzing the lateral drainage ditches and the receiving South Floodwater Channel. Based on the analyses presented within the report, the South Floodwater Channel effects within the project area are mostly limited to areas south of Thomas Drive and during extreme events. The investigation concluded that drainage problems associated within the study area, especially north of Thomas Drive, are directly related to the lateral ditches insufficient capacity and inadequate cross-drainage structures.

In order to relieve flooding within the study area, channel improvements and proposed culvert replacements are proposed. The recommended improvements include: 1) channel improvements consisting of an earthern, trapezoidal section for the East Lateral, West Lateral, and upstream reaches of the East Lateral Tributary No. 1; 2) replacing six (6) crossing structures along the East Lateral; 3) replacing two (2) crossing structures along the West Lateral; 4) replacement one (1) crossing along the East Lateral Tributary No 1; 5) providing a diversion culvert along Thomas Drive from the East Lateral Tributary No. 1 to the West Lateral; and 6) removing of existing outlet control structures at the West Lateral and East Lateral confluences with South Floodwater Channel.

The proposed alternative would reduce the 100-year water surface elevations along the three ditches by an average of 1.5 feet, which would provide a 100-year design capacity for the West Lateral and East Lateral and a 25-year design capacity for the East Lateral Tributary No. 1.

Hidalgo County Drainage District No. 1

902 North Doolittle Road Edinburg, Texas 78542 Office: (956) 292-7080

Invoice Processing Checklist/Routing Slip

Invoice/ Backup

Date Received: 1/5/2016

Engineer/Firm Name: L&G Engineering

Project Name/Number: La Joya Watershed Imp. WA No. 5

Invoice No.: 11325442

Purchase Order No.: 625396

Received By: Rosa Arce

Forwarded to: Nora D. Cavazos _____ Date: _____

Claudette Guerrero _____ Date: _____

Total # of Pages Submitted: 7

Attachments: CD

Forwarded to: Jose N. Saldivar _____ Date: _____

Forwarded to: Lora Briones _____ Date: _____

Additional Comments: $13,401.16

THIS ROUTING SLIP MUST BE KEPT WITH ORIGINAL INVOICE

L&G Engineering
Transportation Consulting Engineers

2100 W. Expressway 83
Mercedes, TX 78570
Phone: (956) 565-9813
Fax: (956) 565-9018
Toll Free: (888) 565-9813

900 S. Stewart Rd., Ste. 10
Mission, TX 78572
Phone: (956) 585-1909
Fax: (956) 585-1927
Toll Free: (866) 585-1909

Firm No. F-4105

Letter of Transmittal

Mr. Raul E. Sesin, P.E. – Drainage District Manager
Attn: Ms. Lora Briones – Chief Financial Manager
Hidalgo County Drainage District #1
902 N. Doolittle Rd.
Edinburg, Texas 78542

DATE: January 4, 2016

REF.: Work Authorization #5 on La Joya Watershed Improvement Project
P.O. #625396
Invoice #11325442

L&G PROJECT NO.: 130105

TRANSMITTED:

☒ For Your Use	☐ Please comment	☐ Approved as Noted
☐ As Requested	☐ Reply ASAP	☐ As Noted Below

VIA:

☐ US Mail	☐ Courier	☒ Hand Carry
☐ E-Mail	☐ Lonestar Overnight	☐ Pick up

COPIES	DESCRIPTION
1	CD - WA#5
1	Invoice #11325442 $13,401.16

REMARKS:
Attached is our invoice and progress report for the month of December. Also attached a CD containing electronic information for the Tasks.

If you have any questions or comments, please feel free to contact me or Mr. Damien B. Tijerina, P.E. at 956-585-1909.

Thank you,

Armando J. Sandoval, P.E.
Project Manager

RECEIVED
HIDALGO COUNTY
DRAINAGE DISTRICT #1
DEC 4 0 2015
1:45 AM PM
BY:

Received By

L&G Engineering
Transportation Consultants

January 4, 2016

Mr. Raul E. Sesin, P.E. – District Manager
Attn: Ms. Lora Briones – Chief Financial Officer
Hidalgo County Drainage District #1
902 N. Doolittle
Edinburg, Texas 78542

RE: Work Authorization #5 on La Joya Watershed Improvement Project
Job #130105
P.O. #626943

Dear Mr. Sesin,

Attached for your review and approval is our progress report for the month of December 2015 on the subject referenced project.

The following is attached:

- L&G Invoice 11325442
- CD w/Electronic Files of Data

CROSS CULVERTS		% Complete
16101 - Task 1-Drainage area maps - existing conditions/proposed improvements	L&G	100%
Task is complete – see progress report dated 06-01-2015		
16102 - Task 2-Hydologic data/discharge determination	L&G	100%
Task is complete – see progress report dated 06-01-2015		
16103 - Task 3-Design Wier of Siphon to circumvent existing HP Gas Lines	L&G	79.2%
L&G requested and received several weir designs, of existing weirs, that are currently being used by Hidalgo County Drainage District #1. L&G reviewed these weir designs and found that none of the designs really fit the current situation. Therefore a concrete riprap/slab is being proposed to cover 3 gas lines that are located near the flow line of the ditch. The design has been implemented and placed on sheets. The riprap/slab design has been submitted to all three gas lines. One gas line company has provided comment/feedback and these comments were implemented into the design of the riprap/slab. Meetings were held in December with Pct #3, TxDOT and the HCDD1 to inform everyone that the Gas companies have now changed their mind after approving the preliminary design of the concrete riprap over their gas lines and they are requesting to be adjusted. If these gas lines are to be adjusted, the costs associated with the adjustment will be the responsibility of the County and therefore		

Commissioner Flores has written a letter to TxDOT to assist with these gas line adjustments. L&G is proceeding to try and solve this problem by designing a Siphon under the gas lines along the ditch and will finalize these designs in January or February of 2016.		
16104 - Task 4-Culverts Layouts	L&G	100%
Task is complete – see progress report dated 06-01-2015		
16105 - Task 5-Determine Impact - Proposed Drainage Plan	L&G	100%
Task is complete – see progress report dated 06-01-2015		
16106 - Task 6-Determine and Identify the utility adjustments for the cross-culvert in cord with TxDOT	L&G	100%
Task is complete – see progress report dated 06-01-2015		
16107 - Task 7-Summary of Quantities	L&G	100%
Task is complete – see progress report dated 06-01-2015		
16108 - Task 8-Specifications, General Notes and Standards for inclusion in TxDOT Plans	L&G	100%
Task is complete – see progress report dated 06-01-2015		
COMPENSABLE UTILITIES		
61001 - Task 9-Preliminary Design Consultations	L&G	100%
Task is complete – see progress report dated 10-01-2015		
61002 - Task 10-Field Observations and Verifications	L&G	100%
Task is complete – see progress report dated 06-01-2015		
61003 - Task 11-Exchange of Information with Utility Providers	L&G	95%
The exchange of information in ongoing with the utility providers. Met with Enterprise Products, 12-01-15. Provided plans, maps and County's SUA process. Conference call with Kinder Morgan, 12/16/15.		
61004 - Task 12-Confirmation of Property Interests	L&G	60%
Met with Enterprise Products, 12-01-15. Made contact with District for progress on agenda items, 12-03-15. Contact with Hilcorp, 12-10-15. Contact with Energy Transfer, 12-11-15, 12-14-15, 12-16-15. Contact with Kinder-Morgan, 12-14-15. Contact with NuStar, 12-14-15, 12-15-15.		
61005 - Task 13-Develop and execute release of Easements	L&G	0%
This task is ongoing.		

61006 - Task 14-Coordination and Development of Joint Use Agreements	L&G	0%
This task is ongoing.		
61007 - Task 15-Utility meetings throughout project development	L&G	50%
Utility meetings and conversations are ongoing. Follow up e-mails were sent to the gas companies. Internal coordination meetings included with L&G Design Engineers and others. Contact with District, 12/03/15. TXDOT meeting, 12/16/15. Prepared and mailed letter from Pct. #3 to TXDOT, 12/16/15.		
RIGHT-OF-WAY ACQUISITION		
60000 - ROW Acquisition Administration	L&G	94.7%
Project presence has been established at 900 S. Stewart Road in Mission, Texas 78572 @ L&G Engineering-Transportation Consulting Engineers Right of Way Office. The office is open during normal County and State work hours with available personnel to answer questions about the project. One staff member is a current commissioned notary. Appraisals are complete and have been submitted to the review appraiser. The title commitments continue to be worked on. Negotiations should start in December. **No Invoice.**		
60001 - Title Services	L&G	50%
To date Sierra Title has provided L&G with 3 of 6 title commitments. **No Invoice.**		
60002 - Appraisal Services	L&G	100%
L&G Engineering is in receipt of the following appraisal reports from Leonel Garza, Jr. & Associates, parcels 22E pt 1 and pt 2, 27E pt 1 and pt 2, 28E, 37E, 39E & 36E.		
60030 - Appraisal Services / SUB	LGA	100%
The office Leonel Garza, Jr. & Associates has submitted the following appraisal reports parcels 22E pt 1 and pt 2, 27E pt 1 and pt 2, 28E, 37E, 39E & 36E.		
60003 - Appraisal Review	L&G	100%
The reviewer has submitted all 6 reviews - 22E pt 1 and pt 2, 27E pt 1 and pt 2, 28E, 37E, 39E & 36E.		
60040 - Appraisal Review / SUB	HLH	100%
The reviewer has submitted all 6 reviews - 22E pt 1 and pt 2, 27E pt 1 and pt 2, 28E, 37E, 39E & 36E.		
60004 - Parcel Negotiations	L&G	0%
NO UPDATE: This task has not begun yet.		
60005 - Closing Service Fees	L&G	0%
NO UPDATE: This task has not begun yet.		

Should you have any questions regarding this submittal or would like clarification on any aspect of the project, please do not hesitate to call me at (956) 585-1909.

Sincerely,

Armando J. Sandoval, P.E.
Project Manager L&G Engineering

L &G Consulting Engineers Inc
2100 W. Expressway 83
Mercedes, TX 78570
(956)565-9813 Fax (956)565-9018

INVOICE#: 11325442
INVOICE DATE: 12/31/2015

BILL TO:
Hidalgo County Drainage District#1
902 N. Doolittle
Edinburg, TX 78542

JOB:130105
La Joya Watershed Imp
WA#5
PO #625396

DESCRIPTION	CONTRACT	PREVIOUS APPLICATIONS	CURRENT COMPLETED	TOTAL COMPLETED	% COMPL	BALANCE TO FINISH
Engineering services for the month of December 2015.						
16101 - Task 1-Drainage area maps - existing conditions/propose	6,827.76	6,827.76		6,827.76	100.0	-
16102 - Task 2-Hydologic data/discharge determination	4,426.80	4,426.80		4,426.80	100.0	-
16103 - Task 3-Design Wier of Siphon to circumvent existing HP (	17,894.72	14,171.34		14,171.34	79.2	3,723.38
16104 - Task 4-Culverts Layouts	6,527.64	6,527.64		6,527.64	100.0	-
16105 - Task 5-Derermine Impact - Proposed Drainage Plan	3,301.36	3,301.36		3,301.36	100.0	-
16106 - Task 6-Detemine and Identify the utility adjustments for th	12,529.92	12,529.92		12,529.92	100.0	-
16107 - Task 7-Summary of Quantities	3,901.60	3,901.60		3,901.60	100.0	-
16108 - Task 8-Specifications, General Notes and Standards for i	9,341.40	9,341.40		9,341.40	100.0	-
61001 - Task 9-Preliminary Design Consultations	7,502.80	7,502.80		7,502.80	100.0	-
61002 - Task 10-Field Observations and Verifications	9,628.60	9,628.60		9,628.60	100.0	-
61003 - Task 11-Exchange of Information with Utility Providers	15,005.60	13,505.04	750.28	14,255.32	95.0	750.28
61004 - Task 12-Confirmation of Property Interests	15,005.60	7,502.80	1,500.56	9,003.36	60.0	6,002.24
61005 - Task 13-Develop and execute release of Easements	20,638.97			0.00	0.0	20,638.97
61006 - Task 14-Coordination and Development of Joint Use Agre	10,754.00			0.00	0.0	10,754.00
61007 - Task 15-Utility meetings throughout project development	8,503.20	3,401.28	850.32	4,251.60	50.0	4,251.60
60000 - ROW Acquisition Administration	35,700.00	33,807.90		33,807.90	94.7	1,892.10
60001 - Title Services	3,600.00	1,800.00		1,800.00	50.0	1,800.00
60002 - Appraisal Services	3,000.00	2,000.00	1,000.00	3,000.00	100.0	-
60030-Appraisal Services / SUB	13,500.00	9,000.00	4,500.00	13,500.00	100.0	-
60003 - Appraisal Review	2,100.00		2,100.00	2,100.00	100.0	-
60040 - Appraisal Review / SUB	2,700.00		2,700.00	2,700.00	100.0	-
60004 - Parcel Negotiations	21,000.00			0.00	0.0	21,000.00
60005 - Closing Service Fees	1,200.00			0.00	0.0	1,200.00
TOTALS:	234,589.97	149,176.24	13,401.16	162,577.40	69.3	72,012.57

ORIGINAL CONTRACT SUM	$	234,589.97
CHANGE BY CHANGE ORDER	$	0.00
CONTRACT SUM TO DATE	$	234,589.97
TOTAL COMPLETED TO DATE	$	162,577.40
LESS PREVIOUS INVOICES	$	149,176.24
CURRENT PAYMENT DUE	$	13,401.16

PROJECT MANAGER'S SIGNATURE

L&G Consulting Engineers, Inc
2100 W. Expressway 83
Mercedes, Texas 78570
(956) 565-9813

Project Workhour Report
La Joya Watershed Improvements WA#5
Reference:Inv#11325442
Date: 12/31/15
P.O.#626943

	Hrs		Rate	Total
Project Engineer	0.00	X	121.92	$0.00
Design Engineer	0.00	X	112.55	$0.00
ROW Administrator	26.00	X	106.29	$2,763.54
Environmental Scientist/Specialist	0.00	X	78.16	$0.00
Engineer Tech	0.00	X	75.03	$0.00
CADD Operator/GIS Analyst	0.00	X	65.65	$0.00
Admin/Clerical	6.00	X	56.27	$337.62

Grand Total of Hours	$	3,101.16
(Difference due to rounding hours)	$	-

Invoice Summary

Man Hours	$	3,101.16
Right-of-Way Acquisition	$	3,100.00
Sub Contract	$	7,200.00
(See Attached Sub Invoice for Man Hour Breakdown)		
(Difference due to rounding)	$	-
Total Per Invoice Submitted	**$**	**13,401.16**


L & G Engineering Electronic Data & CAD Disclaimer
By opening the attached files, the user agrees that data provided by this electronic file is for information purposes only and should be used at one's own risk. L & G Engineering, makes no representations, written or verbal, that the information contained in these CAD files are complete or accurate or should be relied upon for construction except to the extent that they are labeled, dimensioned or otherwise noted and reflect exactly what is on the approved and sealed preliminary or final drawings. Any conflict between the information reflected on the sealed plan sheets and that provided via this electronic data file shall be resolved in favor of the sealed plan sheets. Any reproduction of these sheets without the appropriate preliminary stamp, or professional engineering seal and signature, and the express written approval of L & G Engineering, is a violation of the Professional Engineering Practice Act.
HCDD#1
12/30/2015
L & G ENGINEERING
La Joya Watershed Improvement Project (WA#5)
FC: 60000, 61003, 61004, 61007
L & G Engineering
Highway / Civil
Structural / Bridge
Environmental
Construction Material Testing
900 S. Stewart Rd. Ste 5
Mission, TX. 78572
Phone : (956) 585-1909
Fax : (956) 585-1927