

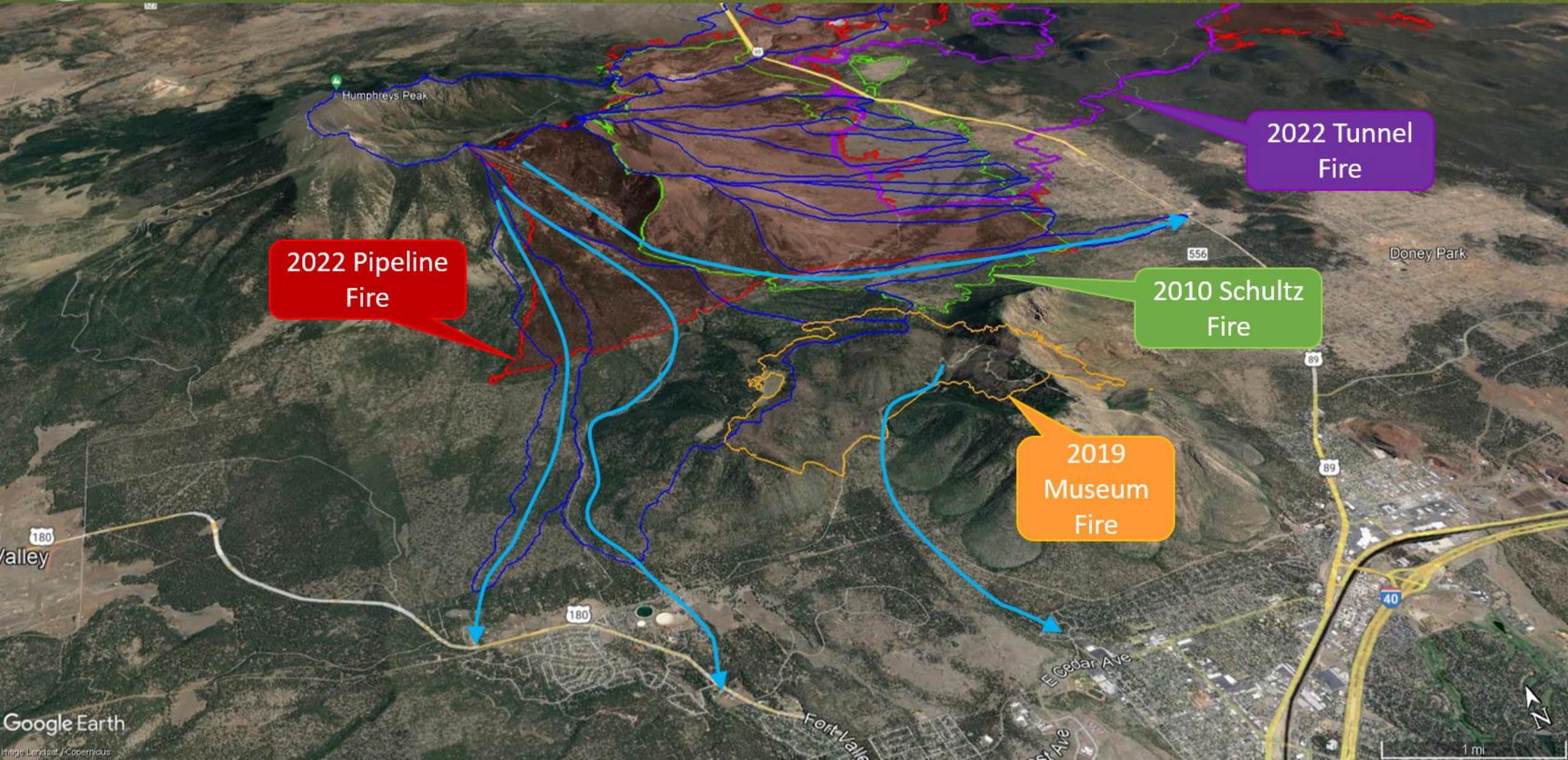
Post-Wildfire Flooding Update

October 17, 2022





Flood Risk Assessment Overview



2022 Pipeline Fire

2022 Tunnel Fire

2010 Schultz Fire

2019 Museum Fire

Pipeline West Flood Area



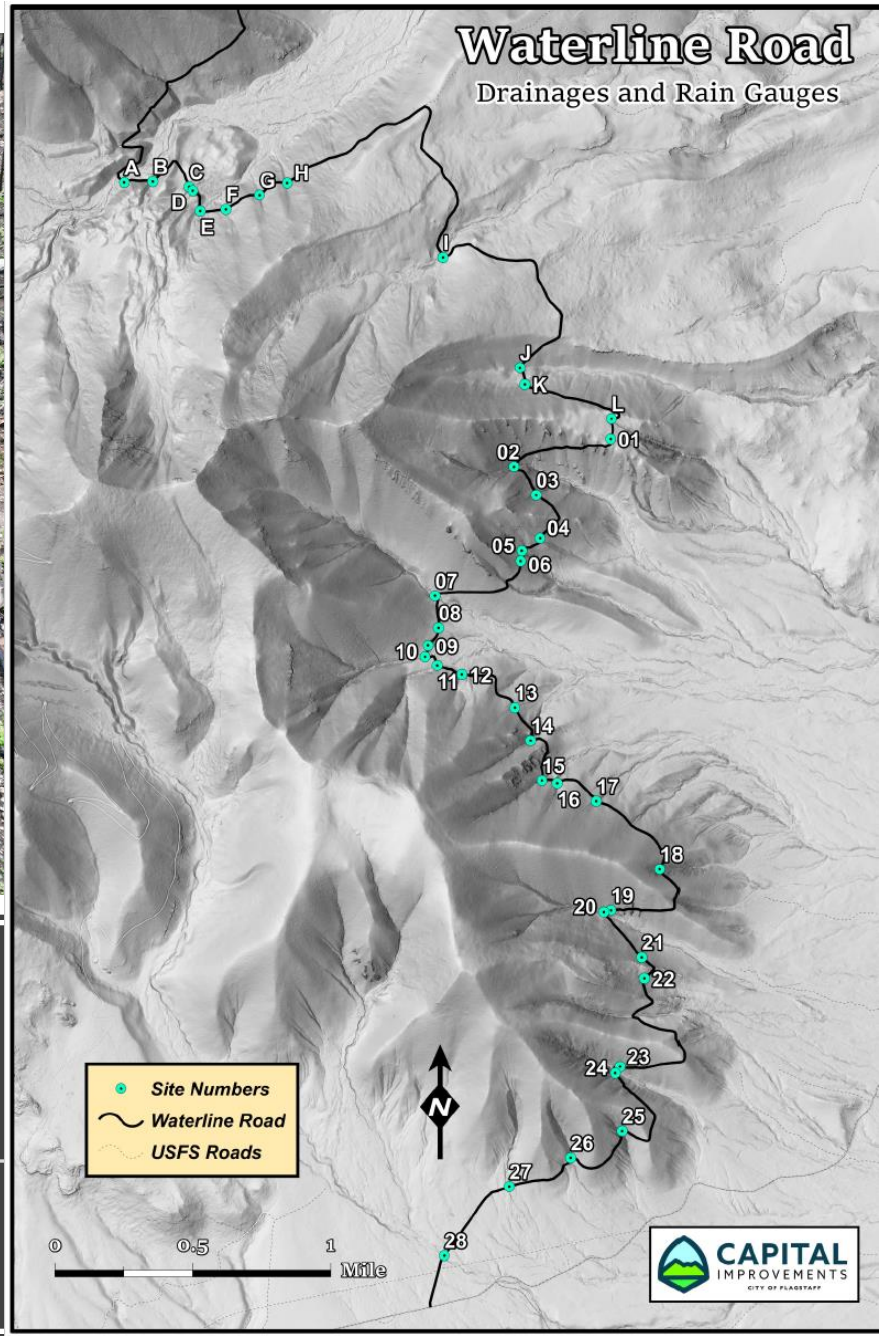


Rainfall intensity, 2022

Date	Area	Max 15-Min Depth Measured (Inches)	Max @	Max Recurrence Interval (Years)
25-Jun	East Pipeline Fire	0.51	Thames - Brandis	1
26-Jun	East Pipeline Fire	0.71	Thames / Peaceful Way	2-5
29-Jun	East Pipeline Fire	0.51	Museum Fire South	1
14-Jul	East and West Pipeline Fire	0.71	Government Tank	2-5
15-Jul	East Pipeline Fire	0.87	Lenox-Wupatki Trails	5
23-Jul	East Pipeline Fire	0.98	Government Tank	5-10
24-Jul	East and West Pipeline Fire	0.12	Schultz Creek near Highway 180	1
26-Jul	East Pipeline Fire	0.47	Thames - Brandis	1
27-Jul	West Pipeline Fire	<0.50	Upper Schultz Creek	1
28-Jul	East Pipeline Fire	<0.40	Lenox-Wupatki Trails	1
29-Jul	West Pipeline Fire	0.71	Upper Schultz Creek	2-5
30-Jul	East Pipeline Fire	0.63	Schultz Basin 7 Upper Campbell	2
31-Jul	East Pipeline Fire	0.75	Thames / Peaceful Way	2-5
7-Aug	East & West Pipeline Fire	0.39	Schultz Creek Headwaters	1
11-Aug	East Pipeline Fire	0.39	Lenox-Wupatki Trails	1
13-Aug	East Pipeline Fire	0.79	Thames-Brandis	5
14-Aug	East Pipeline Fire	0.73	Government Tank	2-5
17-Aug	East Pipeline Fire	0.8	Thames-Brandis	5
24-Aug	East Pipeline Fire	0.4	Thames-Brandis	1



Inner Basin Pipeline





Long-term Projects

Immediate mitigation projects

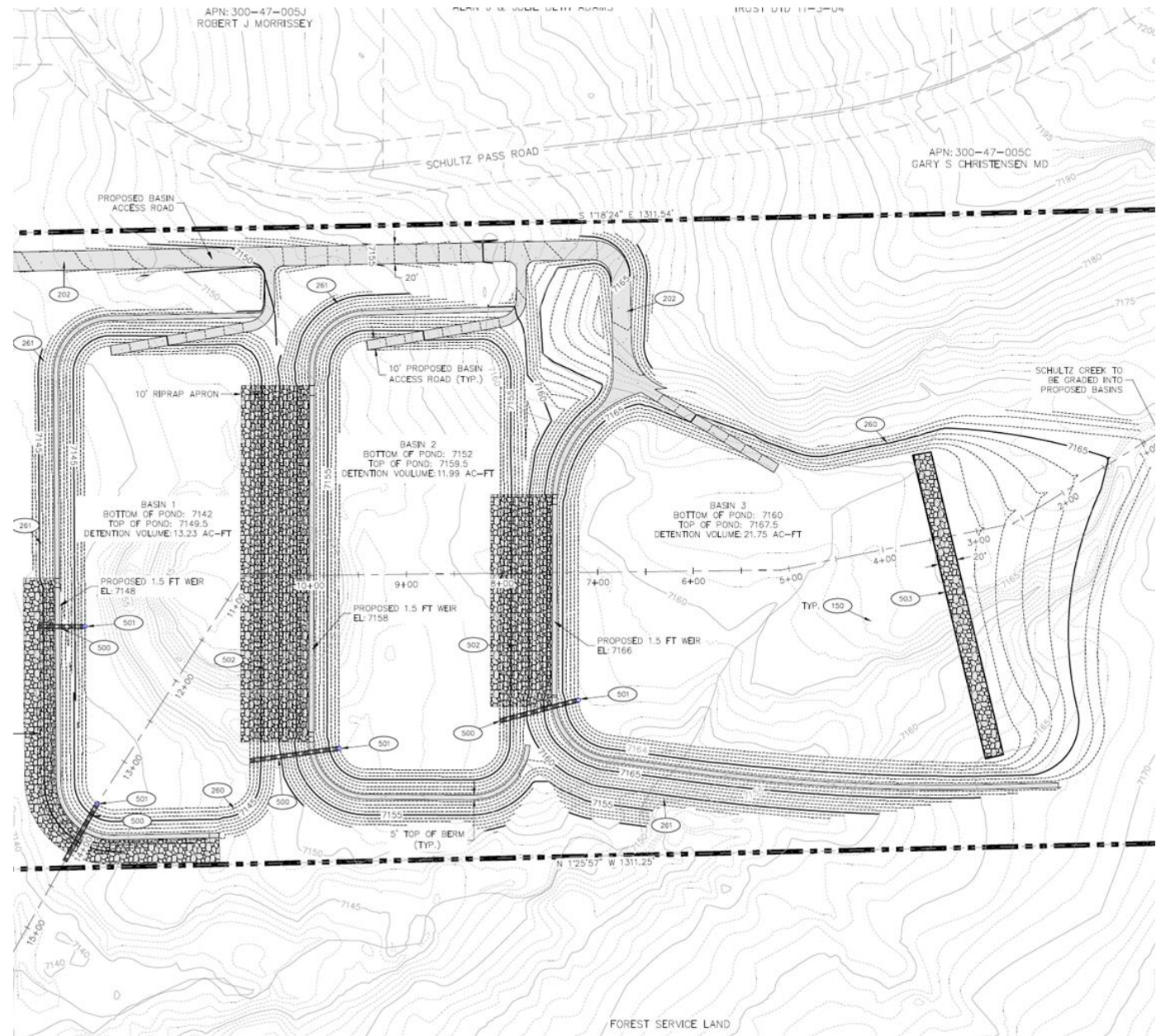
- 20-acre Schultz Creek Sediment & Detention Basins
- Schultz Creek Downstream Channel Stabilization

Long-term mitigations

- Box culvert improvements at Hwy 180
- Inner basin Pipeline repairs and mitigations

Schultz Creek Detention Basins

- 20-acre City owned Parcel
- Incorporating trail access, trailhead parking, historic interpretation, and landscaping.





Schultz Creek Detention Basins



- Complete by 10/26
- Functionally complete with work continuing on stabilization, concrete headwalls and overflow weir structures.



180 Improvements

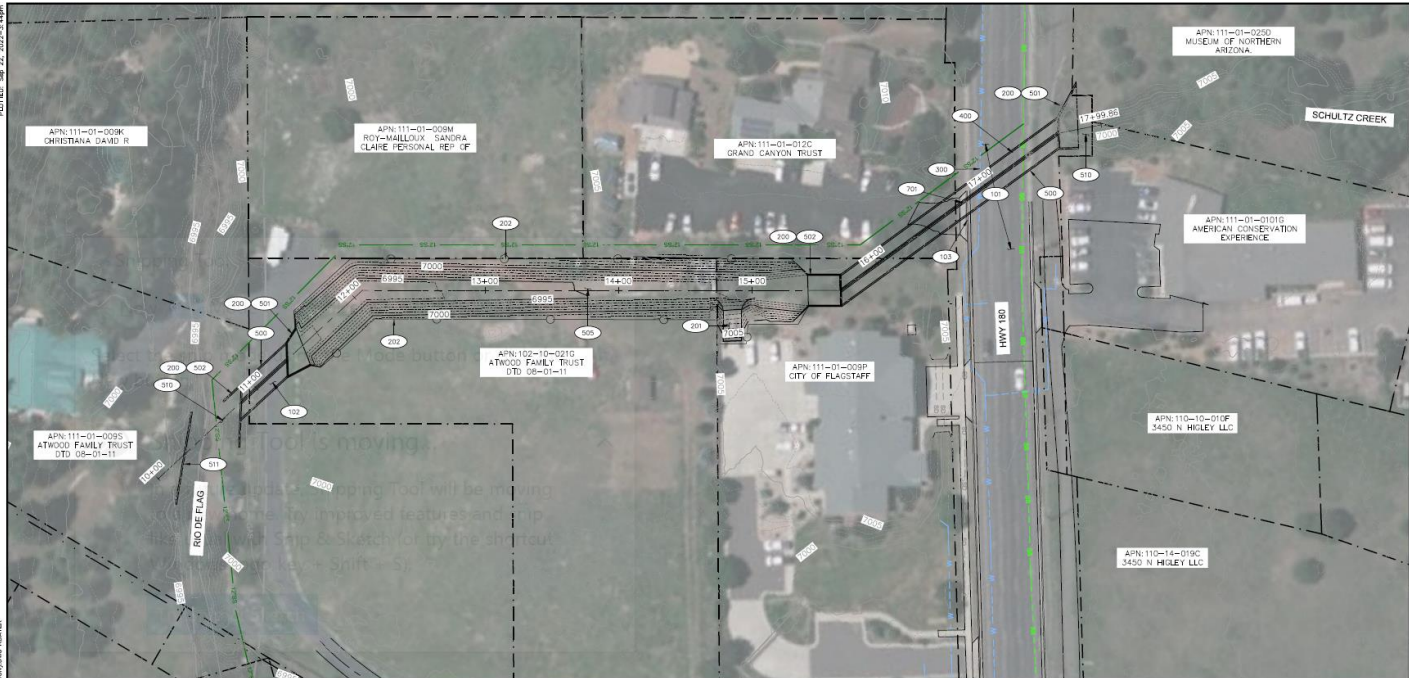
- The City has contracted with SWI to provide options and conceptual designs for an improvement of the culvert at Hwy 180.
- Considerable hurdles including multiple jurisdictions, private property owners, funding, and utility conflicts.
- After several meetings the options have been narrowed to two viable concepts.
- Both concepts allow for ~950 CFS which would fully contain the flow within channel from a 100 year event.



180 Improvements – Option 1

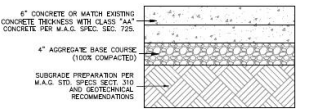
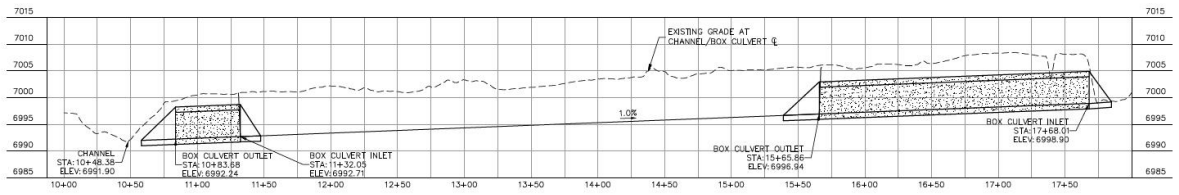


PLATE: P-180201-180L-180R-180C-180D-180E-180F-180G-180H-180I-180J-180K-180L-180M-180N-180O-180P-180Q-180R-180S-180T-180U-180V-180W-180X-180Y-180Z
 DATE: 11/20/2023
 DRAWN BY: J. HARRIS
 CHECKED BY: J. HARRIS
 PROJECT: 180 IMPROVEMENTS - OPTION 1
 SHEET: 180C-180D-180E-180F-180G-180H-180I-180J-180K-180L-180M-180N-180O-180P-180Q-180R-180S-180T-180U-180V-180W-180X-180Y-180Z

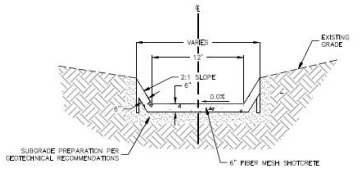


CITY IMPROVEMENT KEYNOTES

100	5,100 CY	EARTHWORK (CUT)
101	500 SY	DEMO AND REPLACE HWY 180 ROAD SECTION
102	350 SY	DEMO & REPLACE LOCAL ROAD SECTION
103	1 LS	DEMO & DISPOSE OF EXISTING BOX CULVERT AND CAP EXISTING STORM DRAIN PIPE
200	280 LF	INSTALL GUARD RAILING
201	500 SF	CONSTRUCT CONCRETE STRUCTURAL SECTION PER DETAIL '1' FOR MAINTENANCE RAMP
202	850 LF	INSTALL PROTECTION FENCING AND ACCESS GATE
300	1 LS	VERTICALLY REALIGN 20" DUCTILE IRON WATER MAIN
400	1 LS	REALIGN EXISTING SEWER MAIN
500	246 LF	INSTALL DOUBLE 8'X5' PRECAST BOX CULVERT
600	2 EA	INSTALL INLET HEADWALL
700	2 EA	INSTALL OUTLET HEADWALL
800	18,100 SF	CONSTRUCT SHOTCRETE CHANNEL PER DETAIL '2'
900	500 SY	INSTALL ROCK RIP-RAP PROTECTION
1000	70 LF	CONSTRUCT CHANNEL BANK PROTECTION WALL
1100	1 LS	DRY UTILITY RELOCATIONS
1200	41,100 SF	PROPERTY ACQUISITIONS FOR EASEMENTS



CONCRETE PAVEMENT SECTION
NO SCALE



SHOTCRETE CHANNEL DETAIL
NO SCALE



PRELIMINARY
NOT FOR CONSTRUCTION,
BIDDING OR RECORDING

OPTION 1
PLAN & PROFILE
 HIGHWAY 180 BOX CULVERT
 FLAGSTAFF, ARIZONA
 JOB NO. 180
 DATE: SEP 22
 SCALE: AS SHOWN
 DRAWN BY: J. HARRIS
 CHECKED BY: J. HARRIS
 715 North Pinal
 Sedona, AZ 86336
 920-862-2000 fax
 www.swhi.com
SWI
 Shephard Westzitter, Inc.
 ARIZONA
 REGISTERED PROFESSIONAL ENGINEER
 NO. 10000
 DATE: 11/20/2023
 SHEET NO. 1 OF 3
 DRAWING NO. C01


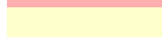
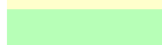


180 project – Matrix



Decision Matrix					
ID	Construction Cost	Management Complexity	Constructibility	City Limits	Property Acquisition
Option 1	\$4.99 Million	A portion of project within City owned parcel. Coordination with multiple other property owners.	More complex closure of ADOT Hwy 180 for removal of existing box culvert and construction of new skewed box culvert	No	41,100 sf across 4 properties
Option 2					
Option 3	\$5.34 Million	Coordination with only 2 property owners.	Simplified closure of ADOT Hwy 180 for construction of new box culvert - existing infrastructure can remain in place and used as an overflow. Option provides no adverse impact to downstream properties.	Yes	47,600 sf across 2 properties

Legend

-  No / Worst
-  Yes / Best
-  Yes / Best



Season wrap-up

Short-term Mitigation

- End of 2022 monsoon clean-up
 - Resident access
 - Pallet requests for sandbags (928) 213-2102
 - Concrete barrier removal
- Winter Preparations



Questions?

