

Post-Wildfire Flooding Update

October 11, 2022





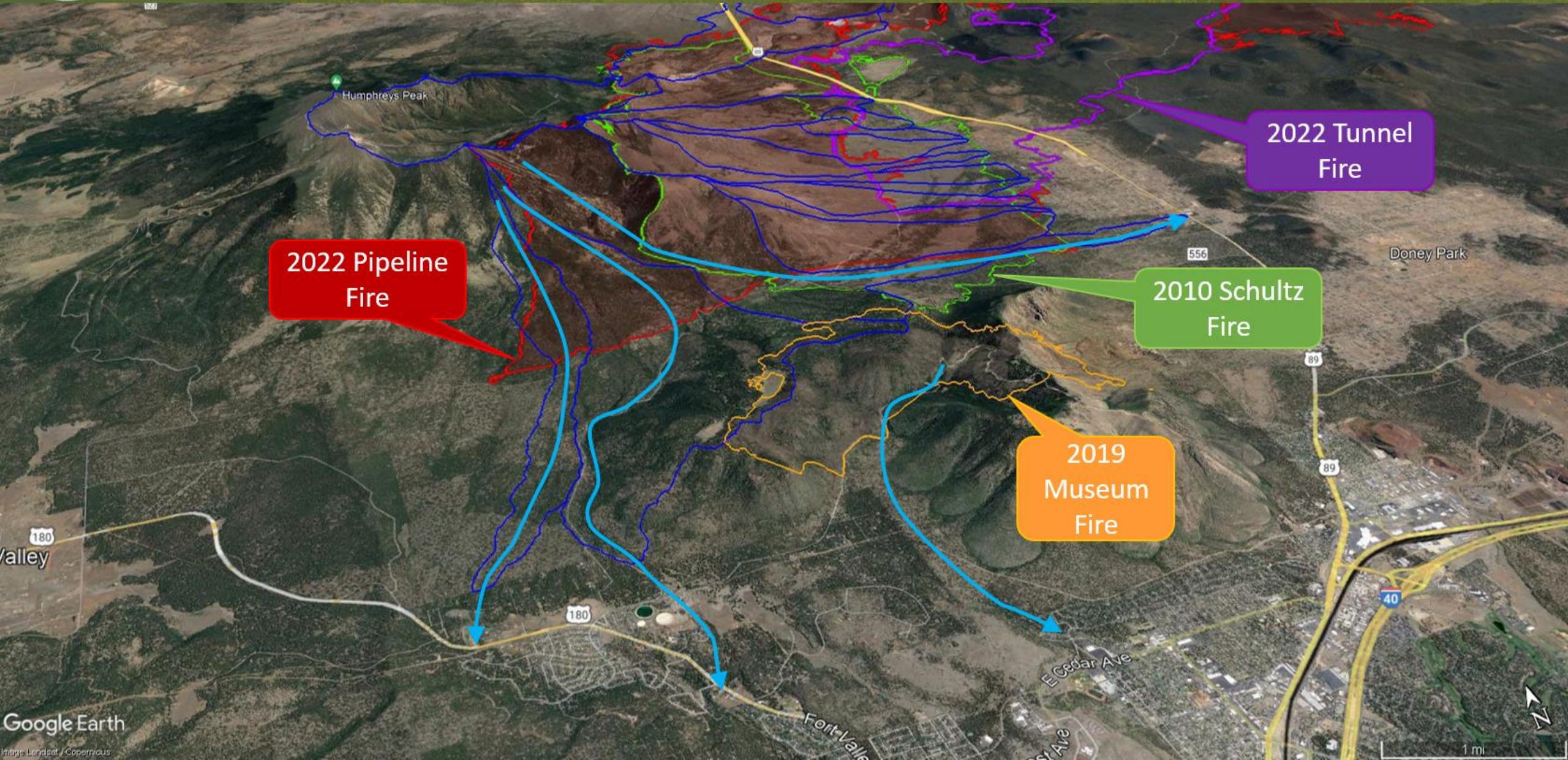
Agenda



- Museum Flood Area updates
 - 2022 monsoon season overview
 - Infrastructure projects
 - Phase 2 Feasibility Study
 - Prop 441
- Pipeline West Area updates
 - 2022 monsoon season overview
 - Infrastructure projects
 - Financial Update
- SBA Loans & communications



Flood Risk Assessment Overview



2022 Pipeline Fire

2022 Tunnel Fire

2010 Schultz Fire

2019 Museum Fire

180 Valley

Doney Park

Google Earth

Image Landsat / Copernicus

1 mi

Museum Flood Area





2022 Monsoon Season



- Risk of post-wildfire flooding in the Museum Flood Area remains high.
- Mitigation measures installed to lessen impacts of flooding – do not eliminate threat.
- Little heavy rain fell on Museum Fire burn scar in 2022, 1-year events at the 15 minute interval

Largest Events on Museum Fire Burn Scars for 2021			
Rainfall Event Date	Rainfall Totals (Inches)		
	Maximum 15 Minute	Maximum 60 Minute	Daily Total
7.13.2021	1.02	1.81	2.17
7.14.2021	0.67	1.15	1.22
7.16.2021	0.63	1.38	1.42
7.21.2021	0.60	1.26	1.26
8.17.2021	1.14	3.07	3.35

Largest Events on Museum Fire Burn Scars for 2022			
Rainfall Event Date	Rainfall Totals (Inches)		
	Maximum 15 Minute	Maximum 60 Minute	Daily Total
7.15.2022	0.67	1.10	1.14
7.27.2022	0.55	1.22	1.42
7.29.2022	0.83	1.06	1.46



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
10-Sep	East Pipeline Fire	0.67	Thames-Brandis	2



Close of monsoon season

Short-term Mitigation

- End of 2022 monsoon clean-up
 - Resident access
 - Pallet requests for sandbags
 - Concrete barrier removal
 - Linda Vista Barrier removal
- Winter Preparation





On-forest Alluvial Fans

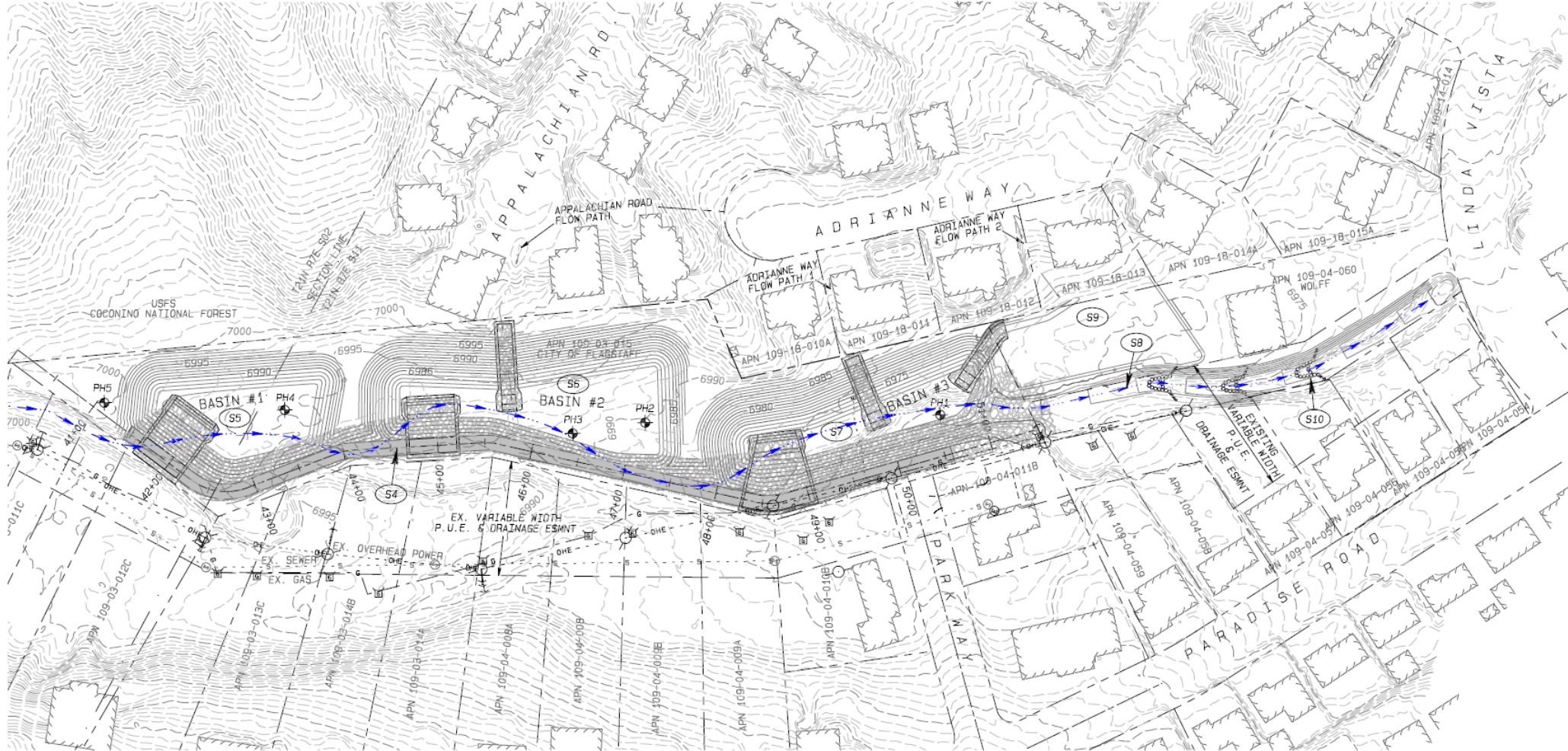
- Alluvial fans completed and functioning well;
 - West Tributary
 - Mount Elden Estates
 - End of Paradise
- New work on "north" fans
 - Two fans
 - Completed by November



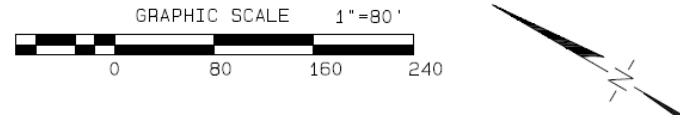
8/7/22, West Tributary



Parkway Basins



OVERVIEW MAP
SPRUCE WASH - PARK SITE SEDIMENT BASINS





Parkway Basins

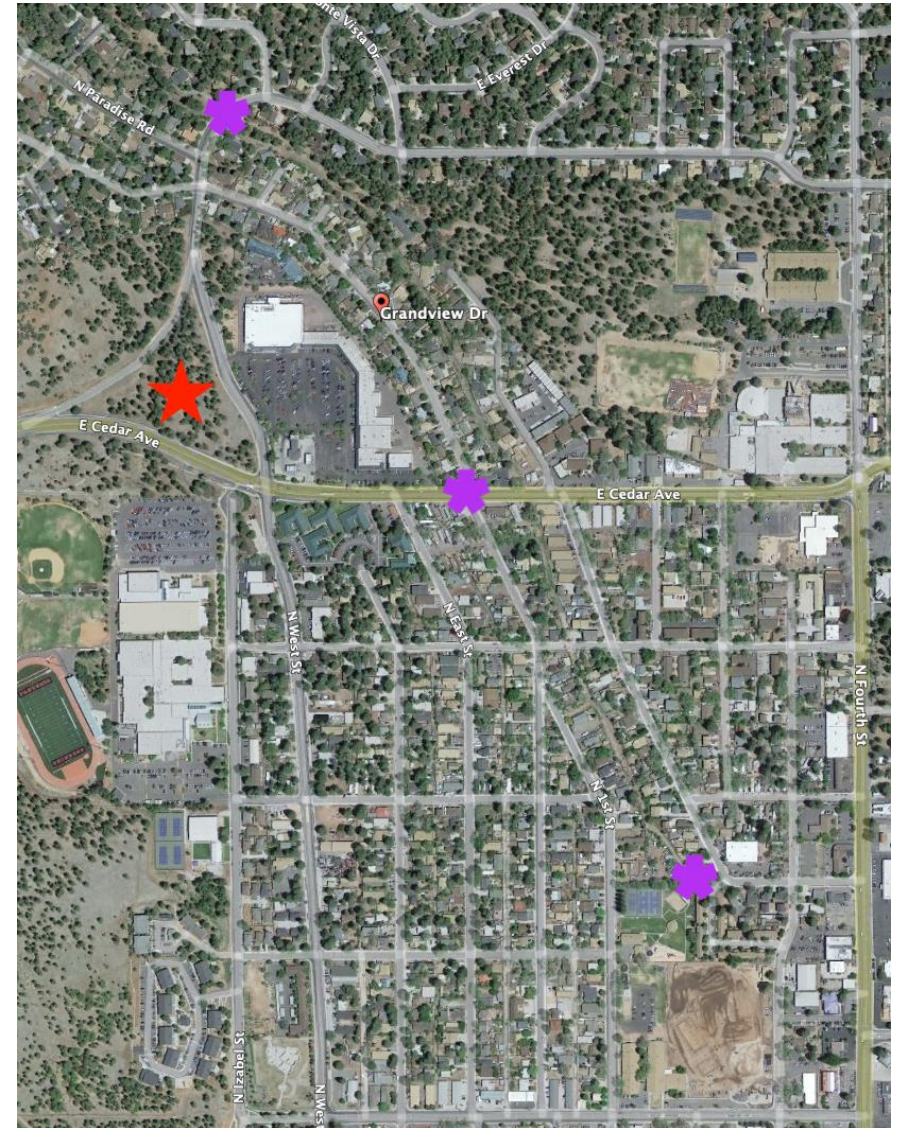


- Utility relocates scheduled for this fall.
- Tree removal would occur this fall.
- Construction in spring.
- Project will reduce sediment into Sunnyside and Grandview



Phase 2 Feasibility Study

- Peak Engineering
 - Proposed projects for reducing flood impacts:
 - Grandview Drive Improvements
 - West/Cedar Basin Development: "The Wedge"
 - Linda Vista & Cedar Avenue Crossing Upgrades
 - Channel Improvements
 - Arroyo Seco Inlet Modifications





Phase 2 Feasibility Study

- Peak Engineering & JE Fuller
 - Hydraulic modeling
 - Show benefit of completed projects: Killip Regional Detention Basins, Dortha Crossing and Dortha Channel
 - Show benefit of proposed projects
 - Identify sequencing of proposed projects
 - Inform policy for assessing impacts (future Council discussion)

Strong alignment with the bond education campaign and providing good detail to inform the community and move the best projects to final design and construction.



Prop 441

- Prop 441 would fund a series of projects to increase stormwater capacity in the Spruce Wash, including:
 - Channel improvements from Paradise to the Killip Retention Basins
 - Continued improvements towards Route 66
- Total cost is \$26,000,000

Flagstaffbonds2022.com

Propositions 441 and 442

are ballot measures that would authorize issuing general obligation bonds to fund infrastructure improvement projects and create rental and homeownership opportunities.



**PROJECTED TO BE FUNDED
WITHIN CURRENT TAX RATE.**



PROP 441

WILDFIRE, FLOOD, AND WASTEWATER INFRASTRUCTURE BOND

Will invest \$57 million dollars in infrastructure improvements to respond to wildfires, help lessen the impacts of flooding and capacity issues at the wastewater treatment facilities in Flagstaff.

PROP 442

RENTAL AND HOMEOWNERSHIP OPPORTUNITIES BOND

In 2020, the Flagstaff City Council declared a housing emergency in response to rising costs and limited supply. If approved, \$20 million dollars will be dedicated to creating rental and homeownership opportunities for Flagstaff residents.



Learn more, scan the QR code or visit flagstaffbonds2022.com. Props 441 & 442 were recommended for the November 8, 2022 election by the Flagstaff Citizen Bond Committee.



Pipeline West Flood Area



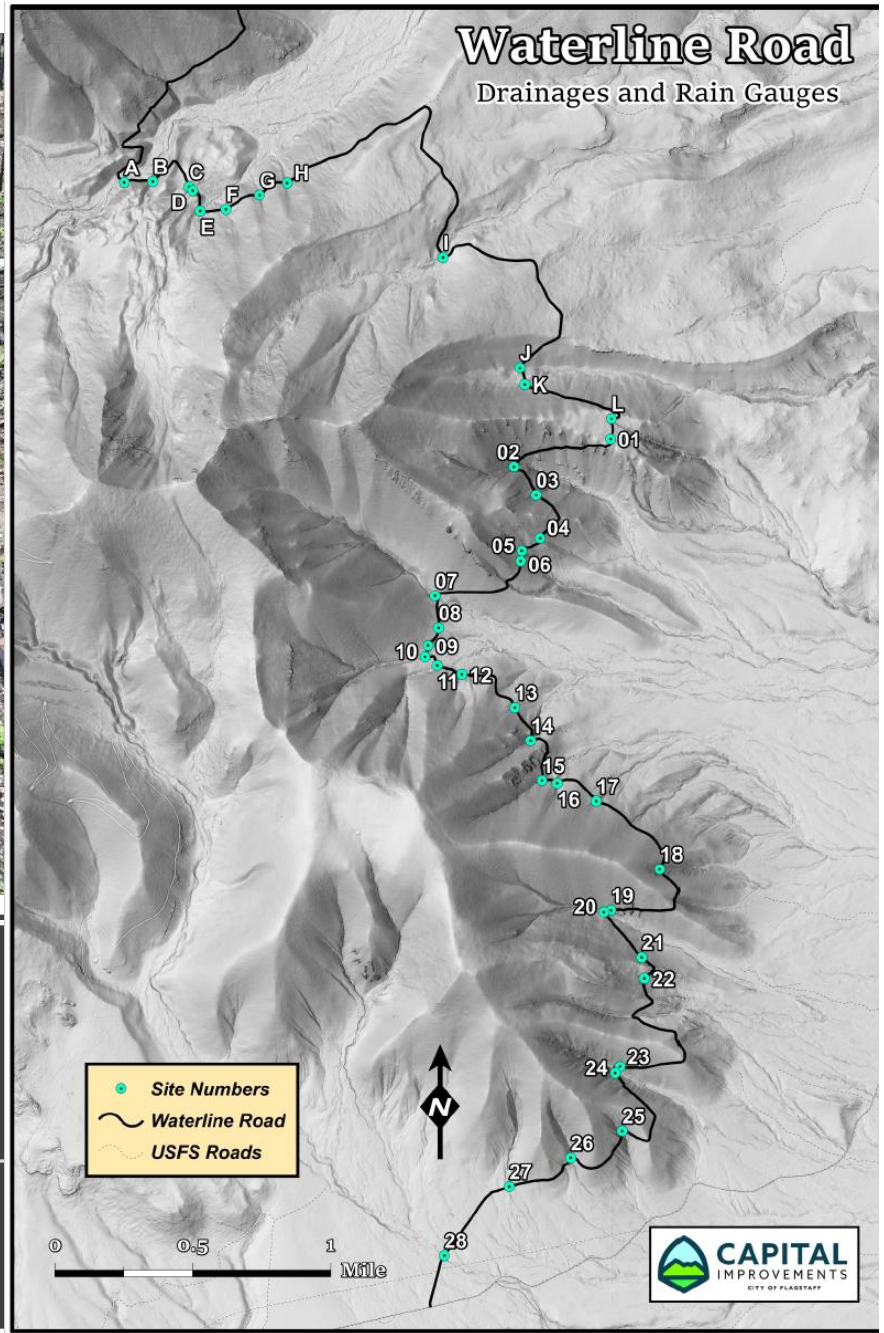


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Inner Basin Pipeline





Long-term Projects

Immediate mitigation projects

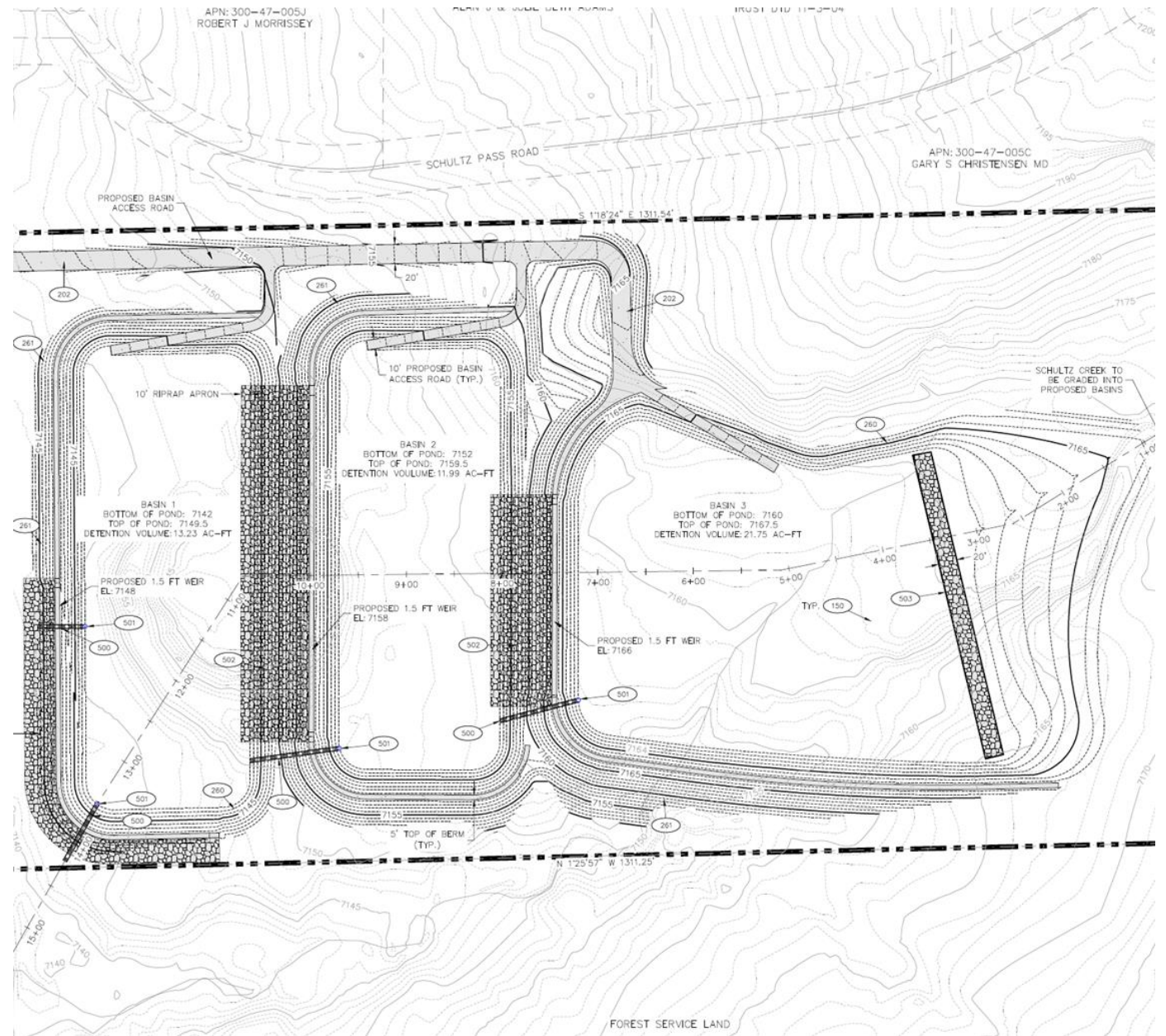
- 20-acre Schultz Creek Sediment & Detention Basins
- Schultz Creek Downstream Channel Stabilization

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, overflow weir structures, and



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.


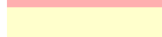
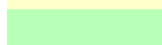


180 project – Decision Matrix



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





Pipeline West Financial Update

- 2022 Pre-season mitigation (Pipeline & Museum): \$471,040
- Flood Response cost estimates: \$351,000
- Private property damage estimate: \$95,500
- Water control facilities estimate: \$15.2M
 - Inner Basin Water Line
 - Rio Channel at Stevanna Way
 - Highway 180 Culvert
 - Frances Short Pond
- NRCS EWP 25% Grant Match: \$768,041
 - Funded by Dept of Forestry and Fire Management
- Schultz Creek Basin Design: \$68,000



Small Business Administration Loans



- For flooding that occurred July 23 – August 28, 2022
- Low interest loans available for homeowners, renters, non-profits and businesses
- 11/18 deadline
- Apply online at disasterloanassistance.sba.gov/ela

SBA Loans Available for Pipeline Fire Flood Damage



Fall 2022

Low-interest federal disaster loans through the U.S. Small Business Administration (SBA) are available to **homeowners, renters, non-profits and businesses** affected by the post-wildfire flooding that occurred between July 23 and August 28, 2022.

- Homeowners may borrow **up to \$200,000** to repair or replace their primary residence.
- Homeowners and renters may borrow **up to \$40,000** to replace personal property.
- Businesses may borrow **up to \$2 million** for any combination of property damage or economic injury.

Apply online at disasterloanassistance.sba.gov/ela. For more information or assistance, call **(800) 659-2955** or email disastercustomerservice@sba.gov. For people who are deaf, hard of hearing, or have a speech disability, please dial **7-1-1** to access telecommunications relay services.

The deadline to apply for a physical damage loan is **November 18, 2022**.



Museum Flood Area Communications

How to stay connected



For more information and to
sign up to receive updates, visit

MuseumFloodProjects.com

Questions?

info@museumfloodprojects.com

928-213-2102



Pipeline West Communications

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For more information and to sign up to receive updates, visit

[Flagstaff.az.gov/PipelineWest](https://www.flagstaff.az.gov/PipelineWest)

Questions?

info@pipelinewestflooding.com

[928-213-2102](tel:928-213-2102)

SCAN ME



Questions?

