

Spruce Wash Post-Wildfire Flooding Update

February 2, 2023



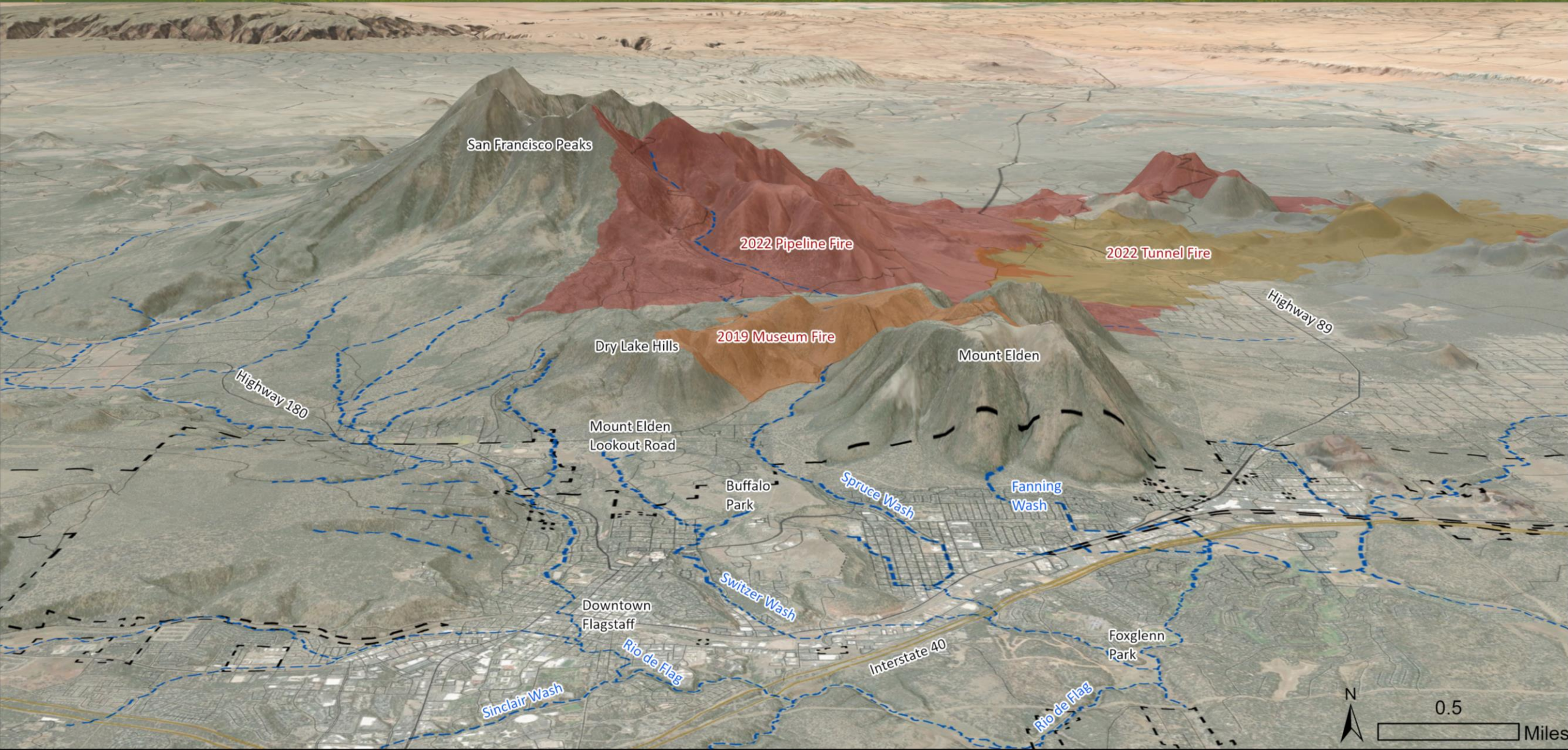


Objectives for tonight

- Museum Fire map and brief history
- Spruce Wash Watershed progress update
- November Prop 441 passage
- Prop 441 projects
- Discussion and questions



Overall Map





Fire/Flood History



- 2019 Museum Fire in Dry Lake Hills
 - 2021 Spruce Wash Flooding (Museum Fire)
 - Post wildfire flooding mitigation development is ongoing and some of the best work in the nation is occurring as quickly as possible.



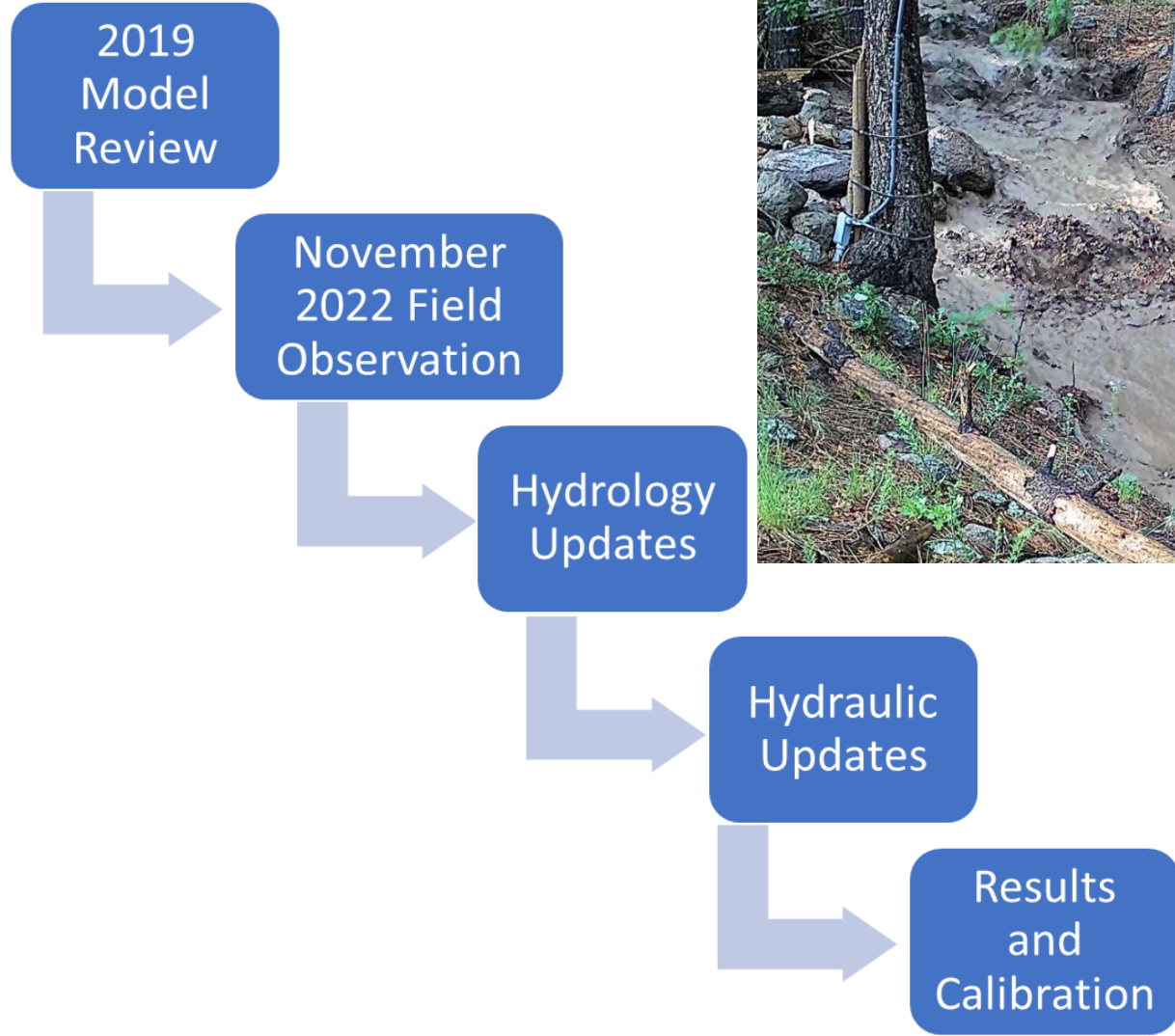
Spruce Wash Hydrology Update



2019



2022



MuseumPineSciCh-597A5/2022_10-10-00



Spruce Wash Hydrology Update

Physical Characteristics – Field Observations

Canopy Cover

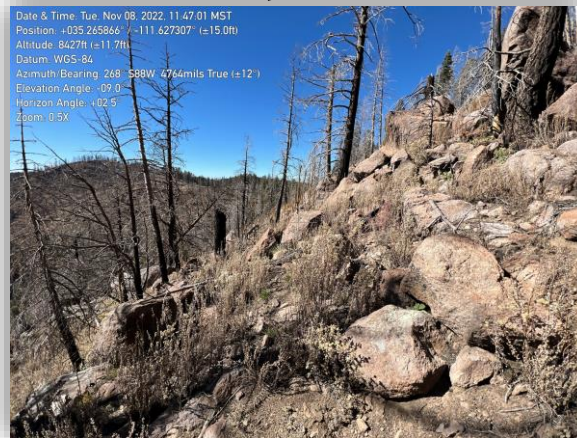
Topsoil

Litter Cover

Ash Presence

Vegetation

Rock





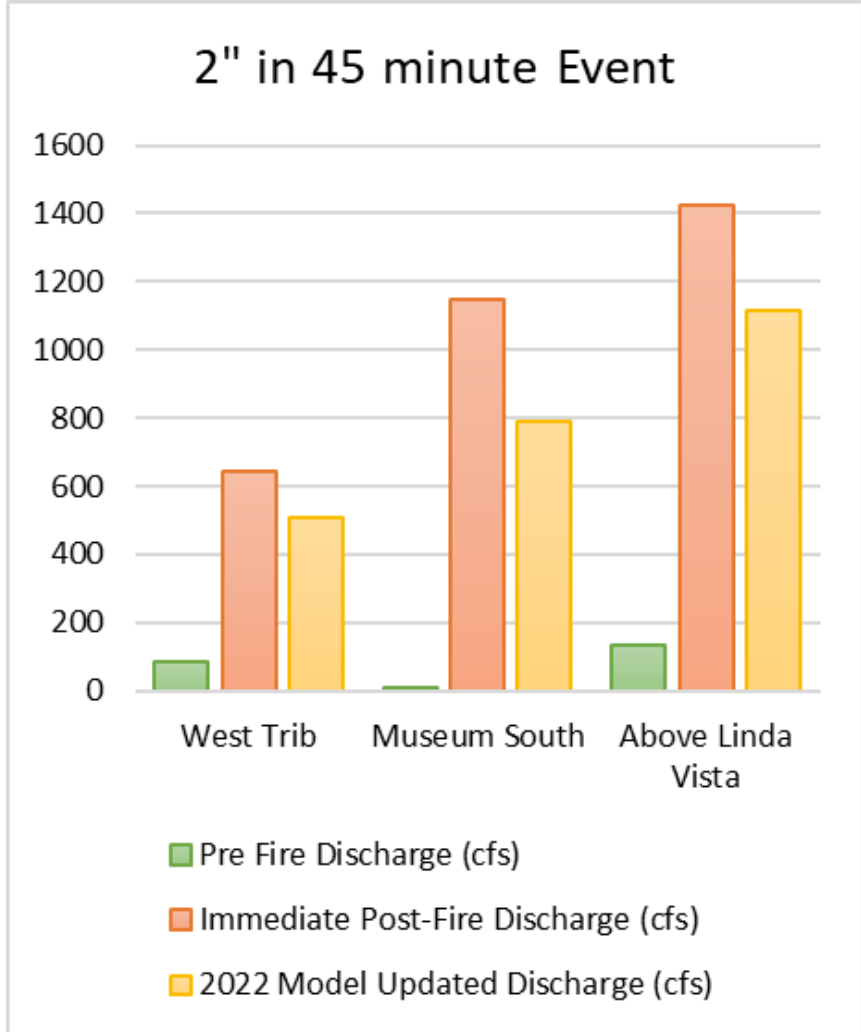
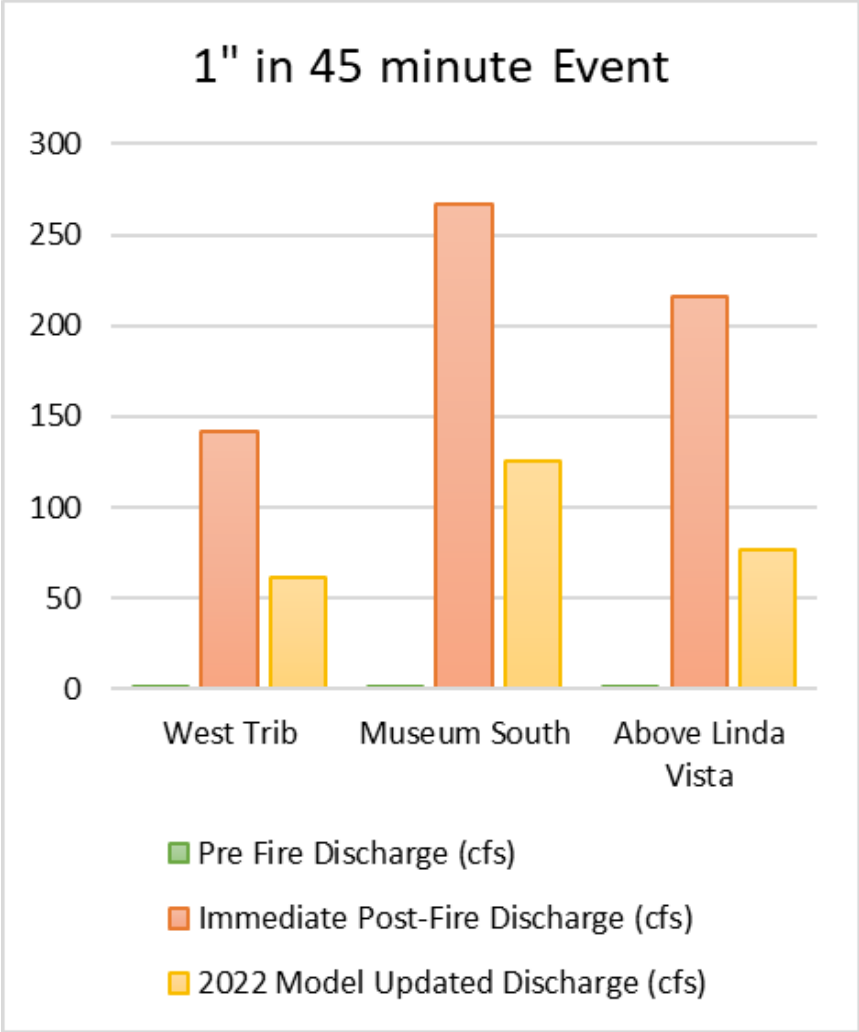
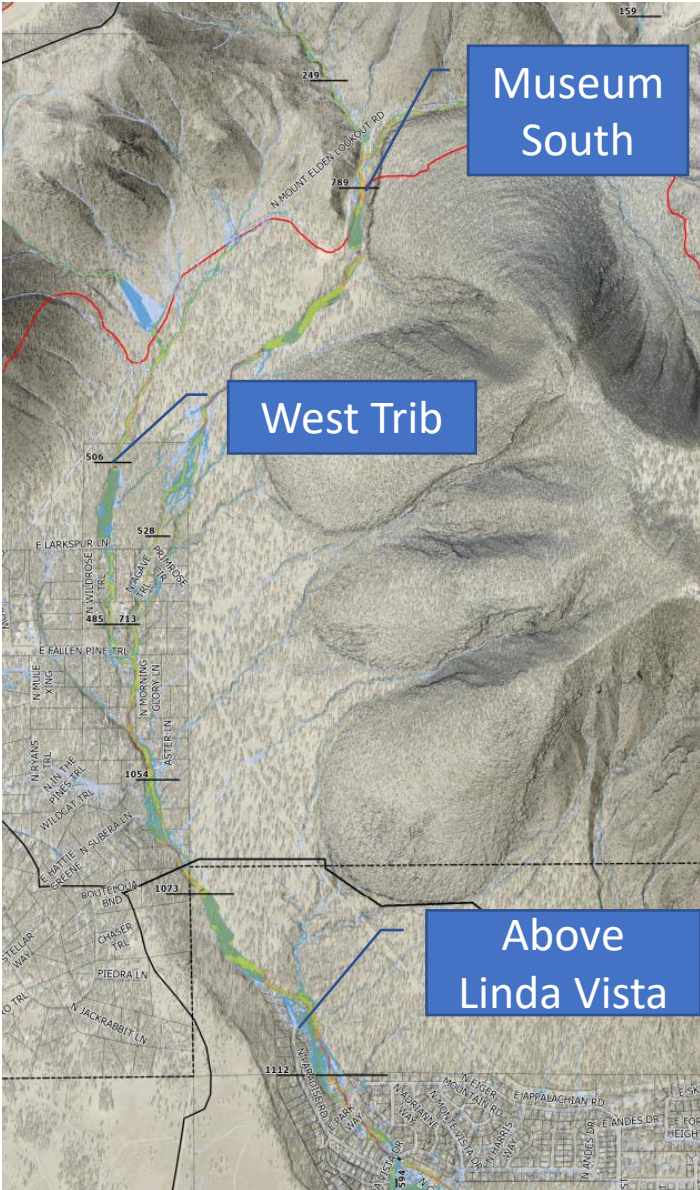
Alluvial Fan and Channel Stabilization



Natural Channel Design, Inc.
The goal of on forest restoration is reduction of sediment source and transport through restoration of channels and alluvial fans

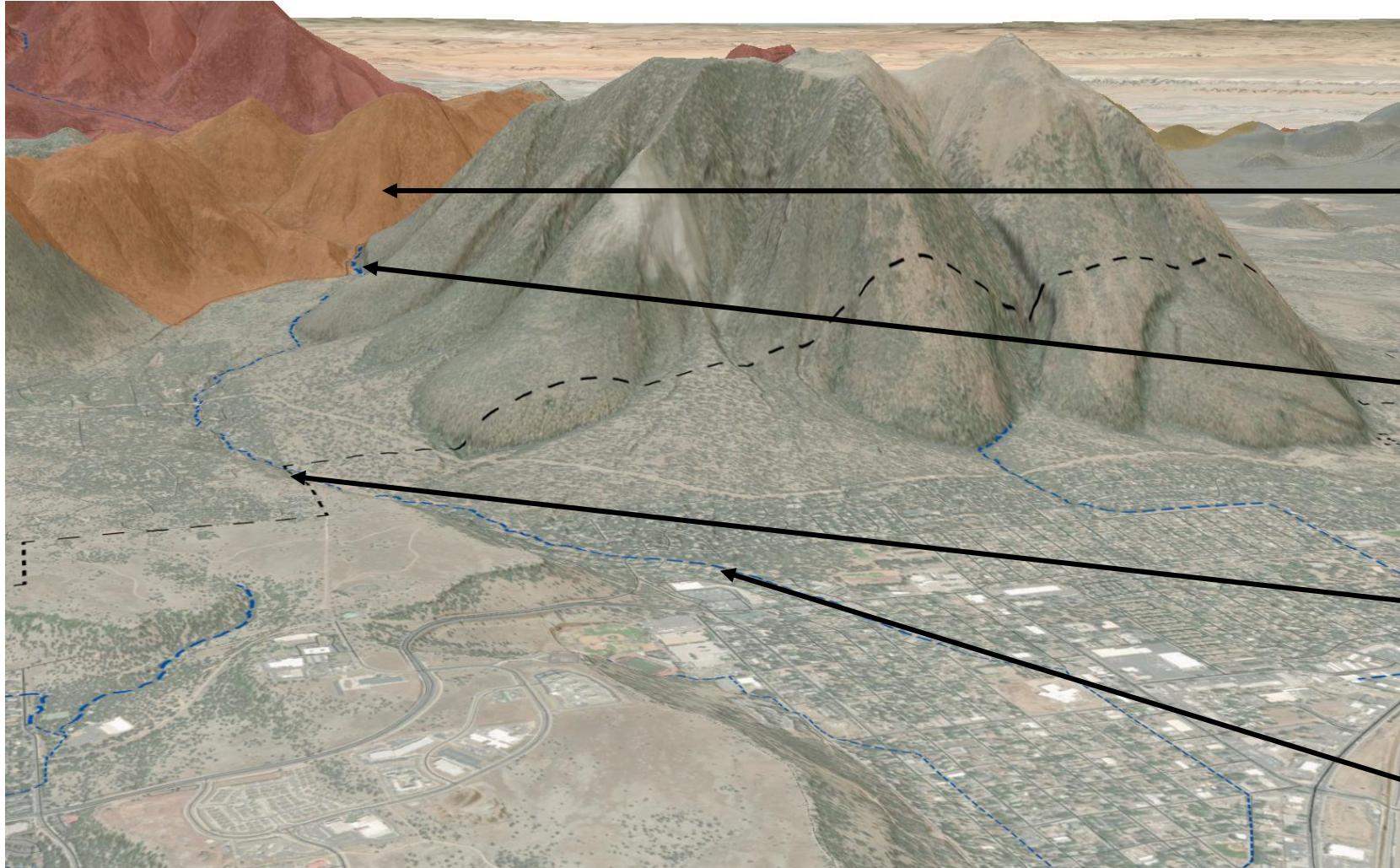


Modeling Summary





Spruce Wash – Holistic Understanding



Post- Fire Conditions

Increased Runoff



Channel Scour



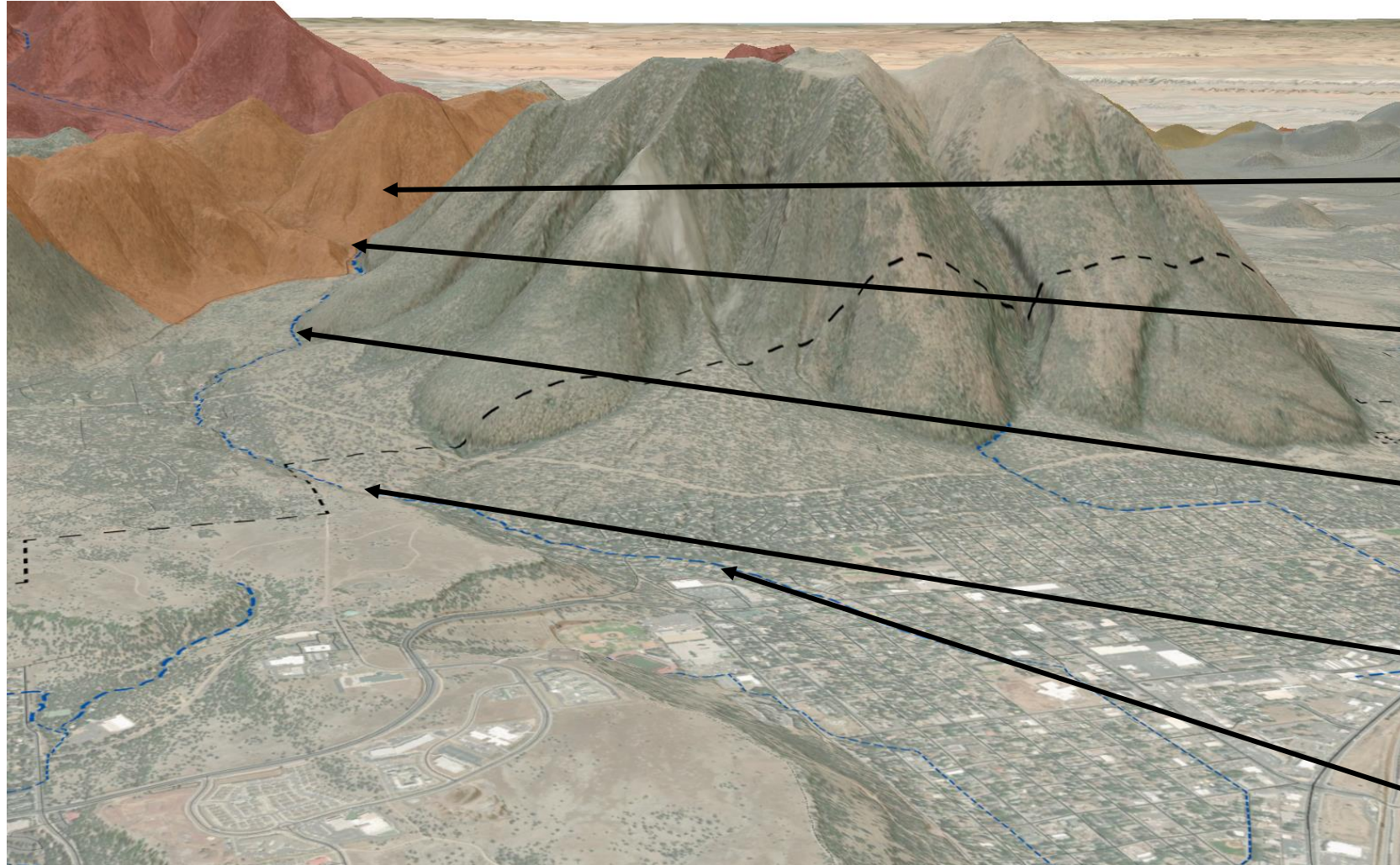
Sediment and Debris Transport



Flooding and Deposition



Spruce Wash – Holistic Understanding



Ideal Future Conditions

Recovering Watershed



Reduced Channel Scour



Channel Stabilization



Debris Deposition on Alluvial Fans



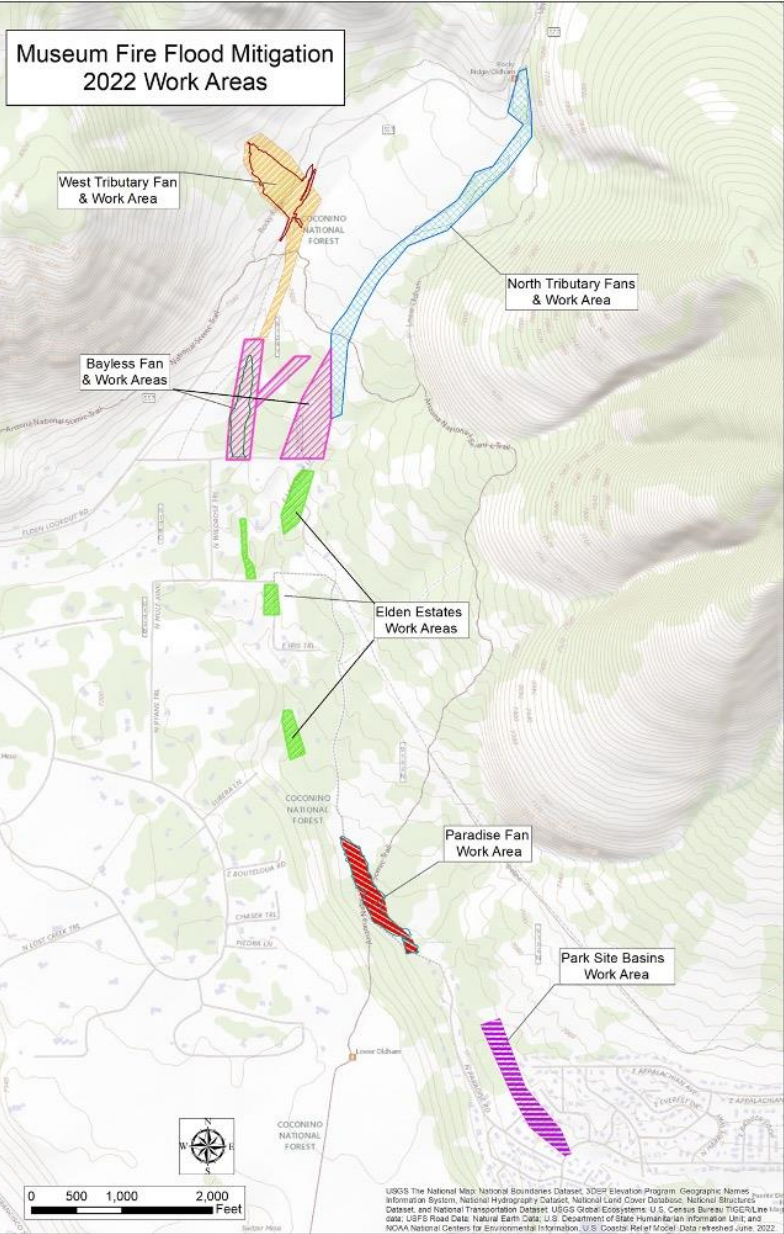
Flood Mitigation



On-Forest & Private Property Work



Museum Fire Flood Mitigation
2022 Work Areas



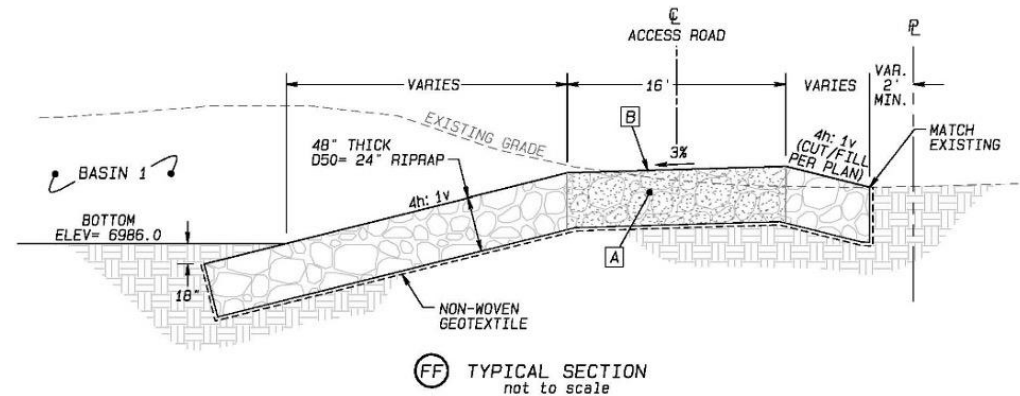
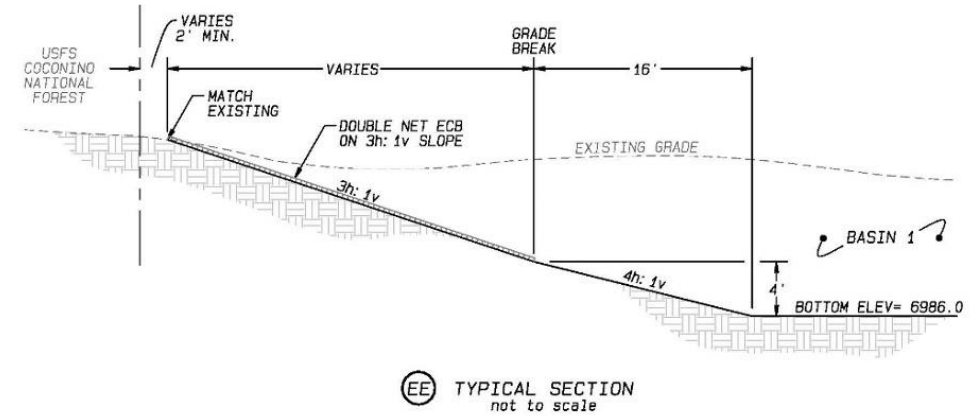
- **Projects Funded by Coconino County Flood Control District, USFS & NRCS**
- Completed 2022
- Focus on sediment reduction and restoration of watershed function
- Grade control and alluvial fan restoration
- Channel and roadway stabilization
- Systematically reduce sediment transport to City of Flagstaff boundary





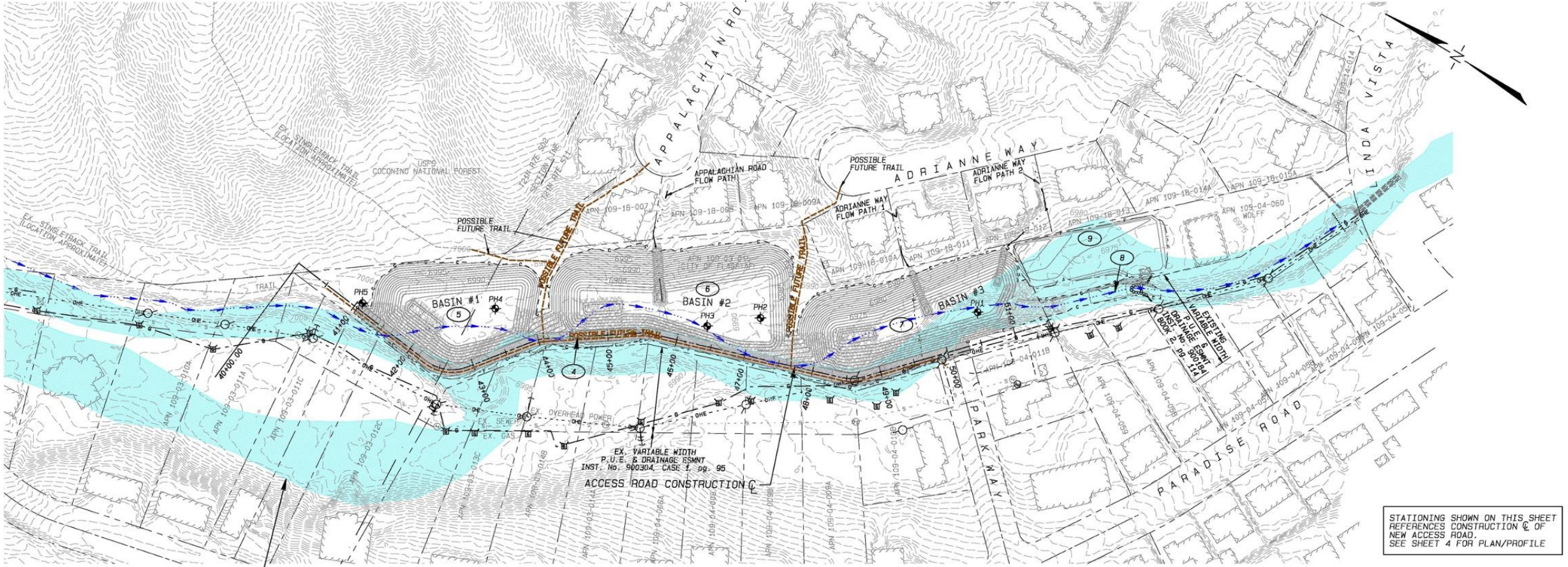
Park Way Sediment Basin Project

- **Funded by Coconino County Flood Control District and NRCS**
- Excavation solely on City of Flagstaff property
- ~ 5000 cu yds sediment storage
- Access to forest along maintenance road
- Some utility relocation
- No adverse flooding impact on neighboring properties, evaluated by independent engineering firm



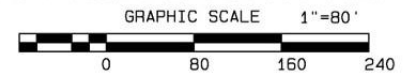


Park Way Sediment Basin Design



EFFECTIVE FEMA FLOODPLAIN IS SHOWN. FUTURE REMAPPING OF THE FLOODPLAIN TO REFLECT OFFICIAL CHANGES TO 100 YEAR FLOODPLAIN WILL BE PER EFFORTS/COORDINATION BY CITY OF FLAGSTAFF FLOODPLAIN MANAGEMENT.

OVERVIEW MAP
SPRUCE WASH - PARK SITE SEDIMENT BASINS



STATIONING SHOWN ON THIS SHEET REFERENCES CONSTRUCTION OF NEW ACCESS ROAD. SEE SHEET 4 FOR PLAN/PROFILE



Feasibility Study Phase II

- Spruce Wash Watershed Management Plan (Feasibility Phase II) includes:
 - Updated hydrology for current watershed conditions
 - Concept design for a suite of projects to mitigate flooding in the Grandview and Sunnyside neighborhoods
 - Mapping the benefit of implementation of the suite of projects (new exhibits showing flood depths)
- The watershed has not recovered – flood risk exists and these projects are critical to reducing the risk.



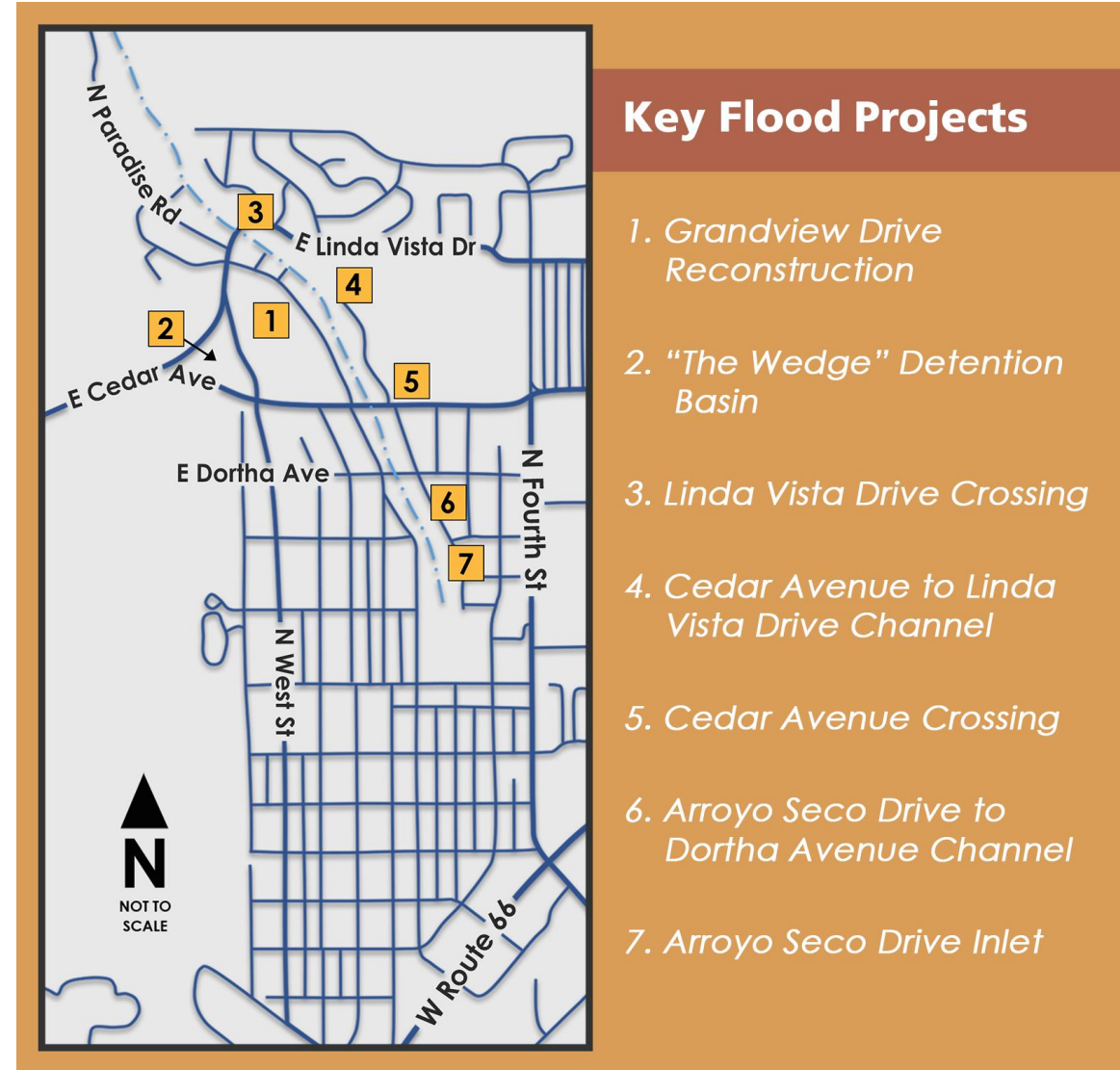
Feasibility Study Phase II

• Recommended Projects:

- Reconstruct Grandview
- Upsize Linda Vista Crossing
- Improve Cedar to Linda Vista Channel
- Upsize Cedar Crossing
- Improve Dortha to Arroyo Seco Channel
- Construct Permanent Inlet at Arroyo Seco Townhomes

• Not Recommended at this Time:

- The Wedge Detention Basin



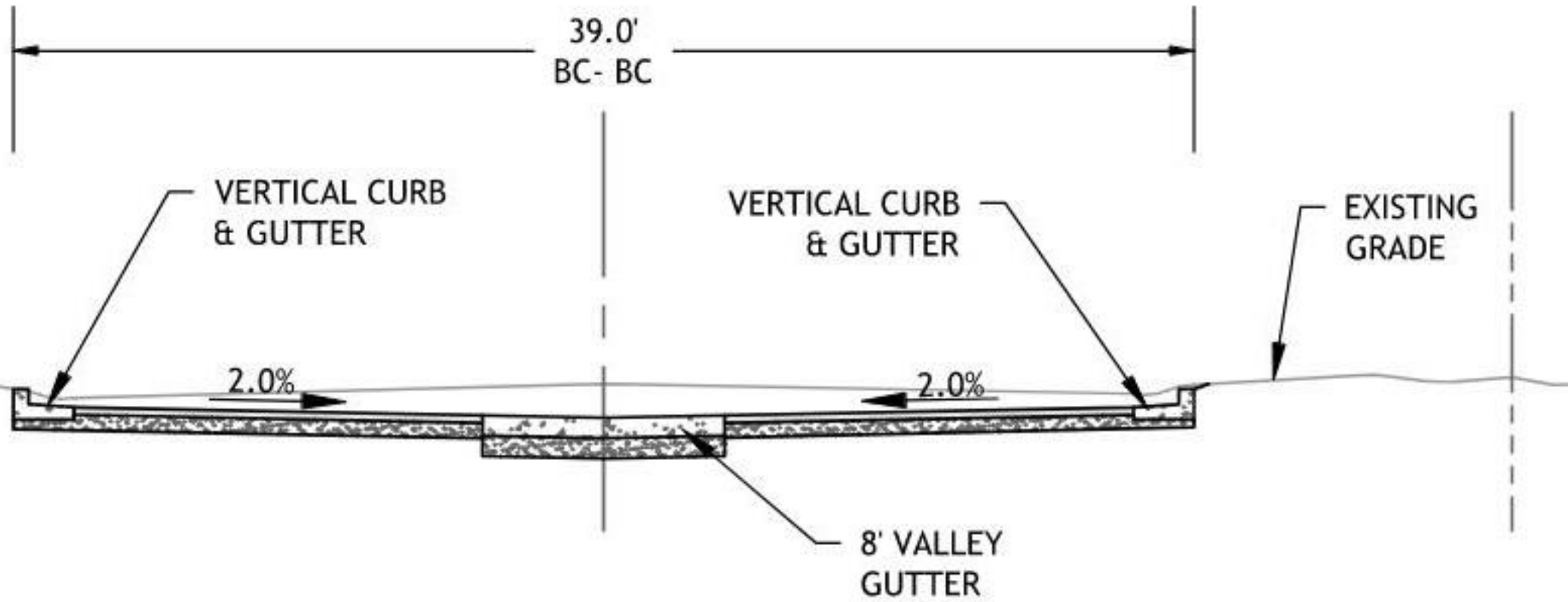


Grandview





Grandview Proposed





Linda Vista Crossing





Example Images of Hardened Channel



Concrete Channel



Shotcrete Channel





Cedar Box Culvert





Arroyo Seco Inlet





Project Timeline



- Design is underway
- Contractor selection process is underway
 - Qualifications based!
- Intent is to begin construction in 2023
- Goal is to complete projects in 3 years



November Prop 441 Passage

- \$26M through Proposition 441 for Spruce Wash/Museum Fire flood mitigation.
- Strong voter support - approved by 76%
- Spruce Wash project delivery kicked off the next day.





November Prop 441 Passage

- Construction will follow the Spruce Wash Watershed Management Plan (Feasibility Study Phase II) and Engineering design.
- Intent is to greatly mitigate routine and medium sized flows off of the Museum Fire burn scar and provide life and safety mitigation for large flows.
- The watershed has recovered slightly since the 2019 Museum Fire but the flood risk is still very high, especially for moderate to large rain events.



Mitigation Post Bond

City-wide effort and commitment

- Water Services, Public Works and Capital Improvements
- All city internal services groups and staff required are at the table
- Community engineering consultants and contractors
- Residents and impacted citizens. Focus on the long-term improvements and provide meaningful impact.



Spruce Wash Project Delivery

- Spruce Wash Project Delivery
 - Technical Advisory Committee
 - Intent: Discuss and coordinate work efforts between city divisions and consultants for the 2022 funded Spruce Wash Project Delivery and Engineering.



Spruce Wash Construction

- Construction Manager at Risk (CMAR) Process
 - The Contractor will be selected on qualifications, not a low bid.
 - Request for Statement of Qualifications (SOQ) was advertised on December 15th, 2022.
 - Review of the Statements of Qualifications is underway now.
 - Contract proposal negotiations and schedule will take place in February.
 - Council Award to selected Contractor in March.
 - Intent is to start construction in the Fall of 2023, after monsoons.



Spruce Wash Project Delivery

This is a super cool project and will likely be one of the most impactful improvements in response to the Muesum post wildfire flooding.

We thank you and the community for the support to be a part of the work.



Emergency Alerts

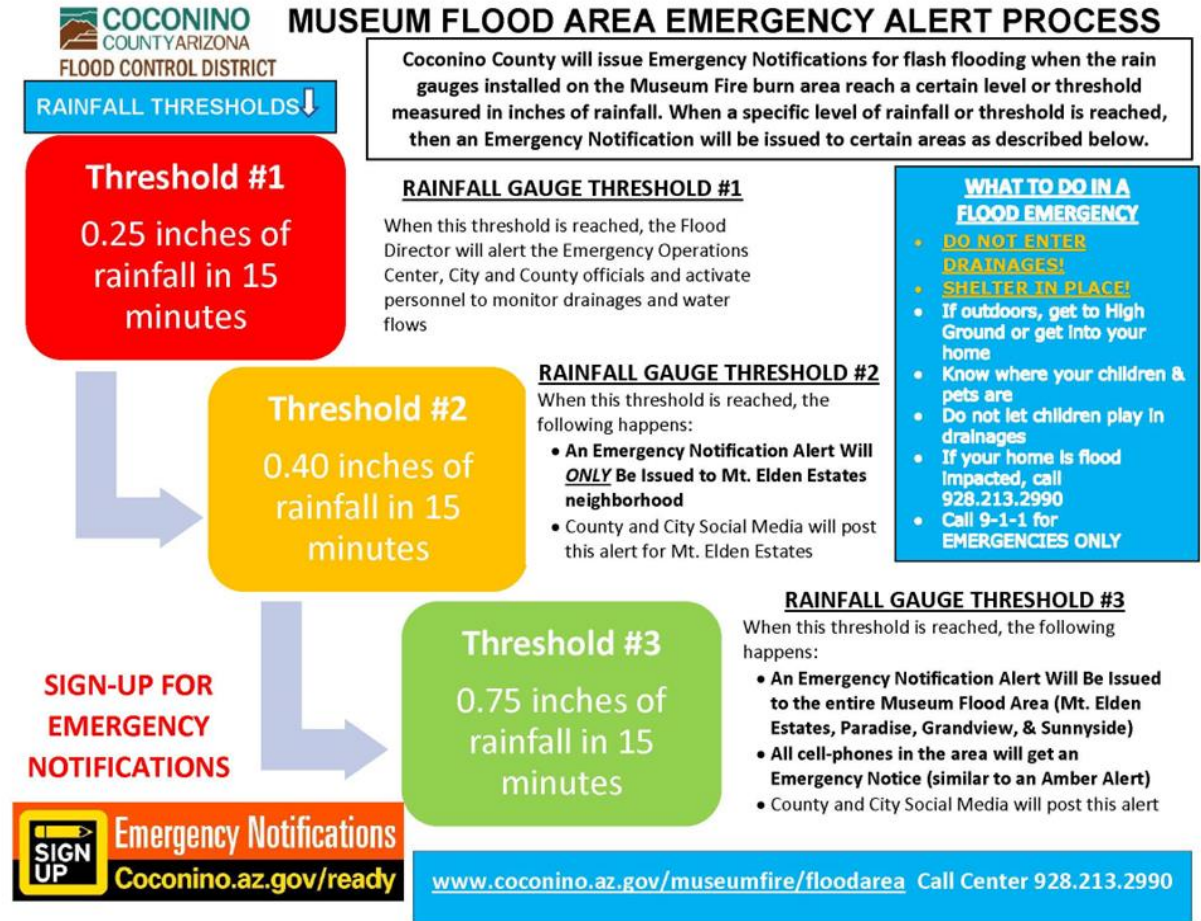


- Current flood alert thresholds will be evaluated this spring to determine new thresholds based on the updated model.
- New thresholds will be communicated before monsoon season.
- Real-time rain and flow available at:

<https://rain.flagstaffaz.gov/jefmap/>

<https://coconino.jefulleralert.com/jefmap/>

<https://coconino.jefulleralert.com/MuseumFireCameras/>



Museum Flood Area Communications

- Additional public meeting to be held before construction begins
- Communications avenues also include print, electronic & radio
- Suggestions welcome!



Museum Flood Area Communications

How to stay connected



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

[MuseumFloodProjects.com](https://www.museumfloodprojects.com)

Questions?

info@museumfloodprojects.com

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



Discussion

