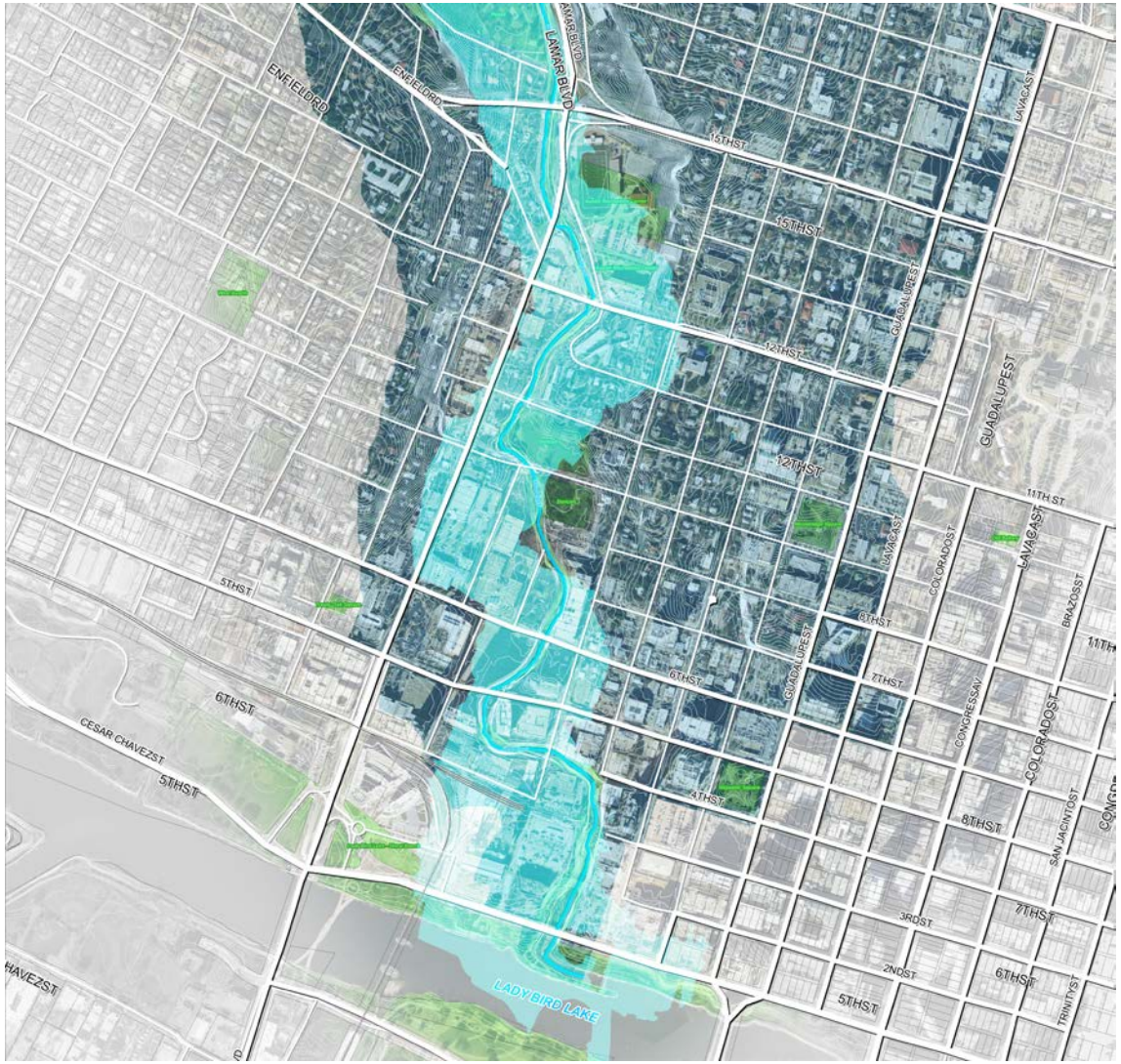
Lower Shoal Creek Flood Hazard Mitigation

Phase 1 – Project Initiation

INTRODUCTION

- Lower Shoal Creek Flood Hazard Mitigation
  - 15th Street to Ladybird Lake
- Phase 1: Project Initiation
  - Literature / Data Collection and Review
  - Engagement / Outreach



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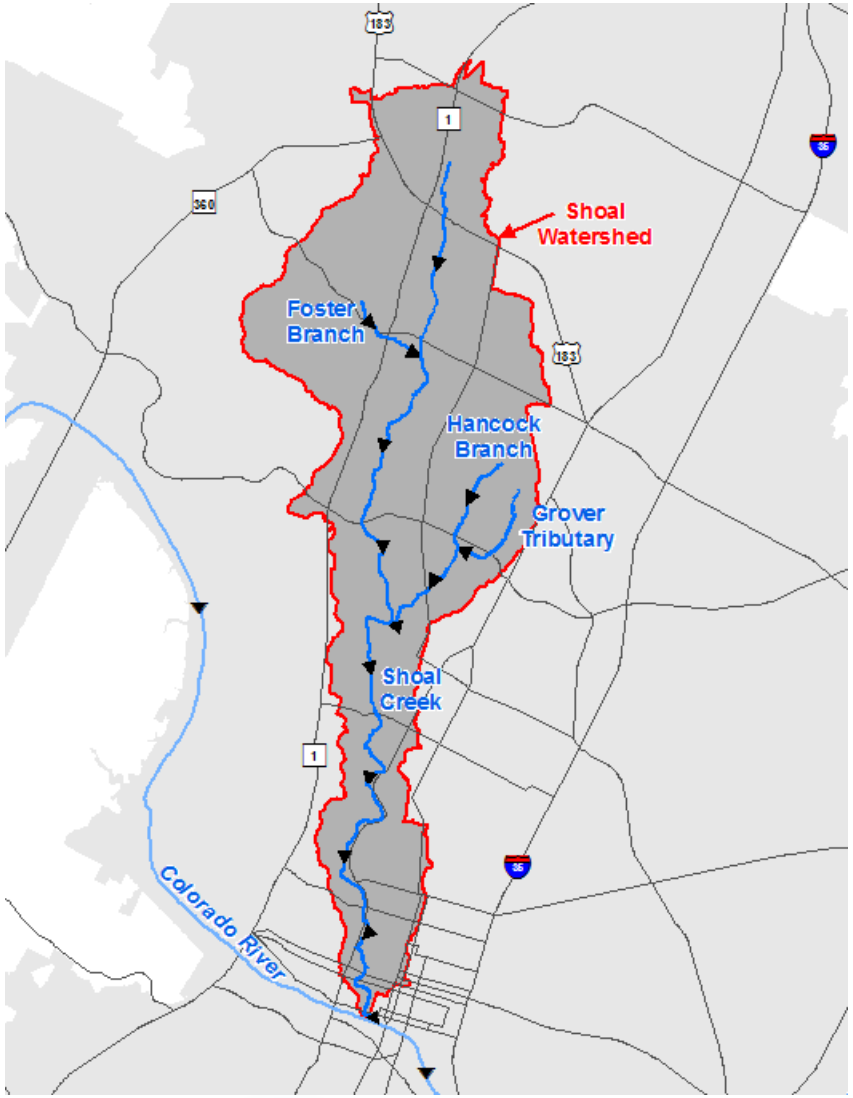
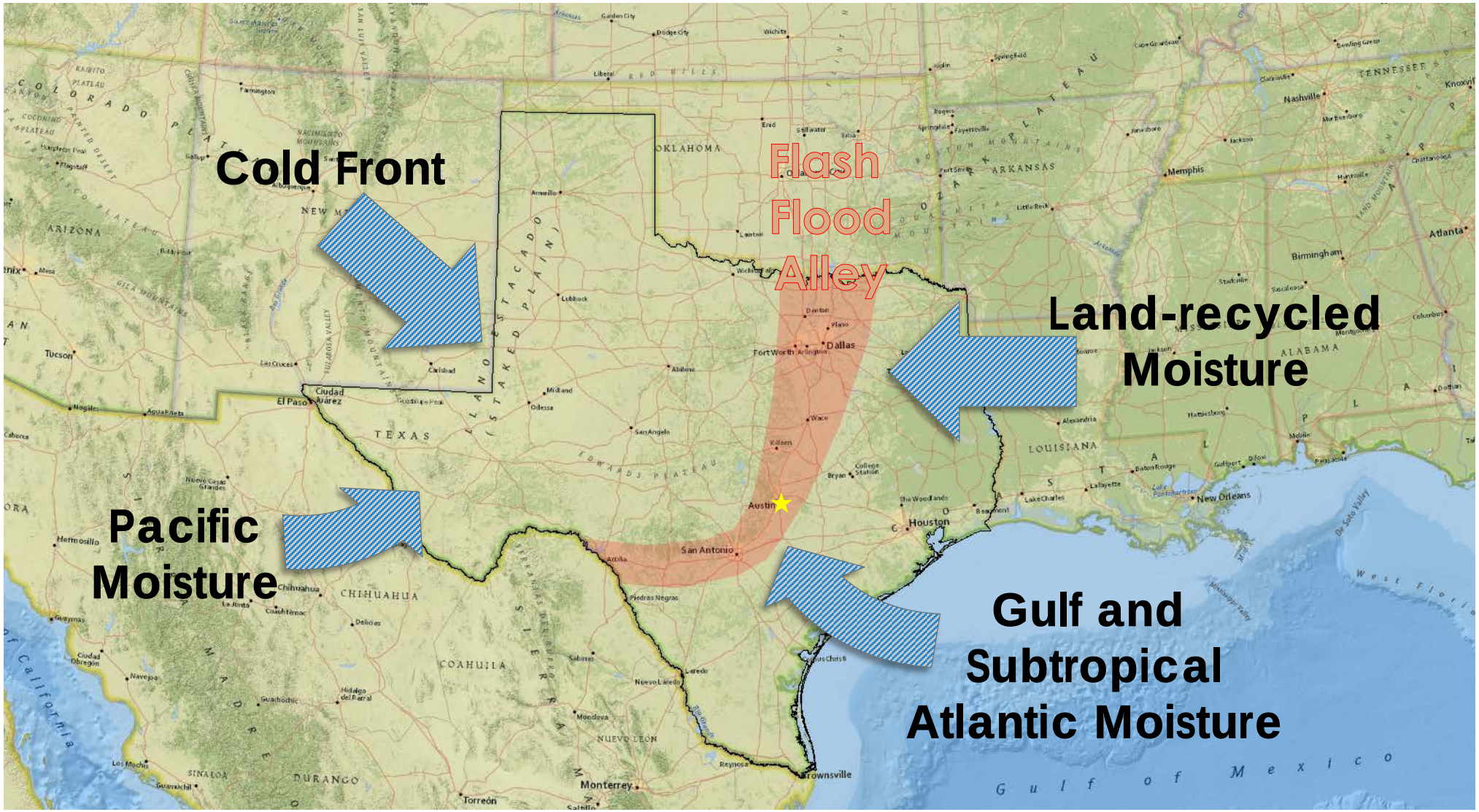
Shoal Creek Watershed

- Total Drainage Area:13 square miles
- Total Stream Length: 13 miles of streams
- Urban watershed (fully developed)
- Recent Studies:
  - 2012-2013: City of Austin Shoal Creek Modeling and Mapping Project
  - 2014: City of Austin Watershed Protection Department Mitigation Analysis
  - 2016: City of Austin Shoal Creek Restoration: 15th – 28th Streets
  - 2016: Shoal Creek Conservancy Debris and Sediment inventory
  - 2017: Shoal Creek Conservancy Mitigation Showcase



Flash Flood Alley



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April 1915

- 8-10 inches in 2-3 hours
- 31 houses destroyed
- 32 deaths

C08541, Austin History Center, Austin Public Library

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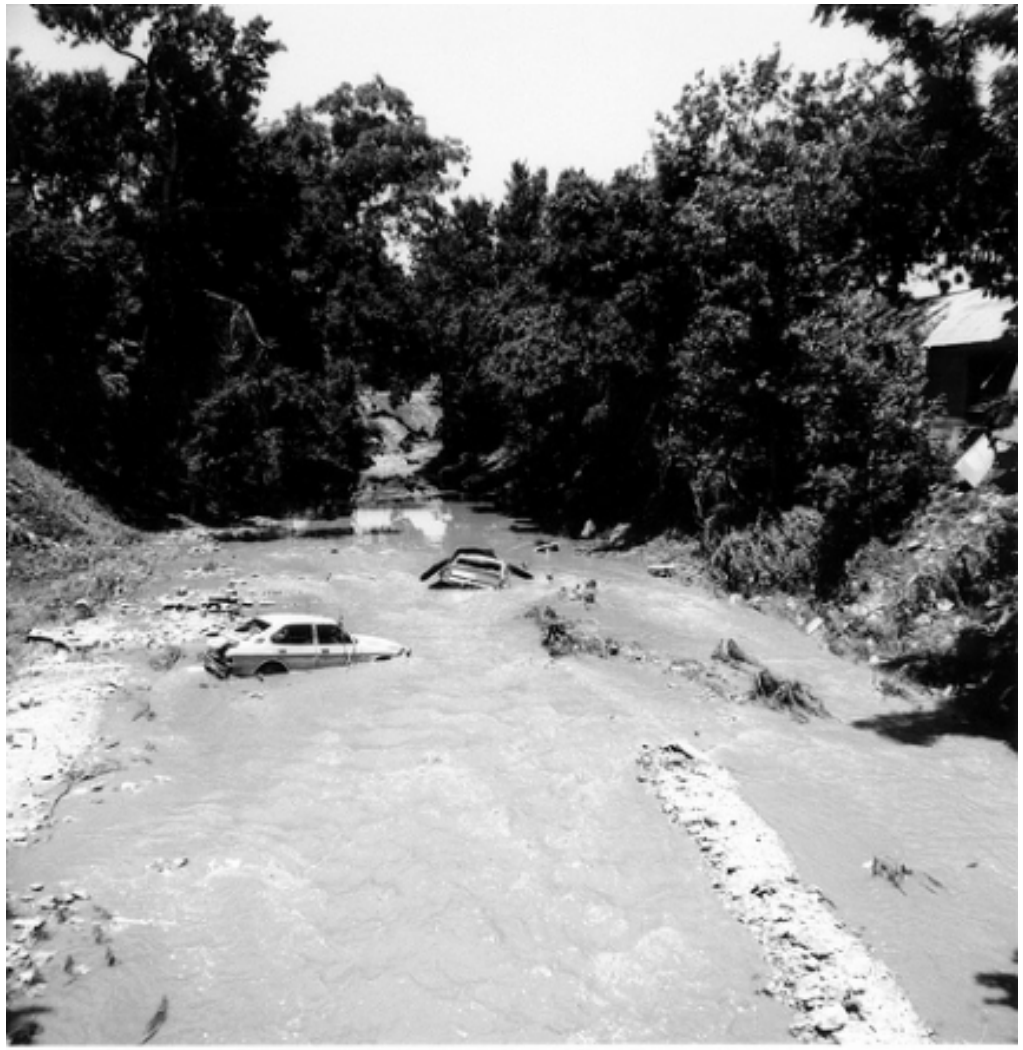
MAY 1981

- 6 inches of rain
- 13 deaths
- Cost of damage: $35.5 Million

11th and Lamar


PICA 15139, Austin History Center, Austin Public Library; Photo by Hienz Schultz

MAY 2015

- 4 inches in 5 hours
- Near 10-year event


House Park Stadium

9th and Lamar

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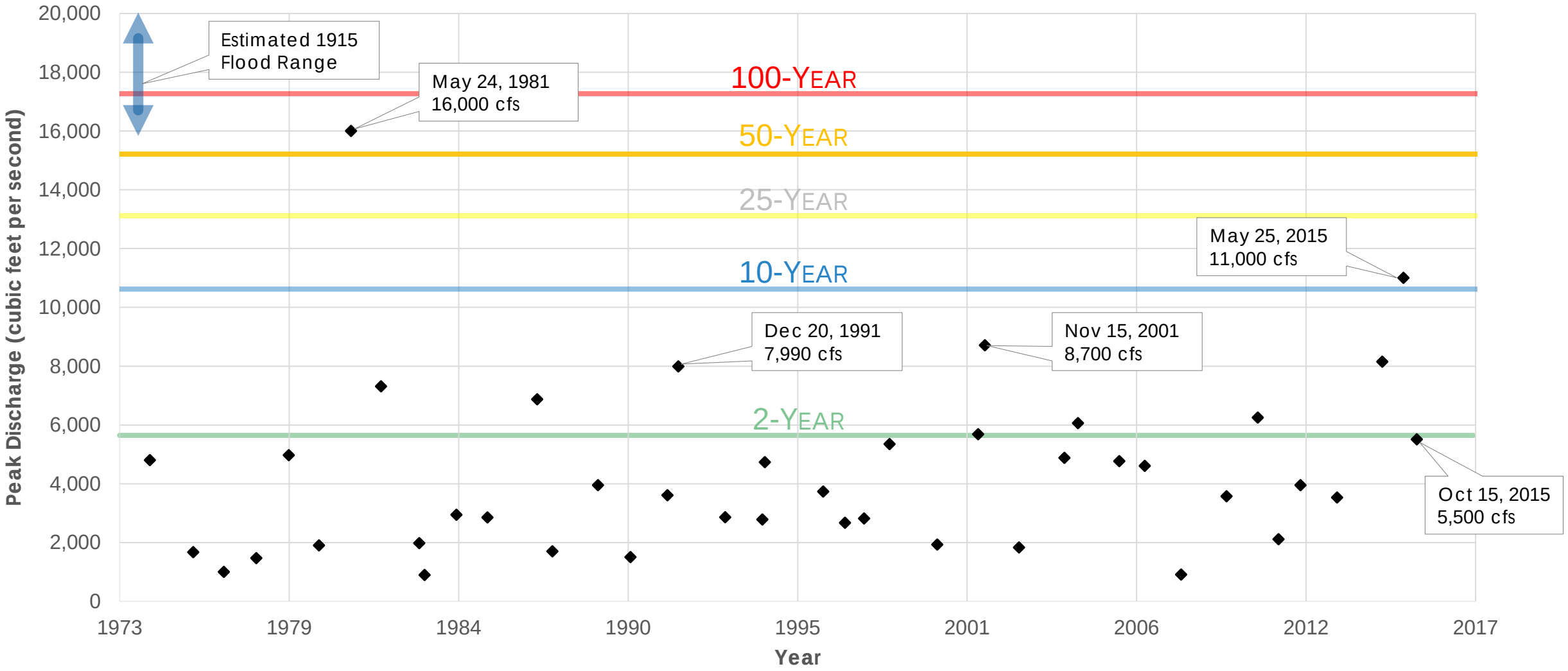
USGS Gage 8156800 Shoal @ W 12th Street



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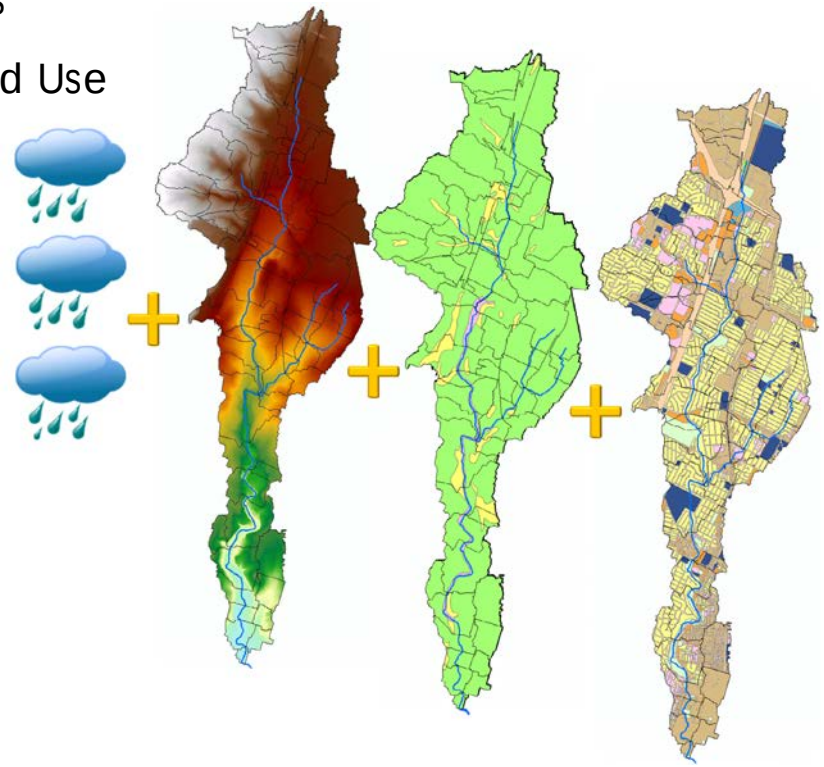
Flood Risk

- What is a 100-yr flood?

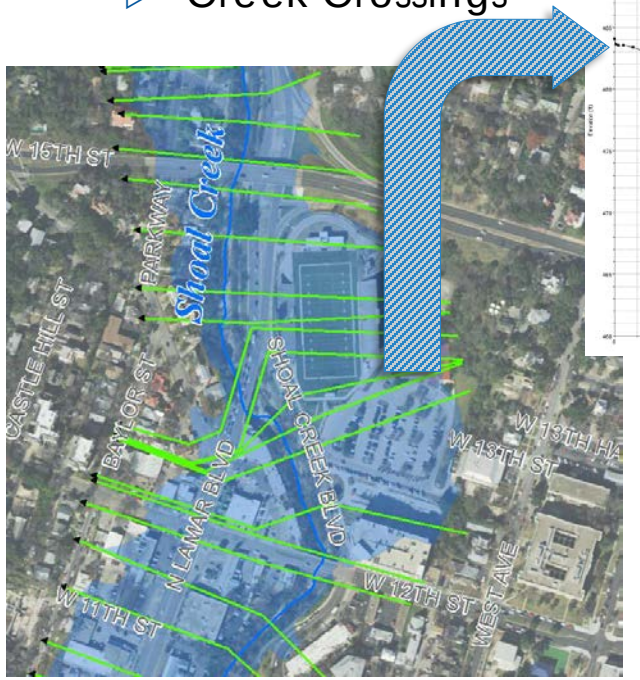
Flood Events	Probability of Occurrence in ANY given year	Percent Chance of Occurrence in ANY given year	Simulated Rainfall over a 24-Hour Period (inches)
500 Year	1 in 500	0.2 %	13.5
100 Year	1 in 100	1 %	10.2
50 Year	1 in 50	2 %	8.9
25 Year	1 in 25	4 %	7.6
10 Year	1 in 10	10 %	6.1
2 Year	1 in 2	50 %	3.4

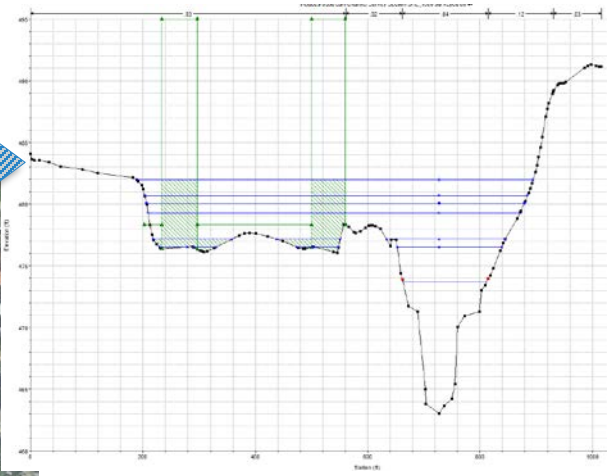
Floodplain Management Overview

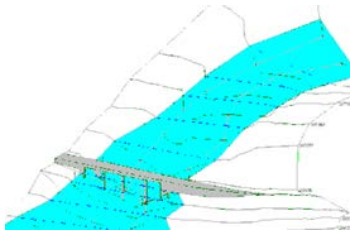
- Hydrology = Water movement to creek
  - Rainfall
  - Topography
  - Soils
  - Land Use



- Hydraulics = Water movement in creek
  - Hydrology
  - Topography
  - Cross-Sections
  - Creek Crossings







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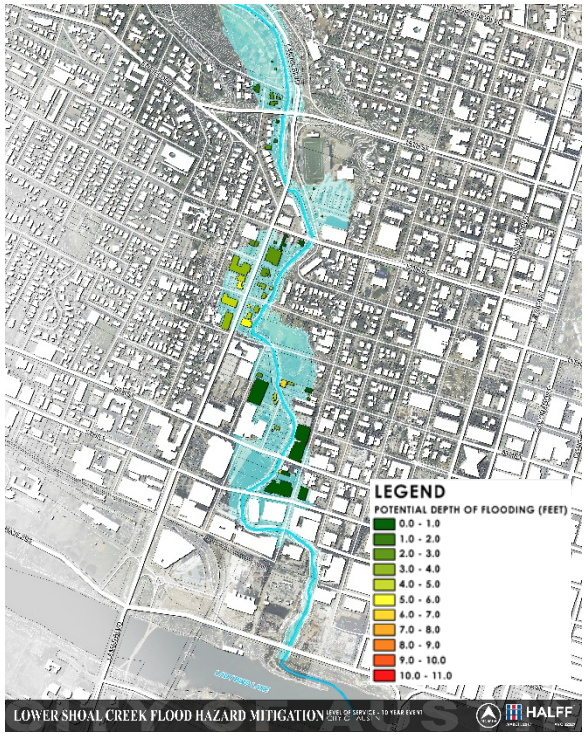
Existing Flood Risk

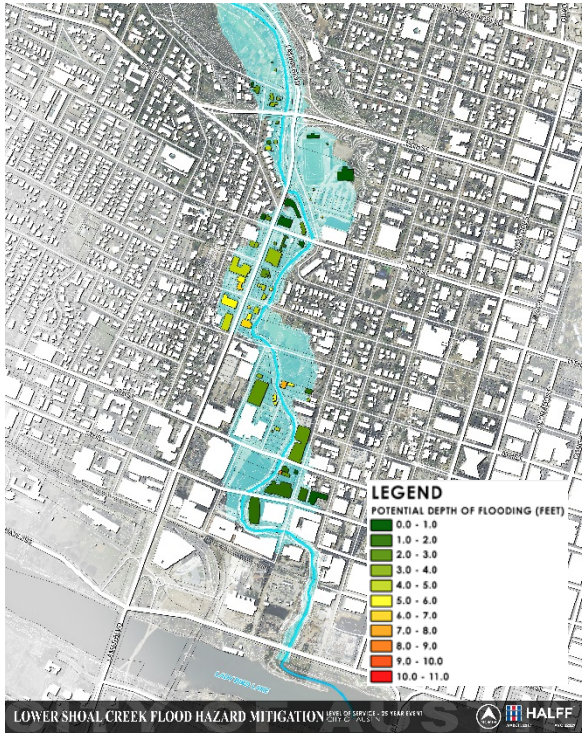
10-Year

- Structures at Risk: 41
- Inundated Roadways: 1.3 miles



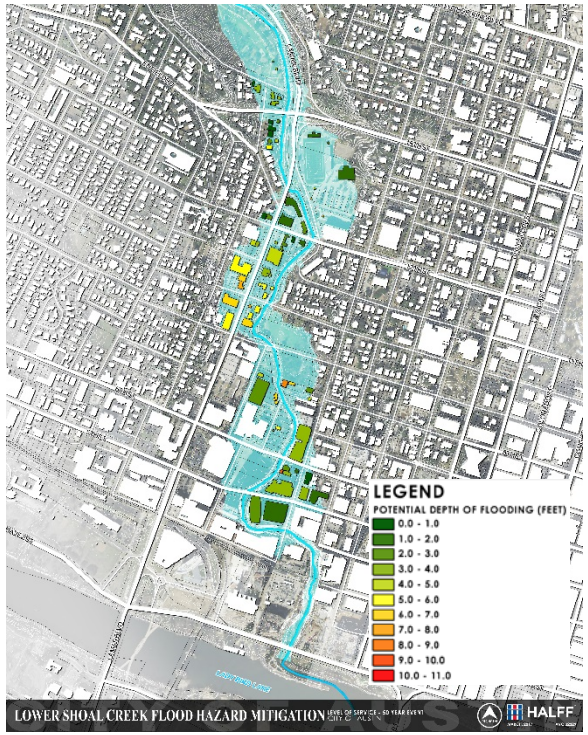
25-Year

- Structures at Risk: 54
- Inundated Roadways: 2.1 miles



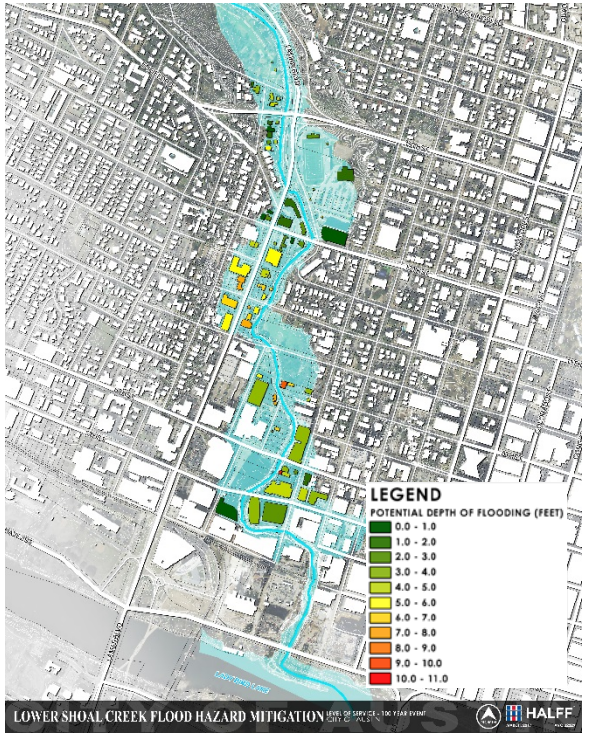
50-Year

- Structures at Risk: 61
- Inundated Roadways: 2.2 miles

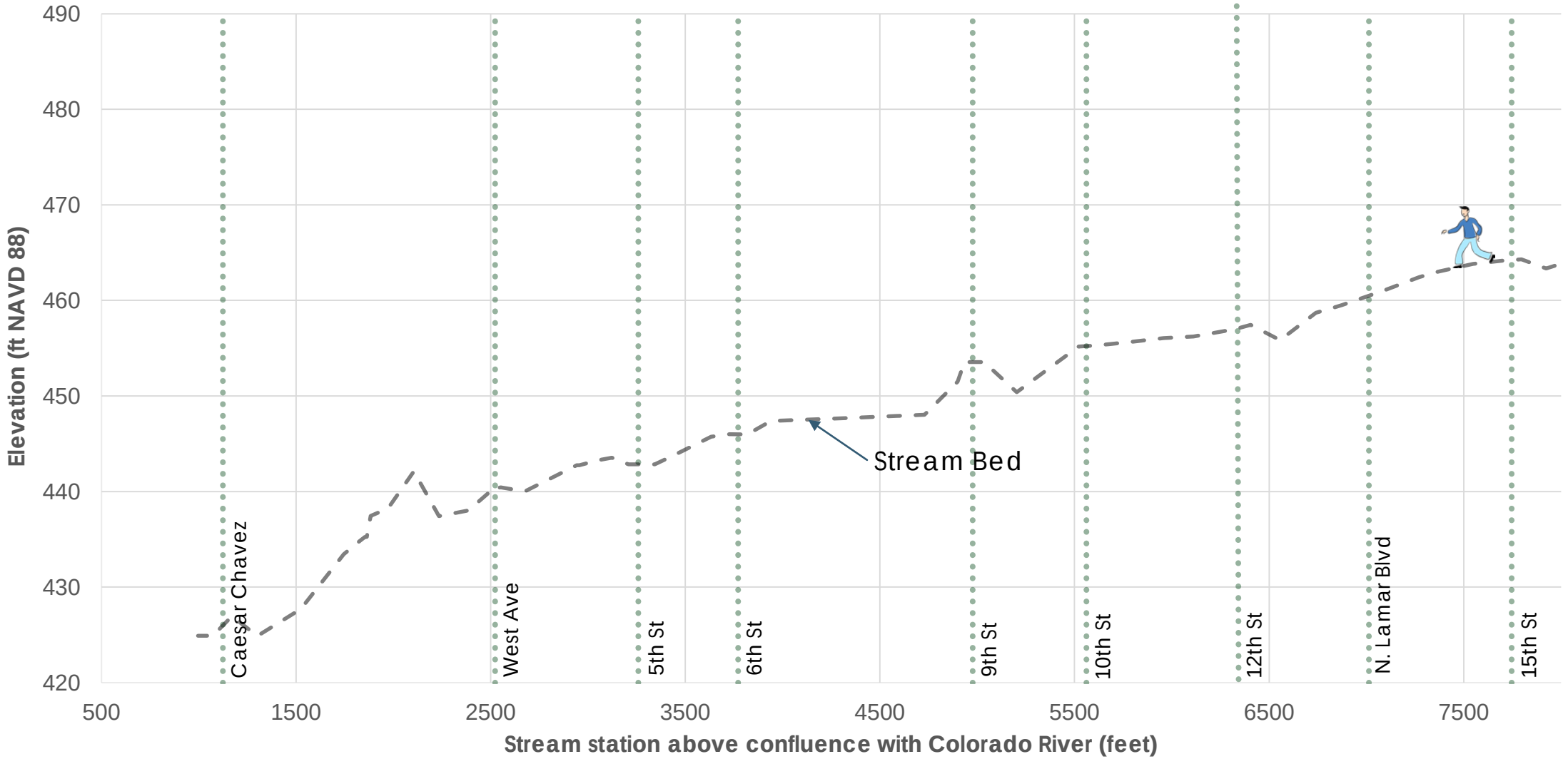


100-Year

- Structures at Risk: 64
- Inundated Roadways: 2.6 miles



Water Surface Elevation Profile



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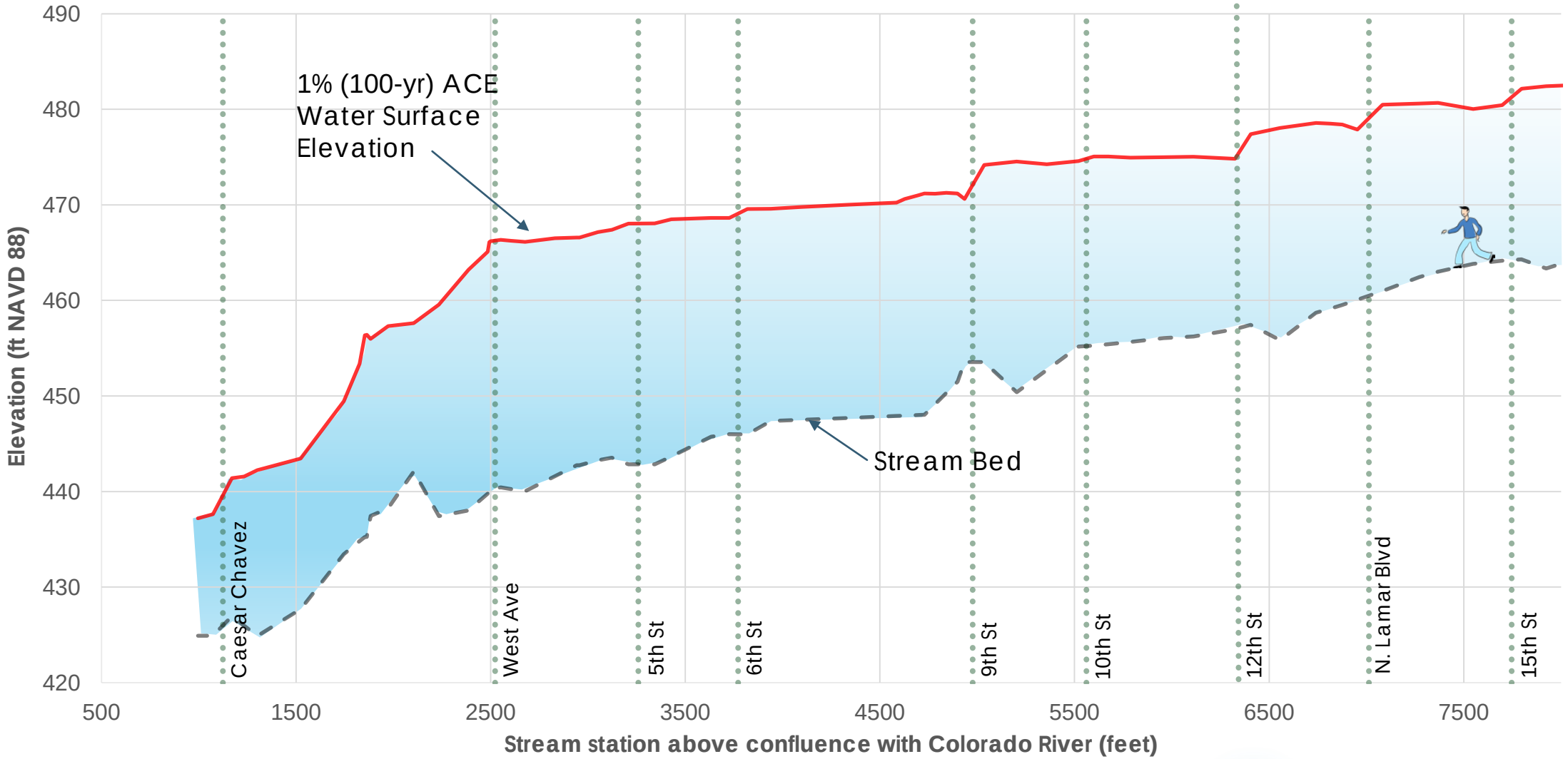
Water Surface Elevation Profile



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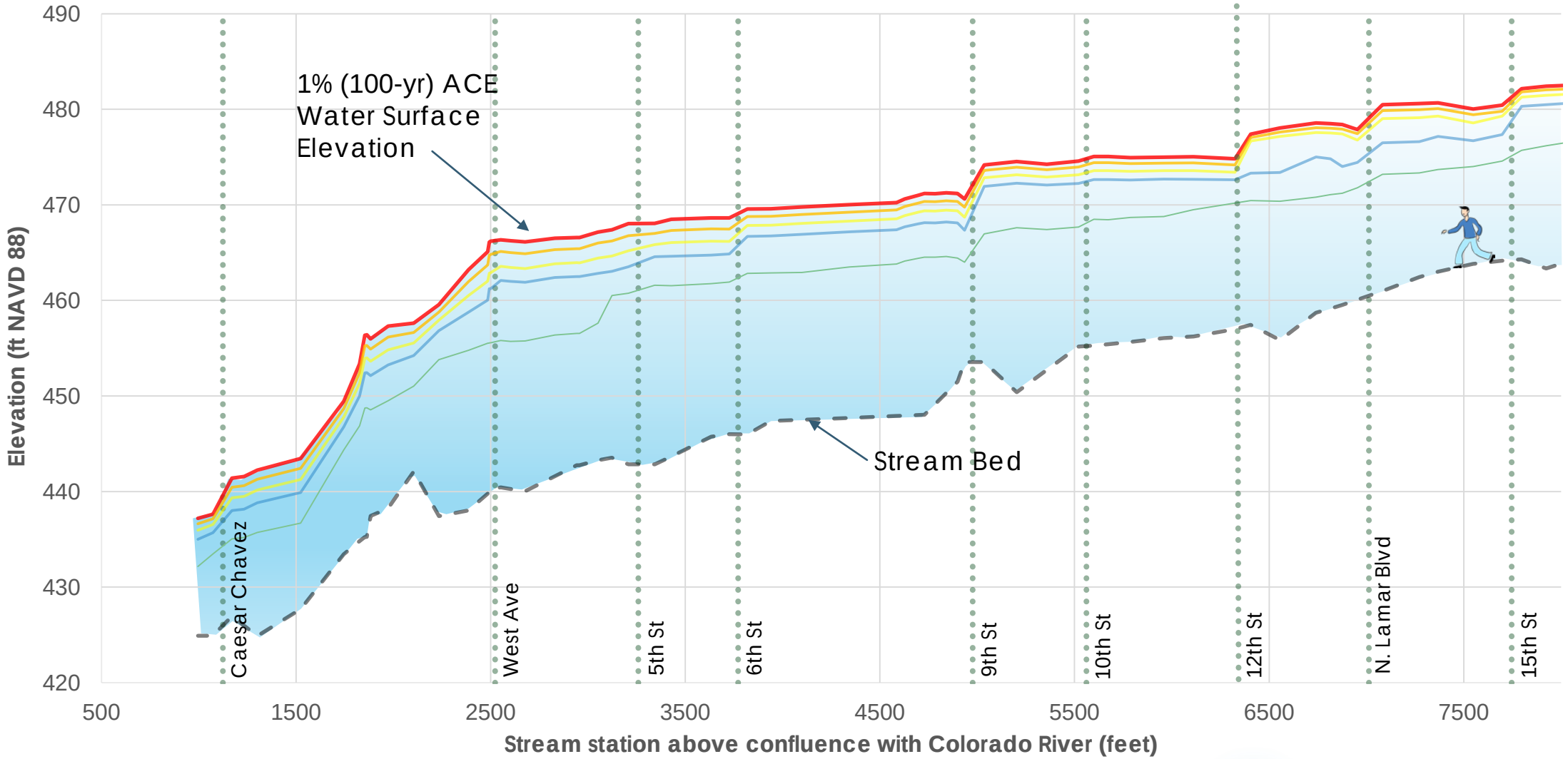
Water Surface Elevation Profile



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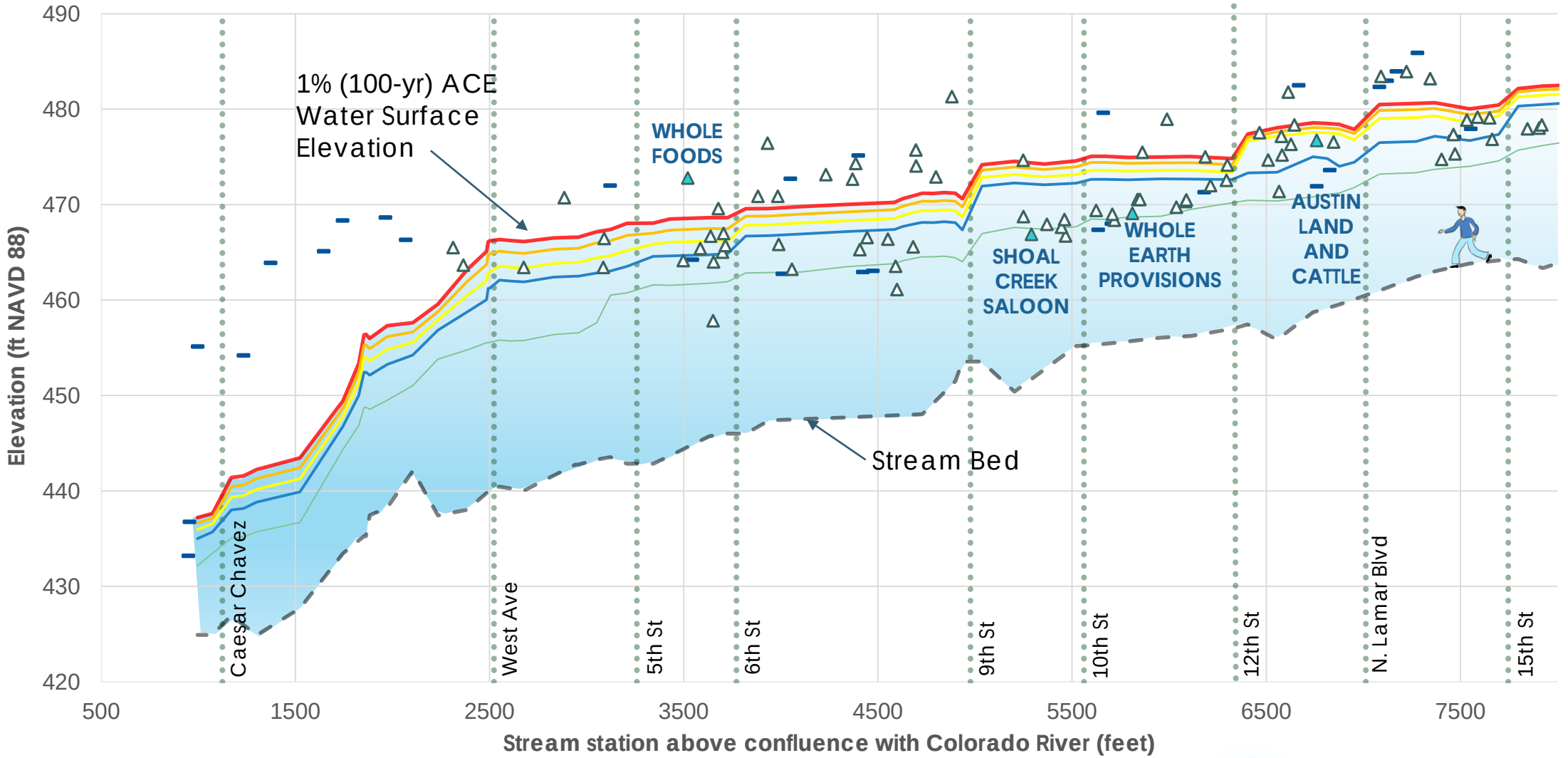
Water Surface Elevation Profile



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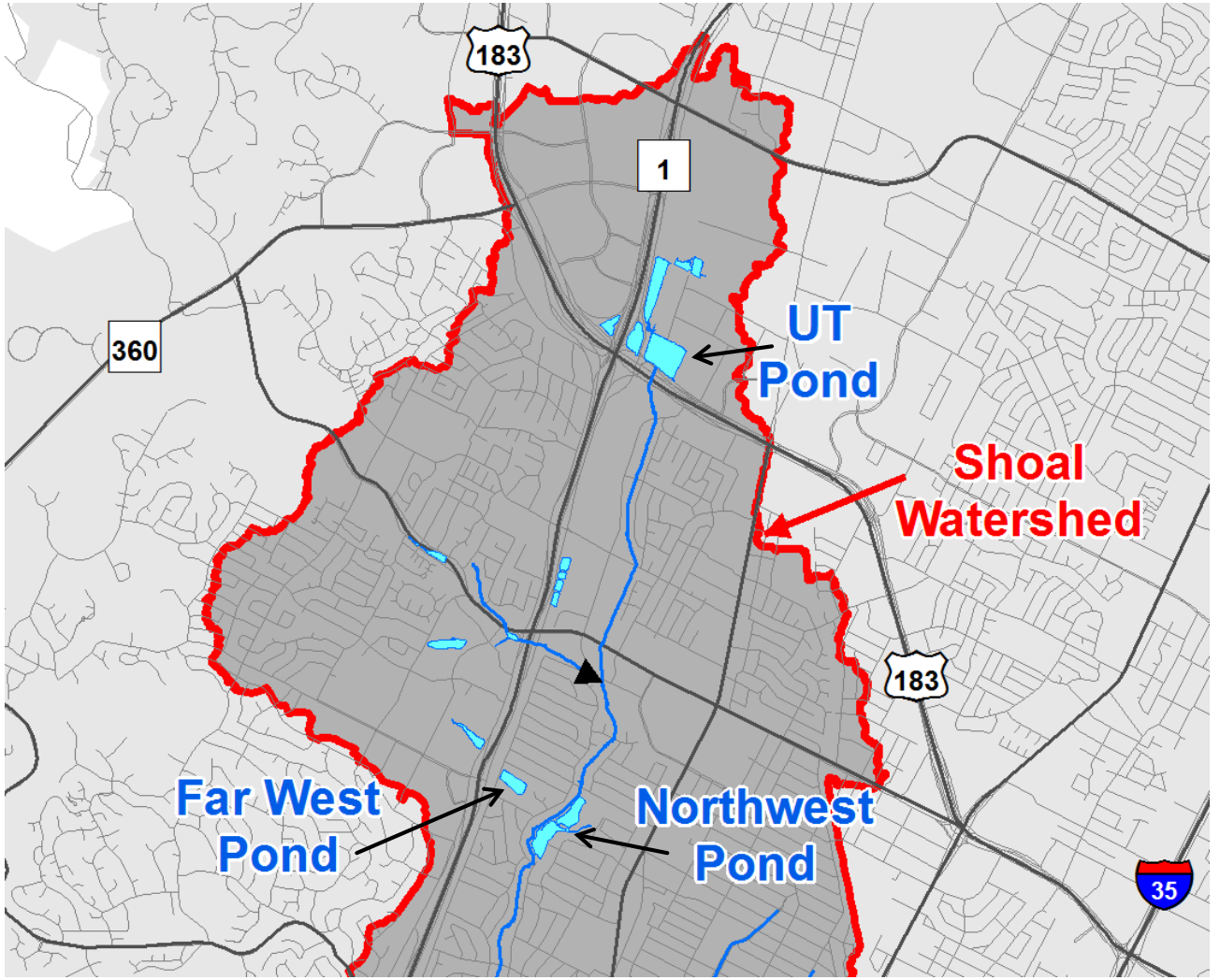
Benefits of Upstream Detention

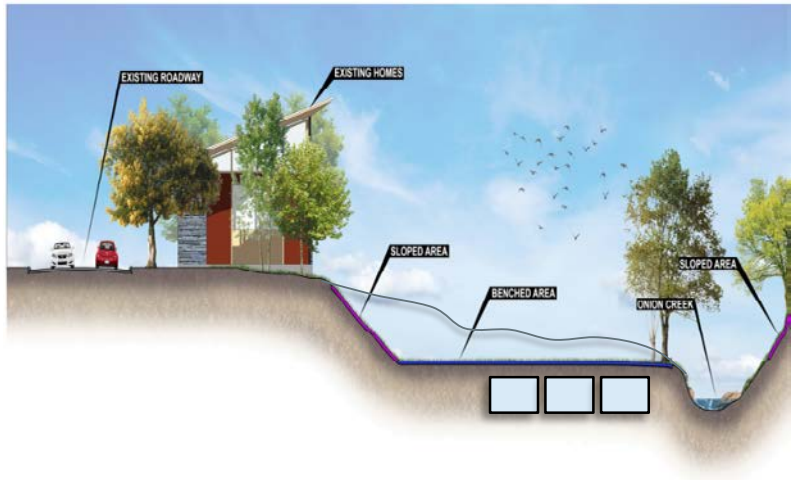
- Existing Regional Detention Ponds
  - Far West Pond
  - Northwest Park Pond
  - UT Pond
- Simulation without Upstream Detention (15th Street results)
  - Ponds provide 20% Reduction in 100-year Peak Discharge



Scoping Flood Mitigation

- Storage
  - Detain/retain flood water

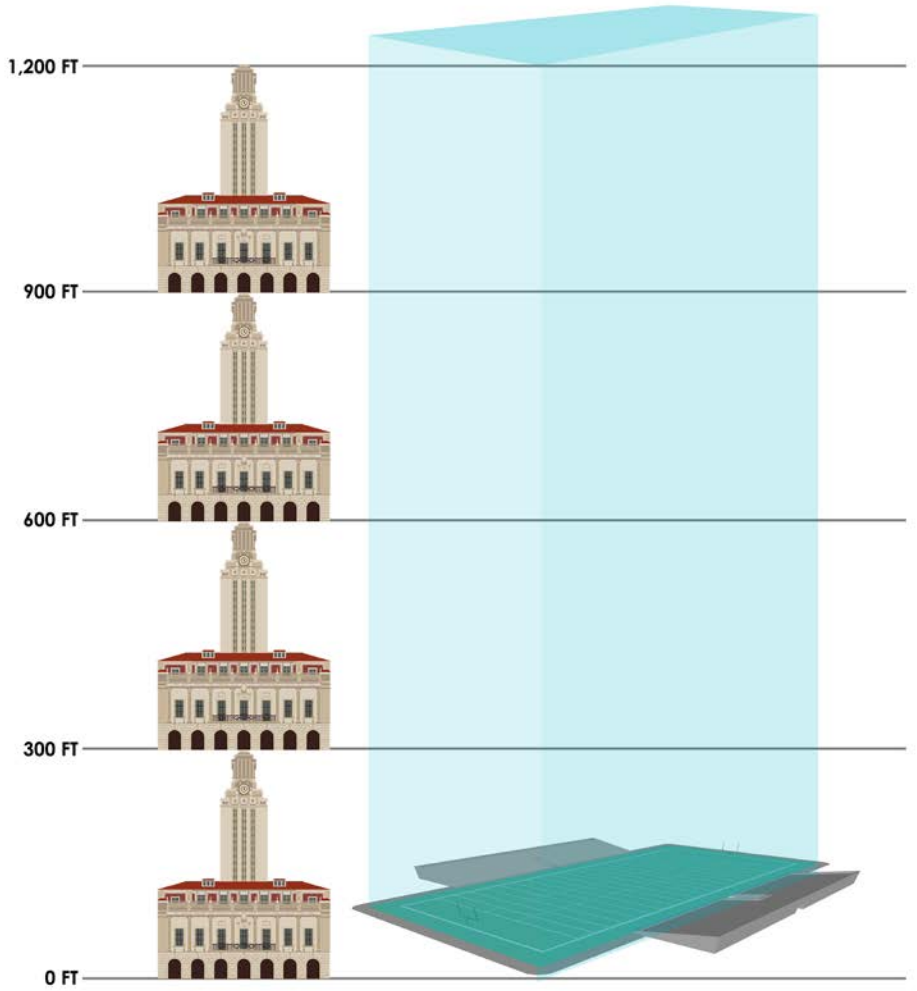
- Conveyance
  - Improve channel or underground capacity



- Considerations
  - Cultural / Historical Resources
  - Environmental Impacts
  - Water Quality Impacts
  - Open Space / Recreation Amenities
  - Project Timeline
  - Project Cost
  - Community Benefit
  - Level of Service

Mitigation: Storage

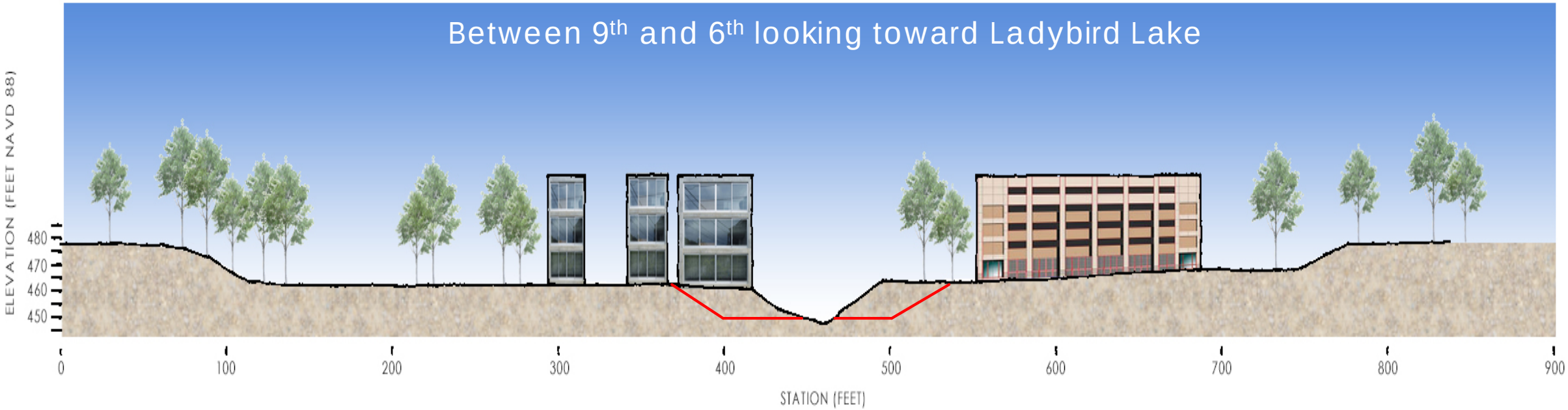
- Storage Required to take 100-year flood to 10-year flood
  - 2,400 acre-feet
- House Park Football Field
  - ~ 2 acres
- UT Tower
  - ~300 feet tall



2,400 acre feet = 800,000,000 gallons!

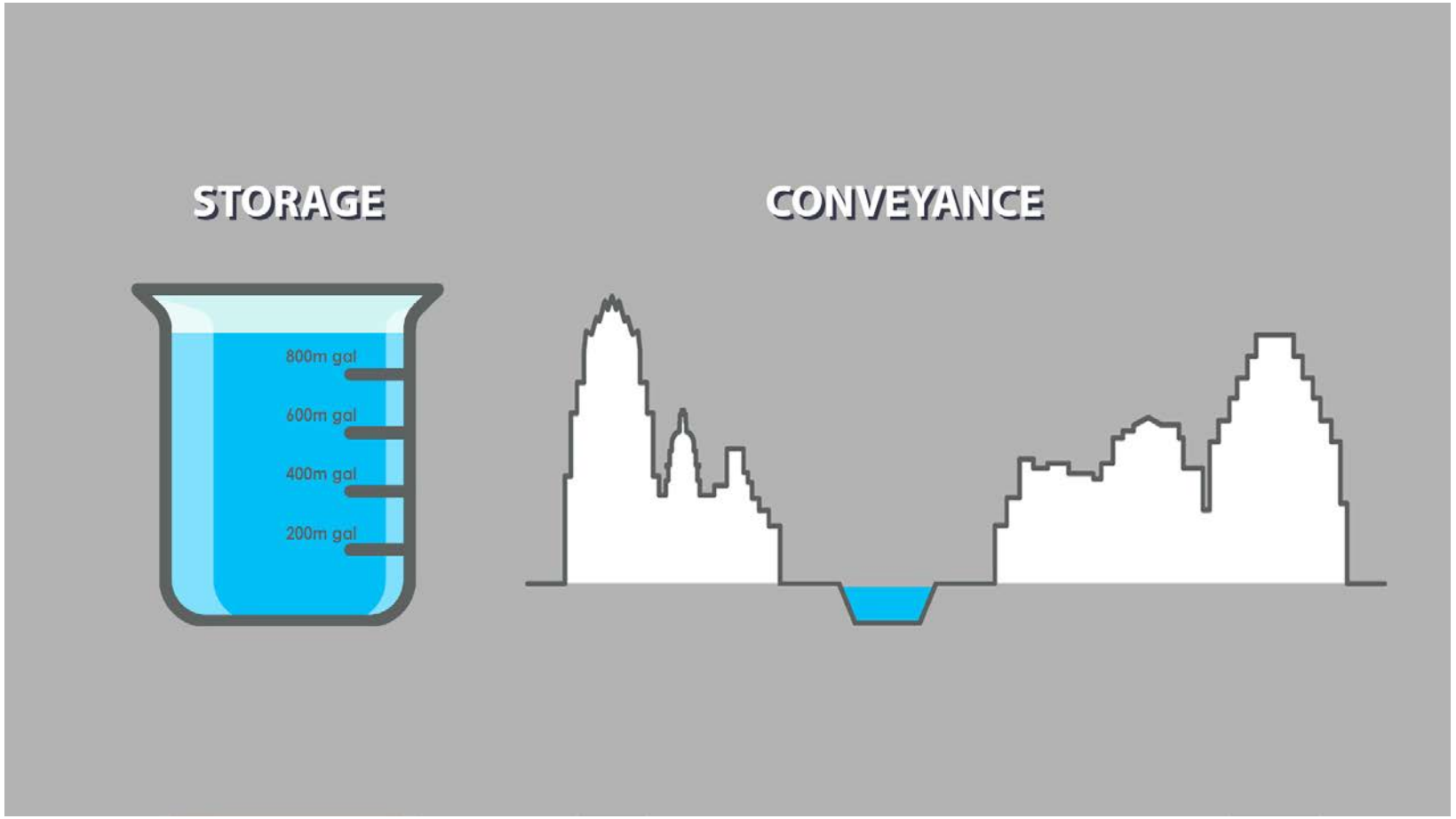
Mitigation: Conveyance

- Required channel to convey 100-year flood
  ~ 100 feet wide, ~15 feet deep

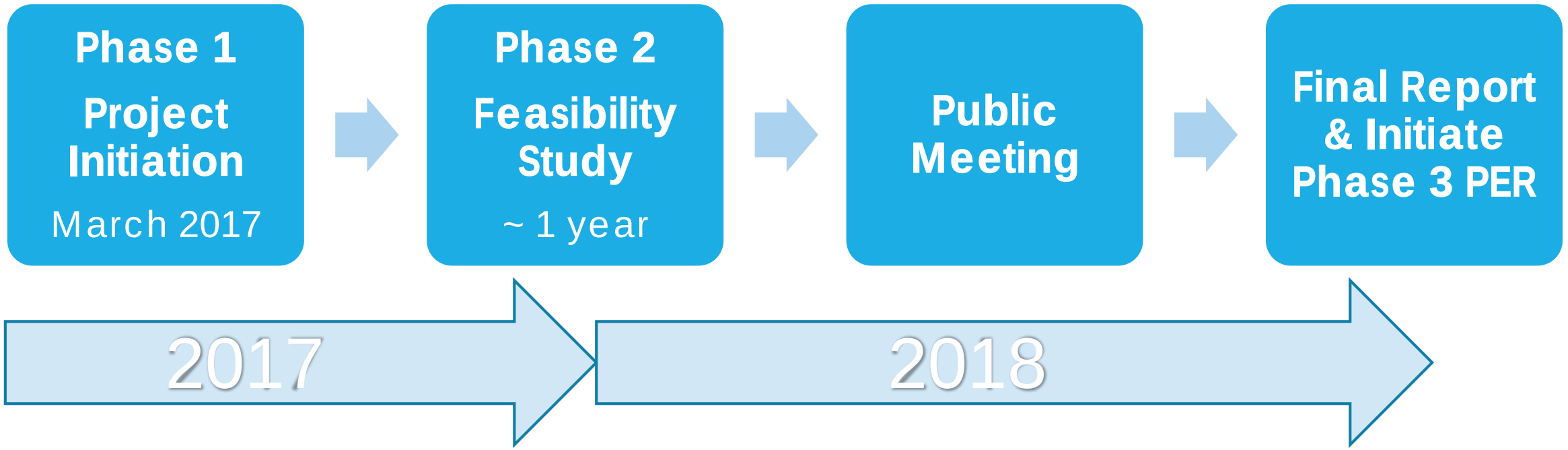


Mitigation Ideas

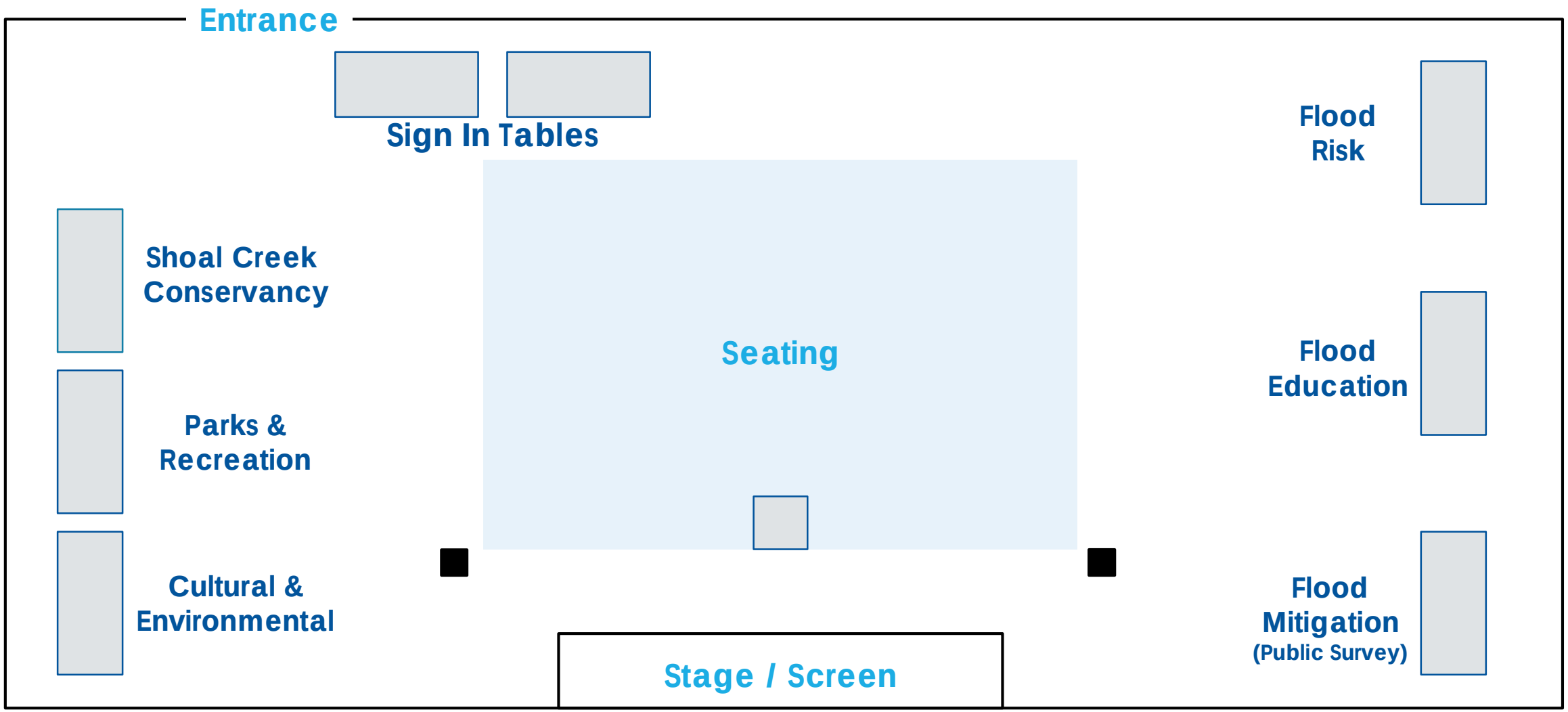
- Storage
  - Surface Detention
  - Subsurface Detention
  - Infiltration
- Conveyance
  - Improved Channel Capacity
  - Bridge Removal
  - Underground Conveyance



Project Phases & Timeline



Open House Stations



THANK YOU FOR YOUR PARTICIPATION!

PUBLIC SURVEY:

WWW.SURVEYMONKEY.COM/R/LOWERSHOAL

Open House Stations