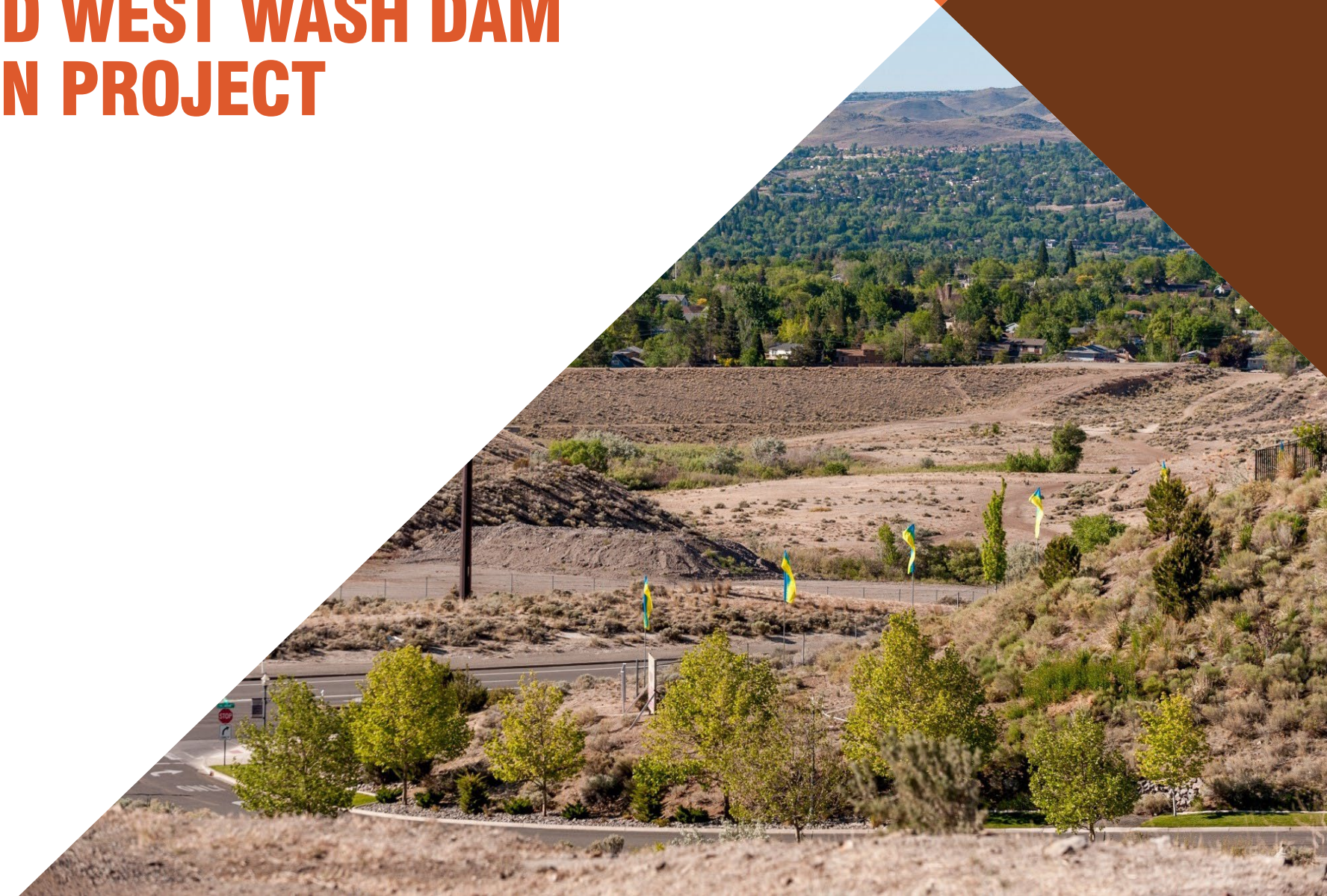
EAST WASH AND WEST WASH DAM REHABILITATION PROJECT

Project Update Meeting

January 31, 2023



PROJECT STAKEHOLDERS

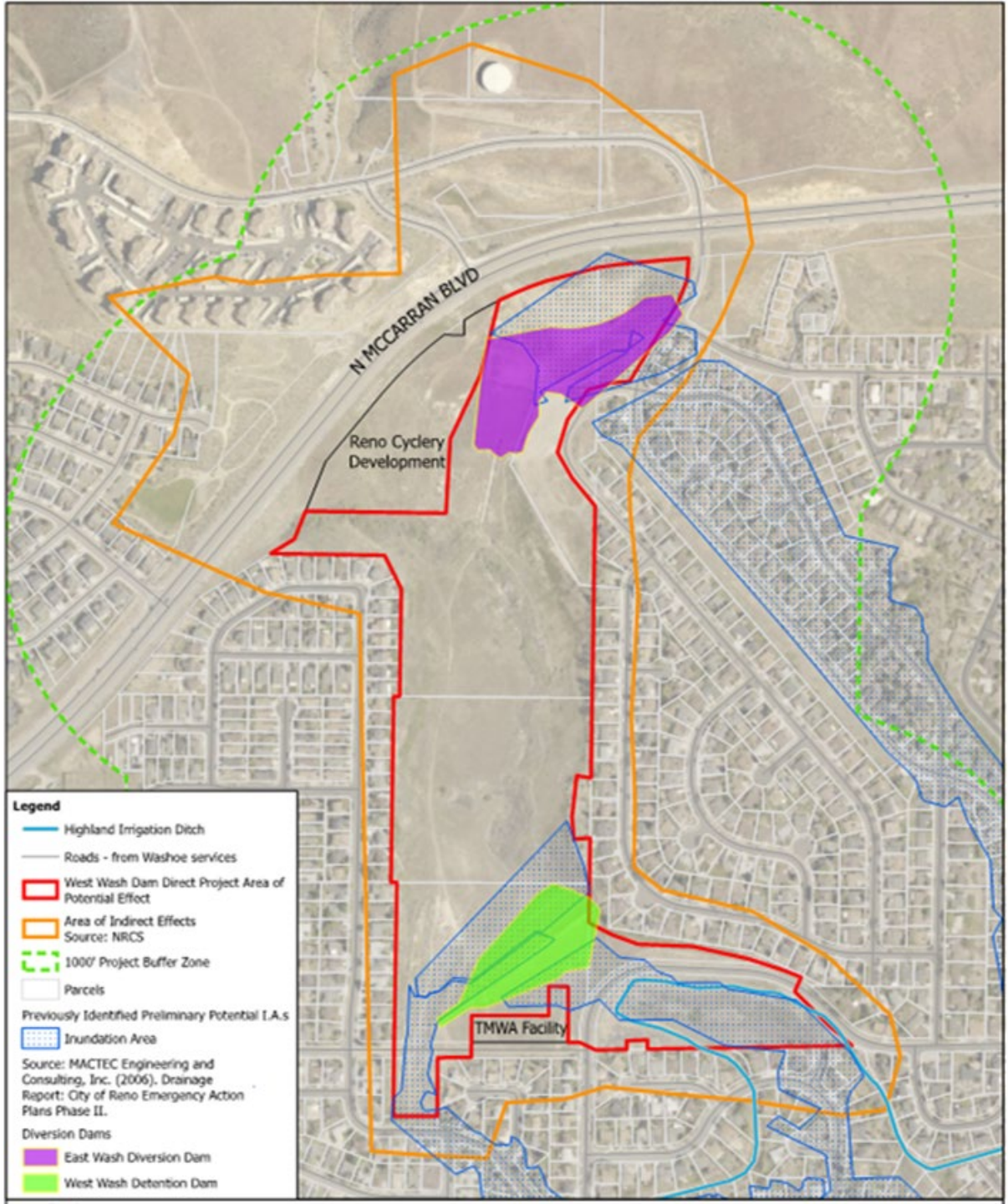
OWNER:
City of Reno
1 East First St.
Reno, NV 89501

LEAD FEDERAL AGENCY:
USDA-NRCS
1365 Corporate Blvd.
Reno, NV 89502

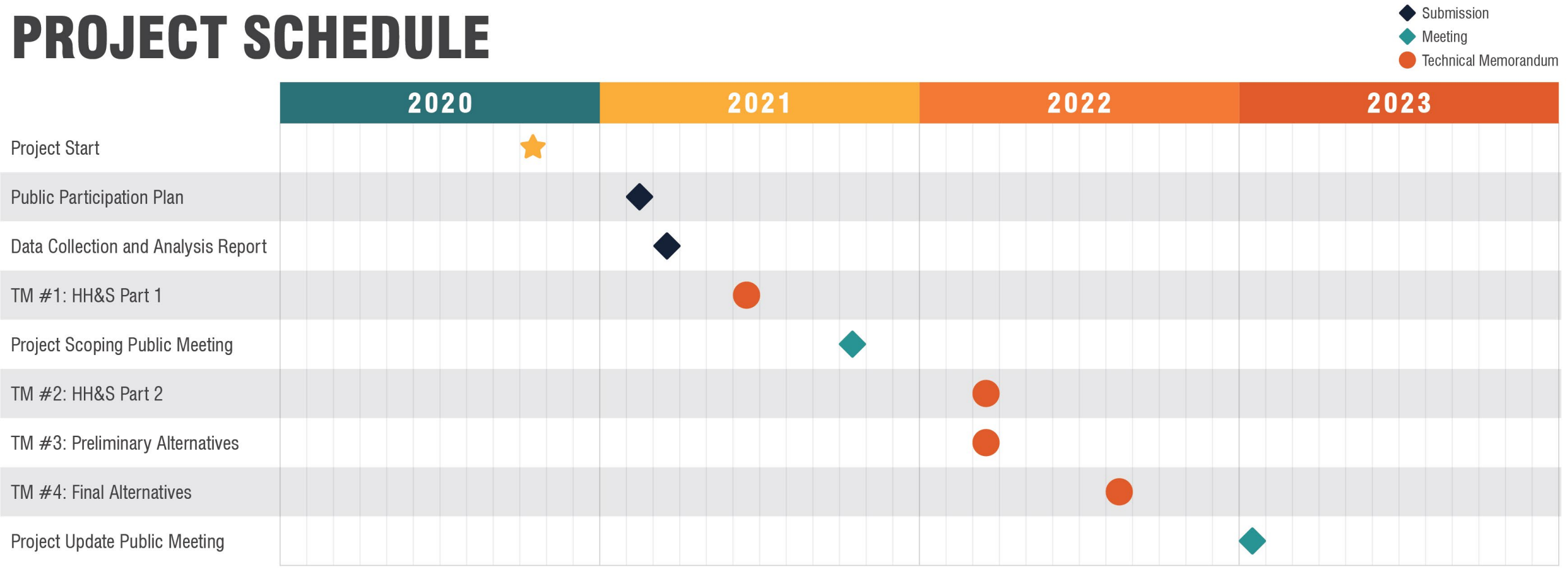
ENGINEER:
DOWL
5510 Longley Ln.
Reno, NV 89511

PROJECT BACKGROUND

- West Wash Dam – 1960
- East Wash Dam – 1961
- Evaluated life of 50 years
- Classified “High Hazard”
- Do not meet dam safety requirements
- City and USDA-NRCS agreement to rehabilitate



PROJECT SCHEDULE



PROJECT TIMELINE TO DATE

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PURPOSE AND NEED STATEMENT

Purpose:

1. Preserve the flood protection function of the East Wash and West Wash Dams
2. Protect lives and property in the surrounding urban area
3. Comply with current performance and safety standards in a cost effective and environmentally acceptable manner

PURPOSE AND NEED STATEMENT

Need:

1. Address current deficiencies at West Wash and East Wash Dams to bring both dams into compliance with current dam safety regulations, engineering standards, and performance criteria
2. Ensure the watershed structure is properly maintained to minimize the risk to lives and property in the surrounding and downstream urban area

PROJECT CHALLENGES

Dam Deficiencies:

- Repairs and maintenance identified in inspections
- Hydraulic inadequacy of current dam design
- Sediment accumulation reducing runoff volume stored

PROJECT CHALLENGES

City Growth and Increased Urbanization

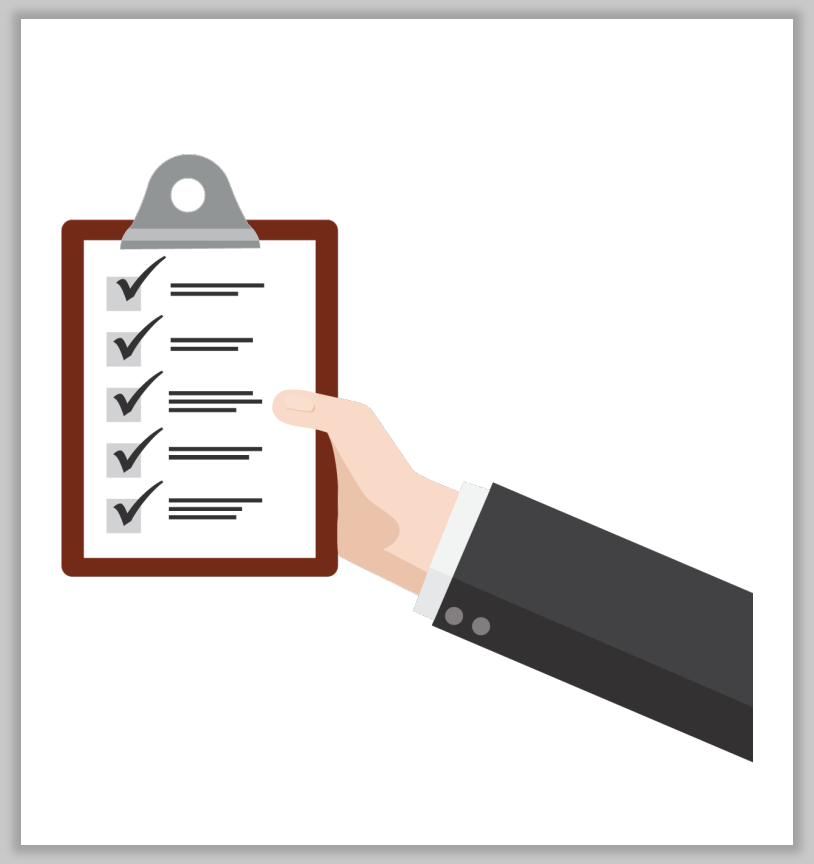
- Original Watershed Plan written in 1958
- Urban land use changes to project area
- Continuing growth in City of Reno

PROJECT OPPORTUNITIES

- Maintain downstream flood protection
- Reduce possibility of dam failure
- Comply with NDWR and NRCS criteria

NEPA SECTION 106

- Project complying with NEPA and NHPA Section 106
- NRCS determined both dams are historical properties
- West Wash considered to have adverse effects
- Working with SHPO on mitigation
- Proposed measures:
  - SHPO approved historical sign
  - Historical documentation (plans and pictures)



ALTERNATIVES ANALYSIS

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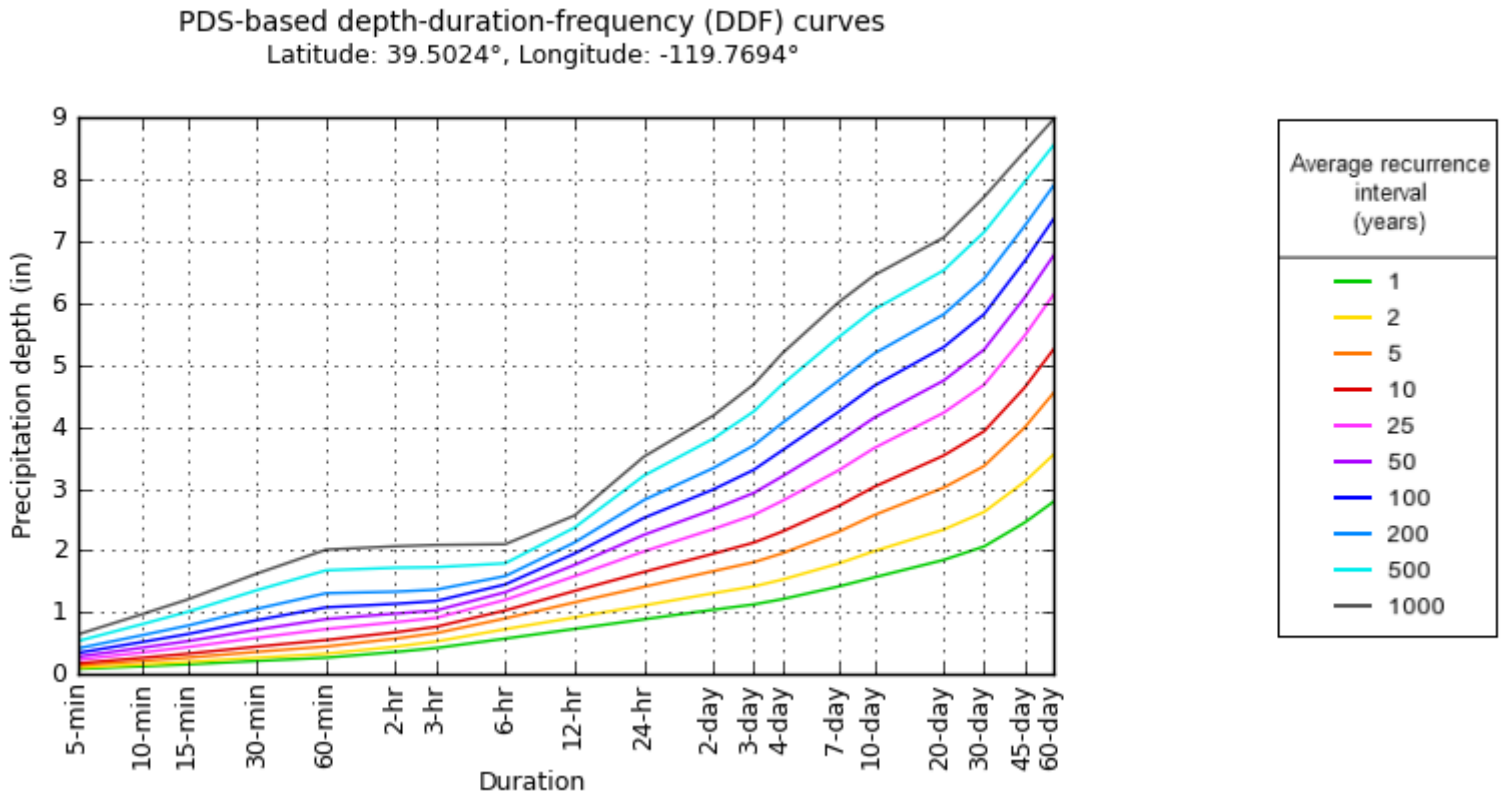
KEY TERMS

STORM RECURRENCE



KEY TERMS

STORM RECURRENCE

- 100-Year Storm
  - 1% chance within a year
- 200-Year Storm
  - 0.5% chance within a year
- Examples
  - 1997: ~50-year storm
  - 2017: ~25-year storm

KEY TERMS

STORM RECURRENCE

- Probable Maximum Precipitation (PMP) Event
  - Maximum precipitation meteorologically possible
  - “Worst Case Scenario”
  - Location specific

KEY TERMS

DAM SPILLWAYS

- Principal Spillway
  - Primary Spillway
- Auxiliary Spillway
  - Emergency Spillway


SCALE: 1" = 100'
100' 0 100' 200'
KEYSTONE AVE
VAN NESS AVE
O'FARRELL ST
POLK ST
PRINCIPAL SPILLWAY DISCHARGE
PRINCIPAL SPILLWAY #1 INLET
EAST WASH DAM
PRINCIPAL SPILLWAY INLET
WYOMING AVE
PRINCIPAL SPILLWAY #2
AUXILIARY SPILLWAY
WEST WASH DAM
MCCARRAN BLVD
AUXILIARY SPILLWAY
SEVERN ST
GULLING RD

KEY TERMS

BENEFIT-COST ANALYSIS

- Benefit-Cost-Ratio (BCR)
- BCR > 1
  - Positive net present value
- 0 < BCR < 1
  - Project cost outweigh benefits
  - Minimize threat to human life
- BCR < 0
  - Generate greater disbenefits than benefits

PRELIMINARY ALTERNATIVES

- Identified 13 preliminary alternatives
- Workshopped alternatives with project stakeholders
  - Meet project purpose and need
  - Meet goals and policies of NRCS
- Eliminated 8 preliminary alternatives
- Selected 5 alternatives for detailed analysis

FINAL PROJECT ALTERNATIVES

1. Future Without Project
2. Downstream Flood Improvements
3. Remediate East Wash Auxiliary Spillway and West Wash Dam
4. Remove Both Dams
5. Remove Both Dams with Downstream Flood Channel

NON-ECONOMIC ANALYSIS

- Operations and Maintenance
- Engineering
- Public/Regional Impacts
- Environmental
- Right-of-Way Requirements
- Level of Flood Protection

ECONOMIC ANALYSIS

- Capital Cost Estimates
- Benefit-Cost Analysis

ALTERNATIVE 1 – FUTURE WITHOUT PROJECT

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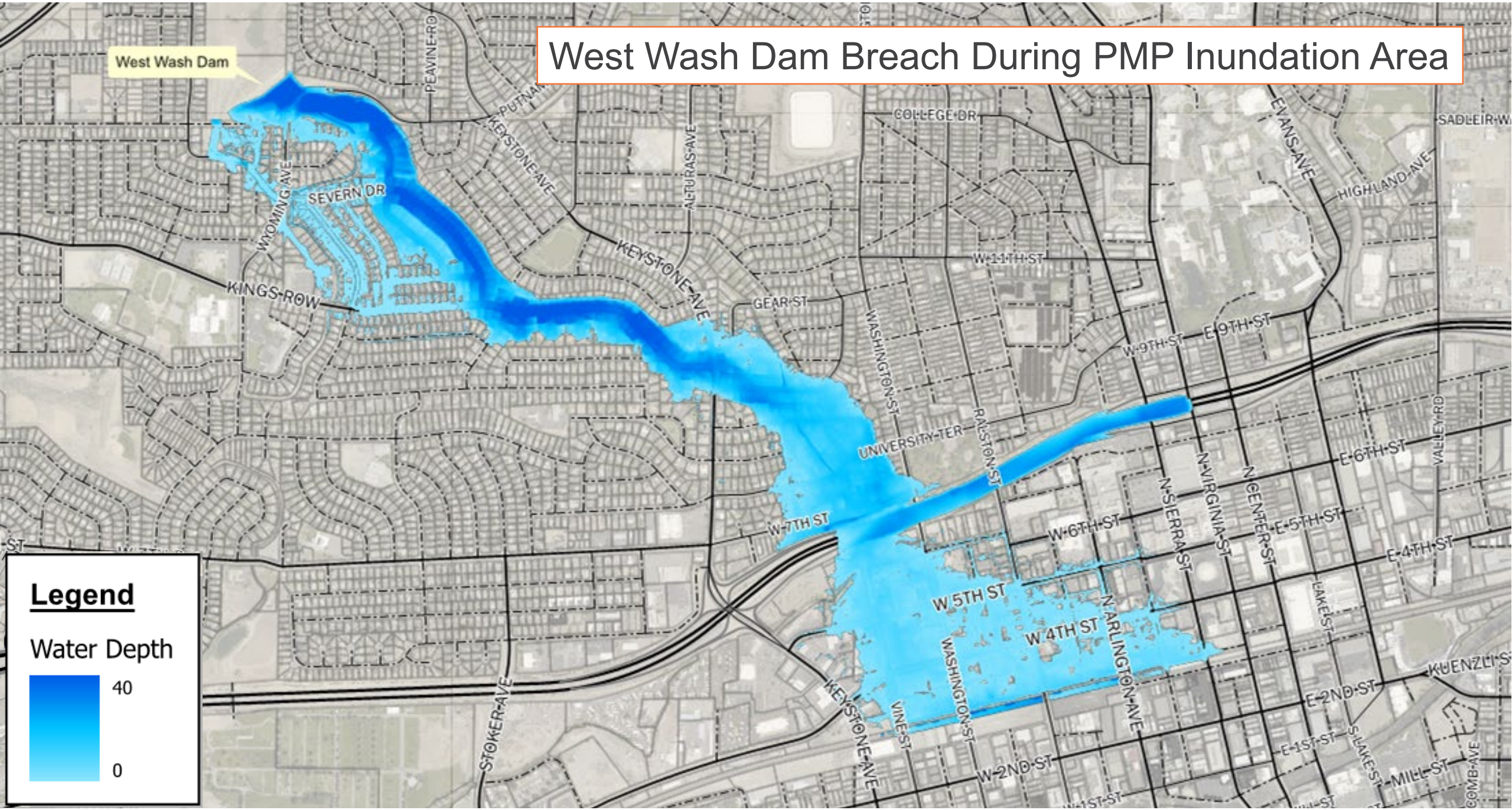
NON-ECONOMIC ANALYSIS

- Operations and Maintenance
  - No change to existing O&M
- Engineering
  - Does not meet regulatory compliance
- Public/Regional Impacts
  - No expected immediate impact

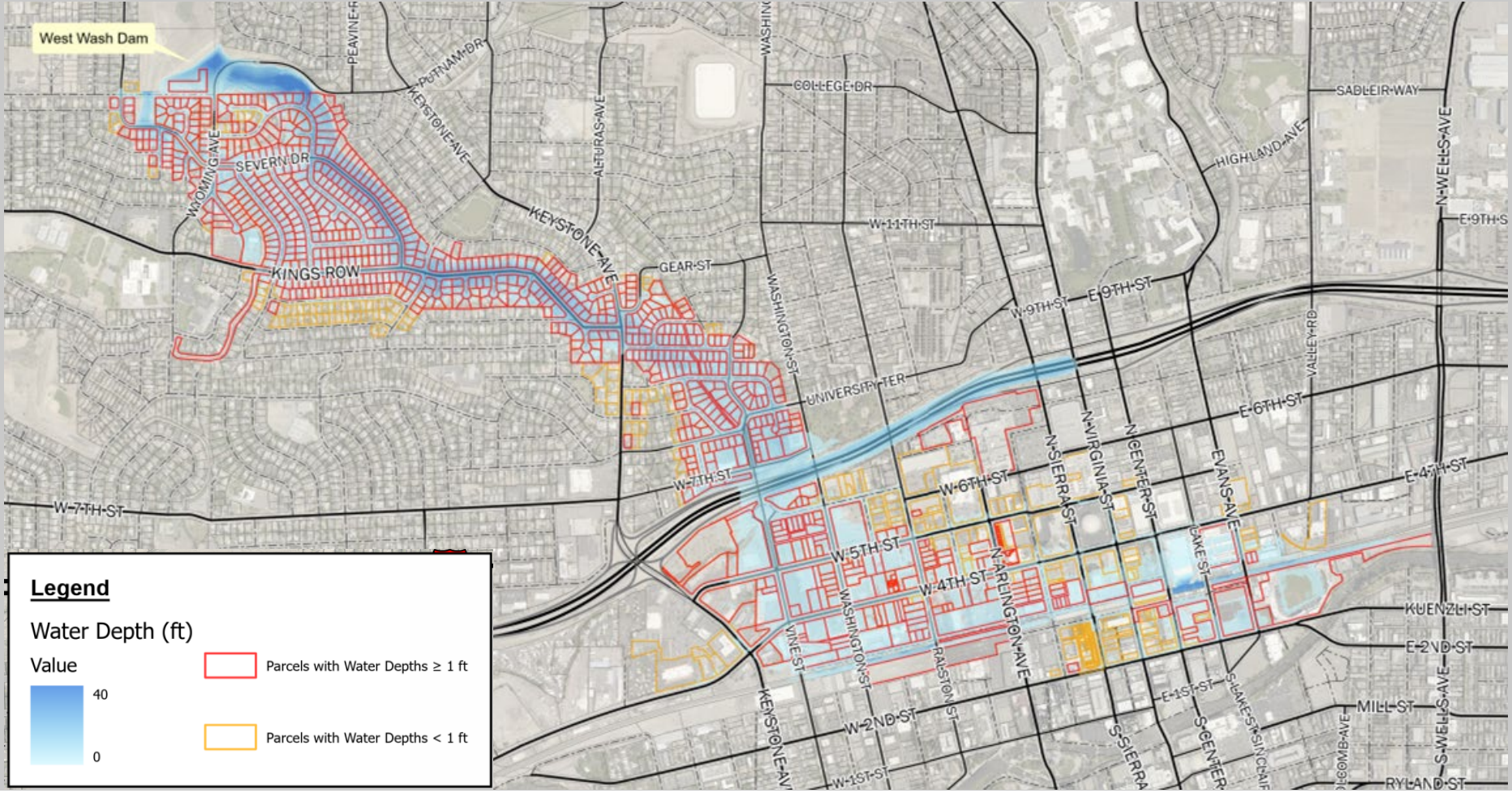
NON-ECONOMIC ANALYSIS

- Environmental
  - No change to existing impact
- Right-of-Way Requirements
  - No change to existing ROW
- Level of Flood Protection
  - Flooding occurs at 200-year event
  - PMP overtops West Wash


West Wash Dam Breach During PMP Inundation Area
West Wash Dam
PEAVINE RD
PUTNAM
KEYSTONE AVE
ALTURAS AVE
COLLEGE DR
EVANS AVE
SADLEIR W
HIGHLAND AVE
WYOMING AVE
SEVERN DR
KINGS ROW
KEYSTONE AVE
GEAR ST
W 11TH ST
WASHINGTON ST
UNIVERSITY TER
RALSTON ST
W 9TH ST
E 9TH ST
E 6TH ST
VALLEY RD
N SIERRA ST
N VIRGINIA ST
N CENTER ST
E 5TH ST
W 6TH ST
E 4TH ST
W 7TH ST
W 5TH ST
W 4TH ST
N ARLINGTON AVE
LAKE ST
KUENZLI ST
E 2ND ST
STOKER AVE
KEYSTONE AVE
VINE ST
WASHINGTON ST
W 2ND ST
E 1ST ST
S LAKE ST
MILL ST
COMBS AVE
Legend
Water Depth
40
0

ECONOMIC ANALYSIS

- Capital Cost Estimate
  - No Cost
- Benefit-Cost Analysis
  - BCR = n/a



ALTERNATIVE 2: DOWNSTREAM FLOOD IMPROVEMENTS

NON-ECONOMIC ANALYSIS

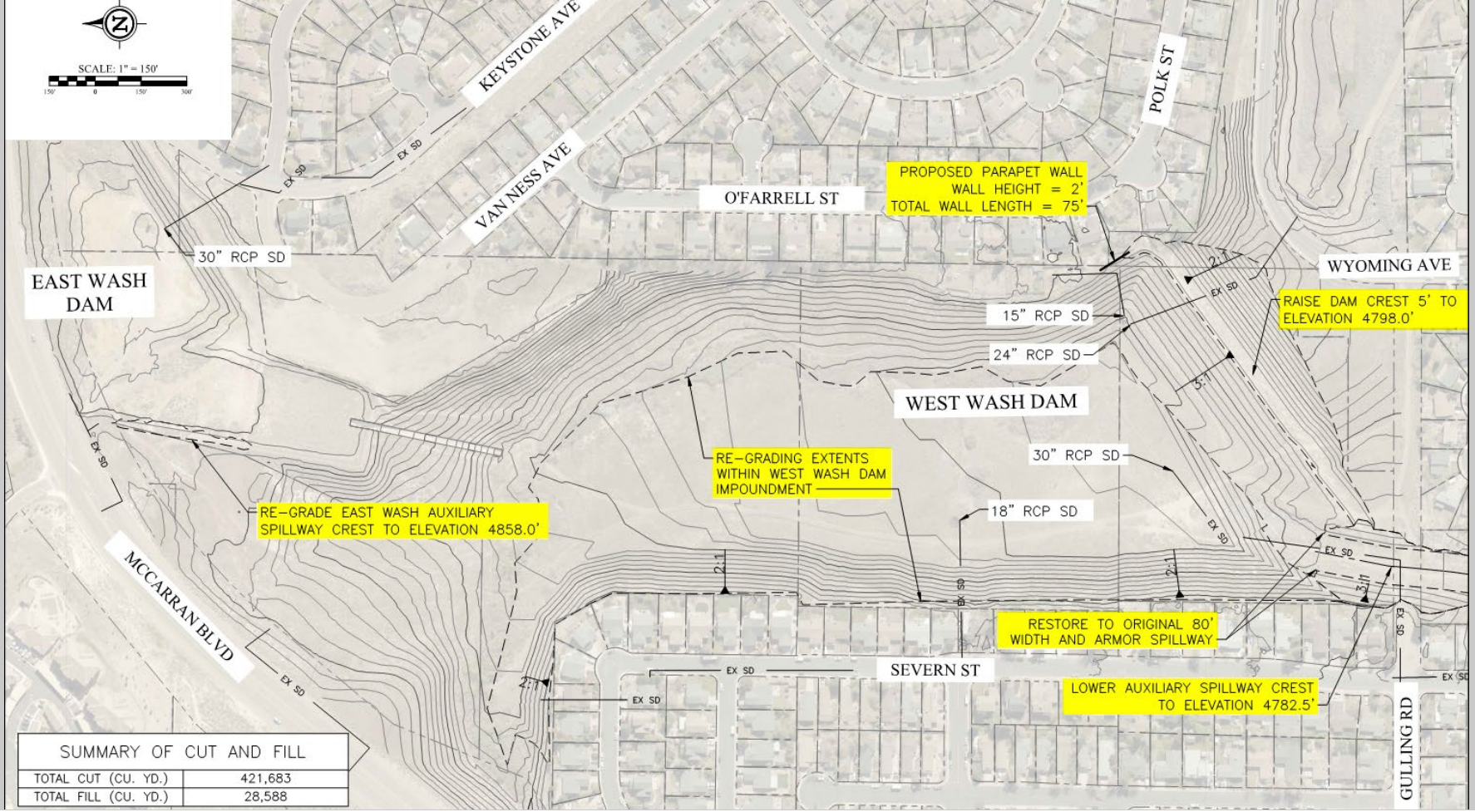
- Operations and Maintenance
  - Large increase in O&M
- Engineering
  - Constructability and design constraints
- Public/Regional Impacts
  - Large impact to downstream areas

NON-ECONOMIC ANALYSIS

- Environmental
  - Significant environmental disturbances
- Right-of-Way Requirements
  - Purchase and demolish 664 properties
- Level of Flood Protection
  - PMP overtops West Wash

ECONOMIC ANALYSIS

- Capital Cost Estimate
  - $2.0 billion
- Benefit-Cost Analysis
  - BCR = 0.00:1



ALTERNATIVE 3: REMEDIATE EAST WASH AUXILIARY SPILLWAY AND WEST WASH DAM

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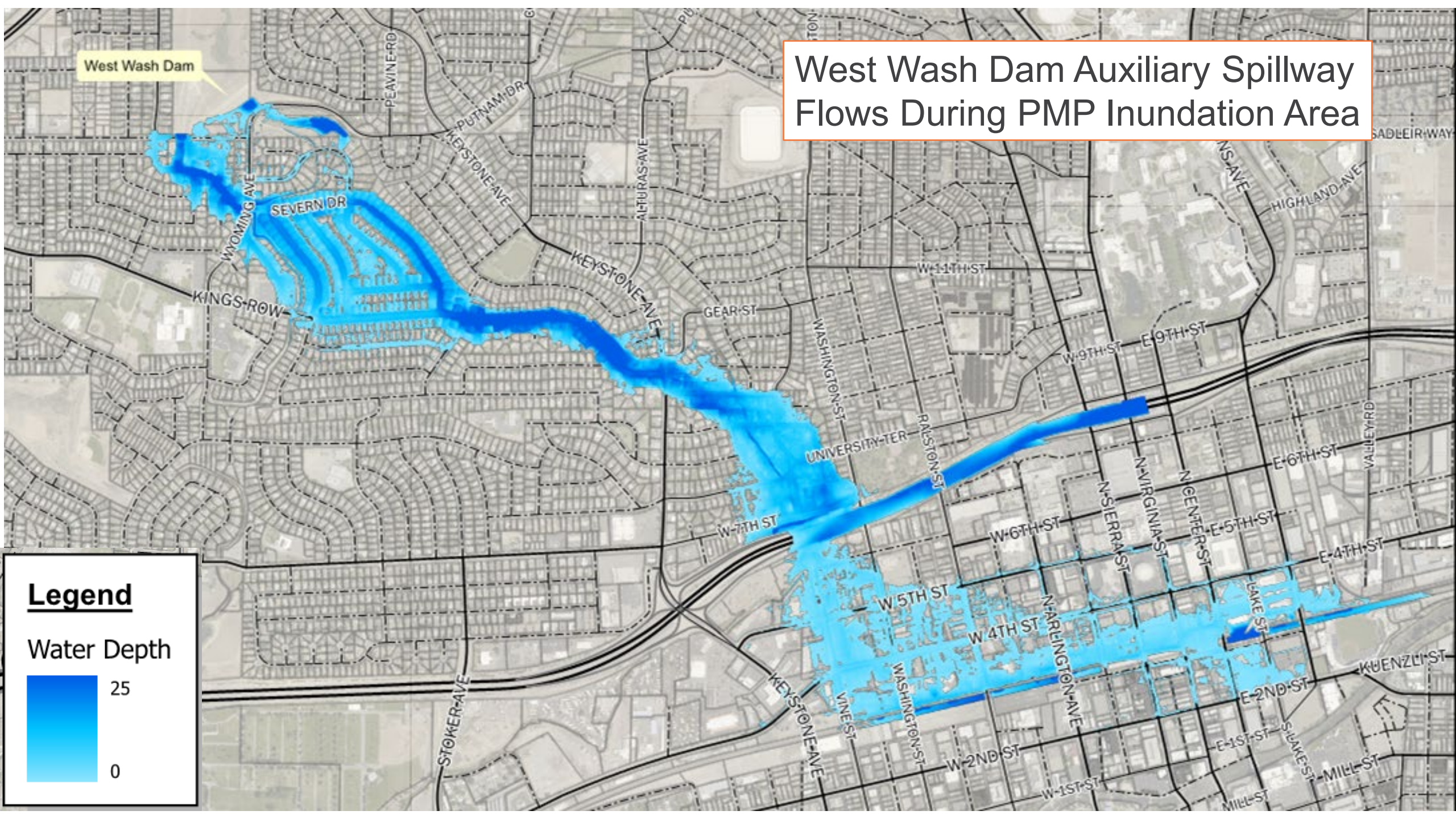
NON-ECONOMIC ANALYSIS

- Operations and Maintenance
  - Reduce O&M needs
- Engineering
  - Bring West Wash Dam into compliance
- Public/Regional Impacts
  - Minimal impacts to surrounding residents

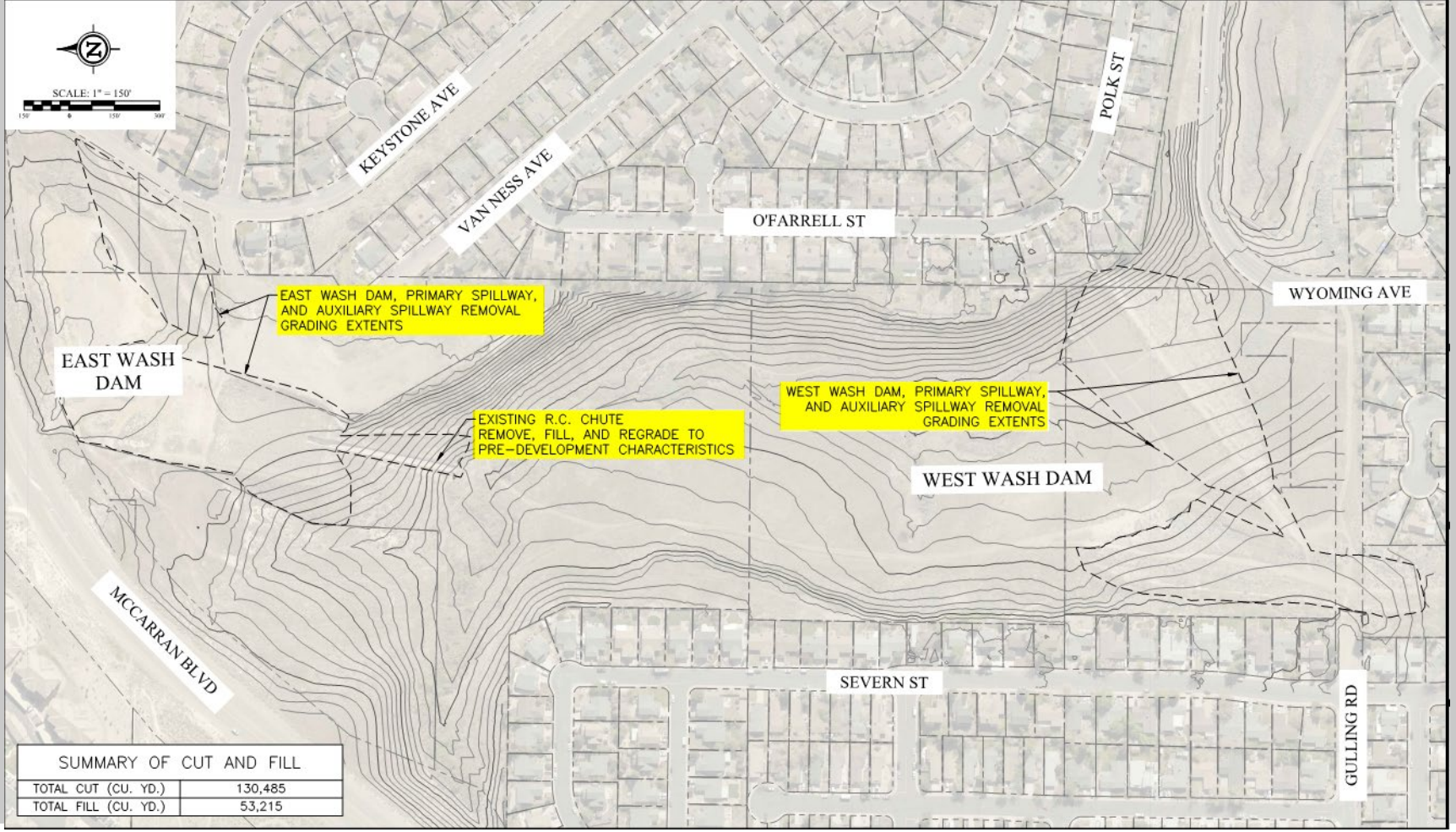
NON-ECONOMIC ANALYSIS

- Environmental
  - Smallest impact aside from Alternative 1
- Right-of-Way Requirements
  - May require change to existing ROW
- Level of Flood Protection
  - Flooding occurs at 500-year event
  - PMP does not overtop dam


West Wash Dam Auxiliary Spillway
Flows During PMP Inundation Area
West Wash Dam
PEAVINE RD
PUTNAM DR
KEYSTONE AVE
ALTURAS AVE
WYOMING AVE
SEVERN DR
KINGS ROW
GEAR ST
WASHINGTON ST
UNIVERSITY TER
RALSTON ST
W 11TH ST
W 9TH ST
E 9TH ST
HIGHLAND AVE
W 7TH ST
W 6TH ST
E 6TH ST
N SIERRA ST
N VIRGINIA ST
N CENTER ST
E 5TH ST
VALLEY RD
W 5TH ST
W 4TH ST
E 4TH ST
N ARLINGTON AVE
LAKE ST
VINE ST
KUENZLI ST
E 2ND ST
W 2ND ST
E 1ST ST
W 1ST ST
S LAKE ST
MILL ST
STOKER AVE
Legend
Water Depth
25
0

ECONOMIC ANALYSIS

- Capital Cost Estimate
  - $23.0 Million
- Benefit-Cost Analysis
  - BCR = 0.16:1



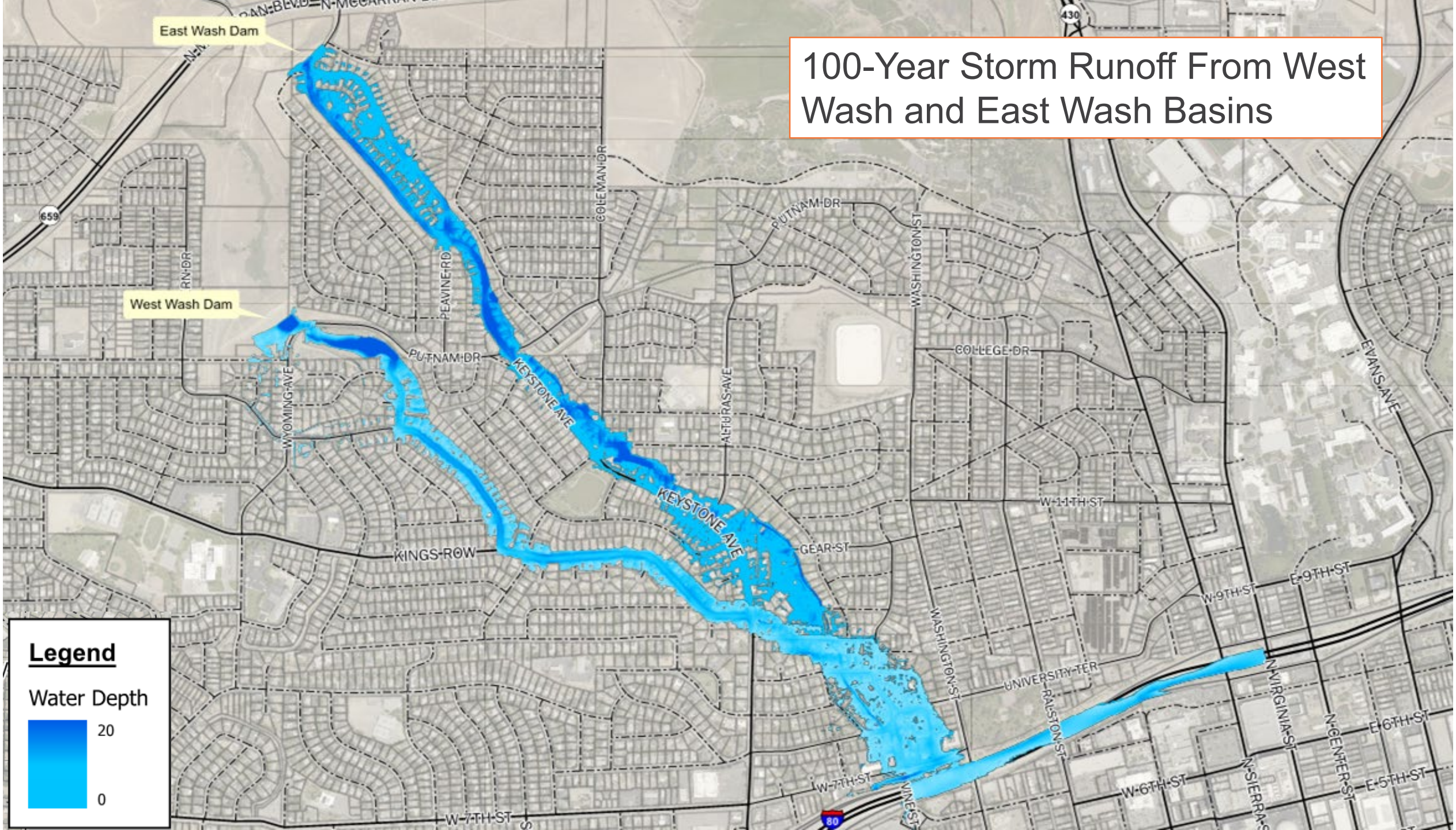
ALTERNATIVE 4: REMOVE BOTH DAMS

NON-ECONOMIC ANALYSIS

- Operations and Maintenance
  - Increase downstream O&M needs
- Engineering
  - Does not meet regulatory compliance
- Public/Regional Impacts
  - Large impacts to downstream residents

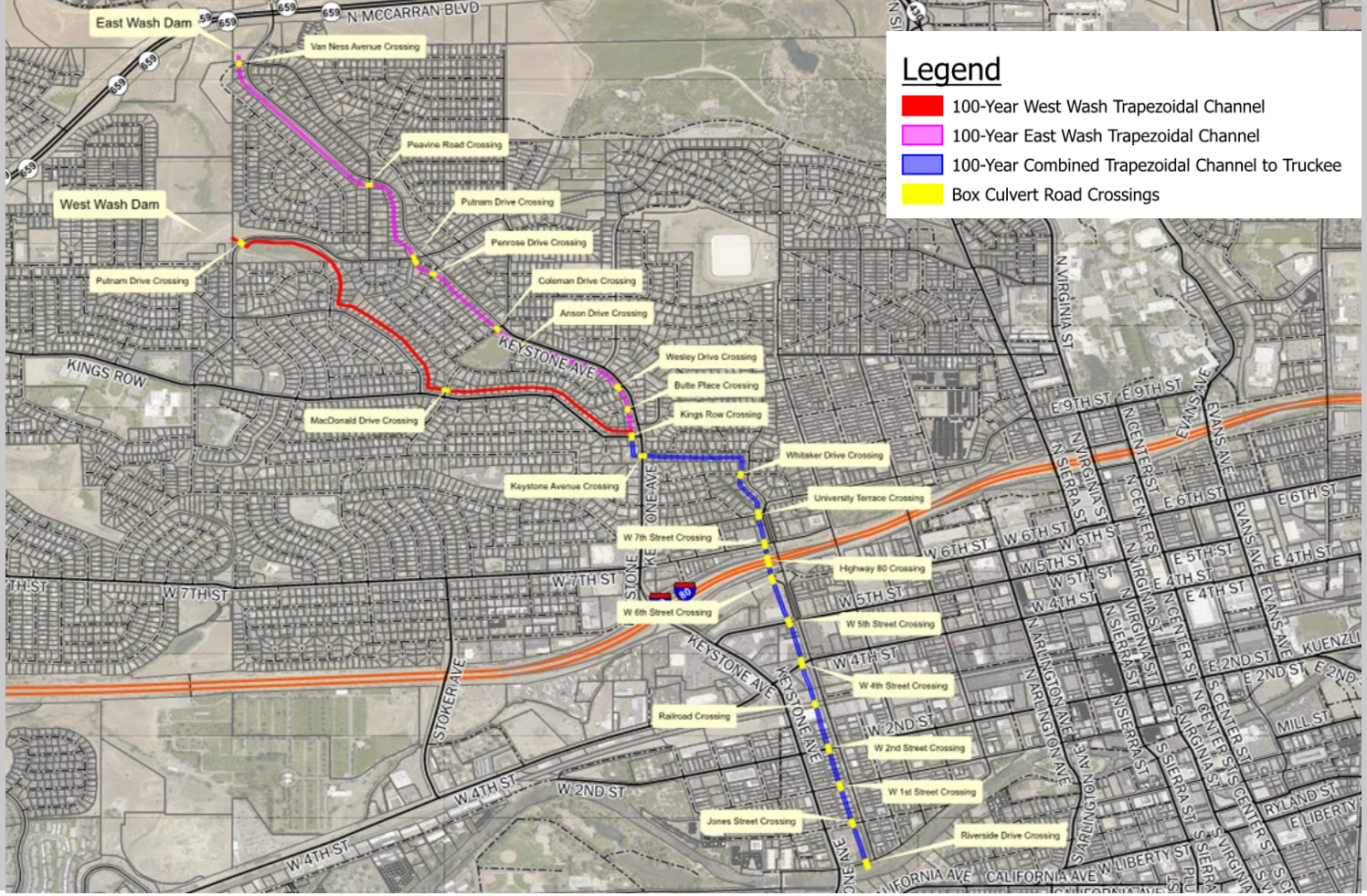
NON-ECONOMIC ANALYSIS

- Environmental
  - Multiple environmental impacts
- Right-of-Way Requirements
  - No change to existing ROW
- Level of Flood Protection
  - No flood protection for downstream residents


East Wash Dam
West Wash Dam
100-Year Storm Runoff From West Wash and East Wash Basins
Legend
Water Depth
20
0
COLEMAN DR
PEAVINE RD
PUTNAM DR
WASHINGTON ST
COLLEGE DR
EVANS AVE
WYOMING AVE
KEYSTONE AVE
ALTURAS AVE
W 11TH ST
KINGS ROW
GEAR ST
W 9TH ST
E 9TH ST
UNIVERSITY TER
RALSTON ST
N VIRGINIA ST
N CENTER ST
E 6TH ST
W 7TH ST
W 6TH ST
N SIERRA ST
E 5TH ST
VINE ST
659
430
80

ECONOMIC ANALYSIS

- Capital Cost Estimate
  - $5.5 Million
- Benefit-Cost Analysis
  - BCR = -96.3:1



ALTERNATIVE 5: REMOVE BOTH DAMS WITH DOWNSTREAM IMPROVEMENTS

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NON-ECONOMIC ANALYSIS

- Operations and Maintenance
  - Increase downstream O&M needs
- Engineering
  - Design and constructability constraints
- Public/Regional Impacts
  - Large impacts to downstream residents

NON-ECONOMIC ANALYSIS

- Environmental
  - Multiple environmental impacts
- Right-of-Way Requirements
  - Purchase and demolish 161 properties
- Level of Flood Protection
  - 100-year event contained

ECONOMIC ANALYSIS

- Capital Cost Estimate
  - $172.2 Million
- Benefit-Cost Analysis
  - BCR = 0.00:1

NON-ECONOMIC COMPARISON

Criteria	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5
O&M	5.6	2.5	6.3	3.8	2.5
Engineering	9.5	7.3	10.3	6.3	7.3
Public Impacts	18.8	3.8	15.0	11.3	7.5
Environmental	22.4	13.3	19.5	16.5	9.9
ROW	12.5	2.5	7.5	12.5	5.0
Flood Protection	9.5	25.0	21.5	7.0	7.0
Total Score	**78.3**	**54.3**	**80.0**	**57.3**	**51.6**

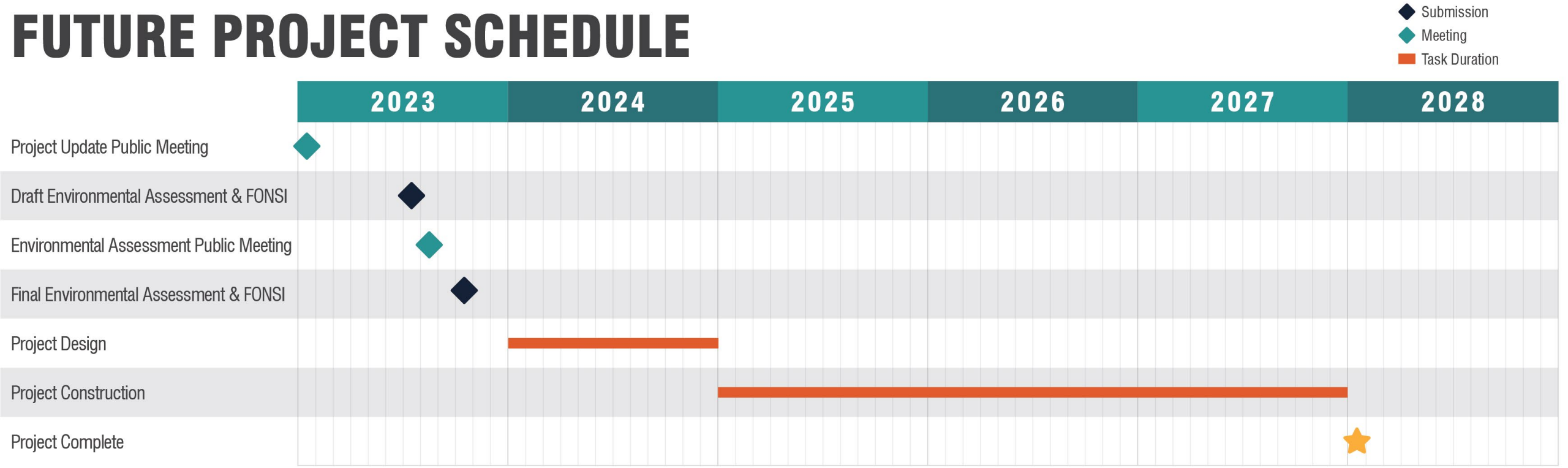
ECONOMIC COMPARISON

Criteria	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5
Capital Cost Estimate	$0	$2.0 billion	$23.0 million	$5.5 million	$172.2 million
BCR	n/a	0.00:1	0.16:1	-96.3:1	0.00:1

PREFERRED ALTERNATIVE

- Alternative 3: Remediate East Wash Auxiliary Spillway and West Wash Dam
  - Reduces required operations and maintenance
  - Minimizes impacts to surrounding residents
  - Increases flood protection to downstream residents
  - Brings West Wash into compliance

FUTURE PROJECT SCHEDULE



PREFERRED ALTERNATIVE TIMELINE

Project Update Meeting

FUTURE MILESTONES

- July 2023 – Environmental Assessment & FONSI Draft
- August 2023 – Public Comment on Environmental Assessment & FONSI Draft
- October 2023 – Final Environmental Assessment & FONSI

THANK YOU...

Any questions or comments?