

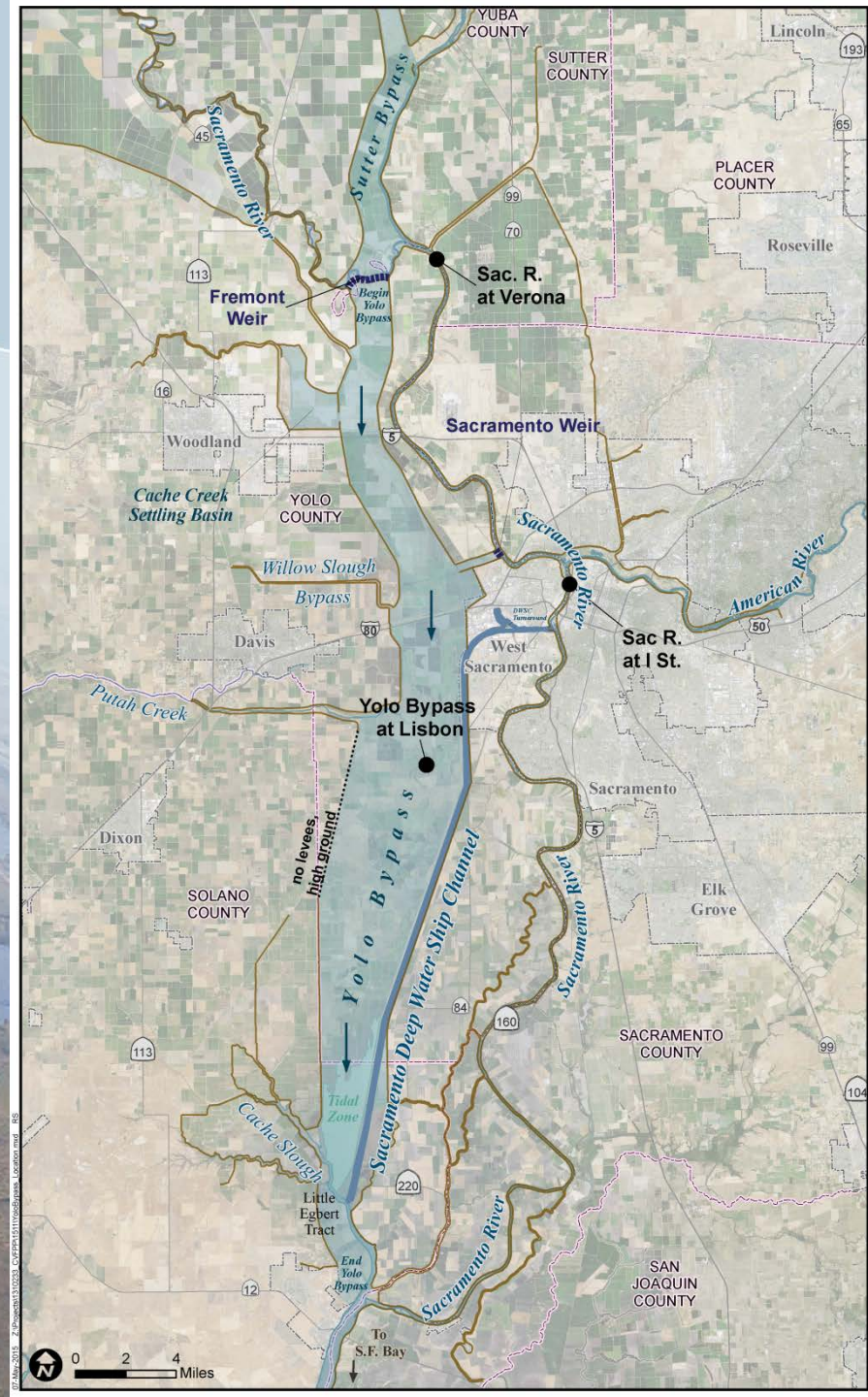
Yolo Bypass Feasibility Study

May 8, 2015 Update to
Central Valley Flood Protection Board

Presented by: Jeremy Arrich



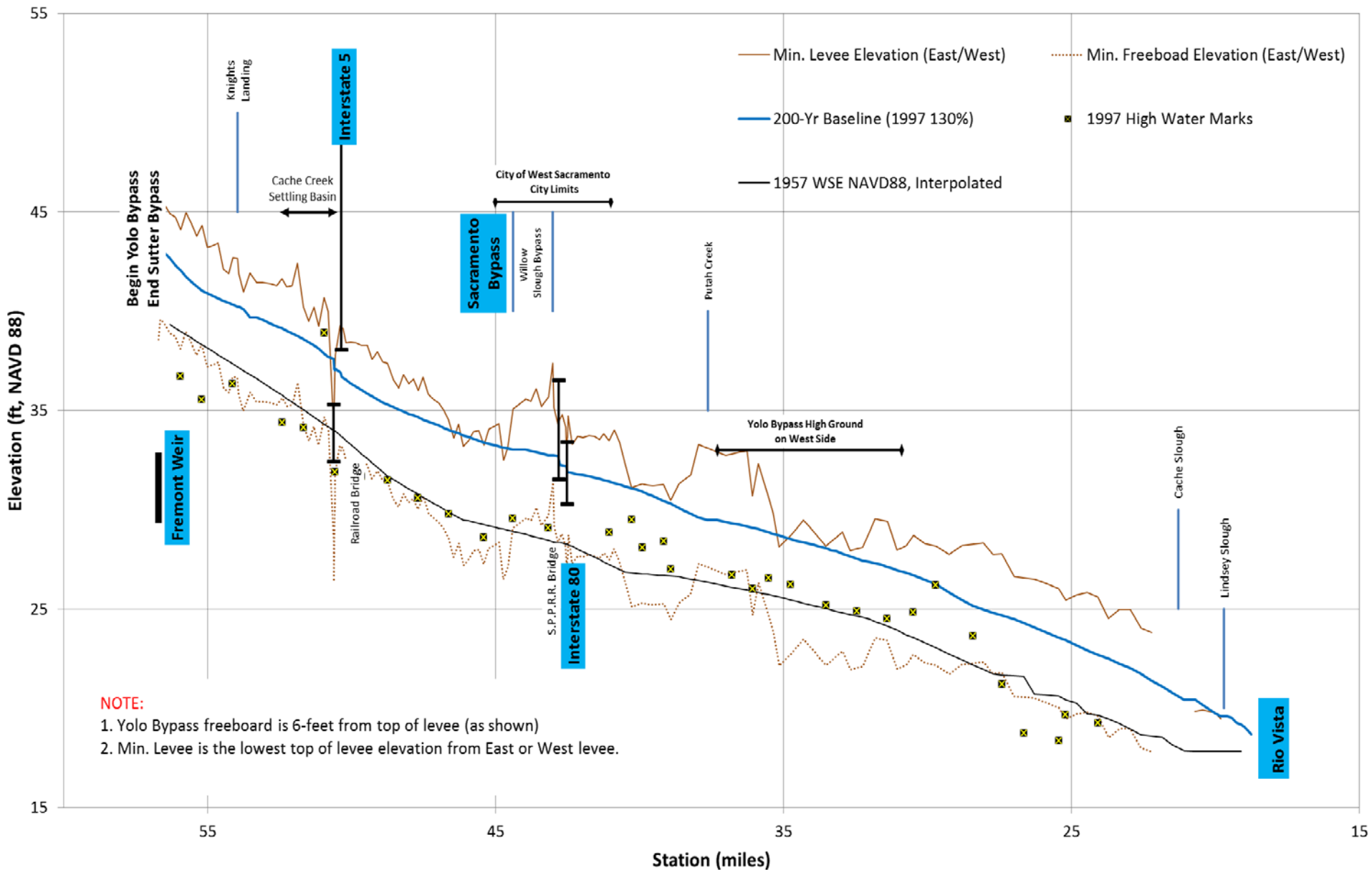
Yolo Bypass



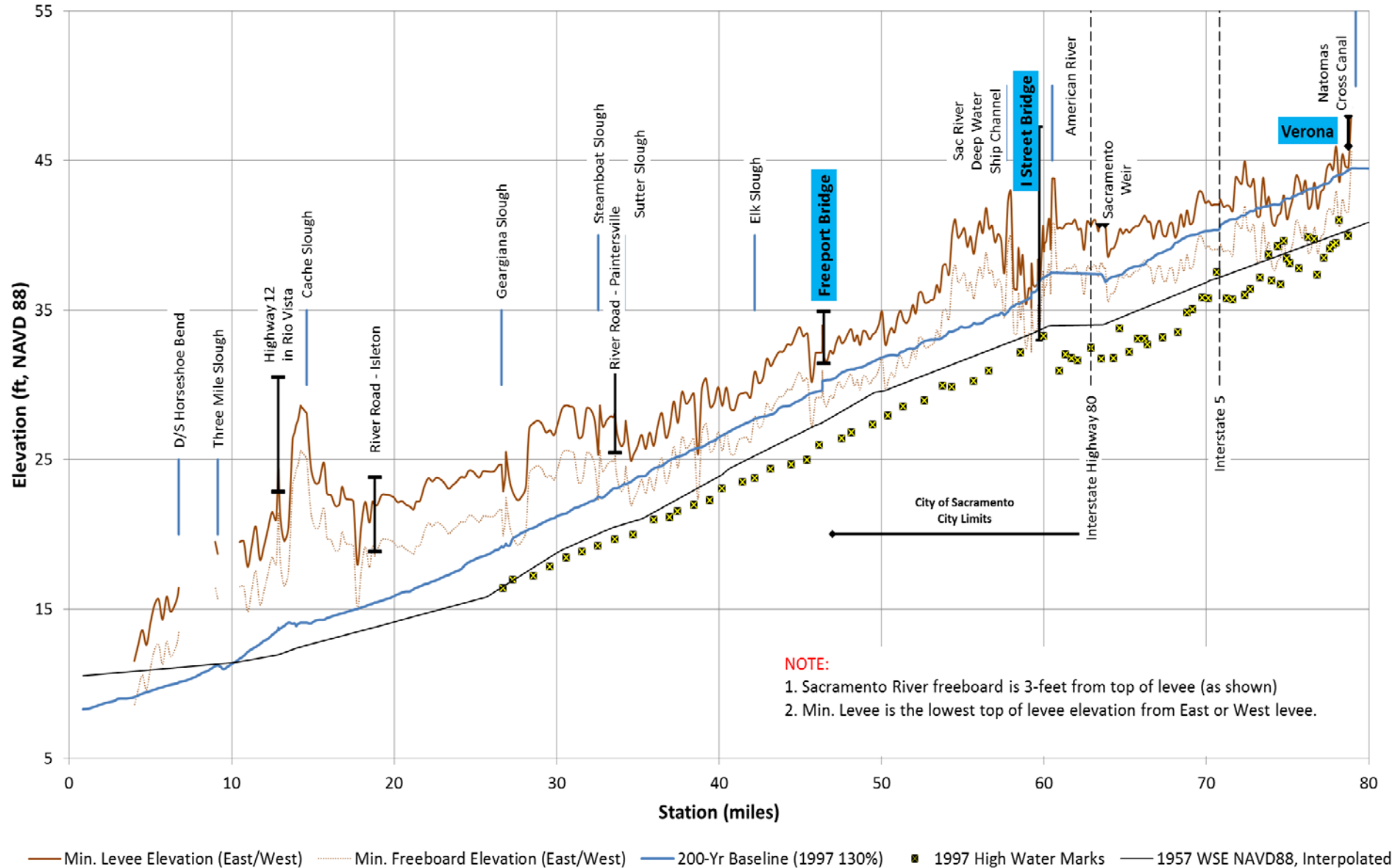
The Yolo Bypass... a valued landscape

- Aging Infrastructure
- Values and Expectations
- System Performance
- Need for Improvements

Yolo Bypass Water Surface Profile



Sacramento River Water Surface Profile



Goal and Objectives

GOAL

A resilient Lower Sacramento River flood management system

OBJECTIVES

- 1. Reduce Flood Stages**
 - Reduce stages upstream of Fremont Weir
 - Reduce Sacramento River stages, downstream of Fremont Weir
 - Reduce stages in Yolo Bypass
 - Provide adequate freeboard in Yolo Bypass
- 2. Improve geotechnical integrity of Yolo Bypass levees**
- 3. Integrate Conservation Strategy and BiOps ecosystem enhancements**
- 4. Accommodate regional program elements where appropriate**

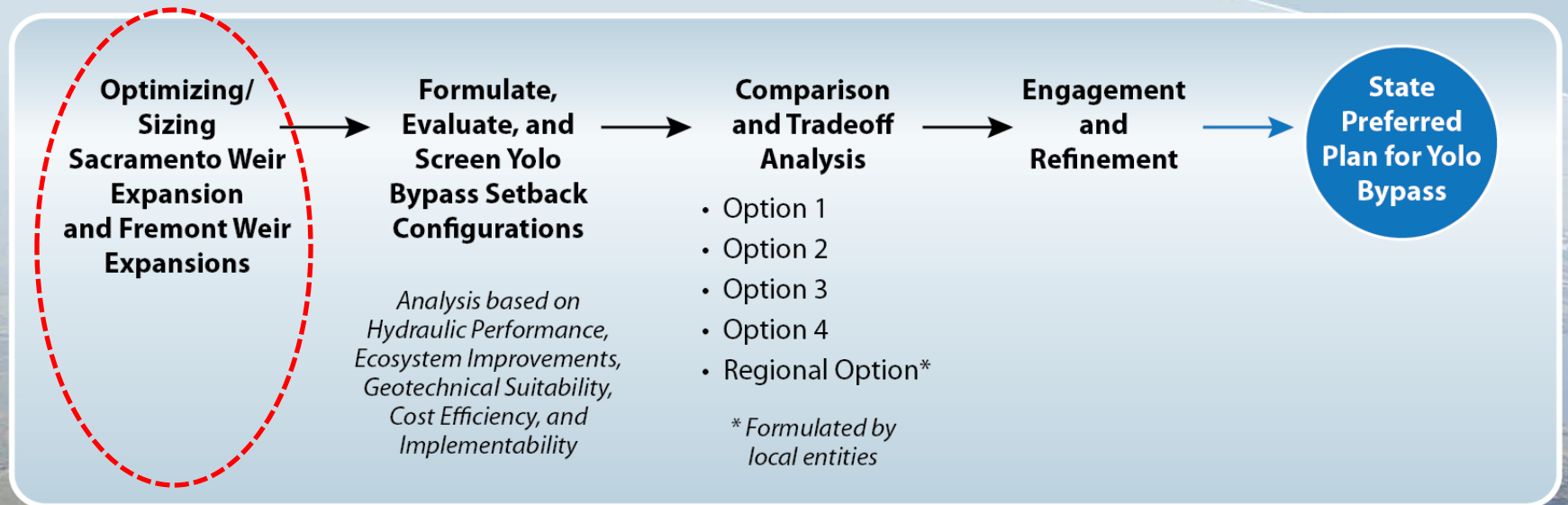
Planning Framework

- California Water Action Plan
- Major Planning Efforts Affecting Yolo Bypass:
 - ✓ CVFPP - BWFS - RFMP
 - ✓ BiOps
 - ✓ Delta: California Water Fix and Eco Restore
 - ✓ Regional Water/Eco/Flood Infrastructure Planning
- **TODAY'S FOCUS – Yolo Bypass “Flood” Feasibility Study**

Coordination, Collaboration and Alignment

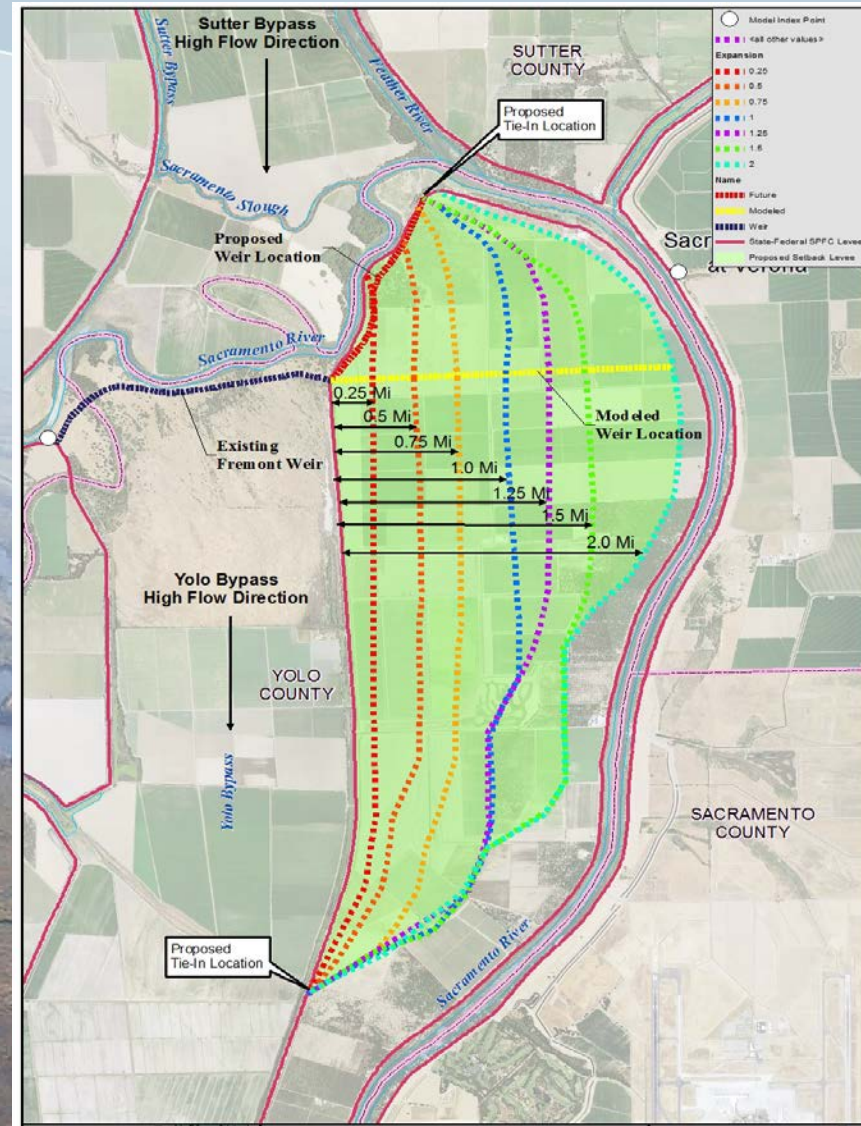
- Coordination in Progress — BWFS and Yolo Bypass focus
 - CVFPB
 - USACE
 - USBR, and other Federal Agencies
 - State
 - Local
 - Interest Groups, NGOs
 - Residents and Property Owners
- Robust interaction and engagement – Through Partnership

Yolo Bypass Feasibility Study



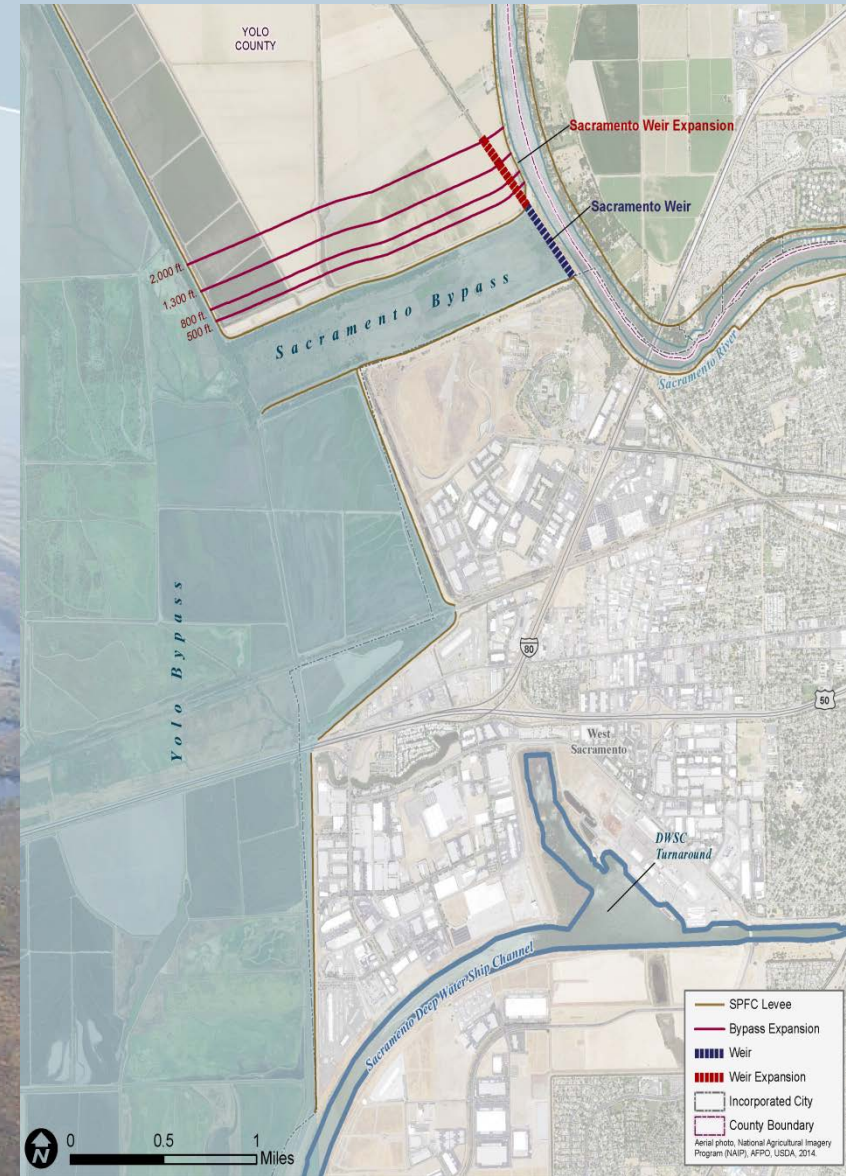
Fremont Weir Expansion

- In-line Weir
- Expansion Increments
 - 0.25 mile
 - 0.5 mile
 - 0.75 mile
 - 1.0 mile
 - 1.25 mile
 - 1.5 mile
 - 2.0 mile
- 25% of the expanded areas include roughness coefficient of 0.1



Sacramento Weir and Bypass Expansion

- Expansion Increments
 - 500 feet
 - 800 feet
 - 1300 feet
 - 2000 feet
 - Additional combinations during refinement
- 25% of the expanded areas include roughness coefficient of 0.1



Combination of Fremont and Sacramento Weir Expansions

Sacramento Weir and Bypass Expansion (ft)	Fremont Weir Expansion (miles)							
	0	0.25	0.5	0.75	1	1.25	1.5	2
0	✓	✓	✓	✓	✓	✓	✓	✓
500	✓		✓		✓		✓	✓
800	✓		✓		✓		✓	✓
1300	✓		✓		✓		✓	✓
2000	✓							

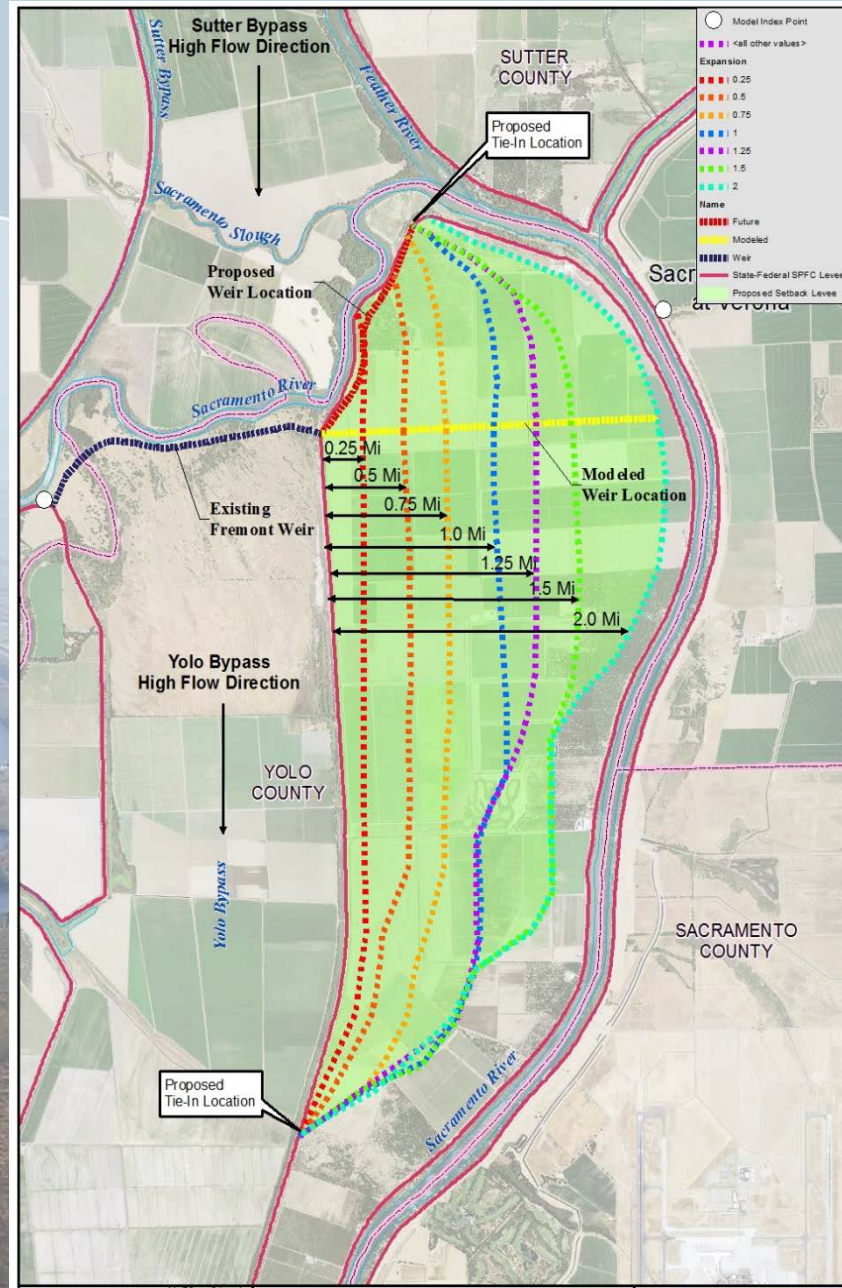
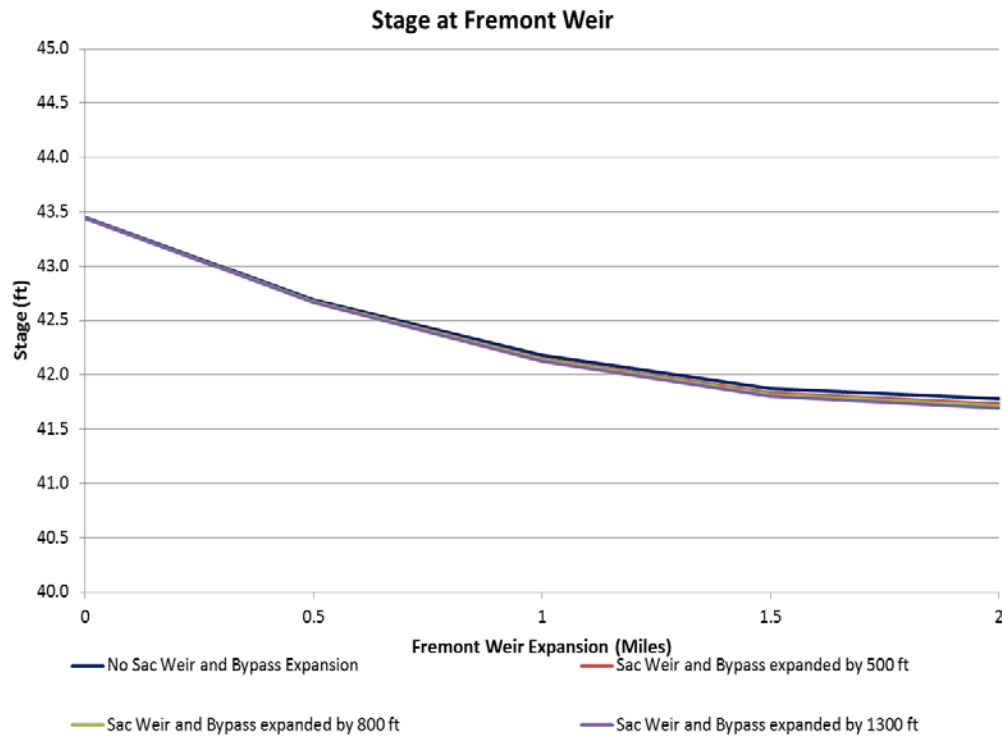
Hydraulic Analysis

- **Hydrology**

- 200-yr (used 1997 event x130% as a Surrogate)
- Conservative Hydrology
- Climate Change hydrology is evolving

Yolo Bypass at Fremont Weir

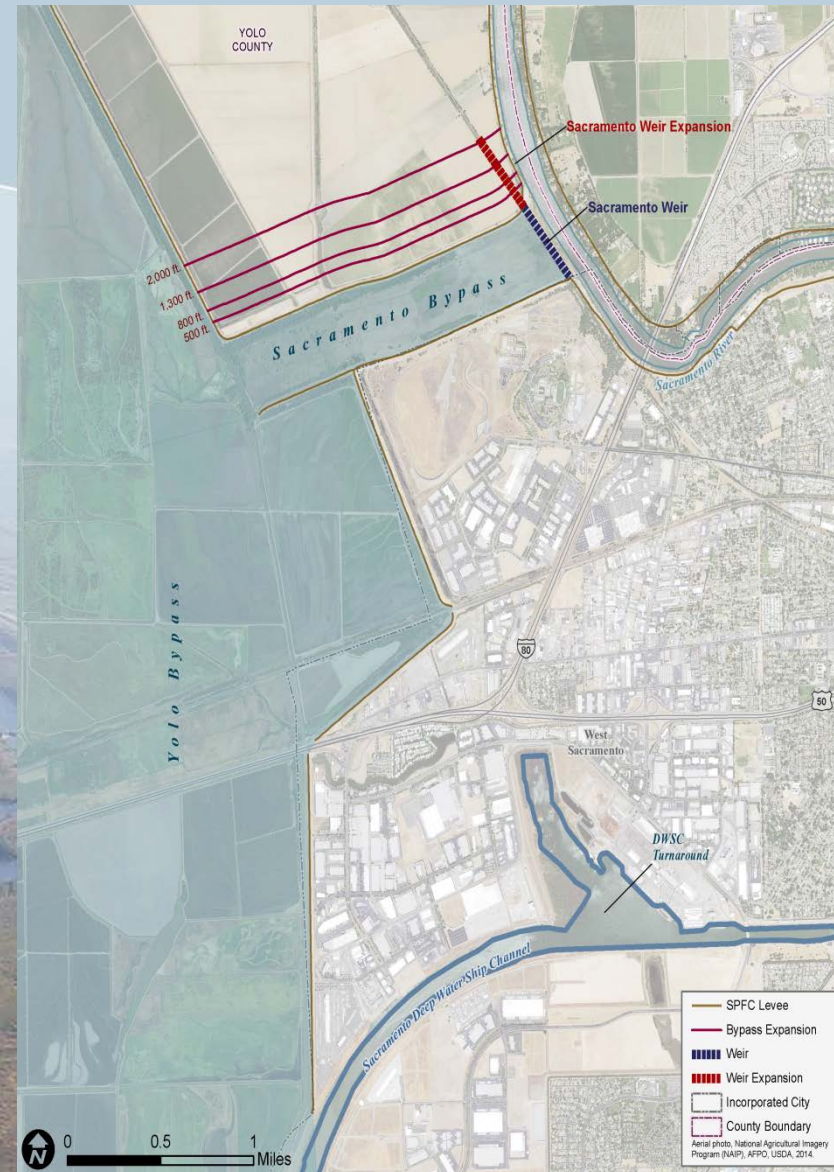
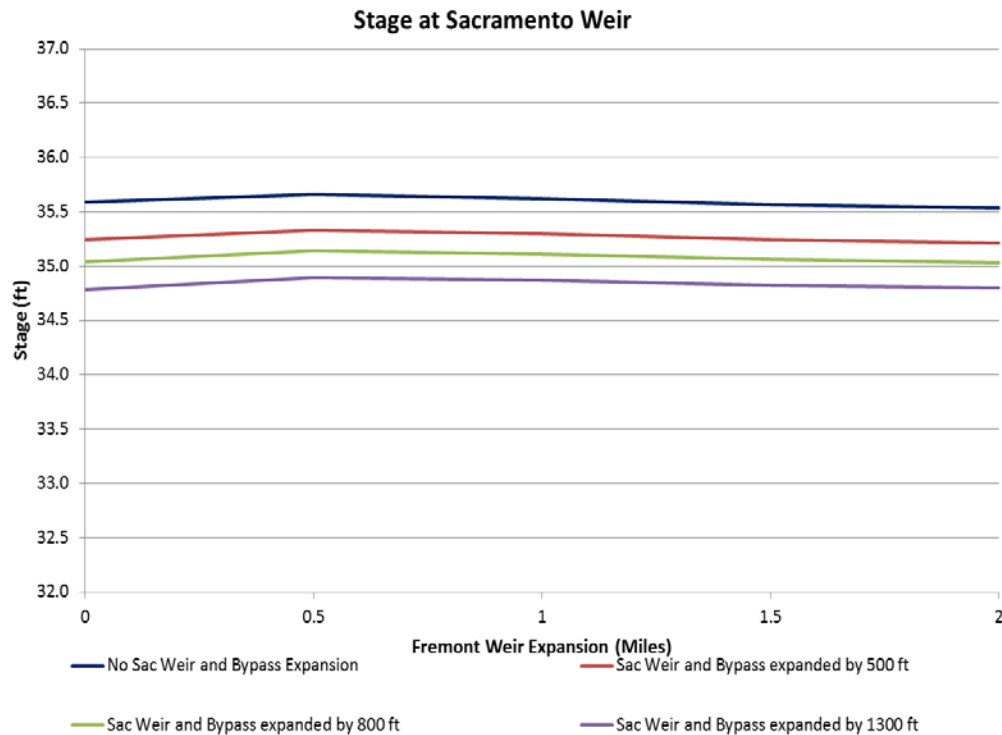
1997 130% Scaled Event



- Expanding Fremont Weir by 2 miles lowers stage by 1.8 ft at Fremont Weir and in Sacramento River at Verona
- Sac Weir expansion has little to no affect at Fremont Weir and Verona

Sacramento Bypass at Sacramento Weir

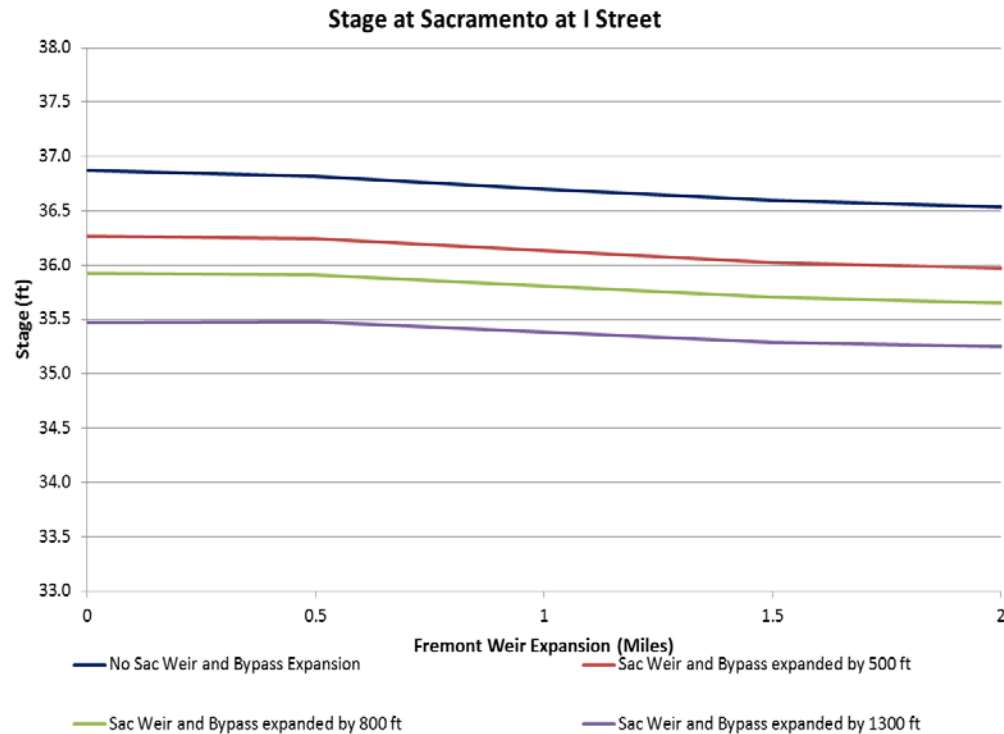
1997 130% Scaled Event



- Expanding Sac Weir and Bypass by 1300 ft lowers stage by 0.9 ft at Sac Weir
- Expanding Fremont Weir has little to no affect at Sac Weir

Sacramento River at I Street

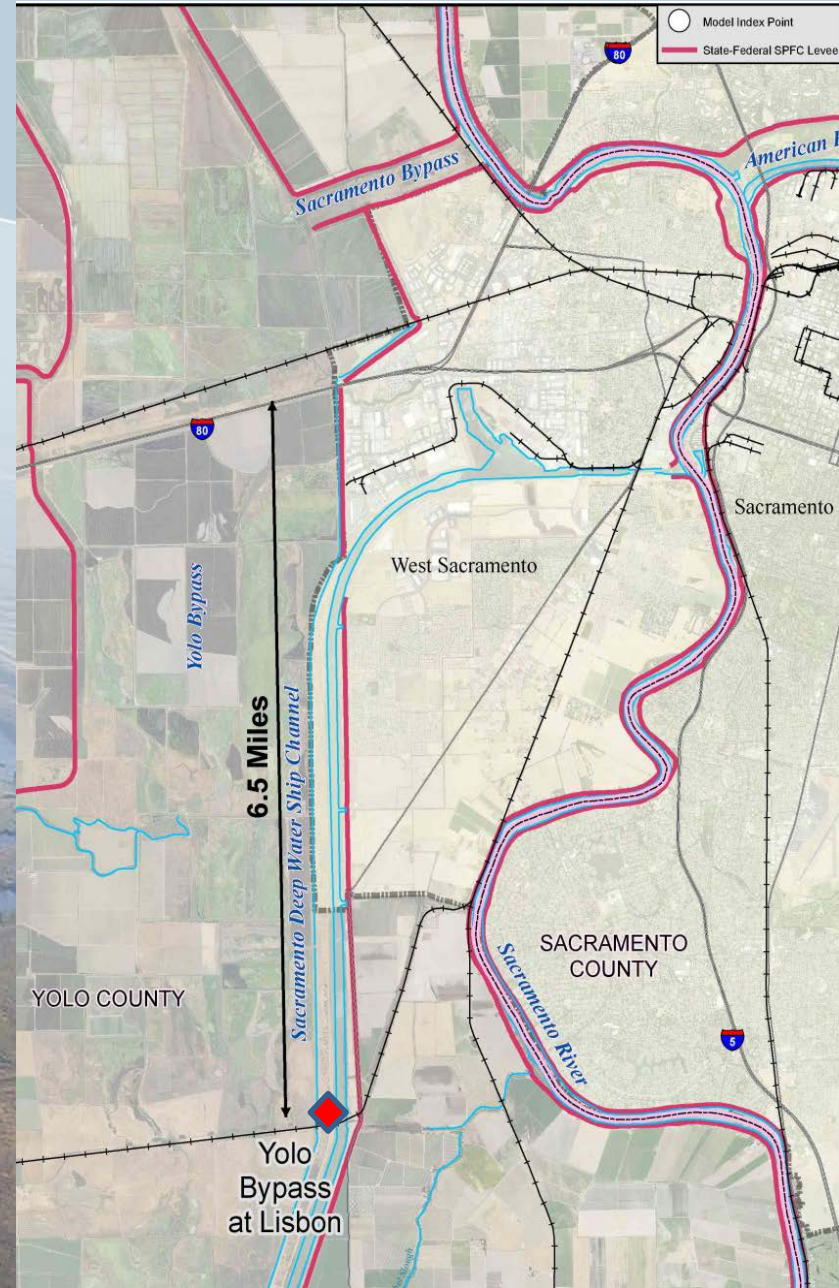
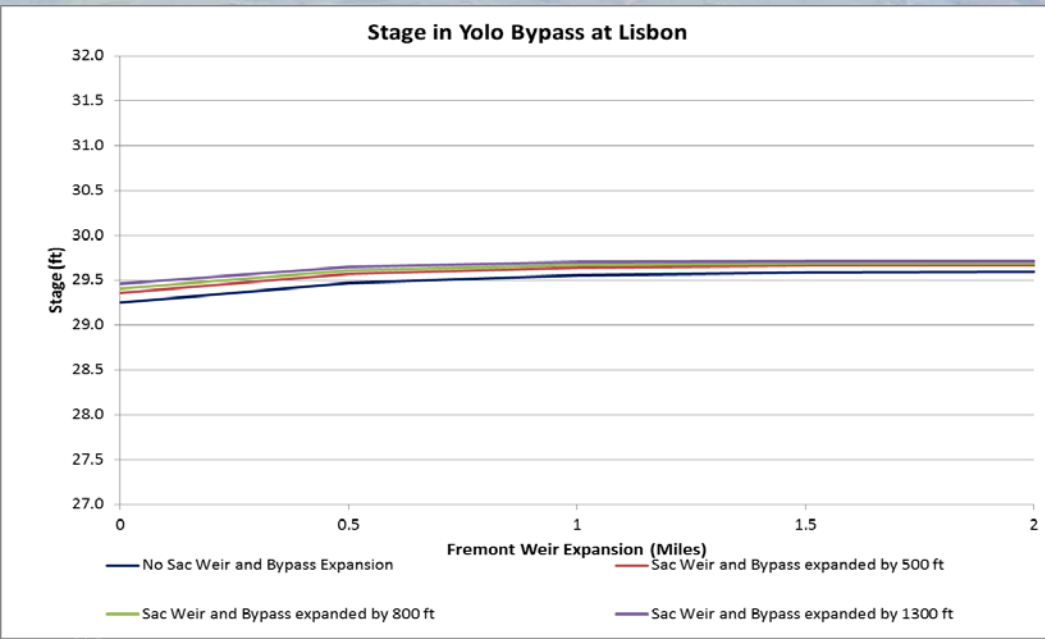
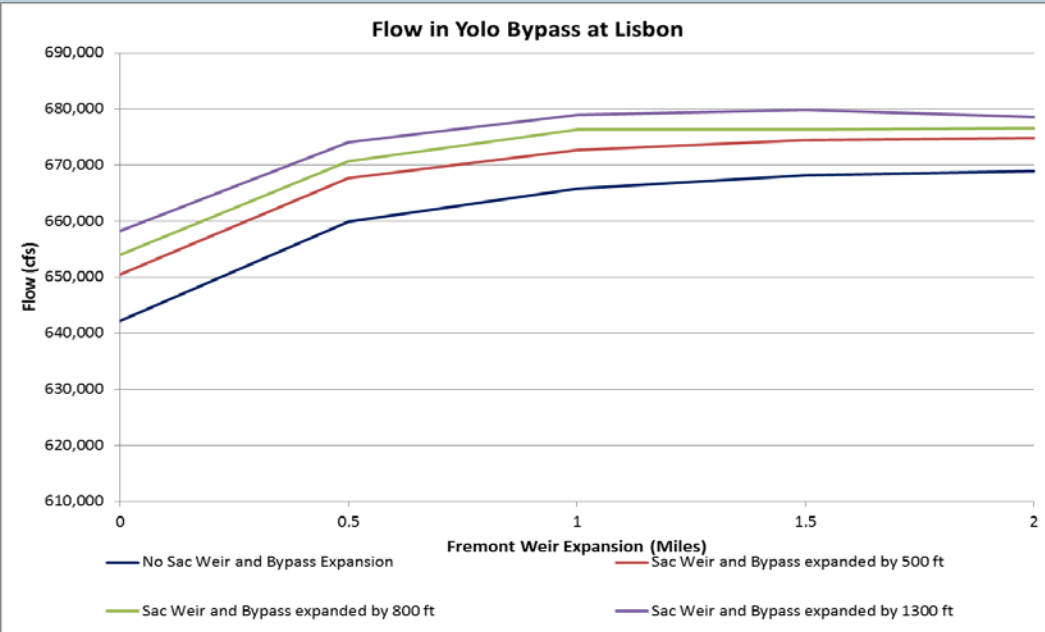
1997 130% Scaled Event



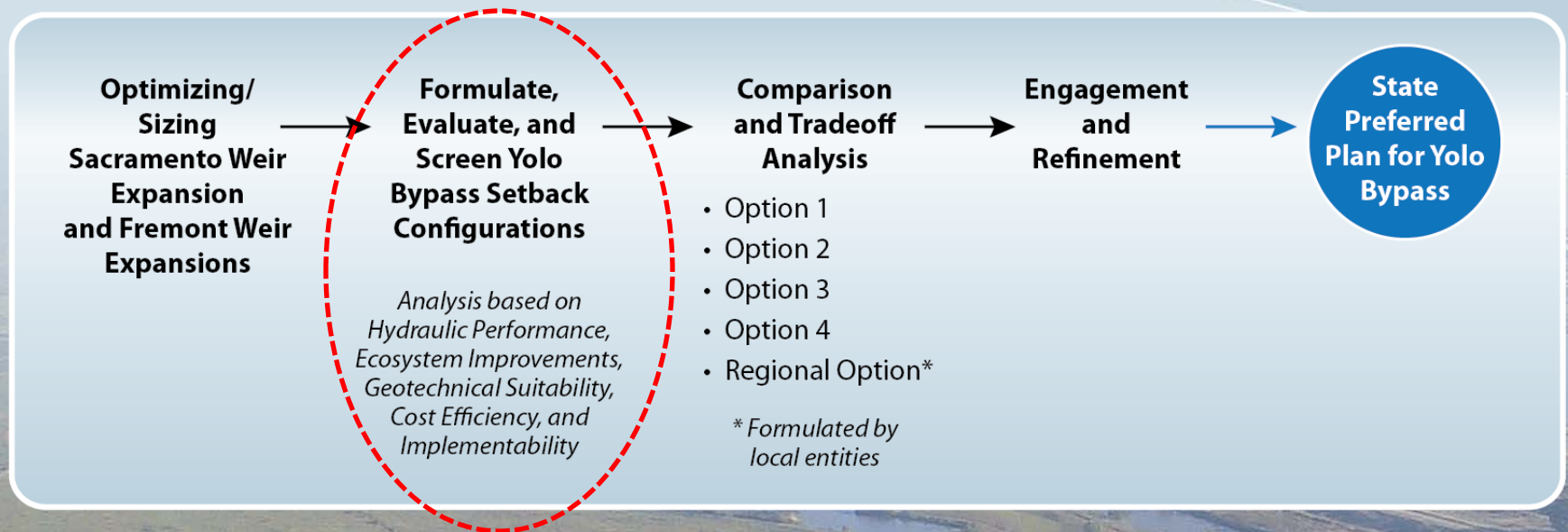
- Expanding Fremont Weir by 2 miles lowers stage by 0.3 ft at I Street
- Expanding Sac Weir and Bypass by 1300 ft lowers stage by 1.4 ft at I Street

Yolo Bypass at Lisbon

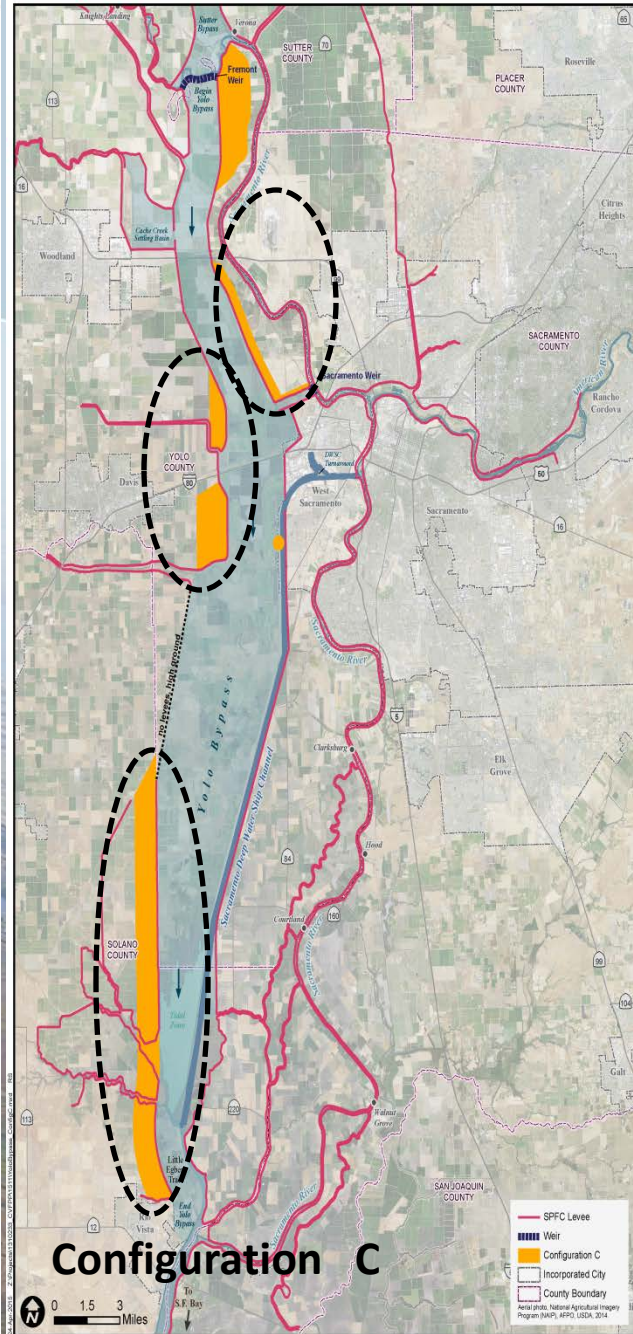
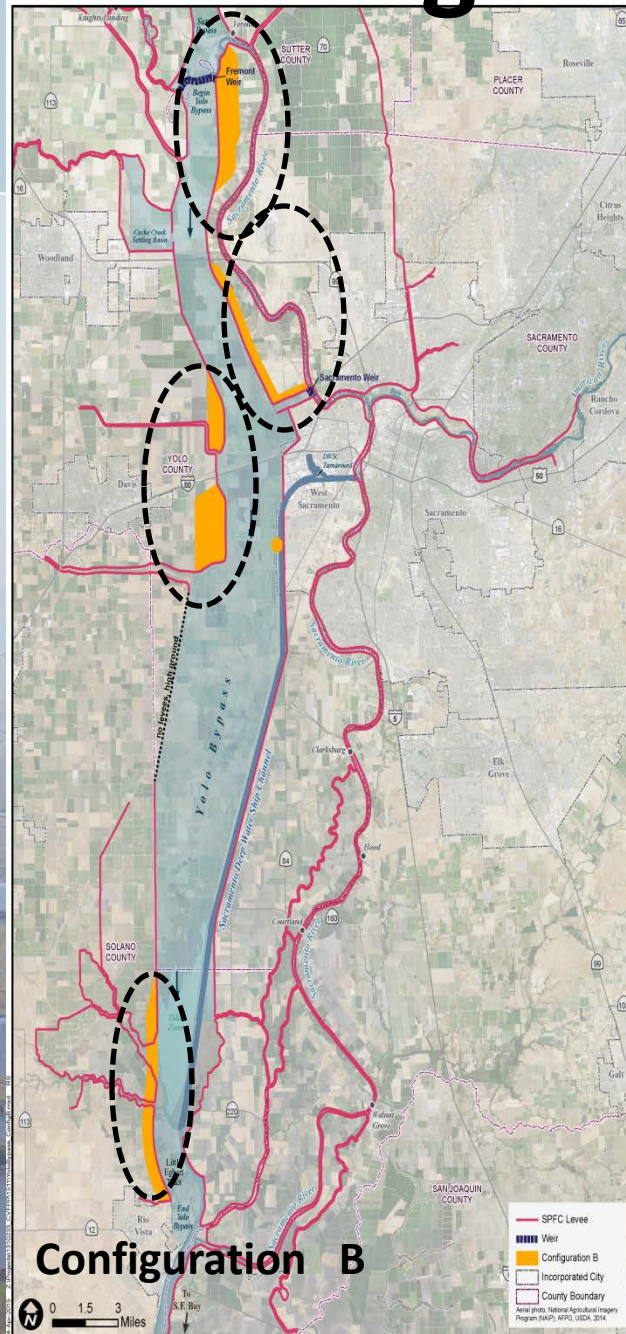
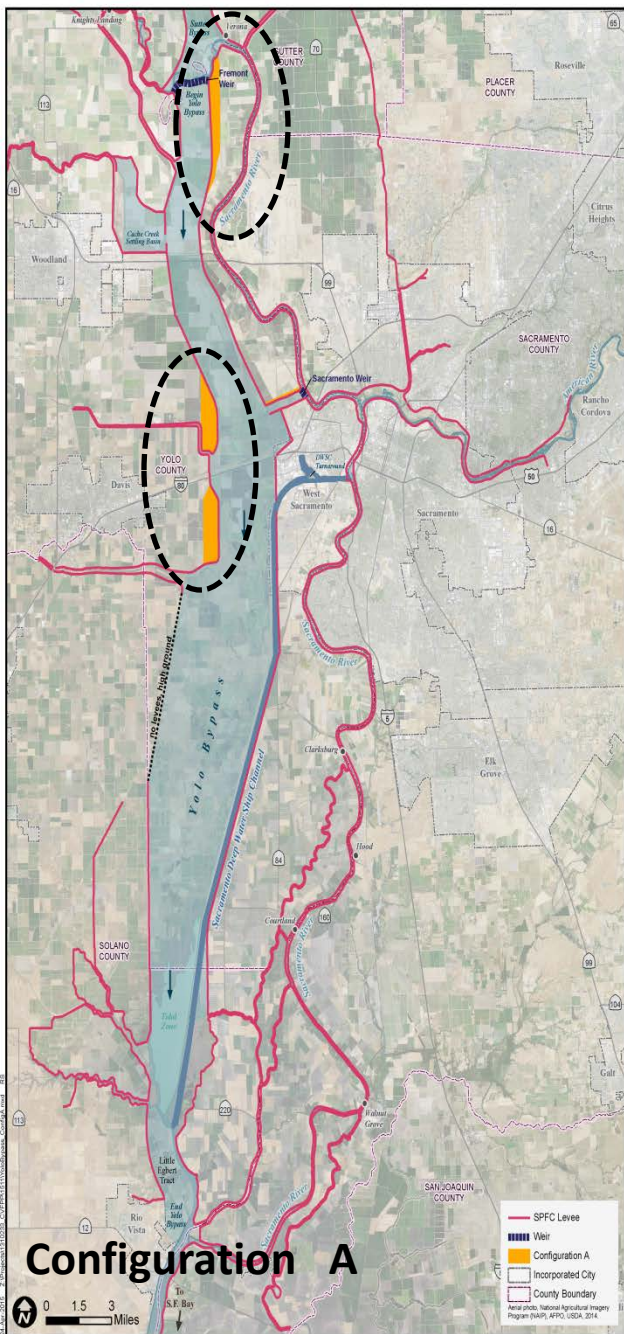
1997 130% Scaled Event



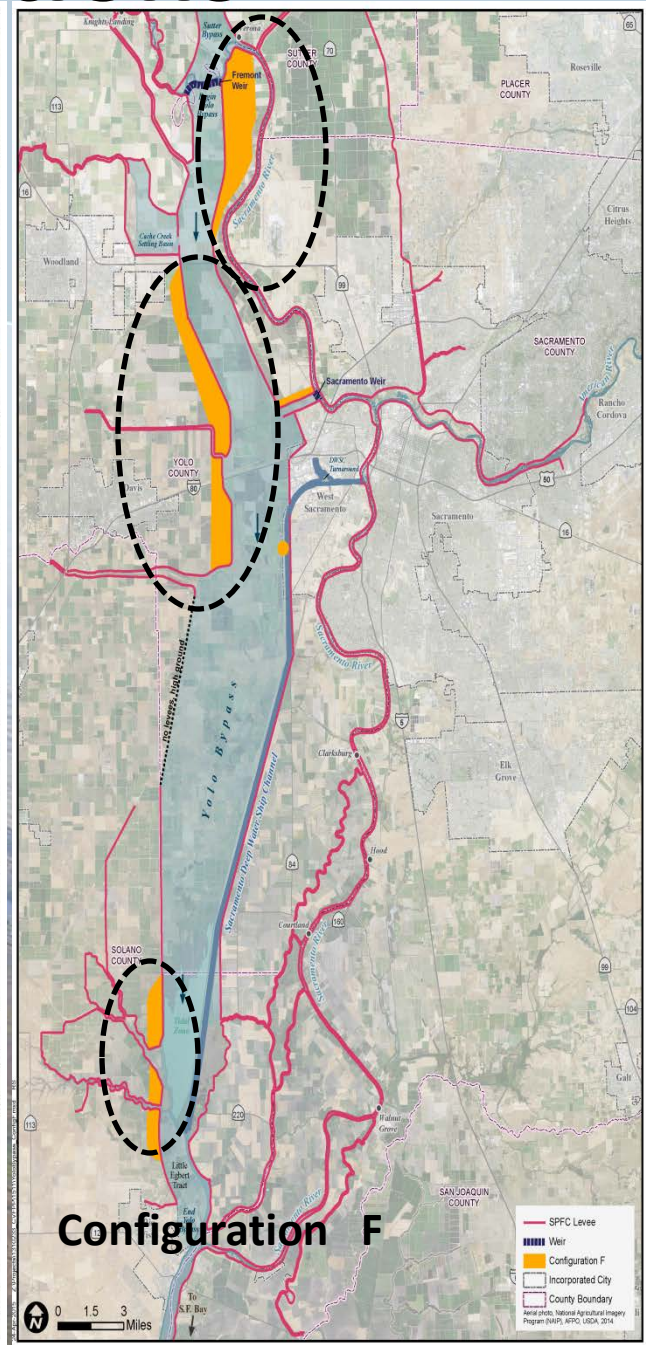
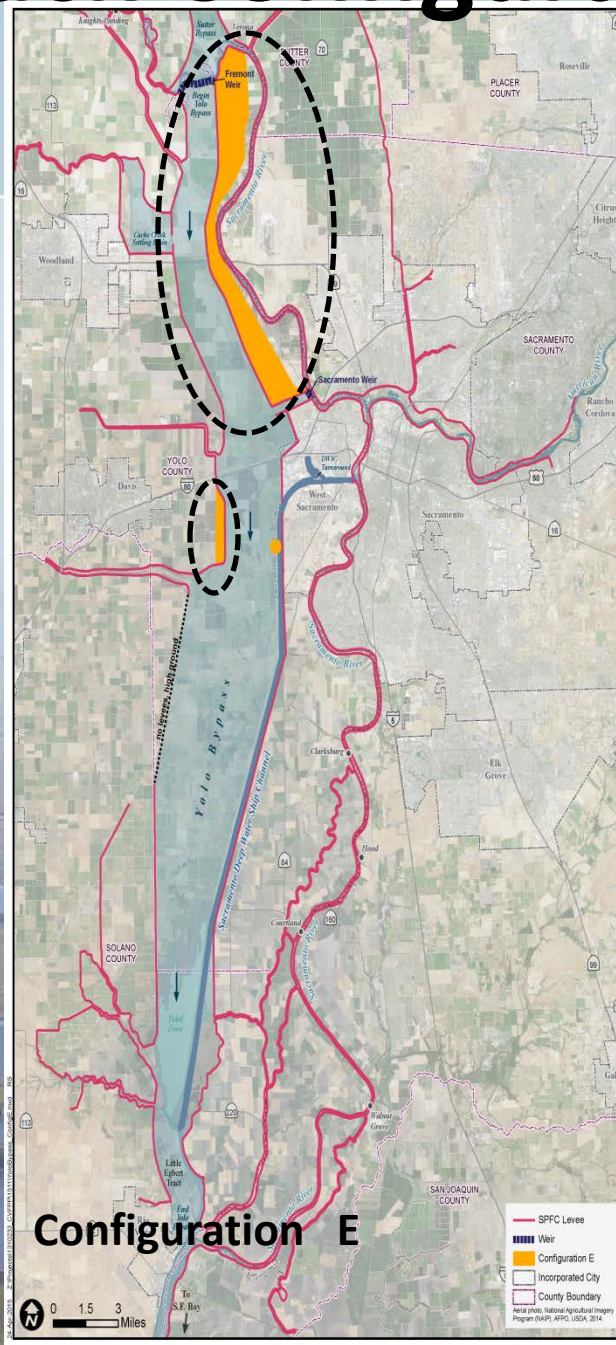
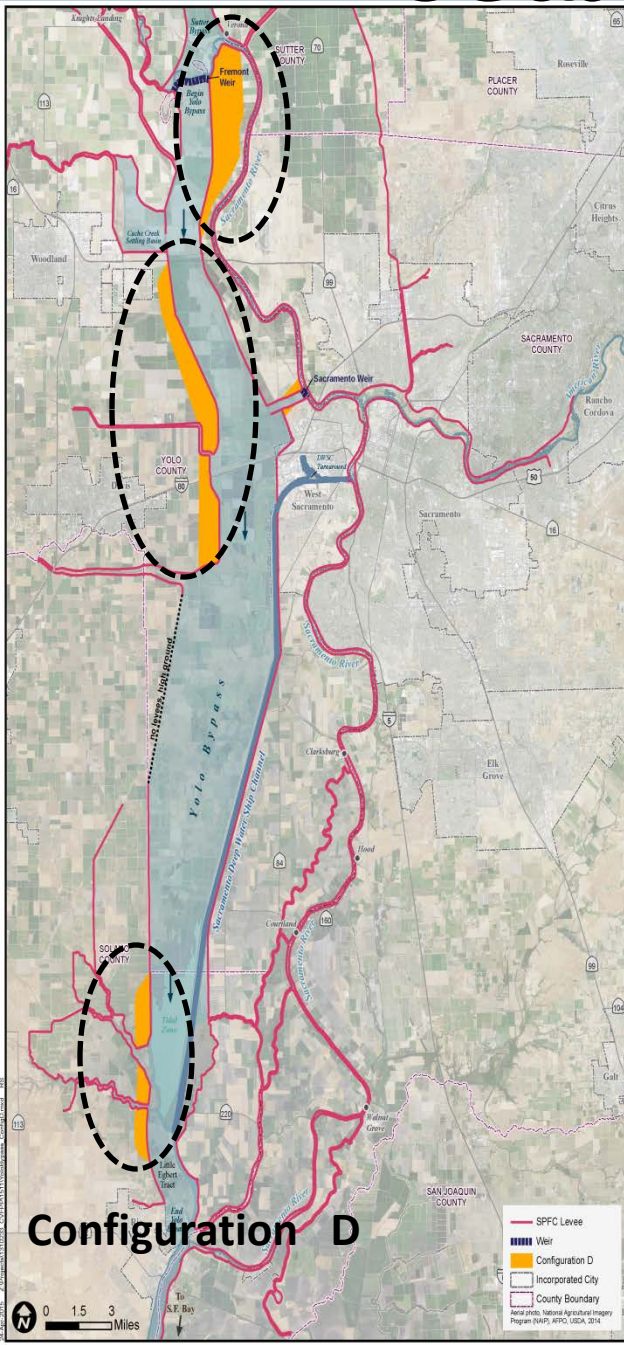
Yolo Bypass Feasibility Study



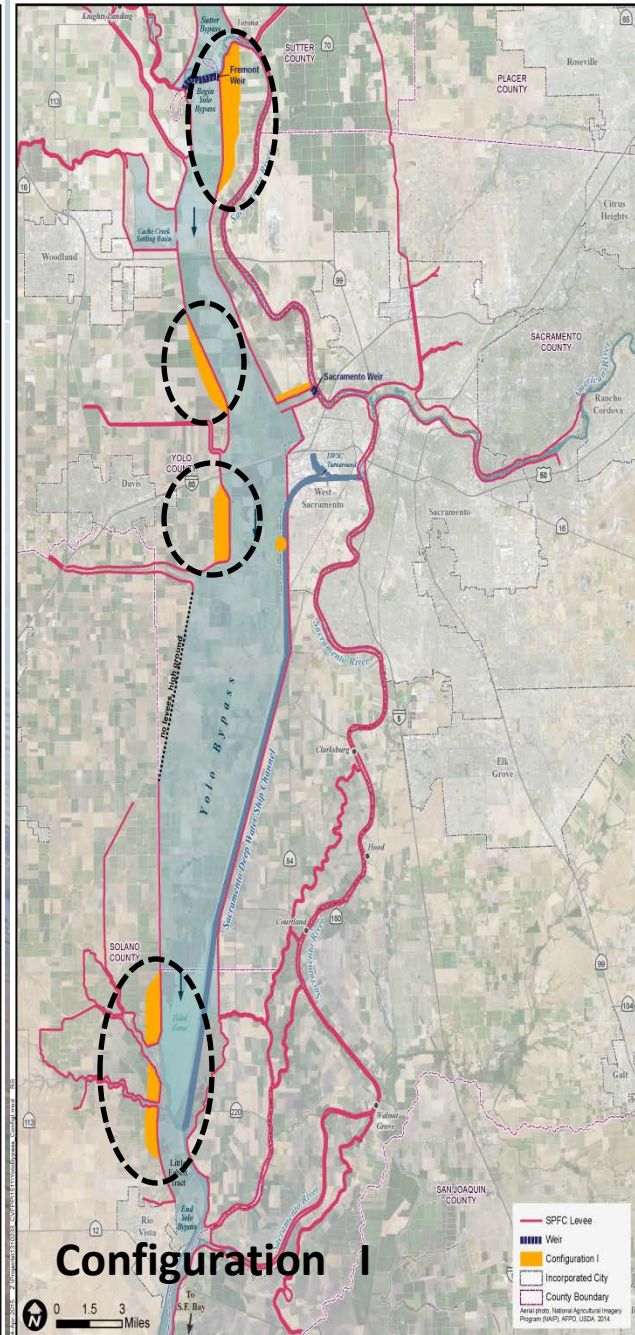
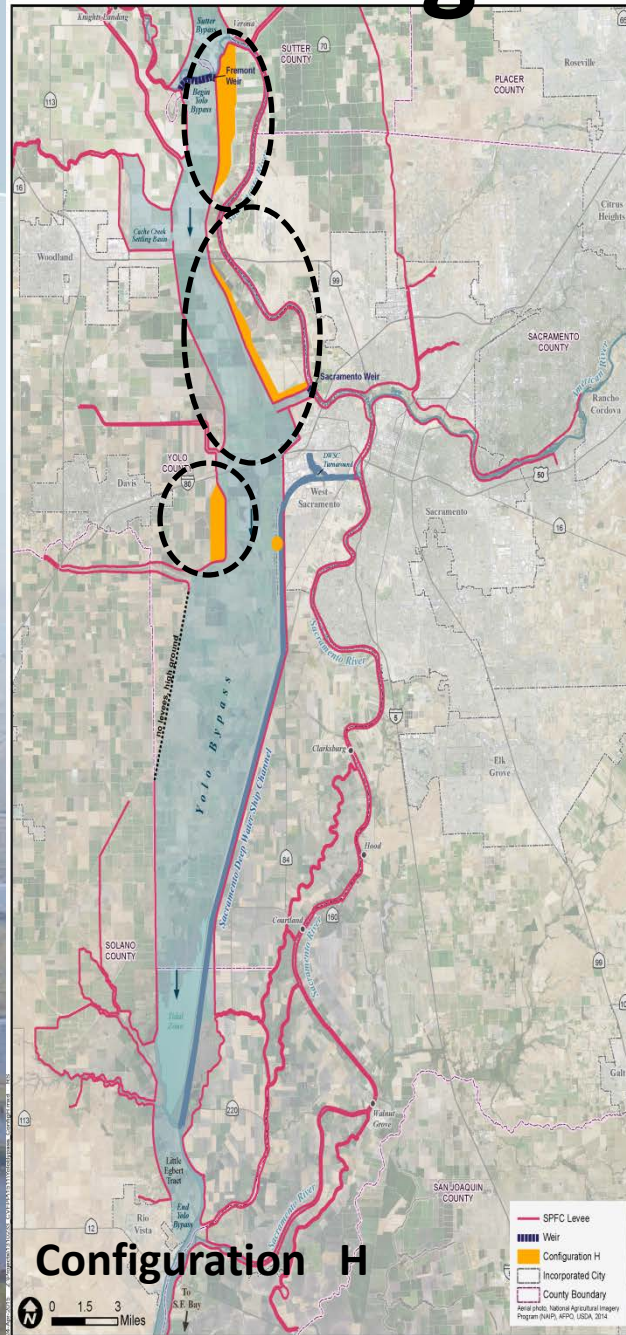
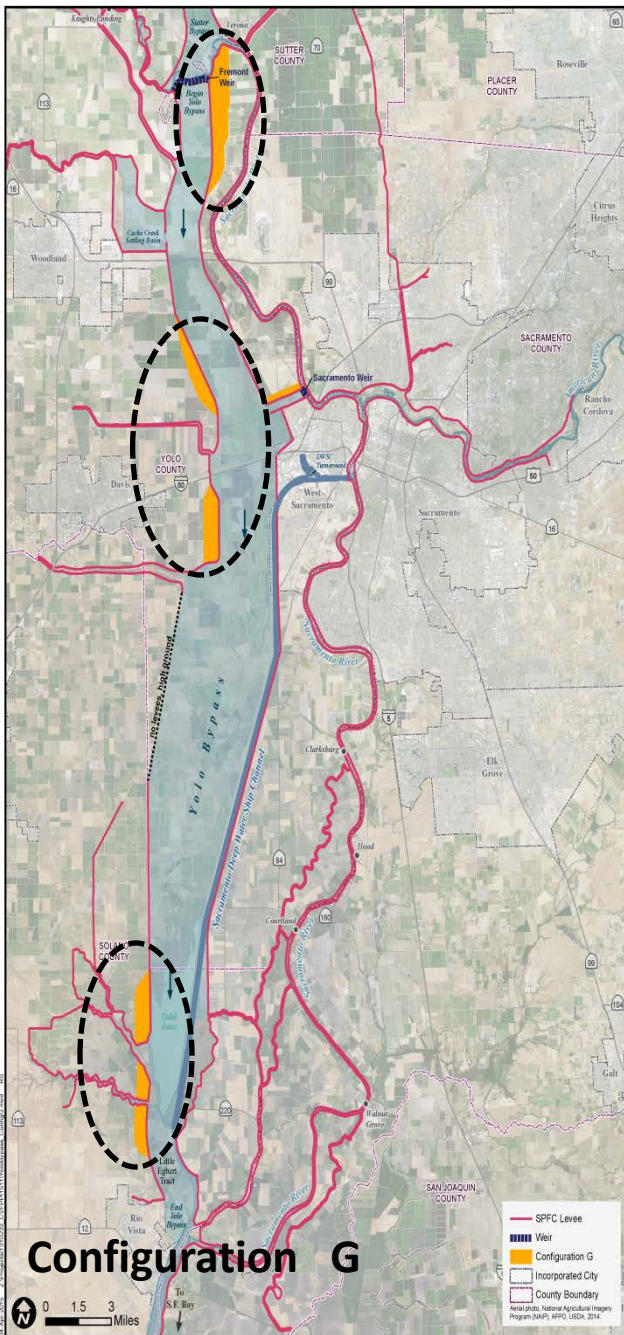
Setback Configurations



Setback Configurations



Setback Configurations



Yolo Bypass Feasibility Study

**Optimizing/
Sizing
Sacramento Weir
Expansion
and Fremont Weir
Expansions**



**Formulate,
Evaluate, and
Screen Yolo
Bypass Setback
Configurations**

*Analysis based on
Hydraulic Performance,
Ecosystem Improvements,
Geotechnical Suitability,
Cost Efficiency, and
Implementability*



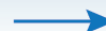
**Comparison
and Tradeoff
Analysis**

- Option 1
- Option 2
- Option 3
- Option 4
- Regional Option*

** Formulated by
local entities*



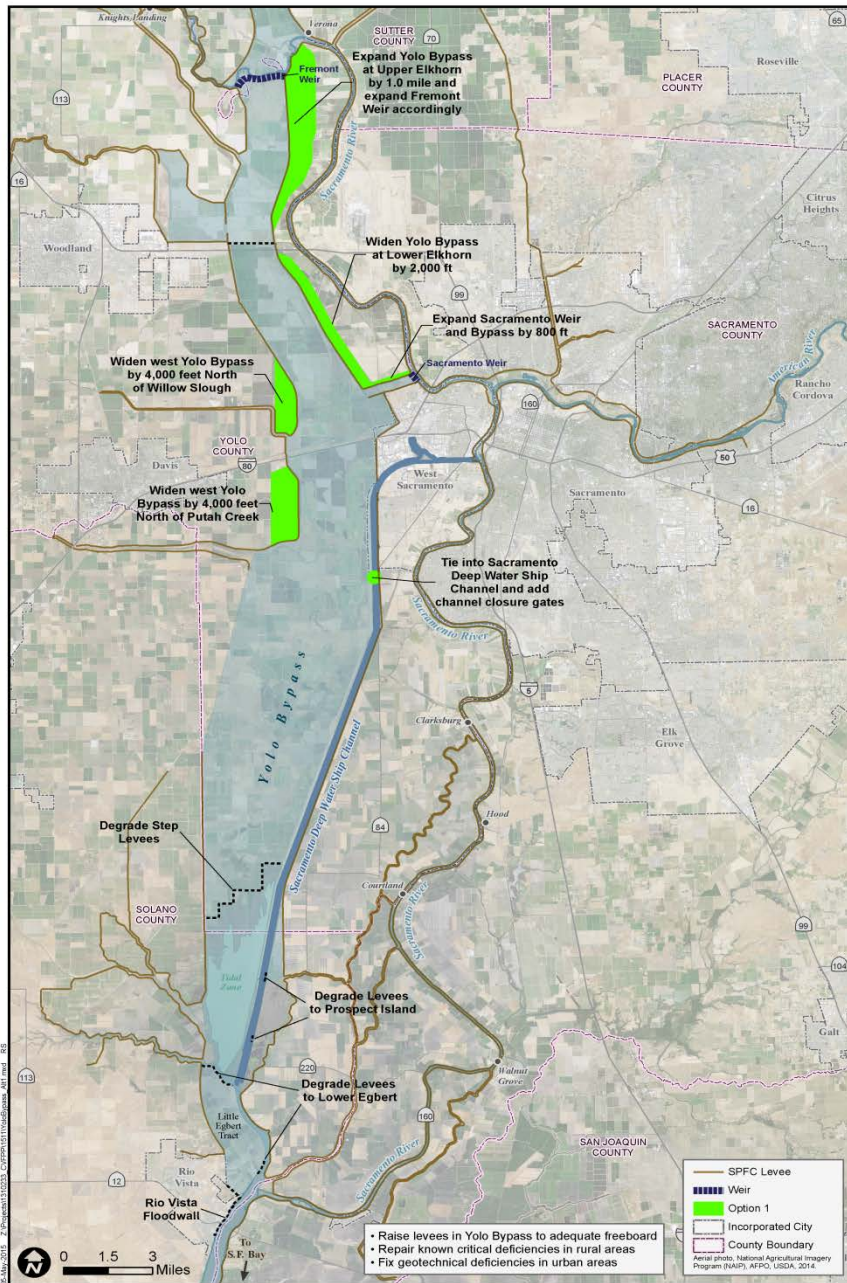
**Engagement
and
Refinement**



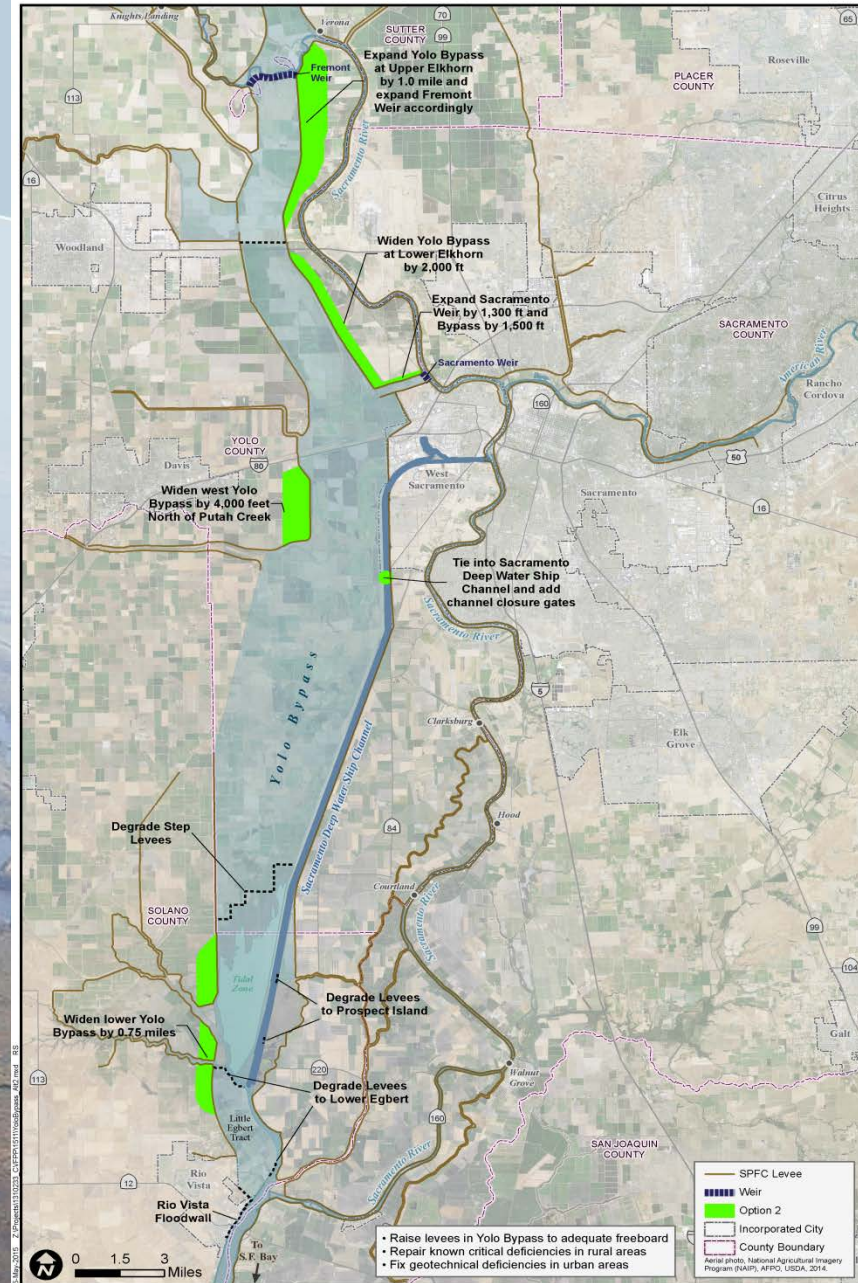
**State
Preferred
Plan for Yolo
Bypass**

Improvement Options

OPTION 1

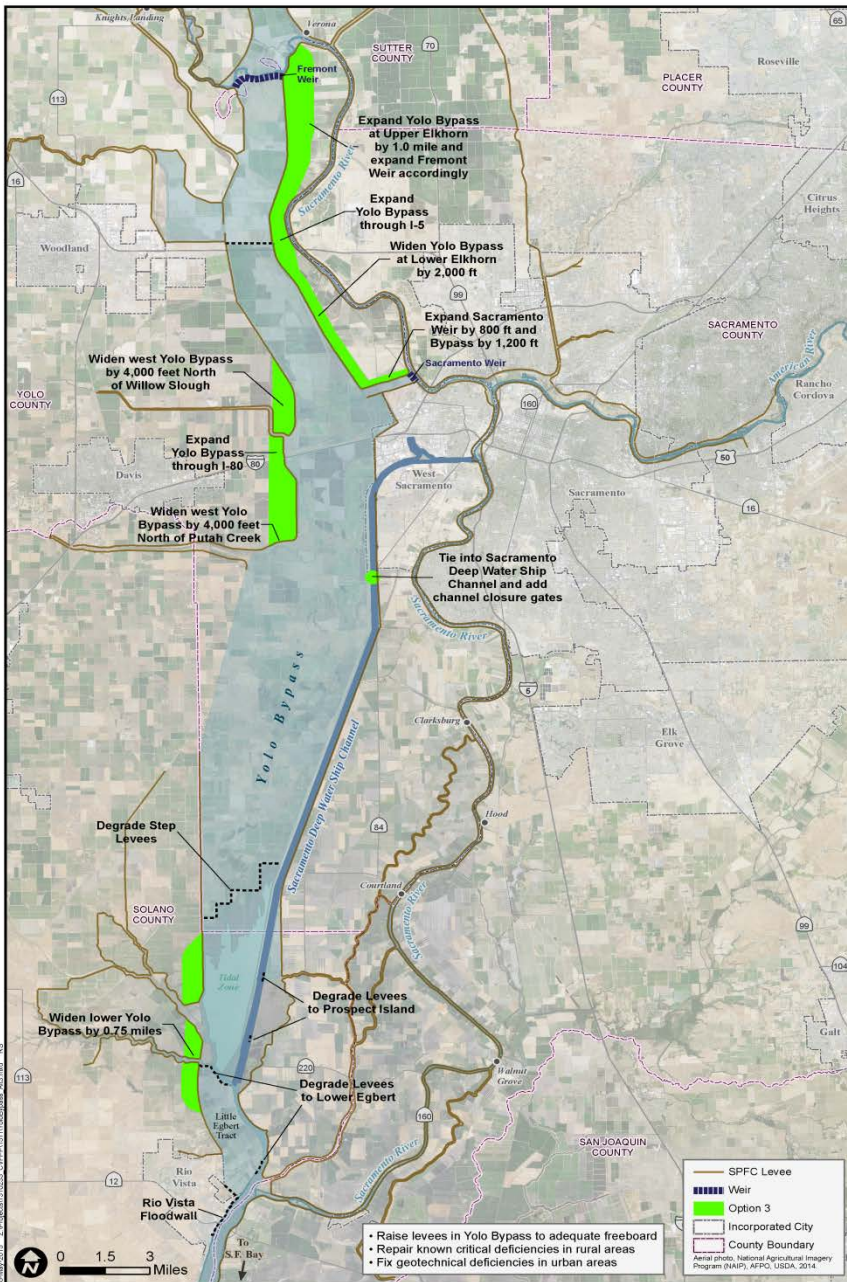


OPTION 2

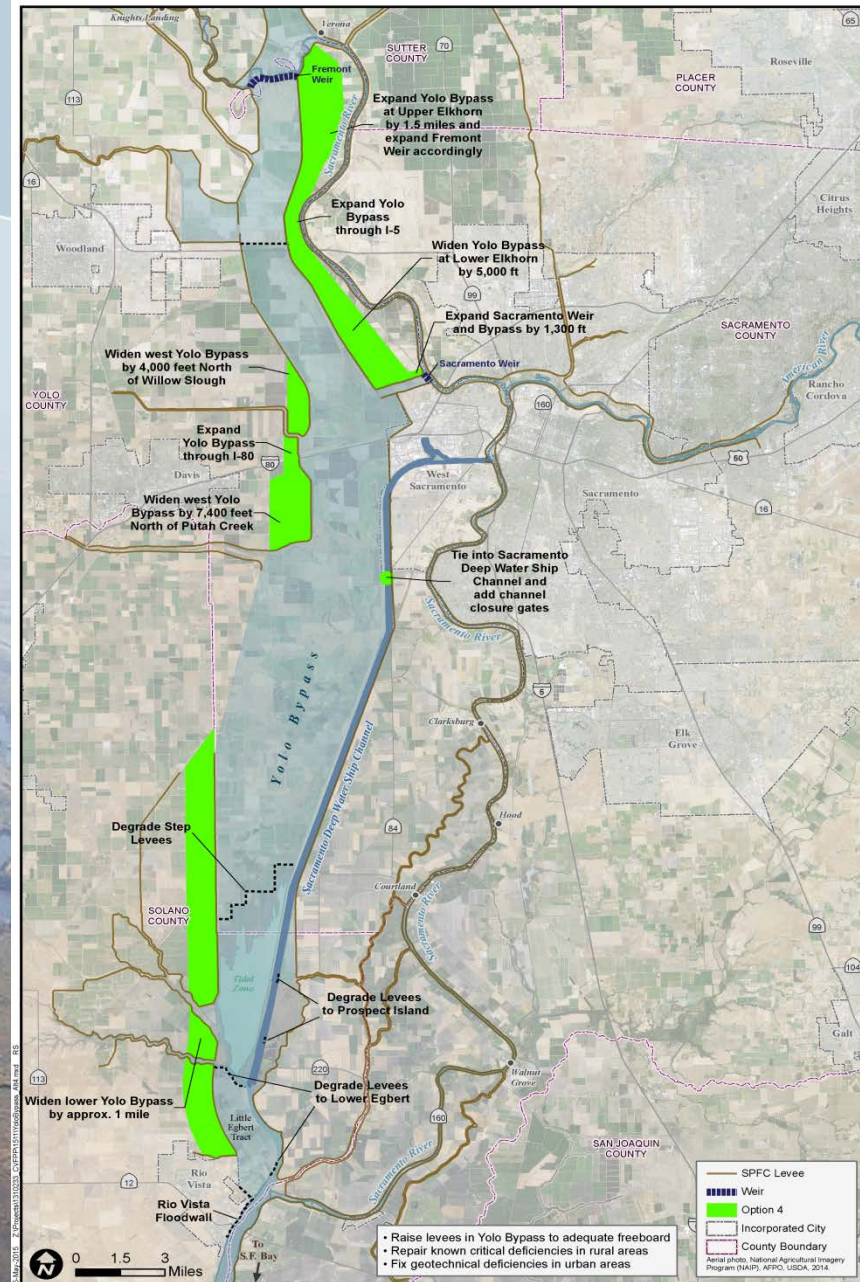


Improvement Options

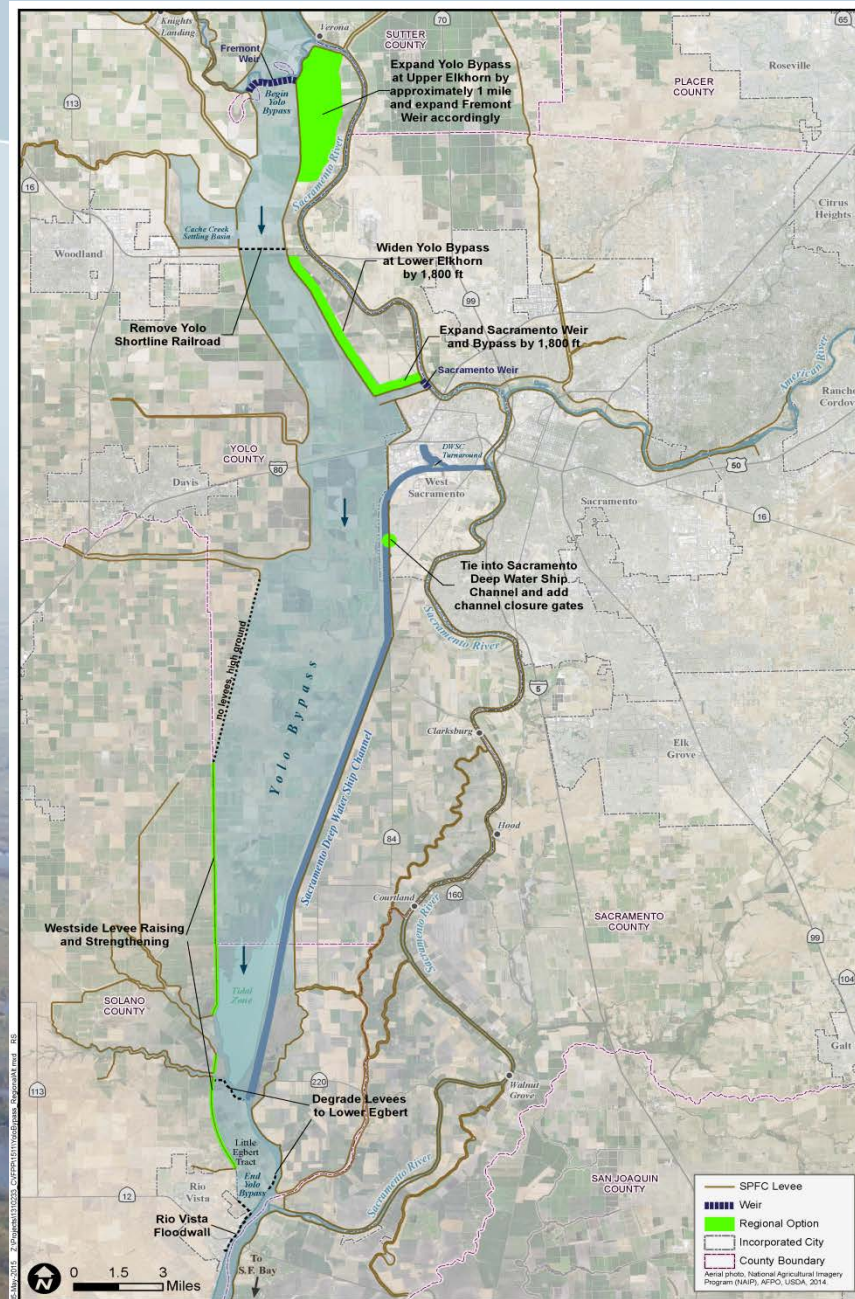
OPTION 3



OPTION 4



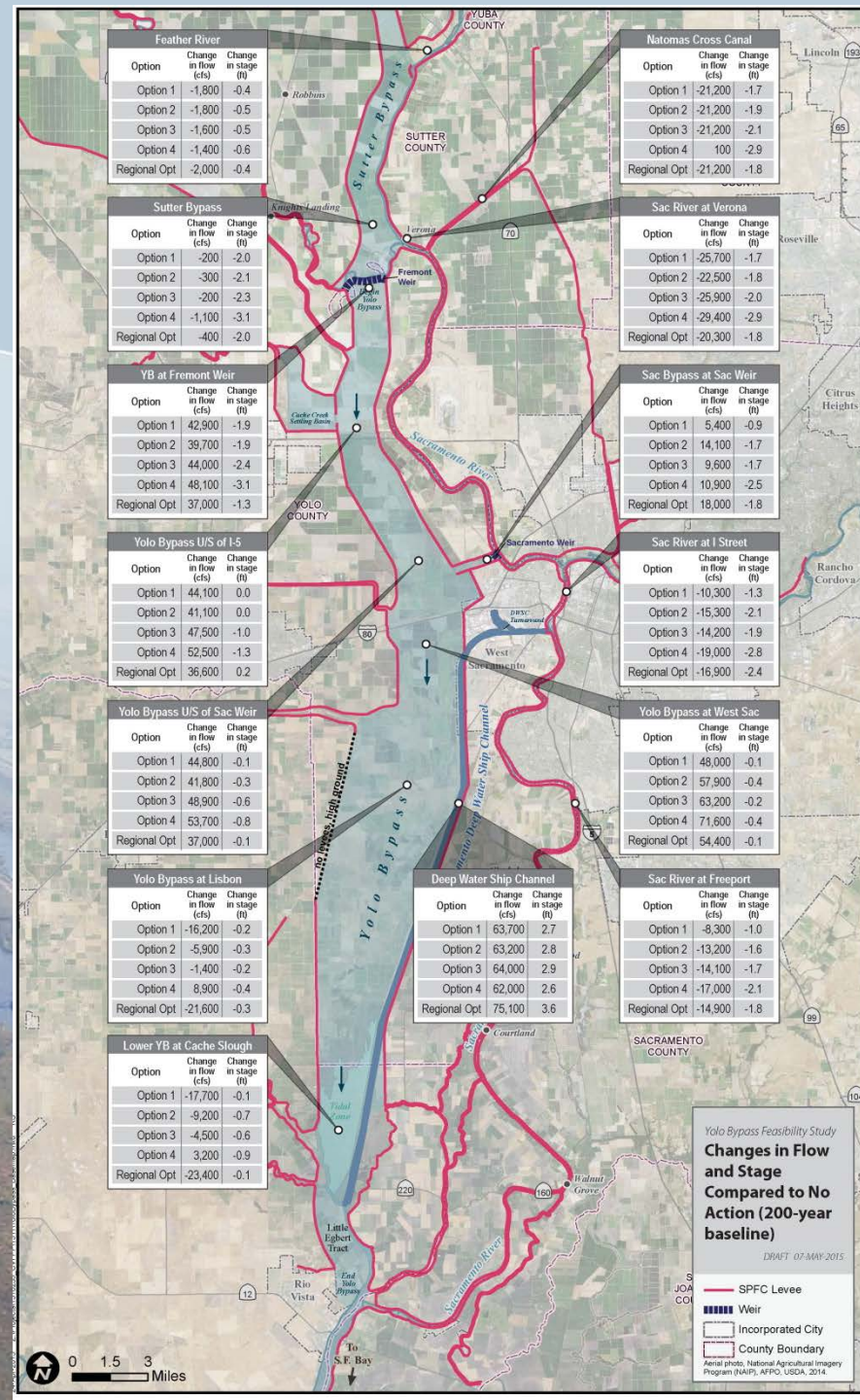
Regional Option



Option Features

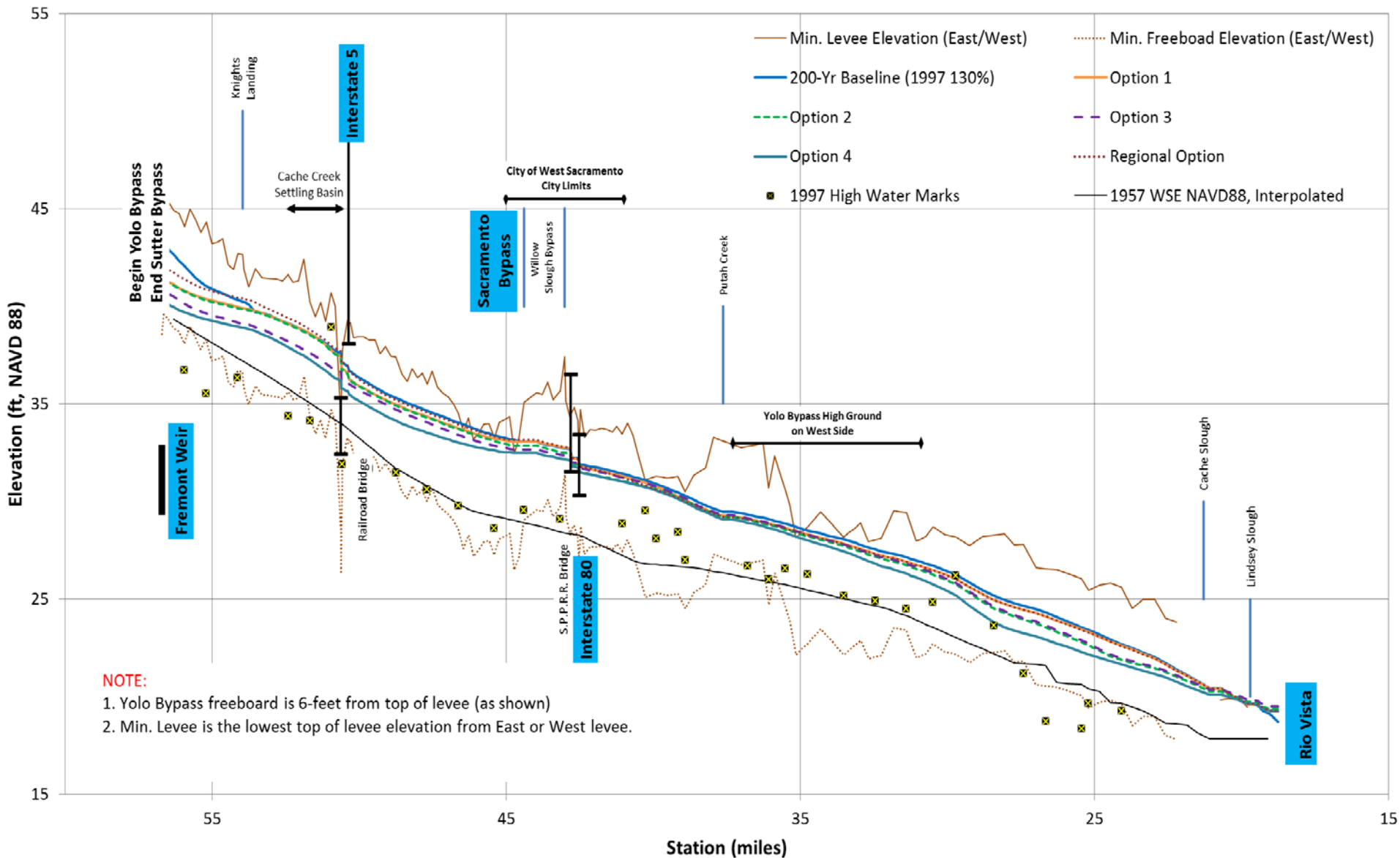
Feature	Option 1	Option 2	Option 3	Option 4	Regional Option
Fremont Weir Expansion	1 mile	1 mile	1 mile	1.5 mile	1 mile
Upper Elkhorn Setback	2,695 acres	2,695 acres	2,695 acres	3,710 acres	2,500 acres
Shortline Trestle Removal	No	No	No	No	Yes
I-5 East Setback	-	-	975 acres	975 acres	-
Lower Elkhorn	1,370 acres	1,370 acres	1,370 acres	3,750 acres	930 acres
Sacramento Weir Expansion	170 acres	380 acres	250 acres	280 acres	380 acres
Sacramento Bypass Expansion					
North of Willow Slough Bypass	1,030 acres	-	1,030 acres	1,030 acres	-
I-80 West Setback	-	-	600 acres	600 acres	-
I-80 to Putah Creek Setback	1,950 acres	1,950 acres	1,950 acres	2,340 acres	-
Tie in to DWSC	Yes	Yes	Yes	Yes	Yes
Degrade Levees near Prospect Island	Yes	Yes	Yes	Yes	No
Lower Yolo Bypass - West Setback	-	2,000 acres	2,000 acres	9,000 acres	-
Degrade Step Levees	Yes	Yes	Yes	Yes	No
Rio Vista Floodwall	Yes	Yes	Yes	Yes	Yes
Degrade Lower Egbert	Yes	Yes	Yes	Yes	Yes
Provide 6' of Freeboard over 200-year Profile	Yes	Yes	Yes	Yes	No
Geotech Improvements as needed where Hydraulic Impacts Occur	Yes	Yes	Yes	Yes	No

Analysis Results



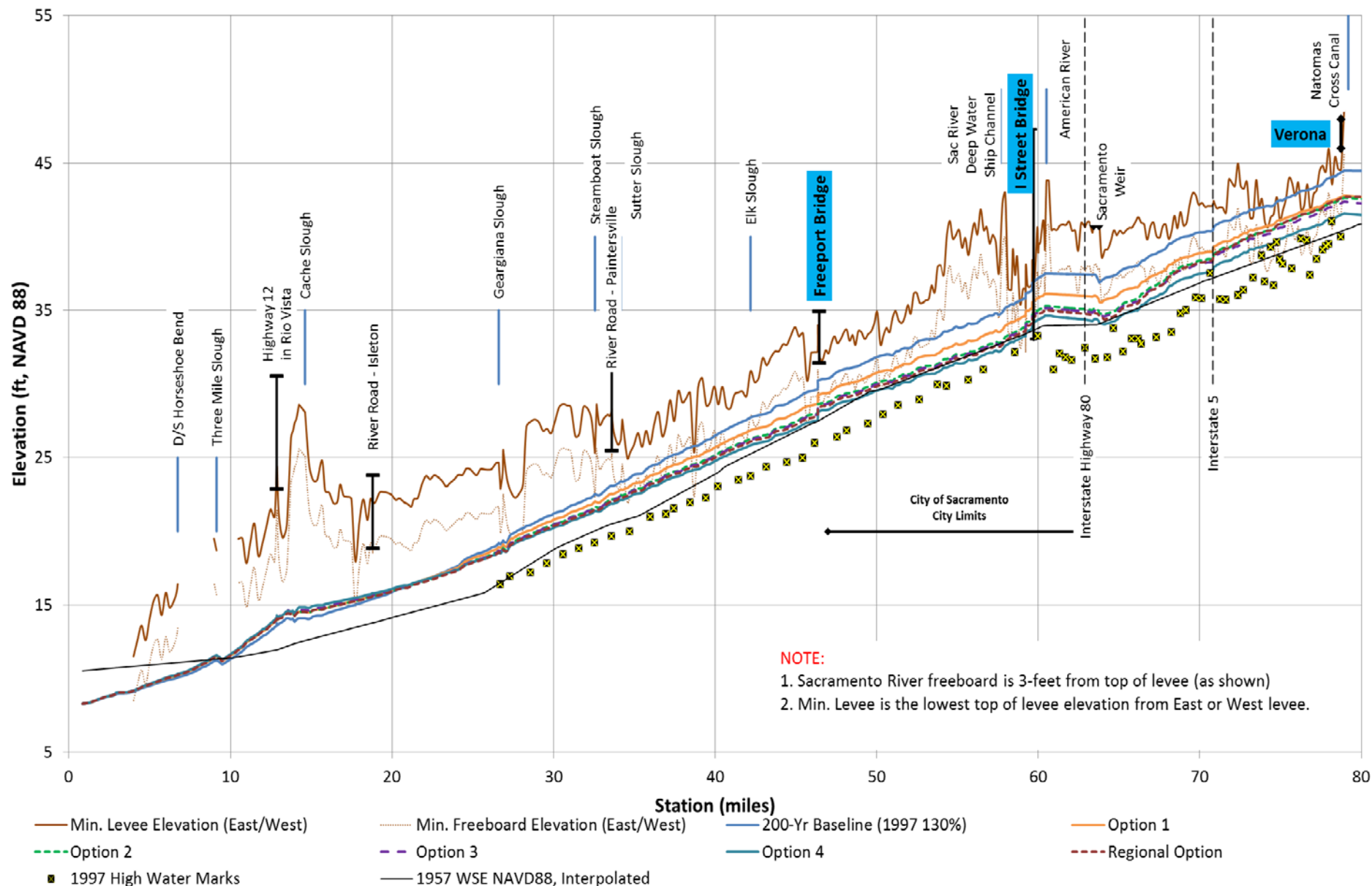
Yolo Bypass Water Surface Profile

1997 130% Scaled Event
(Includes n=.1 for 25% of setback)

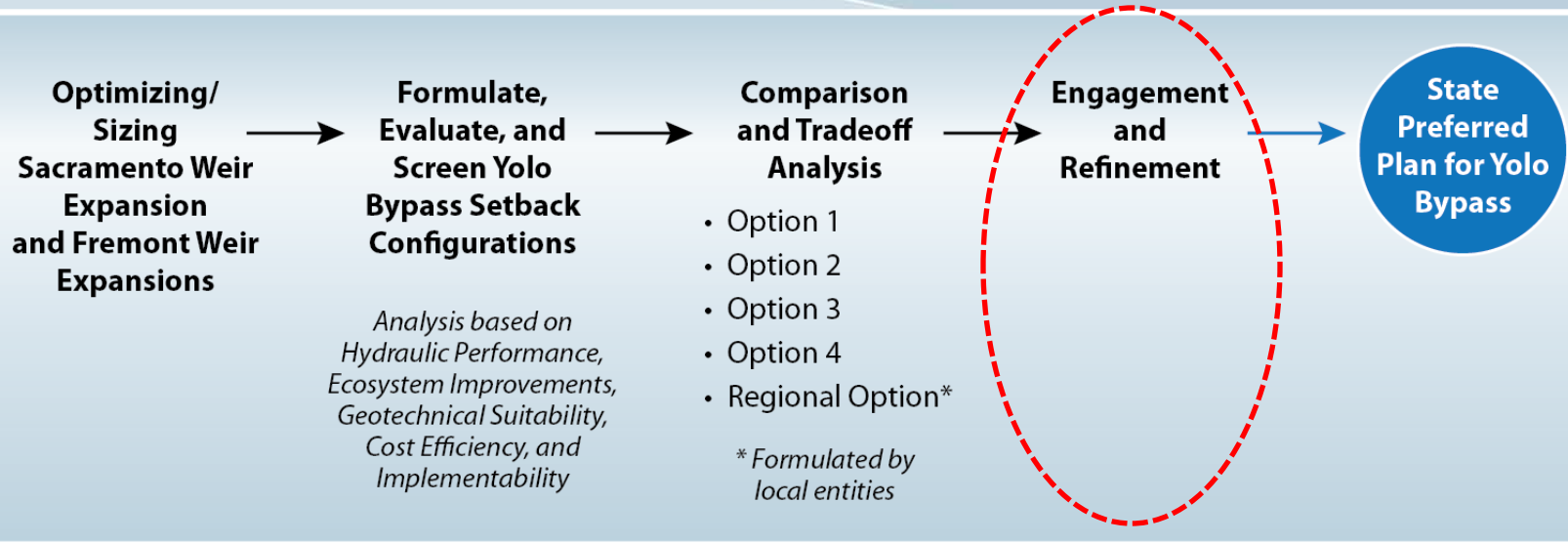


Sacramento River Water Surface Profile

1997 130% Scaled Event
(Includes n=.1 for 25% of setback)



Yolo Bypass Feasibility Study



Implementation Considerations

- Establish a common vision for Yolo Bypass multi-benefit Improvements
- Interagency coordination structure for involved agencies
- Policy Alignment: Executive and Legislative, Local, State, and Federal
- Hydraulic benefits and impacts (changing baseline)
- Environmental benefits and impacts (changing baseline)
- Effective permitting for implementation and O&M
- Implementation Strategies that facilitate
 - Phased approach
 - Reducing long-term O&M costs
- Cost-sharing on multi-benefit features
- Financing and sustained cash flow for implementation

Discussion