

**Central Valley Flood Protection Board Meeting  
February 26, 2016**

**INFORMATIONAL BRIEFING – Sutter Basin Flood Protection Project  
BRIEFING SUMMARY**

**Background**

The Sutter Basin is a 326 square mile area located in northern California on the west bank of the Feather River, downstream of Oroville Dam. Sutter Basin is a historic flood basin and is reliant on Sacramento River Flood Control Project (SRFCP) levees for flood protection. The basin is primarily agricultural with urban areas concentrated in and around the cities of Yuba City, Live Oak, Gridley, and Biggs. Flood events were recorded in 1909, 1914, 1940, 1955, 1964, and 1970. The 1955 flood event resulted in 38 deaths and significant property damages.

In 1997, the Feather River experienced high water surface elevations that resulted in a levee failure on the east bank of the Feather River near Arboga. Although Sutter Basin was not flooded, likely due to relieved pressure from the east levee failure, the need for improvements to the flood management system in Sutter Basin was identified.

**History of Partnership**

United States Army Corps of Engineers (USACE) initiated the Sutter Basin Feasibility Study in 2000 at the request of Sutter County through the former Reclamation Board. In 2007, Sutter Butte Flood Control Agency (SBFCA) was formed and became a joint non-federal sponsor in the Feasibility Study Cost Share Agreement.

Also in 2007, SBFCA, in partnership with the Central Valley Flood Protection Board (CVFPB) and Department of Water Resources (DWR), conducted a comprehensive evaluation of the condition of the flood protection facilities in the Sutter Basin. The results of the evaluation resulted in the inclusion of the Feather River West Levee Project in the State Systemwide Investment Approach in the 2012 Central Valley Flood Protection Plan.

**USACE Sutter Basin Feasibility Study**

The Sutter Basin Feasibility Study was completed in 2013. It assessed the risk of flooding in the Sutter Basin, formulated and evaluated a range of potential alternatives to reduce the risk, identified a recommended plan for implementation, and included a joint Environmental Impact Report and Supplemental Environmental Impact Statement to comply with the National Environmental Policy Act and California Environmental Quality Act.

The National Economic Development (NED) Plan and the Locally Preferred Plan (LPP) alternatives were identified as the final array of alternatives:

- NED Plan: Fix-in-Place Feather River Levees: Sunset Weir to Laurel Avenue

- In-place strengthening of approximately 27 miles to reduce risk of geotechnical failure due to under-seepage.
- Estimated total cost of \$390M (October 2013 prices)
- Benefit/Cost Ratio: 4.4
- LPP: Fix-in-Place Feather River Levees: Thermalito Afterbay to Laurel Avenue
  - In-place strengthening of approximately 41.4 miles to reduce risk of geotechnical failure due to under-seepage.
  - Estimated total cost of \$686M (October 2013 prices)
  - Benefit/Cost Ratio: 2.6

Although the net economic benefits would be maximized through the implementation of the NED Plan, the reduction in flood risk would be primarily centered in Yuba City; the communities of Biggs, Gridley, and Live Oak would still be at the same level of risk. The LPP provided an economically feasible alternative that would reduce flood risk damages and reduce risk to life safety. The LPP was recommended as the Recommended Plan with Federal cost sharing capped at 65% of the cost of the NED Plan, with the Non-Federal Sponsors cost sharing the NED plan with the Federal Sponsor, as well as paying 100% of the LPP that exceeds the NED.

The Sutter Basin Feasibility Study was authorized by the Water Resources Reform and Development Act (WRRDA) 2014. WRRDA is strictly an authorizing legislation and does not include funding; funding was secured for the initiation of design under the USACE Civil Works FY2015 Work Plan.

### **Local Projects**

#### *Levee District No.1 – Feather River Levee Setback at Star Bend*

Levee District No. 1 (LD1) completed construction of a 3,400 foot long setback levee at Star Bend in November 2009. The total cost of the project was \$20,780,000; the State contribution under DWR's Early Implementation Program (EIP) was \$16,330,000.

#### *SBFCA – Feather River West Levee Project*

SBFCA expedited the implementation of the plan for flood risk reduction in Sutter Basin through the implementation of the Feather River West Levee Project (FRWLP). The FRWLP is funded by SBFCA, DWR's EIP and Urban Flood Risk Reduction (UFRR) program, and DWR's Flood System Repair Project (FSRP) program. Design and construction has been completed or is underway from Thermalito Afterbay to Star Bend and a small section near Laurel Avenue.

- EIP and UFRR Program – In-place levee rehabilitation for SBFCA's Feather River West Levee Phase 1, Thermalito Afterbay to Star Bend, is under construction and scheduled to be completed by late 2016. The total project cost is estimated to be \$288,930,000 with a State contribution of \$158,445,378.

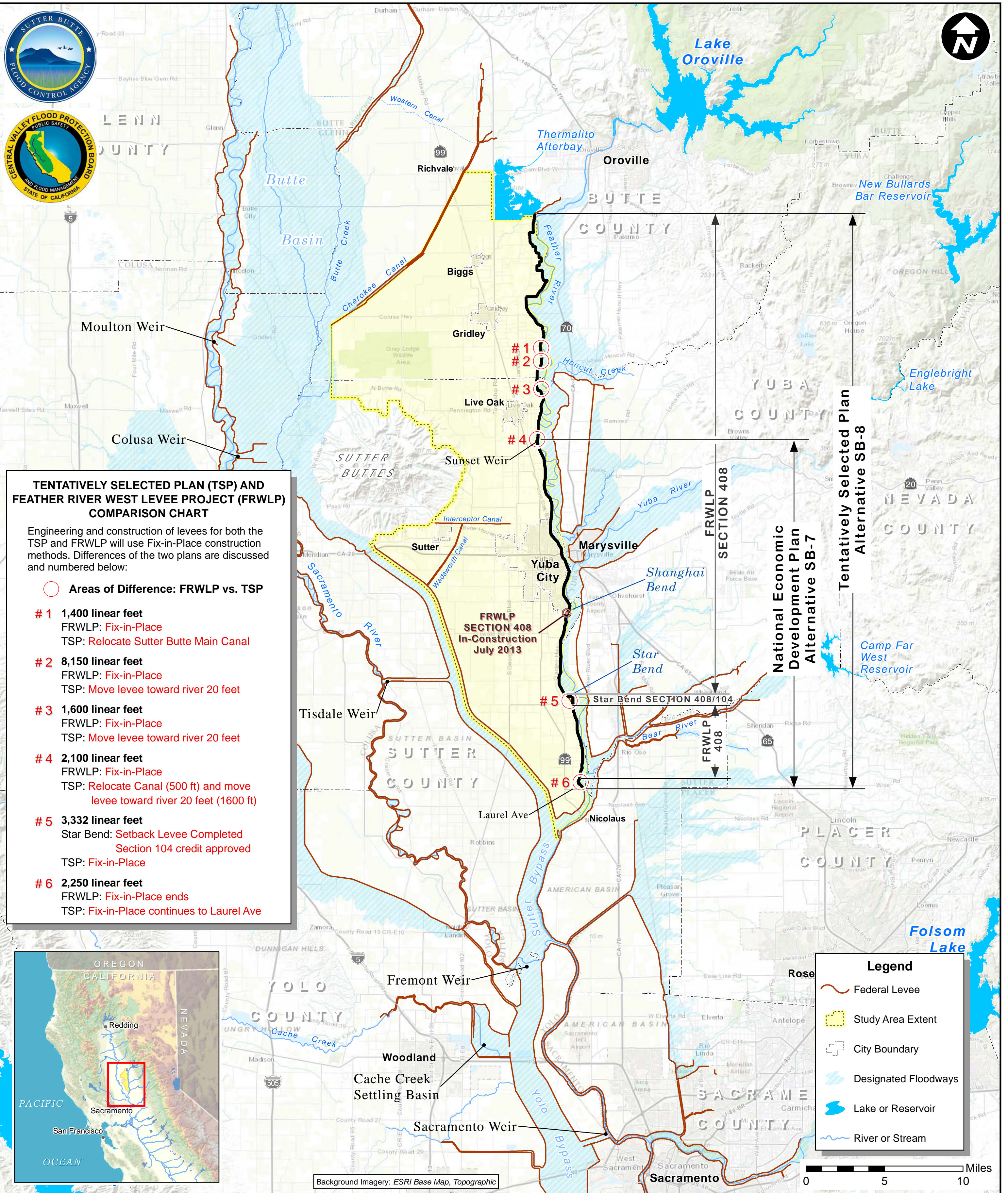
- FSRP Program – In-place levee rehabilitation for SBFCA’s Laurel Avenue Repair Project is under the design phase. The 90% Design was completed in December 2015.

**Next Steps**

A Preconstruction Engineering and Design (PED) phase will be initiated through a Design Agreement to cover an approximately five mile section not yet implemented by SBFCA: south of Star Bend to north of Laurel Avenue. Federal and Non-Federal sponsors are working on developing a Design Agreement within the next few months that meets the Assistant Secretary of the Army’s approval.



# SUTTER BASIN PILOT FEASIBILITY STUDY



### TENTATIVELY SELECTED PLAN (TSP) AND FEATHER RIVER WEST LEVEE PROJECT (FRWLP) COMPARISON CHART

Engineering and construction of levees for both the TSP and FRWLP will use Fix-in-Place construction methods. Differences of the two plans are discussed and numbered below:

- Areas of Difference: FRWLP vs. TSP
- # 1 1,400 linear feet**  
FRWLP: Fix-in-Place  
TSP: Relocate Sutter Butte Main Canal
- # 2 8,150 linear feet**  
FRWLP: Fix-in-Place  
TSP: Move levee toward river 20 feet
- # 3 1,600 linear feet**  
FRWLP: Fix-in-Place  
TSP: Move levee toward river 20 feet
- # 4 2,100 linear feet**  
FRWLP: Fix-in-Place  
TSP: Relocate Canal (500 ft) and move levee toward river 20 feet (1600 ft)
- # 5 3,332 linear feet**  
Star Bend: Setback Levee Completed  
Section 104 credit approved  
TSP: Fix-in-Place
- # 6 2,250 linear feet**  
FRWLP: Fix-in-Place ends  
TSP: Fix-in-Place continues to Laurel Ave

National Economic Plan Development Plan Alternative SB-7  
 Tentatively Selected Plan Alternative SB-8



**Legend**

- Federal Levee
- Study Area Extent
- City Boundary
- Designated Floodways
- Lake or Reservoir
- River or Stream

Background Imagery: ESRI Base Map, Topographic

0 5 10 Miles

## TENTATIVELY SELECTED PLAN & FEATHER RIVER WEST LEVEE PROJECT - SECTION 408