



# Flood Management

## California Department of Water Resources Levee Evaluation Program

Reflecting Governor Arnold Schwarzenegger's long-term commitment to improving flood safety to prevent possible catastrophic flooding and loss of life, DWR is undertaking unprecedented efforts to evaluate and upgrade aging and deteriorating levees along the Sacramento and San Joaquin River Valleys and Delta.

**Funded through Propositions 84 and 1E**

### Urban Evaluations:

Geotechnical levee evaluations of project levees that protect greater than 10,000 people.

### Non-Urban Evaluations:

Geotechnical levee evaluations of project levees that protect 10,000 people or less.



The Electromagnetic (EM) system collects three-dimensional earth resistivity data via a transmitter and receiver housed in the cylindrical "bird" slung beneath the helicopter.



A helicopter equipped with a LIDAR system called FLI-MAP (Fast Laser Imaging - Mapping Airborne Platform) was used to conduct high-resolution surveys, still pictures, and a video record of the levee system.

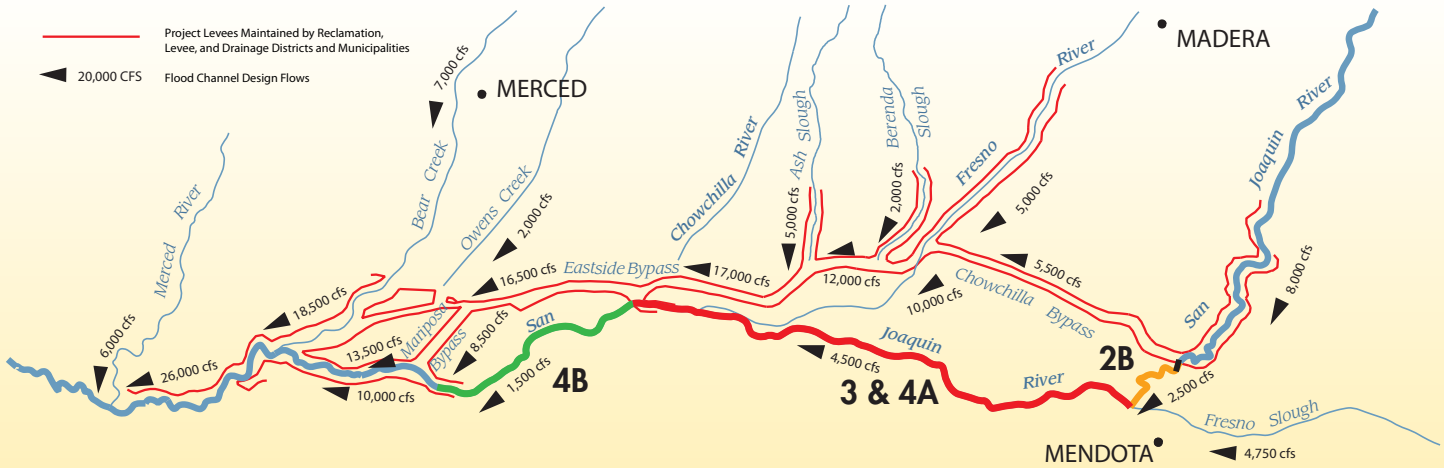


Cone Penetrometer (CPT) rig advancing rod into project levee to estimate soil behavior type.



Geotechnical field crews drill borings to collect soil samples from a flood control levee.

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Restoration plans propose that all channels on the San Joaquin River have a minimum flow capacity of 4,500 cfs, which would require an increase in flow capacity of Reach 2B and 4B and evaluation of flow capacity in Reach 3 and 4A.

Photo provided by Lower San Joaquin River District



Sedimentation has reduced flow capacity in some reaches.

Photo provided by Department of Water Resources



Vegetation encroachment has reduced flow capacity in some reaches.

Photo provided by Lower San Joaquin River District



Levees are constructed on unstable foundations consisting of river sediment, mostly sand bars and sand strata. Even low flows can result in numerous sand boils and often levee failure in some reaches.



## Proposed settlement actions that will improve flood protection on the San Joaquin River System

### Phase 1 Improvements

2) Modifications in channel capacity to ensure conveyance of at least 4,500 cfs in Reach 2B.

### Phase 2 Improvements

2) Modifications to the Chowchilla Bifurcation Structure to provide fish passage and prevent entrainment.  
 4) Modifications to the Sand Slough Structure to enable effective routing and conveyance of restoration flows up to 4,500 cfs.

### Paragraph 12

"The Parties acknowledge that there are likely additional channel or structural improvements...that may further enhance the success of achieving the Restoration Goal."



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## California Department of Water Resources Levee Geotechnical Evaluation

