

Special Investigations-Current Activities

West Delta Program: Reverse Subsidence/Habitat Restoration

Project Design and Construction \$ 5.5 million (committed/expended), Completion Spring 2016

Whales Mouth/Scour Pond Habitat Restoration Project

Description: 600 acres of permanent wetland and 100 acres of riparian habitat on Sherman Island to provide benefits for reversing subsidence, levee stability, habitat restoration, and carbon sequestration. (Construction commenced) View more information on the West Delta program at

http://www.water.ca.gov/floodsafe/fessro/levees/west_delta/.

North Delta Program: Habitat Restoration/Flood Protection

Project Design and Construction \$ 28 million (committed), on-going

The North Delta Project focusses on flood control and habitat improvements where the Mokelumne River, Cosumnes River, Dry Creek, and Morrison Creek converge. Flood flows and high water conditions in this area threaten levees, bridges, railways, and roadways that affect human safety and the economy. The project will reduce flooding of neighboring lands and provide contiguous aquatic and floodplain habitat along the downstream portion of the Cosumnes River Preserve by modifying levees on McCormack-Williamson Tract (MWT) and at Grizzly Slough (GS). View more information on the North Delta Program at

http://www.water.ca.gov/floodsafe/fessro/levees/north_delta/.

McCormack Williamson Tract

Description: The MWT Element (1450 acres) provides flood flow and stage attenuation in the area of the tract by lowering the crest of selected levees. The reduction in levee crest height will allow flood flows to enter and drain in a controlled manner to create floodplain and fresh water tidal wetland habitats that benefit native fish and wildlife.

Grizzly Slough

Description: The GS Element (400 acres) consists of the breaching small areas of Grizzly and Bear Slough levees on DWR's Grizzly Slough property upstream of MWT. This will help attenuate peak flood flows and create floodplain habitat to benefit native fish and wildlife species.

Delta Risk Management Strategy (DRMS) /Delta Knowledge Improvement Program (DKIP)

\$12 million DRMS, started 2006, Phase 1 published 2009, Phase 2 published 2011

\$5 Million DKIP (2010-2015), completed and on-going projects:

DRMS Study

The overall purpose of the Delta Risk Management Strategy (DRMS) was to assess the performance of Delta and Suisun Marsh levees (under various stressors and hazards) and evaluate the economic, environmental, and public health and safety consequences of levee failures to California as a whole (Phase 1); and to develop and evaluate risk reduction strategies (Phase 2). View more information on DRMS at

<http://www.water.ca.gov/floodsafe/fessro/levees/drms/>.

Delta Knowledge Improvement Program

Since the completion of the DRMS report several DKIP funded projects have been completed to fill the data gaps identified in DRMS. The information from DKIP provides an opportunity to use technical data and studies to innovate new ideas to achieve Delta economic sustainability in the future. View more information on DKIP at <http://portal-dev.water.ca.gov/floodsafe/fessro/levees/dkip/>. The following on-going activities are currently being funded under the DKIP Program:

Surveys

LiDAR (Light Detection and Return) Survey

Description: A LiDAR survey of the Delta was completed in 2007. Conducted at appropriate intervals, the information from this type of land survey provides useful elevation data over large areas of the Delta for determining changes in levee heights and other areas. Another survey is planned for 2016.

Delta Bathymetry

Description: Surveys of Delta channel bathymetry areas being conducted in areas where channel cross-sections are known or suspected to have changed and that the change is likely to affect the hydraulic modeling results used in many Delta studies. The surveys are being conducted annually.

Historical Gage Survey Data Review

Description: In connection with the work to update the 100-year flood stages in the Delta, this project is analyzing data from the historic water level data records collected at gauges located throughout the Delta.

Water Quality

Methyl Mercury Monitoring

Description: This project monitors mercury and methyl mercury over a 5 year period at the Mayberry Farms Wetlands Restoration Project on Sherman Island. The monitoring is intended to determine if mercury and methyl mercury will be a concern to wildlife for this type of habitat restoration project.

Habitat Surveys

GIS (Chico State)

Description: DKIP provides funding to California State University, Chico Research Foundation, on GIS projects located in the Delta that involve habitat assessment mapping and reports, levee anatomy improvements, and other necessary GIS projects that complement and improve traditional field assessments to meet the Department of Fish and Wildlife migration requirements on Delta projects.

Data Management

DWR Enterprise GIS

Description: Supported by DKIP funding, DWR has begun promoting approved GIS datasets into a dedicated Atlas on enterprise architecture which included a review process to verify conformance with a Data Standard, and assigning a subject matter expert data steward. This project has promoted several official, stewarded datasets to the DWR enterprise GIS system, and another dozen datasets are being reviewed.

Levee Stability

UCLA Levee Seismic Study

Description: This contract with UCLA was signed and implemented in 2014 to help DWR understand how Delta levees respond under seismic load conditions. DWR engineers are also working to develop potential designs of setback levees in the Delta to meet stability requirements while also incorporating desired habitat features.

100-year Flood Stage Frequency Update

Description: DKIP is contracting with the U.S. Army Corps of Engineers (USACE) to update 100-year flood stage elevations at gages located throughout the Delta and Suisun Marsh. The design of levees is fundamentally related to the 100-year water levees experienced for any given stretch of levee. 100-year water levels in the Delta were last updated by the USACE in a report dated 1992 which used recorded data up to the 1988 water year.

PS-InSAR

Description: Persistent Scatterer Interferometric Synthetic Aperture Radar (PS-InSAR) is a remote sensing technique that uses radar signals from a satellite to accurately measure ground displacement. DWR has been contracting with NASA to utilize this tool to identify problem areas on Delta Islands, and in particular, sudden displacement of the levees.

Levee Investment Prioritization

Delta Stewardship Council Levee Investment Prioritization Methodology

Description: The Delta Stewardship Council (DSC), in consultation with the Central Valley Flood Protection Board, is required by Water Code Section 85306 to develop priorities for State investments in Delta levees. The DSC entered into an agreement with DWR in 2014 to conduct a Delta levee investment strategy study to meet this requirement.

Delta Protection Commission Levee Assessment District

Description: The DPC study will determine how to create, if possible, a statewide assessment district with fee assessment authority to provide adequate flood protection and emergency preparedness for the benefit of all beneficiaries: local, regional and statewide. The DPC entered into an agreement with DWR in 2014 to carry out this study.

U.S. Army Corps of Engineers (USACE) Delta Islands and Levees Feasibility Study- Reuse of Dredging Material

Description: The USACE conducted a feasibility study to identify potential flood protection and habitat restoration projects in the Delta for potential USACE funding. The DRMS study provided the local sponsor (DWR) in-kind services cost share to nearly complete the study. The selected alternative would reuse dredge material to create approximately 90 acres of tidal marsh in the Delta. The USACE is currently working to complete Chief's Final Report.