

**REPORT OF ACTIVITIES  
OF THE  
DEPARTMENT OF WATER RESOURCES**

**By**

**Keith E. Swanson, Chief,  
Division of Flood Management  
Department of Water Resources  
California Natural Resources Agency  
State of California\***

---

\*Prepared for the Central Valley Flood Protection Board for December 20, 2013 meeting.

## **FUNCTIONAL AREA 1 FLOOD EMERGENCY RESPONSE**

*This functional area includes work to better prepare for, respond to, and recover from flood emergencies. A program for flood emergency response is a necessary part of flood management because California will always face flood emergencies, even when system improvements reduce the frequency of flooding. Program activities include inspection and assessment of flood projects' integrity; reservoir operations and river forecasting; flood data collection, management, and dissemination; precipitation and runoff forecasting; Delta flood preparedness, response, and recovery; and statewide flood emergency response functions.*

### **REAL-TIME FLOOD CONDITIONS, STATUS, & WARNING**

*The purpose of the Real Time Flood Conditions, Status, and Warning element is to provide information needed to manage floods as they are occurring. This element supports flood operations by 1) inspecting, documenting, and assessing the integrity of the Sacramento and San Joaquin Flood Control Project levees, 2) storing and managing information so that it is accessible to flood managers and the general public, 3) providing emergency flood information and warnings based upon existing and forecasted conditions and field reports, and 4) developing information management tools to support emergency operations.*

### **INSPECTIONS**

Inspectors have completed field work for Fall 2013 levee inspections and are working on publishing the results. FPIs staff are also working with LMAAS and other FPIIB staff to completing the annual report. The Encroachment Permit and Levee Log databases continue to be updated and consolidated under task orders. Section staff continues to coordinate with DWR, USACE, CVFPB, and LMA staff in a number of venues and have been participating in meetings regarding rodent abatement, Regional Plans, and Unacceptable Vegetation.

### **FLOOD PROJECT INTEGRITY/VULNERABILITY ASSESSMENT ACTIVITIES**

No new information to report this month.

### **LOCAL MAINTAINING AGENCY ANNUAL REPORTING PROGRAM (CWC 9140-9141)**

No new information to report this month.

### **CLIMATE DATA COLLECTION & PRECIPITATION/RUNOFF FORECASTING**

*This Element supports Flood Emergency Response by providing information on current and forecasted water conditions, and by providing meteorological and climate information. Additionally, this Element includes evaluating and improving the data collection and exchange network and forecasting models, providing water supply and watershed runoff information and forecasting, and the development of a new generation of forecasting and data collection tools to improve the quality, timeliness, and length of watershed and river forecasts. Real-time data, its timely availability, and quantities and quality are all critical to improving forecasting quality and timeliness.*

## WATER CONDITIONS

As of October 31, statewide hydrologic conditions were as follows: precipitation, 25 percent of average to date; runoff, 65 percent of average to date; and reservoir storage, 75 percent of average for the date. Sacramento River Region unimpaired runoff, for Water Year 2014, observed through October 31, 2013 was about 0.3 million acre-feet (MAF), which is about 67 percent of average. For comparison during Water Year 2013, the observed Sacramento River Region unimpaired runoff through October 31, 2012 was about 0.4 MAF, or about 72 percent of average.

On October 31, the Northern Sierra 8-Station Precipitation Index Water Year total was 0.8 inches, which is about 27 percent of the seasonal average to date and 2 percent of an average water year (50.0 inches). During October, the total precipitation for the 8-Stations was 0.8 inches, or about 27 percent of average for the month. Last year on October 31, the Water Year 2013 seasonal total for the 8-Stations was 2.7 inches, or about 90 percent of average.

On October 31, the San Joaquin 5-Station Precipitation Index Water Year total was 0.9 inches, which is about 45 percent of the seasonal average to date and 2 percent of an average water year (40.8 inches). During October, the total precipitation for the 5-Stations was 0.9 inches, or about 45 percent of average for the month. Last year on October 31, the Water Year 2013 seasonal total for the 5-Stations was 1.3 inches, or about 65 percent of average.

Selected Cities Precipitation Accumulation as of 10/31/2013 (National Weather Service Water Year, July through June)					
City	July 1 to Date 2013 - 2013 (in inches)	% Average	July 1 to Date 2012 - 2012 (in inches)	% Average	% Avg "Water Year" July 1 to June 30 2013 - 2014
Eureka	3.27	98	3.50	105	8
Redding	1.40	47	2.35	78	4
Sacramento	0.59	46	1.17	91	3
San Francisco	0.43	31	1.49	107	2
Fresno	0.04	5	0.25	30	0
Bakersfield	0.03	7	0.04	10	0
Los Angeles	0.05	6	0.15	18	0
San Diego	0.30	39	0.70	91	3

Key Reservoir Storage (1,000 AF) as of 10/31/2013								
Reservoir	River	Storage	Average Storage	% Average	Capacity	% Capacity	Flood Control Encroachment	Total Space Available
Trinity Lake	Trinity	1,222	1,614	76	2,448	50	---	1,226
Shasta Lake	Sacramento	1,744	2,755	63	4,552	38	-2,147	2,808
Lake Oroville	Feather	1,528	2,164	71	3,538	43	-1,635	2,010
New Bullards Bar Res	Yuba	504	533	95	966	52	-292	462
Folsom Lake	American	292	496	59	977	30	-432	685
New Melones Res	Stanislaus	1,025	1,302	79	2,420	42	-945	1,395
Don Pedro Res	Tuolumne	1,024	1,297	79	2,030	50	-666	1,006
Lake McClure	Merced	258	451	57	1,025	25	-416	767
Millerton Lake	San Joaquin	278	189	147	520	53	-158	242

Pine Flat Res	Kings	159	350	46	1,000	16	-706	841
Isabella	Kern	53	159	33	568	9	-117	515
San Luis Res	(Offstream)	434	1,105	39	2,039	21	---	1,605

The latest National Weather Service Climate Prediction Center (CPC) long-range, 1-month precipitation outlook for November 2013, issued October 31, 2013, suggests no tendency for above or below average rainfall for California.

## **SNOWMELT & SEASONAL VOLUME RUNOFF FORECASTING**

### **Snow Surveys and Snow Course Maintenance**

As of December 5, 2013, the regional snow pack conditions as reported by the remote snow sensors are as follows:

- Northern Sierra – Less than 1” of SWC for 2% of April 1 Avg.
- Central Sierra - 1” of SWC for 3% of April 1 Avg.
- Southern Sierra - 2” of SWC for 6% of April 1 Avg.
- Statewide - 1” of SWC for 3% of April 1 Avg.

The next snow course measurements will occur near January 1, 2014.

## **HYDROLOGIC DATA MANAGEMENT**

The Snow Surveys section continues to collect, review, Quality Control, and enter Full Natural Flow (FNF), precipitation, snow, and reservoir storage data for thousands of locations statewide on a daily basis. With this data staff continues to issue daily, monthly, and seasonal water condition reports on CDEC. The extreme dry conditions during 2013 have brought a lot of media attention and a lot of question from cooperating agencies. During the month Snow Surveys staff alone responded to over one dozen media requests.

## **BULLETIN 120 AND WATER SUPPLY INDEX FORECASTS**

The next Bulletin 120 forecast will be for February 1, 2014.

The December 1, 2013 WSI forecast will be available next week. A preliminary review of conditions reveals a Critically Dry classification for both the Sacramento and San Joaquin River systems. The January thru November observed precipitation in the Northern Sierra Nevada ranks as the driest on record.

## **HYDRO-CLIMATE ANALYSES**

No new information to report this month.

## **REAL-TIME DATA COLLECTION NETWORK**

No new information to report this month.

## **RESERVOIR OPERATIONS & RIVER FORECASTING**

*This element supports Flood Emergency Response through a coordinated effort with various agencies' operating reservoirs in the system to enhance reservoir operations. The goal of coordinated operation of the reservoirs will be to reduce peak flood flows downstream of the reservoirs. Additionally, this Element supports Flood Emergency Response through river forecasting activities conducted in coordination with the National Weather Service River Forecast Center located at the Joint Operations Center in Sacramento. By conducting real-time and long-range hydrologic and watershed analyses, this Element provides accurate and timely runoff and river peak flow forecasts.*

### **RESERVOIR COORDINATED OPERATIONS**

No new information to report this month.

### **RIVER FORECASTING**

No new information to report this month.

## **FLOOD OPERATIONS EMERGENCY RESPONSE**

*This element includes all preparation and planning to execute flood fights, deploy teams, provide training, and coordinate local response needs and federal assistance in the event of a flood. This includes maintaining the readiness of the Flood Operations Center and all the staff that may have to staff it in the event of an emergency and assuring local response efforts can be integrated into the State response system.*

### **FLOOD OPERATIONS, TRAINING AND EXERCISES**

No new information to report this month.

### **OUTREACH**

No new information to report this month.

### **FLOOD SYSTEM ANALYSIS SECTION (FSAS)**

No new information to report this month.

## **EMERGENCY RESPONSE SUPPORT**

*This element includes various efforts that will further the Departments understanding of the flood system interactions with water supply systems and conjunctive use programs. It also includes the update of the Central Valley hydrology for use in risk assessment and project development. Another component includes developing a comprehensive plan to response to flood events in the Delta.*

### **CENTRAL VALLEY HYDROLOGY STUDY (CVHS)**

No new information to report this month.

## **HYDRAULIC ANALYSIS AND EVALUATION**

In November 2013 the Hydraulic Analysis Section continued to manage the remaining hydraulic model development work under the CVFED program. The combined riverine and overland flow hydraulic models for the Upper and Lower Sacramento River System are 95% and 93% completed, respectively; and for the Upper and Lower San Joaquin River System 95% and 95%, respectively. Following the deliveries of the ULOP 200-year Informational Floodplain Maps (SB 1278 and AB 1965) for urban communities in July 2013, we continued to respond to communities and legislators regarding maps, model and data requests related to the 200 year informational maps during the month of October.

In this month HAS continued to populate Library of models with CVFED models as they are completed and approved.

In the month of November, we processed 5 requests for data and transferred a total of 182 LIDAR tiles and 691 tiles of Aerial Imagery. One of these requests also included bathymetric and field survey data. Four of the requests were from within DWR and the other was from an outside public agency. Approximately 89 GB of data were transferred covering a land area of approximately 195 square miles.

## **FUNCTIONAL AREA 2 OPERATION AND MAINTENANCE**

*Operation and maintenance is a functional area under FloodSAFE established to ensure project facilities are operated and maintained in good working condition. DFM's Flood Maintenance Office (FMO) has responsibility for operation and maintenance of the Sacramento River Flood Control Project as outlined in California Water Code sections 8361 and 12878. Routine operation and maintenance is performed by the Sacramento and Sutter Maintenance Yards (Yards). Outside contractors are sometimes given responsibility for non-routine operation and maintenance. Funding from FloodSAFE has expanded the program by providing additional funding for deferred maintenance and for new projects identified through a number of inspection programs. FMO also provides funds to share costs with the federal government and with local maintaining agencies for repair projects.*

*DWR is responsible for planning projects in a way that avoids or minimizes environmental impacts, and for obtaining State and federal environmental permits and clearances for projects within Functional Area 2. DWR works to conduct operation and maintenance in a manner that supports public safety while protecting, and where possible, enhancing the environment. As such, environmental stewardship is integrated into each of the other major elements rather than a stand-alone element. Also, with DWR's established open collaborative process, various local, State, and federal agencies examine issues together and develop integrated solutions to complex environmental compliance requirements and resource opportunities as flood control maintenance activities are undertaken.*

### **FLOOD SYSTEM PREPAREDNESS**




















































*Routine maintenance of project facilities is an essential component of Flood System Preparedness and is conducted by the Yards. Routine annual maintenance of project levees, channels, and flood control facilities begins in March and continues until the beginning of the flood season in October. The project's operation and maintenance manuals and the criteria for evaluating maintenance practices developed by the United States Army Corps of Engineers (USACE) serve as a guide for establishing maintenance practices. The Yards focus on completing all routine maintenance activities (including repair of damage caused by previous flood season's high water events) and having adequate flood fighting supplies on hand before the onset of the next flood season.*

### **Levee Maintenance**

*Maintenance of levees includes: mowing levees and managing vegetation to maintain visibility and accessibility for flood fighting, filling rodent holes, inspecting and repairing pipe penetrations, keeping levee crown roads in good condition, repairing damaged gates, and repairing slumping or eroded levee sections. Levees are inspected four times per year.*

- *Levee maintenance is mostly complete for the year. The remaining items are fall pre-emergent spraying, some levee grouting, road grading, and a few erosion repairs. The pre-emergent must be applied late fall just before seeds are to germinate. Rodent hole grouting could not be completed this year due to trouble acquiring permits from the California Department of Fish and Wildlife. These delays also affected some of the grouting that was permitted and is ongoing.*

- The following figure shows the status of routine maintenance activities.

Maintenance Activities completed for Fiscal year 2013-2014						
	Vegetation Control	Rodent Grouting	Encroachment Removal	Levee Restoration	Levee Road Maintenance	Minor Structure Maintenance
MA 1		n/a				
MA 3		n/a				
MA 4		n/a				
MA 5		n/a				
MA 7		n/a		n/a	n/a	
MA 9					n/a	
MA 12			n/a		n/a	
MA 13					n/a	
MA 16					n/a	
MA 17		n/a				
WC 8361 State maintained				n/a		

n/a = not applicable



## **Channel Maintenance**

*Channels are maintained to convey the design flood flow by removing and thinning vegetation, and by removing accumulated debris and sediment as necessary. Hydraulic models are developed and applied to analyze channel flow capacity and identify critical areas within channels where vegetation or sediment needs to be removed to maintain channel capacity. As the models are completed, channel-specific management plans are developed to support on-going maintenance activities in the channel. Approximately 20 percent of the project channels will be modeled every year with priority given to channels with suspected deficiencies and every channel will be modeled no less than every 5 years.*

- Channel maintenance is 70% complete - mowing, vegetation removal, spraying.
- Butte Creek Hydraulic Model - Model and hydraulic reports were updated to include additional cross section data collected by DWR's Northern Region Office (NRO).
- Cherokee Canal Hydraulic Model - Combining hydraulic model previously developed by a consultant for the upper section of Cherokee Canal (Nelson Road to Highway 162) with the hydraulic model developed by FMO for the lower Cherokee Canal (Highway 162 to Butte Sink). Combined model will be used to develop a Channel Management Plan for Cherokee Canal.
- Chico Area Streams Hydraulic Model – NRO and FMO staff participated in a conference call with CVFED and Atkins (consultant for CVFED) to coordinate development of models by FMO and CVFED for the Chico area. CVFED has incorporated some parts of the FMO model into the CVFED system model.
- Linda and Arcade Creek Hydraulic Model – No new information.
- Natomas Cross Channel (NCC) Hydraulic Model – Finished recalibration of NCC. Began recalibration of East Side Canal roughness n-values and review of bridge modeling parameters. Received and reviewed electronic copy of NLIP NCC Phase 2 South Levee As-Built drawings provided by consultants for SAFCA.
- Natomas East Main Drainage Canal (NEMDC) - No new information.
- Putah Creek Hydraulic Model – Comparing the Solano county 1995 survey cross section with recent DOE Bathymetric Survey. Drafting initial sections of hydraulic model report.
- Tisdale Bypass Hydraulic Model – Preparing HEC GeoRAS data layer to develop model cross sections. Collecting high water staking data for eventual model calibration and as-built drawings for Garmire Road and Reclamation Road Bridges needed to complete model development.
- Wadsworth Canal Hydraulic Model – FMO staff met with Sutter Yard to review results of the hydraulic modeling and levee evaluation. Modeling shows that 1957 design flow Water Surface Elevation (WSE) based on current conditions is below that shown on the 1957 profile. There is a freeboard deficiency in the left levee below Franklin Road with the maximum deficiency less than one foot in an area with an approximately six-foot freeboard requirement. Deficiency is due to levee heights below design elevations and not WSE. There is currently approximately 100,000 CY of sediment accumulation between Franklin Road and the Sutter Bypass. FMO intends to develop a sediment removal project based on Standard O&M Manual requirements relative to sediment accumulation.

### **Flood Control Facilities Maintenance**

*DWR operates and maintains flood control structures such as weirs, pumping plants, fish ladders, and bridges. Routine activities, such as maintaining electrical and mechanical systems, removing debris from intakes, and inspecting facilities for deterioration, are performed so the facilities are ready for operation.*

Facility maintenance is complete for the calendar year.

### **Maintenance Yard Flood Season Preparedness**

*The Yards serve as first responders for State-operated Maintenance Areas (MA) and those areas where the State Legislature has given DWR levee maintenance responsibilities. By October, the Yards prepare for the next flood season by: restocking flood fighting supplies, conducting flood fight training that is needed for new staff, preparing schedules for high water patrolling or staking that may be conducted during the forthcoming flood season, inspecting and repairing communication equipment, and coordinating flood fighting activities with DWR's Flood Operations Center.*

### **Sacramento Maintenance Yard**

Installation of 11 in-situ chemical oxidation well casings and 8 soil vapor monitoring probes associated with remediation of a dissolved petroleum hydrocarbon groundwater plume was completed on October 30, 2013. Procurement and installation of the remediation injection equipment is scheduled for the first quarter of 2014.

### **Emergency Response**

*The Yards, when requested, respond to flood events as first responders in areas where they have maintenance responsibilities. They also provide support to other locally maintained areas for flood fighting when requested.*

No new information to report this month.

### **CENTRAL VALLEY FLOOD PROTECTION PLAN (CVFPP) – IMPLEMENTATION**

*In addition to the routine maintenance described above, FMO is using FloodSAFE bond funds to complete deferred non-routine maintenance projects (such as rehabilitation of pumping plants), and rehabilitation and repair of system facilities (such as removing accumulated channel sediment and repairing major levee and bank erosions sites). The CVFPP identified several near-term priority actions that are being implemented including: development of rural levee repair criteria, proactive erosion repair and stabilization, risk-prioritized repair of critical system problems, rehabilitation and maintenance of all-weather levee access roads, and participation in federal levee repair programs. Implementation of the rural levee projects will be consistent with the State System-wide Investment Approach (SSIA).*

### **Levee Rehabilitation and Repair**

*FMO is supporting the rehabilitation and repair of levees through a variety of cost-share programs with the federal government and local maintaining agencies. A key program for providing local cost-share assistance in rural/agricultural areas is the Flood System Repair Project (FSRP) that repairs critical damage to flood control facilities. The State, in collaboration with the Central Valley Flood Protection Board (CVFPB) and members of the flood control community, is also developing the Rural*

*Levee Repair Guidelines (RLRG) to provide guidance for repairs of smaller-scale levee deficiencies in rural/agricultural areas. Once developed, these criteria may be applied to repairs conducted under the FSRP.*

### **Small Erosion Repair Program (SERP)**

SERP is continuing to move forward with finalizing permits. DWR received the draft Routine Maintenance Agreement developed for SERP from CDFW for this program on November 18, 2013. The agreement incorporates coverage for repairs in CDFW's Regions 2 and 3. DWR is currently reviewing this document.

### **Flood System Repair Project (FSRP)**

DWR is engaging the Local Maintenance Agencies (LMAs) to verify repair sites and enter into work agreements. Construction of levee repairs is anticipated to begin in summer 2014.

### **Rural Levee Repair Guidelines (RLRG)**

Draft RLRG document is being reviewed by key stake holders: regional coordination groups, coordinating committee members, Central Valley Flood Control associations, and State and local Farm Bureaus.

### **Sacramento River Bank Protection Project**

- The Cache Creek North Levee Setback Levee at LM 3.9 and 4.2 has been completed. There are no mitigation maintenance requirements at these sites, so the O&M manuals are being updated in order to turn over the sites to the LMA.
- Construction of the West Sacramento setback levee at Sacramento RM 57.2R has resumed after negotiations with the contractor were needed to remedy the slurry wall that did not meet contract specifications. The setback levee will be brought to design elevation soon, but final site construction will likely be completed after the winter.

### **PL 84-99**

No new information to report this month.

### **Channels – Corridor Management Strategy (CMS)**

*CMS is a concept for planning, designing, and implementing projects for flood control features that DWR has responsibility for maintaining and repairing. It incorporates DWR's environmental stewardship and sustainability policies, and involves developing a vision, strategy, and Corridor Management Plan (CMP) for managing corridors that integrate public safety, environmental stewardship, and economic stability over a long-term (greater than 30 years) planning horizon. CMPs are a foundation for securing programmatic regulatory agency approvals for on-going maintenance activities and habitat restoration. CMPs effectively support the objectives of the CVFPP and Conservation Framework in establishing an integrated management plan to reduce flood risk, improve ecosystem function, and create a more sustainable flood management system that allows for on-going operation and maintenance of flood management facilities.*

**Lower Feather River Corridor Management Plan (LFRCMP)**

An administrative draft of the LFRCMP was submitted by AECOM (the primary support services contractor) for DWR review in the middle of November. The administrative draft revisions and comments are due back to AECOM by early January 2014.

**Willow Slough Bypass Channel Rehabilitation Project**

No new information to report this month.

**Flood Control Facilities – Rehabilitation and Repair**

*DWR repairs or replaces flood control structures that are part of DWR responsibilities within the Sacramento River Flood Control Project. These facilities include weirs, pumping plants, fish ladders, outfall gates, and bridges.*

**Butte Slough Outfall Gates (BSOG)**

Flood Maintenance Office and Sutter Maintenance Yard staff are reviewing the 95% design drawings and specifications. The project description for the CEQA document is being updated.

**Sutter Bypass East Borrow Canal – Weir No. 2**

The remote communications for the weir is installed and operational. Testing of the weir is ongoing.

**Pumping Plants**

Pumping Plant testing is on-going.

### **FUNCTIONAL AREA 3 FLOODPLAIN RISK MANAGEMENT**

*The primary purpose of Floodplain Risk Management is to empower local communities through floodplain management program support and technical assistance to make wise land use decisions in flood prone areas that result in reduced flood risk and preservation of the beneficial uses of floodplains. FPM projects and programs work towards development of a statewide integrated approach for flood risk reduction and long term floodplain sustainability that reduces loss of life and property damage and minimizes the economic impacts associated with flooding.*

#### **FLOODPLAIN MANAGEMENT ASSISTANCE**

*Floodplain Management Assistance provides statewide technical support to federal, state and local agencies, and the public for flood hazard maps, levee data, and the National Flood Insurance Program activities including the Community Rating System (CRS). As part of the NFIP Community Assistance Program (CAP) grant-partnership with the Federal Emergency Management Agency (FEMA), DWR conducts audits with communities participating in the NFIP, provides technical assistance to the public, and trains community officials.*

No new information to report this month.

#### **STATEWIDE FLOODPLAIN EVALUATION AND DELINEATION**

*Floodplain Evaluation and Delineation works to estimate the frequency, depth, and limits of potential flooding throughout the state providing building blocks in terms of floodplain assessments, standards, methodologies, tools, and analyses supporting multiple applications including FloodSAFE programs and projects and FEMA's National Flood Insurance Program.*

No new information to report this month.

#### **CENTRAL VALLEY FLOODPLAIN EVALUATION AND DELINEATION**

*Floodplain Evaluation and Delineation works to estimate the frequency, depth, and limits of potential flooding in the Central Valley by providing building blocks in terms of floodplain assessments, standards, methodologies, tools, and analyses supporting multiple applications including FloodSAFE programs and projects and FEMA's National Flood Insurance Program.*

No new information to report this month.

#### **FLOOD RISK NOTIFICATION**

*Flood Risk Notification focuses on communicating flood risk and risk mitigation strategies to the public and to local, state and federal agencies for areas protected by the facilities of the State Plan of Flood Control.*

No new information to report this month.

## **FLOOD RISK PLANNING**

*Flood Risk Planning is focused on incorporating flood risk management into statewide and local land use decision-making to identify potential flood hazards and mitigation strategies to reduce flood risks through creation of integrated planning approaches and datasets that help agencies, communities, and individuals make well informed decisions.*

No new information to report this month.

## **FUNCTIONAL AREA 4 FLOOD PROJECTS & GRANTS**

*Flood Protection Projects and Projects Grants has been a long-standing California Department of Water Resources (DWR) base program, and is expected to continue indefinitely, because of the ongoing need for system improvements and the long-lead time to implement federal flood control projects. The program is responsible for the majority of physical improvements to the flood management system and provides grant money in the Delta and Statewide. The State acknowledges the program need by continuing to be a significant partner in viable flood management projects in the Central Valley, Delta, and Statewide.*

### **USACE/CVFPB PROJECTS**

The Central Valley Flood Protection Board (CVFPB/Board) continues to participate with the U.S. Army Corps of Engineers (USACE) on project non-federal cost-share funding to upgrade the Central Valley's State-federal flood management.

#### **American River Common Features (ARCF) Project**

The ARCF project is improving the levee system along the American and Sacramento rivers.

- Construction is underway on sites L9 and L9A. Cut-off wall construction is complete on sites Natomas East Main Drainage Canal (NEMDC) South and R10. The L5A winterization plan is ongoing. These sites are scheduled for completion in fiscal year (FY) 2013; except for site L5A which will be completed in FY 2014.
- USACE completed 100% design on sites R3A, L10, L7, and R7. Sites R3A and L10 have been awarded contracts for construction. The design is at 90% for the NEMDC North Extension site. L7 and R7 contract award scheduled for December 2013. NEMDC North contract has been awarded.

#### **ARCF – Natomas Basin**

The Natomas Basin Project is pending authorization in Congress in Water Resources Development Act 2013 and includes significant improvements to the levees along the southern and eastern boundaries of the basin to improve flood protection to modern engineering standards.

- The Senate and House are forming a conference committee to negotiate and work through the differences in the two bills, S 601 passed by the Senate in April 2013, and HR 3080 passed by the House in October 2013.
- The Sacramento Area Flood Control Agency (SAFCA) and DWR have been meeting to assemble necessary documentation to eventually apply for credit from USACE for the approximate \$375,000,000 invested so far. This credit has been approved in concept by the Assistant Secretary of the Army in a series of letters obtained by SAFCA over the last six years.

#### **Folsom Dam Raise**

The Folsom Dam Raise Project will provide flood damage reduction by increasing the reservoir storage capacity by 3.5 feet and performing structural modifications to the existing tainter gates for operational safety. In addition, improvements to the temperature shutters and ecosystem restoration along the lower American River will provide environmental benefits.

- No new information to report this month.

### **Folsom Dam Modifications Joint Federal Project (JFP)**

The purpose of the Folsom Dam Modifications Project is to construct an auxiliary spillway at the Folsom Dam that will work in conjunction with the existing spillways to help the Sacramento region achieve a 200-year flood protection level. Estimated completion for the JFP is October 2017.

- Construction and Design – The project status as of September 30, 2013, is as follows:

Phases	Planning & Design	Construction
Pre-construction Engineering and Design	100%	N/A
Phase III – Control Structure	100%	64%
Phase IV – Approach Channel, Chute, and Stilling Basin	100%	4%
Phase V – Site Restoration	18%	0%
Project Overall	90%	30%

### **Lake Kaweah Enlargement Project (Terminus Dam, Kaweah River Project)**

The Lake Kaweah Enlargement Project was completed in 2006, and the remaining administrative, financial, and turnover work is planned to be complete by September 2014.

- The CVFPB approved the USACE schedule and cost change request (SACCR) for this project that increases the total project cost by approximately \$1.9 million to cover expenses by USACE from early 2009 until closeout in September 2014.

### **Marysville Ring Levee Improvement Project**

The Marysville Ring Levee Project will provide a 200-year or greater flood protection level to the city of Marysville by constructing cut-off walls, levee strengthening, and reshaping of the existing levee systems surrounding Marysville.

- Phase 1 cutoff wall construction was completed in 2012.
- Phase 4A construction is planned to begin spring of 2014.
- Phase 2A design is 60% complete with construction award planned for fall of 2014.
- Phase 2B design will begin in 2015.
- Phase 2C design will begin the spring of 2014.
- Phase 3 designs will begin the summer of 2014.

### **Mid-Valley Area Levee Reconstruction Project**

The Sacramento River Flood Control System Evaluation – The Phase III Contract Area 3 Project is located near Knights Landing in east Yolo County, approximately 26 miles northwest of Sacramento. Contract area 3 includes levee reconstruction at sites 9, 10, and 11 planned along the Sacramento River. Sites 12, 12A, and 13 are planned along the Knights Landing Ridge Cut drainage canal.

- No new information to report this month.

### **South Sacramento Streams Project**

The South Sacramento County Streams Project will increase the flood protection level for south Sacramento County's urbanized area and an area to the south and east of the city of Sacramento.



- The Morrison Creek floodwall construction was completed November 1, 2013.
- Improvements to Florin Creek are in design with USACE now. Complete design is expected by September 2014, and construction will follow in 2015.

### **West Sacramento Area Project, Slip Repair**

The West Sacramento Slip Repair Project was completed in 2011 and is awaiting close-out by USACE. On September 4, 2013, Flood Projects Office staff made a request to the Project Leadership Board to provide the State with a schedule to complete project closeout and final accounting as soon as possible.

- No new information to report this month.

### **USACE/CVFPB STUDIES SECTION**

The State, represented by CVFPB, participates and provides cost-share for feasibility studies with USACE and local partners. Several studies are underway.

**ARCF General Reevaluation Report (GRR)** This study will provide a 200-year level of flood protection for the Lower American River, downstream of the Folsom Dam, the Sacramento River (downstream of the Natomas Cross Canal), and the Natomas Cross Canal.

- USACE and the State continue to negotiate the terms and conditions of the Feasibility Cost Share Agreement (FCSA) for the GRR. USACE is requiring a retroactive start date under a new 50/50 cost-share; which will require retroactive funding for previous work completed by USACE, in addition to contributed funds by the non-federal sponsors to complete the GRR. USACE is considering a retroactive start date of October 2012, which coincides with the 3x3x3 Rule rescoping effort.
- CVFPB approved a letter requesting that USACE consider a Locally Preferred Plan (LPP) as part of their feasibility study process. This will allow the Non-federal sponsors to include a preferred plan in accordance with State policy and guidance, in USACE's review process. SAFCA and CVFPB, as non-federal sponsors of the GRR, are reviewing the latest USACE Sacramento District Tentatively Selected Plan (TSP) description to determine if it meets State policy and guidance, if so the Non-federal Sponsors may not need to submit an LPP.

### **Lower San Joaquin River Feasibility Study**

This study is a coordinated effort by the State, USACE, and SAFCA to investigate feasible 200-year level flood protection and risk reduction alternatives and opportunities for floodplain restoration, recreational enhancements, and ecosystem restoration and enhancement for the city of Stockton and surrounding areas.

- No new information to report this month.

### **Merced County Streams Project-Bear Creek GRR**

This project will evaluate options to increase the Merced urban area level of flood protection from a 50-year to 200-year event.

- No new information to report this month.

### **Rock Creek/Keefer Slough Feasibility Study**

This study will generate an environmental impact statement/environmental impact report (EIS/EIR) and feasibility study to evaluate federal, State, and local interests in planning, designing, mitigating, and improving these levee systems in Butte County.

- No new information to report this month.

### **Sutter Basin Feasibility Study**

This multipurpose study will address levee improvement measures for existing levee systems protecting Yuba City and the surrounding communities in the Butte/Sutter basin, as well as environmental restoration and recreation opportunities.

- No new information to report this month.

### **West Sacramento GRR**

The GRR is being conducted to study future work necessary to provide a minimum 200-year level of flood protection for the city of West Sacramento.

- USACE has postponed the Tentatively Selected Plan (TSP) Milestone #2 conference from December 17, 2014, to a future date in February or March. This delay occurred because USACE must complete the draft environmental documents prior to the TSP conference. The TSP conference provides vertical concurrence within USACE for the selected alternative.

### **West Stanislaus County - Orestimba Creek Feasibility Study**

This study will evaluate feasible flood protection alternatives for the city of Newman and the surrounding agricultural areas to achieve a 200-year level of flood protection.

- No new information to report this month.

### **White River/Deer Creek Feasibility Study**

This study will generate an EIS/EIR and feasibility study to evaluate federal, State, and local interests in planning, designing, mitigating, and improving existing levee system of White River and Deer Creek in Tulare County.

- No new information to report this month.

### **Woodland/Lower Cache Creek Feasibility Study**

This study is a State, USACE, and the city of Woodland coordinated effort to investigate the feasible 200-year level flood protection and risk reduction alternatives and opportunities for floodplain restoration, recreational enhancements, and ecosystem restoration for the city of Woodland and surrounding areas. The study will continue efforts, suspended in 2004, after significant local resistance to the USACE-selected flood barrier option alternative halted the study.

- On November 12, 2013, City of Woodland staff briefed Caltrans District 3 management staff on potential flooding scenarios in the Woodland area resulting from high flows in Lower Cache Creek. Caltrans is not currently a participant in the feasibility study; however, they indicated that they obtained approval to assist with portions of the economic analysis that relate to potential loss of use resulting from possible flooding of Interstate 5 within the Study area. Hydraulic calculations have shown flooding depths from a 100-year event could exceed 10-feet over the roadway surface and could incapacitate Interstate 5 for weeks and possibly months should such a flood occur.

- On November 14, 2013, a community information meeting was conducted at the Senior Center in Woodland to inform interested members of the public on the status of the feasibility study. USACE staff described the study process while City staff described the progress to date related to existing floodplain mapping. This meeting met the requirements for a USACE National Environmental Protection Act (NEPA) “scoping” meeting which is a requirement prior to reaching Milestone #1 in the Planning Modernization Effort (3x3x3 Rule), which is part of USACE’s SMART Planning process. Milestone #1 marks approval of the focused array of alternatives.

### **Cache Creek Settling Basin**

This settling basin was initially constructed in 1937 and modifications were completed in 1993. The project’s federal authorization specified additional improvements to be considered at year 25 or when the sediment trapping efficiency fell below 30%.

- No new information to report this month.

### **Yuba River Basin Project GRR**

The Yuba River Basin Project GRR consists of increasing the Yuba River Basin flood protection level in Marysville, Linda, Olivehurst, and Arboga.

- No new information to report this month.

## **CENTRAL VALLEY FLOOD PROJECTS**

*This element is responsible for flood projects review and federal feasibility studies cost-sharing. It contains three components: Feasibility Studies, EIP Projects, and Flood Control Projects.*

### **EIP PROJECTS**

EIP includes projects ready to proceed in advance of the Central Valley Flood Protection Plan. An approval element for these projects ensures they do not eliminate opportunities or prejudice the flood risk reduction alternatives that would provide regional or system-wide benefits.

### **Knights Landing Levee Repair Project**

This project will repair 3.4 miles of levee along the left (east) bank of the Knights Landing Ridge Cut back to the USACE 1957 Design Profile.

- The funding agreement was executed on October 18, 2013.
- On November 22, 2013, the 408 Minor Application package was approved by CVFPB for submittal to USACE.

### **Levee District 1 (LD-1) – Setback Levee at Starbend, Feather River**

LD-1 constructed a 3,400-foot-long setback levee at Star Bend near river mile (RM) 18.0 on the right bank to provide increased flood protection for Yuba City.

- No new information to report this month.

### **Reclamation District 17 (RD-17) – 100-Year Seepage Area Project**

RD-17 levees have unacceptably low safety factors due to under-seepage and through-seepage. These issues are being addressed by constructing seepage

berms, slurry walls, and a setback levee to increase the flood protection level for south Stockton, Lathrop, and Manteca.

- No new information to report this month.

### **Three Rivers Levee Improvement Authority (TRLIA) – Feather River**

This project will result in a 200-year flood protection level for Highway 65 and 70, and will also improve flood protection for Olivehurst, Linda, Plumas Lake, Marysville, and Yuba City. This project includes one of the largest setback levees west of the Mississippi River, and creates 1600 acres for on-site mitigation, agricultural use, and habitat.

- TRLIA continues to construct a 20-foot maintenance corridor along the levee toe in Segment 3. A time variance has been granted by CVFPB through November 30, 2013.

### **TRLIA – Upper Yuba River**

This project will result in a 200-year level of flood protection for Highway 65 and 70, and will also improve flood protection for Olivehurst, Linda, Plumas Lake, Marysville, and Yuba City. This project includes a portion of the Yuba River's south levee.

- No new information to report this month.

### **SAFCA – Natomas Cross Canal**

This Natomas Levee Improvement Program project will install cutoff walls to prevent seepage, under-seepage, and raise the levee to improve the Natomas Basin's flood protection and create a 200-year minimum flood protection level.

- No new information to report this month.

### **SAFCA – Sacramento River East Levee**

This Natomas Levee Improvement Program project will install cutoff walls to prevent seepage, under-seepage, and raise the levee to improve the Natomas Basin's flood protection and create a 200-year minimum flood protection level. SAFCA plans to complete components to element 12A (RM 67) along the Sacramento River and have the USACE complete the remaining work.

- EIP is waiting on approval by the Department of General Services (DGS) of a \$35 Million Funding Agreement Amendment which was approved by the SAFCA Board on November 22, 2013, and now goes back to DWR Contracts and DGS for routing. It will take approximately 30 days to complete.

### **San Joaquin Area Flood Control Agency (SJAFCA) – Smith Canal Closure Structure**

The Smith Canal Closure Structure Project will construct an Obermeyer gate at the mouth of the Smith Canal on the San Joaquin River/Stockton Deep Water Ship Channel. The cost to design the structure is \$2,412,500.

- No new information to report this month.

### **West Sacramento Area Flood Control Agency (WSAFCA) – North and Southport Improvement**

The California Highway Patrol Academy, Rivers, and I-Street Bridge projects are part of the North Area Plan. All construction is complete for these sites. These projects correct through-seepage and foundation under-seepage that have excessive hydraulic gradients, embankment instability, and erosion problems. All three projects are designed to provide a 200-year flood protection level for about 47,000 residents.

The Southport area project is being designed and may include a large setback levee.

- No new information to report this month.

### **Sutter Butte Flood Control Agency (SBFCA) – Feather River West Levee Project (FRWLP)**

FRWLP is designed to repair approximately 35 miles of levee along the west bank of the Feather River from the Thermalito Afterbay to the north end of Star Bend. The design will include slurry walls and seepage berms to protect Gridley, Biggs, Live Oak, Yuba City, and parts of Sutter and Butte counties. FRWLP's highest priority segment was identified as Project Area C. DWR has decided to pursue this project area as the first construction contract.

- A design Funding Agreement Amendment for a 21-month time extension was executed on October 14, 2013.
- The construction funding agreement for \$56.78 million in State funds was executed on October 29, 2013.
- Construction of the slurry wall for the Shanghai Bend portion of the Feather River West Levee is complete and the levee is currently being rebuilt.

### **STATEWIDE FLOOD PROGRAMS**

*The Statewide Flood Programs provide local entities financial support for State-wide flood and ecosystem restoration related projects. These programs include the Flood Control Subventions Program (FCSP), the Flood Corridor Program (FCP), the Local Levee Assistance Program (LLAP), and the Yuba-Feather Flood Protection Program (YFFPP).*

#### **YFFPP (Yuba-Feather Flood Protection Program)**

YFFPP provides Proposition 13 financial assistance to local entities that can demonstrate non-structural flood management projects that show a peak flood flow reduction, flood stage, and flood risk in the Yuba and Feather River (including wildlife habitat enhancement and/or agricultural land preservation).

- No new information to report this month.

#### **Flood Corridor Program (FCP)**

FCP provides local assistance grants to local governments, special districts, and non-profit organizations for flood risk reduction projects using non-structural methods. Each project must also include an ecosystem restoration or agricultural land conservation component.

- Dos Rios II (Hidden Valley Ranch Acquisition) – DWR management approved the purchase of 497 acres of floodplain property which would enable the

expansion of the existing Dos Rios project using FCP bond funds. The project has the potential to greatly increase transitory water storage and provide habitat for protected species. Partners in the acquisition include the FloodSAFE Environmental Stewardship and Statewide Resources Office and the Wildlife Conservation Board. Funds are currently in escrow and pending closure.

- Middle Creek Flood Damage Reduction and Ecosystem Restoration Project – Two property acquisition and one relocation are being completed. The total number of homes purchased to date is 14 including these acquisitions. This will reduce the flood risk and the State’s associated flood maintenance responsibilities and liability. FCP is providing \$12.7 million in funding to the Lake County Watershed Protection District for the acquisitions and removal of 18 residential structures from 1,600 acres within the project area. The project is part of a larger USACE and Lake County Watershed Protection District project to restore the Middle Creek floodplain to a natural wetland ecosystem, and to provide flood damage reduction.

### **DELTA FLOOD PROJECTS**

*This is a grants program that works with more than 60 reclamation districts in the Delta and Suisun Marsh to maintain and improve the flood control system and provide protection to public and private investments in the Delta, including water supply, habitat, and wildlife. The program, through its two major components; Delta Levees Maintenance Subventions Program and Delta Levees Special Flood Control Projects, works with the local agencies to maintain, plan, and complete levee rehabilitation projects. One of the requirements to qualify for available funds is for the project to result in no Delta habitat net loss. Additional Bay-Delta Levees Branch responsibilities are to support the levee system and habitat development; improve Delta flood fight capability through planning, cooperative efforts, encouraging the emergency response plan development for each Delta island; and conducting necessary program studies and contract efforts.*

### **DELTA LEVEES MAINTENANCE SUBVENTION PROGRAM**

DWR staff, on behalf of CVFPB, initiates and manages work agreements to fund levee maintenance and rehabilitation. To date, the status of work agreements is as follows:

#### **Work Agreements for FY 2012-2013.**

- The CVFPB executive officer executed 65 work agreements.
- Staff received 60 final claims by the November 1, 2013, deadline totaling approximately \$12 million worth of work.
- DWR staff has conducted 17 joint levee inspections with CDFW and the local agencies.
- Claims are currently being reviewed for eligibility and completeness. Once fully reviewed, the eligible amounts will be reimbursed to the local agencies.

#### **Work Agreements for FY 2013-2014.**

- On September 13, 2013, the Board approved the FY 2013-14 funding plan for \$12 million dollars. Work Agreements will be mailed to the 67 local agencies for signature.

## **DELTA LEVEES SPECIAL FLOOD CONTROL PROJECTS**

DWR initiates and manages project funding agreements in support of local agencies' levee rehabilitation, habitat, or other projects. DWR executes agreements authorizing the work proposed under Project Solicitation Packages.

Current information can be found at:

<http://www.water.ca.gov/floodmgmt/dsmo/bdlb/spp/>

## **FUNCTIONAL AREA 5 EVALUATION & ENGINEERING**

*Evaluation & Engineering is a FloodSAFE Functional Area established to address assessments of existing flood management facilities to identify deficiencies and needed improvements. This is a new Functional Area that is expected to continue after the FloodSAFE foundational objectives are met. Functional Area activities are performed in partnership with the USACE, which prior to FloodSAFE, conducted most evaluations and engineering for existing facilities. This Functional Area is based on the acknowledgement that changing conditions, new knowledge about system performance, and eventual facility deterioration will demand continued evaluation and engineering services.*

### **URBAN LEVEE EVALUATION (ULE)**

*DWR is required to evaluate the current level of performance of the State-Federal flood protection system in the Central Valley. Urban levees are levees that provide protection to developed areas with a population of at least 10,000 people. The evaluation of current urban levee performance is to include an estimate of the risk of levee failure, a discussion of the inspection and reviews performed, and recommendations regarding the levees and future work activities. The geotechnical engineering being performed will help flood managers understand the overall flood risks to populated areas in the Central Valley and consider alternative changes to the flood management system to better manage the risks.*

ULE is evaluating 470 miles of urban levees that include State-Federal project levees, as well as appurtenant non-project levees that provide protection to urban areas receiving some protection from the State-Federal flood system. Urban levees are being evaluated to determine whether they meet defined geotechnical criteria for landside and waterside slope stability, under- and through-seepage, erosion, freeboard, seismic and, where needed, to identify remedial measures and cost estimates to achieve the defined geotechnical criteria. The information developed to date has been used in support of the Central Valley Flood Management Planning Program to inform development of two required 2012 documents: the Flood Control System Status Report and the Central Valley Flood Protection Plan. Information currently shown in the table below is in process or pending, and will be used to support the 2017 updates to these documents.

The final analyses and Geotechnical Evaluation Report (GER) is the end result of a five-step process that includes the following steps: historical data collection, initial field investigation, preliminary analysis, supplemental field investigation, and final analyses and reporting. Each of these five steps results in the below listed deliverables.

The overall status of the ULE program intermediate and final deliverables for 27 urban levee study areas are shown in the table below.

<b>No.</b>	<b>Urban Study Area</b>	<b>Historic Data Collection (TRM)</b>	<b>Initial Field Investigations (P1GDR)</b>	<b>Preliminary Analyses</b>	<b>Supplemental Field Investigations (SGDR)</b>	<b>Final Analyses &amp; Report (GER)</b>
1	Chico	Done	Done	Done	Done	In Progress
2	Marysville	Done	Done	Done	Done	In Progress
3	RD 784	Done	Done	Done	Done	Print



No.	Urban Study Area	Historic Data Collection (TRM)	Initial Field Investigations (P1GDR)	Preliminary Analyses	Supplemental Field Investigations (SGDR)	Final Analyses & Report (GER)
						Check Submitted
4	Feather River West Levee	Done	Done	Done	Done	In Progress
5	Sutter Bypass Wadsworth	Done	Done	Done	Done	In Progress
6	American River	Done	Done	Done	Done	In Progress
7	Sacramento River	Done	Done	Done	Done	Draft 1 In Progress
8	Davis	Done	Done	Done	Done	In Progress
9	Woodland	Done	Done	Done	Done	In Progress
10	NEMDC East	Done	Done	Done	Done	In Progress
11	NEMDC West	Done	Done	Done	Done	In Progress
12	Natomas North	Done	Done	Done	Done	In Progress
13	Natomas South	Done	Done	Done	Done	In Progress
14	West Sacramento	Done	Done	Done	Done	Done
15	DWSC	Done	N/A	N/A	Done	In Progress
16	South Sac Streams	Done	N/A	Done	Preparing Final	In Progress
17	RD 404	Done	Done	Done	Done	Draft 1 Submitted
18	RD 17	Done	Done	Done	Done	In Progress
19	Bear Creek	Done	Done	Done	Done	In Progress
20	Calaveras River	Done	Done	Done	Done	In Progress
21	Lincoln Village	Done	N/A	N/A	Done	In Progress
22	Brookside	Done	N/A	N/A	Done	In Progress
23	Rough and Ready	Done	N/A	N/A	In Progress	In Progress
24	Boggs Tract	Done	N/A	N/A	In Progress	In Progress
25	Shima Tract	Done	N/A	N/A	In Progress	In Progress
26	SJAFCA upland levees	Done	N/A	N/A	In Progress	In Progress
27	Smith Canal	Done	N/A	N/A	In Progress	In Progress

Notes:

- 1) In areas where detailed recent studies were performed in advance of the GER five-step process, initial field investigations and preliminary analyses were not performed and the Technical Review Memorandum (TRM) incorporated these recent studies instead.
- 2) In Progress means that the work has been initiated and is in various stages of completion. The remaining In Progress SGDR work is nearing completion.

### ULE Summary

- Overall, ULE is 88% complete.

- Over 2000 interview records and historic reports have been obtained and reviewed. These records/reports have not currently been entered into the database but will be after completion of the ULE program.
- 400 miles of urban levees were surveyed using low altitude, high accuracy (+/- 6 cm) LiDAR survey techniques to generate topographic survey data.
- A bathymetric survey, to generate underwater topographic survey data, was performed for over 100 miles of river systems and integrated with the LiDAR survey to provide levee cross-section profiles that have both landside and waterside topography.
- 300 miles of levees were subject to Helicopter-based Electro-Magnetic Geophysical Survey (HEM). The HEM was performed to assist in assessing the subsurface stratigraphy between borings and determine the need for additional explorations.
- To supplement the HEM in no fly zones, over 100,000 feet of land based geophysical surveys were performed.
- For each of the 27 urban areas, detailed geomorphic studies and associated mapping were conducted to support the field explorations and subsequent analyses.
- Over 5,300 explorations along with approximately 15,000 laboratory tests have been performed as part of this effort for the 27 urban levee study areas.
- The West Sacramento GER was finalized in May 2012.
- Print check for RD 784 and Draft 1 for RD 404 were reviewed by DWR; revisions are underway.
- The 20<sup>th</sup> ICB meeting was held October 21 and 22, 2013; the ICB report with comments has been received and is under review.
- The current date for completion of all GERs is planned for the end of 2014.
- Close coordination of the GER efforts and the EIP projects for RD 17 and Sutter Butte continues.

### **NON-URBAN LEVEE EVALUATION (NULE)**

*DWR is required to evaluate the current level of performance of the State-Federal flood protection system in the Central Valley. Non-urban levees are levees that provide protection to agricultural areas and developed areas with a population of fewer than 10,000 people. The evaluation of current system performance includes an estimate of the risk of levee failure, a discussion of the inspection and reviews performed, and recommendations regarding the levees and future work activities. The geotechnical engineering being performed will help flood managers understand the overall flood risks to populated areas in the Central Valley and consider alternative changes to the flood management system to better manage the risks.*

NULE is evaluating approximately 1,500 miles of non-urban levees that include State-Federal project levees and appurtenant non-project levees that also provide protection to non-urban areas receiving some protection from the State-Federal flood protection system. Non-urban levees are being evaluated to determine whether they meet defined geotechnical design criteria at the 55/57 design water surface for slope stability, under- and through-seepage, erosion, and, where needed, identify remedial measures and cost estimates to achieve the defined geotechnical design criteria. The information being developed will be used in support of the

Central Valley Flood Management Planning Program to inform development of the six regional plans.

The overall status of the NULE program intermediate and final deliverables for the 21 non-urban levee study areas are shown in the table below.

<b>No.</b>	<b>Non-Urban Study Area</b>	<b>Geotechnical Assessment Report (GAR)</b>	<b>Remedial Alternatives and Cost Estimate Report (RACER)</b>	<b>Geotechnical Data Report (GDR)</b>	<b>Geotechnical Overview Report (GOR)</b>
1	Chico/North/South	Done	Done	Done	In Progress
2	Clarksburg	Done	Done	Done	Final volume 1 in Progress, comments from ICB on draft volume 2 are under review
3	Colusa Drain	Done	Done	Done	Draft volume 1 Submitted to DWR
4	Colusa North	Done	Done	Done	In Progress
5	Colusa South	Done	Done	Done	In Progress
6	Gerber	Done	Done	Done	Final volume 1 in Progress, Draft volume 2 in Progress
7	Knights Landing	Done	Done	Done	Draft volume 1 complete – conversion to template underway
8	Sutter	Done	Done	Done	Final volume 1 in Progress, Draft volume 2 in Progress
9	Wheatland	Done	Done	Done	In Progress
10	Woodland South	Done	Done	Done	Final volume 1 in progress; revised erosion analyses under review by ICB
11	Ash Slough	Done	Done	Print check version under review	In Progress
12	Berenda Slough	Done	Done	Print check version under review	In Progress
13	Black Rascal/Fairfield	Done	Done	Print check version under review	In Progress
14	Diverting Canal/Mormon	Done	Done	Print check version under preparation	In Progress
15	ESB/Chowchilla	Done	Done	Print check version under review	In Progress
16	Fresno River	Done	Done	Print check version under review	In Progress

No.	Non-Urban Study Area	Geotechnical Assessment Report (GAR)	Remedial Alternatives and Cost Estimate Report (RACER)	Geotechnical Data Report (GDR)	Geotechnical Overview Report (GOR)
17	Gravelly Ford	Done	Done	Print check version under review	Draft volume 1 in Progress pending final template, Draft volume 2 in Progress
18	RD 2064	Done	Done	Print check version under review	In Progress
19	RD 2075	Done	Done	Print check version under preparation	In Progress
20	RD 2095	Done	Done	Print check version under preparation	In Progress
21	SJRRP/CCID	Done	Done	Print check version under review	In Progress
22	SJAFCA orphan levees (upper Bear Creek)	In process	NA	NA	NA

### NULE Summary

- Overall, Non-Urban Levee Evaluations are 89% complete.
- Over 8,000 records have been obtained and incorporated into a searchable Microsoft Access database.
- Over 7,000 points of interest have been recorded and incorporated in GIS-based maps that also link to the project records database.
- For the 21 non-urban areas, surficial geomorphic studies and associated mapping efforts were conducted. More detailed efforts were performed in selected areas. The surficial mapping was performed to aid the GAR, while the more detailed efforts were performed to aid field exploration efforts.
- Over 3,000 explorations along with approximately 6,000 associated laboratory tests were performed as part of this effort for the 21 leveed areas protecting populations greater than 1,000.
- Drilling is complete.
- Laboratory testing is complete.
- Preparation of GDRs for NULE study areas is ongoing and nearly complete. Final GDRs for Sacramento River basin are complete; final GDRs for San Joaquin River basin are expected in November 2013.
- Preparation of GORs is continuing, with the current delivery dates scheduled for late 2013 through early-mid 2014.
- Preparation of GORs continued for each of the study areas. The results presented in the GORs will support FMO, regional plans, and SJRRP studies.
- A geotechnical assessment of non-urban levees in upper Bear Creek is underway. A senior review panel to review the results of the assessment was conducted.
- The 20<sup>th</sup> ICB meeting was held October 21 and 22, 2013; the ICB report with comments has been received and is under review.

## **Support of Other DWR and USACE Programs:**

- **CVFPP**

In support of Central Valley Flood Planning Program (CVFPP), ULE and NULE data and preliminary analyses were used to define levee reaches requiring remediation to bring them up to appropriate design standards; develop corresponding conceptual cost estimates; and prepare levee reliability curves and maps showing limits of deficiencies by failure mode (e.g., seepage, stability, erosion).

- **CVFED**

To support Central Valley Flood Evaluation and Delineation Program, ULE and NULE data and preliminary analyses were used to establish the height at which a levee no longer meets criteria for stability and seepage for 2100 miles of levees. Revisions to the previously submitted data set using updated (circa February 2013) ULE/NULE analyses have been submitted to CVFED. An addendum to the previously submitted technical memorandum was prepared.

- **FSRP**

In support of the FSRP, NULE and ULE information is being used to perform detailed assessment of potential repair sites in 74 Leveed Areas in the Central Valley. The 8000 records and 7000 points of interest collected for NULE were used as a basis for FSRP. Information and processes developed under NULE and ULE have been used to screen, assess and estimate the initial remediation costs of specific repair sites. In addition, FSRP repair sites undergoing further feasibility and design studies will use field investigation and analyses data being performed under the NULE project. During 2012, field reconnaissance for the FSRP project was completed by eight teams comprised of a combination of DWR and contractor staff. The Field Reconnaissance Summary Reports for the Sacramento River Basin and the San Joaquin River Basin have been finalized. The Pre-feasibility Cost Estimate Reports for north and south leveed areas have been finalized. Support of outreach to LMAs is continues.

In addition to supporting the FSRP, NULE project information is being used to support development of the Rural Levee Repair Guidelines including preparation of templates for typical repairs. Development of the RLRG involves a collaborative effort with input from the U.S. Army Corps of Engineers, the Central Valley Flood Protection Board, DWR, local maintaining agencies, subject matter experts, and interested parties. Two working group meetings were attended.

- **San Joaquin River Restoration Program**

Task Order SJ105 is being implemented during the reporting period and draft geomorphology mapping is complete. The first phase of field explorations has been completed. Laboratory testing is complete for soil samples from these explorations. Analyses for areas with significant channel fill have been completed and a summary technical memorandum was prepared. Planning of a geophysical resistivity study and other Phase 2 field activities is underway. Planning for maximizing geotechnical engineering evaluation and analysis with a limited budget and schedule are currently under way including geophysical work.

- **USACE Lower San Joaquin General Reevaluation Report**

Remediation cost estimating support – protocol developed for ULE/NULE levee repair cost estimating has been provided to USACE to assist their GRR program.

- **Prospect Island Tidal Habitat Restoration Project**

Geomorphic mapping from the ULE/NULE program was augmented to support the Prospect Island Tidal Habitat Restoration Project. Final mapping and accompanying Technical Memorandum were submitted on October 18, 2013.

### **TECHNICAL REVIEW**

*Geotechnical analyses are being conducting on behalf of the CVFPB on an “as-needed” basis and to support proposed and ongoing capital improvement projects. Collaboration with the USACE is occurring with on-going geotechnical studies, including review of associated documents that may impact the CVFPP.*

- Technical reviews are currently being performed for the Sutter Butte Area Flood Control Agency, the (LSJFS) Lower San Joaquin Feasibility Study, and RD 17.
- ULE/NULE continues providing additional supporting data to USACE for the LSJFS.
- ULE continues to review/provide construction support the SBFCA Feather River West design project.

### **TECHNICAL POLICY SUPPORT**

*A statewide seismic policy was developed for levee performance, emergency levee remediation, and long-term levee remediation. Urban Levee Design Criteria (ULDC) were developed to guide local urban levee improvement projects. Research is being conducted to resolve gaps in knowledge associated with the effects that woody vegetation growing on or near levees and animal burrowing activities have on levee integrity; and to provide technical support for the development of management policies as part of the CVFPP.*

- For vegetation issues, joint research with Sacramento Area Flood Control Agency (SAFCA) continues with ULE/NULE logistical and technical support. The NULE program will support the November CVLRP meeting. The following studies have been or are nearly completed:
  - Tree Root Architecture – How and where do tree roots grow on and near levees?
  - Levee Slurry Wall Investigations – Do tree roots penetrate slurry walls? What are their effects?
  - How Trees affect Seepage and Stability of Levees – Do tree roots become preferential seepage pathways through a levee and do trees contribute to levee slope instability?
  - Tree Windthrow – What are the forces necessary to topple trees on California Levees?
  - Burrowing Mammal Habitat Associations – How is burrowing mammal abundance related to the presence or absence of trees on levees?
  - Levee Mammal Burrow Characterization and Grouting Efficacy – What are the seepage and stability implications? Do standard grouting methods seal burrows in a levee?
  - Forensics – Has woody vegetation affected historic levee performance?
- In addition to the static evaluation process, two seismic studies are being performed for the ULE project. The objective of the first study is to develop

conceptual seismic remediation alternatives and associated costs for areas of urban levees that have been identified as being potentially compromised by earthquake loading in the GER. The second seismic study focuses on West Sacramento as a prototype to perform economic analyses and to develop a cost/benefit assessment for seismic remediation. As part of this effort, a draft Seismic Remediation Alternative Report and a prototype seismic remediation cost/benefit study reports for the West Sacramento study area were prepared.

- Participated in various FloodSAFE FAXCTs (Functional Area Cross Coordination Teams).

## **FUNCTIONAL AREA 6 FLOOD MANAGEMENT PLANNING AND CONSERVATION STRATEGY**

*The Flood Management Planning and Conservation Strategy Functional Area refer to the planning and analysis necessary to evaluate flood systems as complete systems consistent with the intent of the FloodSAFE Implementation Plan rather than a set of individual, isolated projects. This functional area consists of three elements: Central Valley Flood Management Planning (CVFMP) Program, Statewide Integrated Flood Management Planning, and Conservation Strategies.*

### **CENTRAL VALLEY FLOOD MANAGEMENT PLANNING (CVFMP)**

*The CVFMP Program is one of several programs being managed within FloodSAFE California. The CVFMP Program addresses most of the flood-related planning activities that were authorized by the Legislature during the 2007/2008 session within much of the Central Valley. The CVFMP Program consists of two primary projects - State Plan of Flood Control (SPFC) and the Central Valley Flood Protection Plan (CVFPP).*

### **STATE PLAN OF FLOOD CONTROL (SPFC)**

The SPFC primarily includes: (1) SPFC Descriptive Document and (2) Flood Control Systems Status Report (FCSSR), which were completed and provided to Central Valley Flood Protection Board (Board) in November 2010 and December 2011. The SPFC Descriptive Document is to be updated as the SPFC is modified. The FCSSR is to be updated in 2016, and in subsequent years ending in 1 and 6.

### **CENTRAL VALLEY FLOOD PROTECTION PLAN (CVFPP)**

The CVFPP reflects a system-wide approach to protecting lands currently protected from flooding by the SPFC. The Board adopted the 2012 CVFPP on June 29, 2012. The CVFPP is to be updated in 2017, and in subsequent years ending in 2 and 7. The 2012 CVFPP presents a State System-wide Investment Approach (SSIA) for making improvements to the SPFC over time through five flood management programs: (1) Flood Emergency Response Program, (2) Flood System Operations and Maintenance Program, (3) Floodplain Risk Management Program, (4) Flood System Assessment, Engineering, Feasibility, and Permitting Program, and (5) Flood Risk Reduction Program. Two important components in further refining flood system improvements include developing Regional Flood Management Plans (RFMP) and two State-led Basin-wide Feasibility Studies (BWFS).

### **Regional Flood Management Planning (RFMP)**

RFMP is a DWR sponsored and locally led planning process to develop a long-term vision of flood management in six regions in the Central Valley. Initial elements of the RFMPs include a Regional Flood Atlas, information on Regional Flood Management Priorities, and a Regional Financial Plan. RFMPs are being coordinated with the two BWFS led by DWR. DWR staff continues to support RFMP efforts. DWR staff and SPFC Coordinators have participated in locally led workgroups and meetings to help with identifying regional problems, financial planning, flood emergency response, and small community protection strategies.



### **Basin-Wide Feasibility Studies (BWFS)**

The two BWFS (Sacramento River Basin and San Joaquin River Basin) are being conducted to describe the State's flood management objectives in each river basin, refine the scale and location of system elements in connection with regional improvements in the SSIA, inform development of the CVFPP financing plan, and integrate a system-wide environmental conservation strategy.

### **Technical Evaluations**

The Central Valley Flood Planning Office (CVFPO) continues work on a number of tasks to support the Sacramento River and San Joaquin River Basin-wide Feasibility Studies. Some of these tasks include assessing potential bypass system modifications to the State Plan of Flood Control (SPFC) to improve flood conveyance, and developing an economic analysis procedure for flood management studies.

### **Flood Planning Activities**

- CVFPO staff continues coordinating with the USACE.
- CVFPO staff presented the final ULOP to the Board on October 25.
- DWR conducted a 2-day Technical Workshop #2 on October 23-24. The workshop focused on tools and data being used to develop measurable objectives for flood management and ecosystem functions.

### **STATEWIDE INTEGRATED FLOOD MANAGEMENT PLANNING**

*The Statewide Integrated Flood Management Planning Program (SFMP) is intended to address flood risk to life and property statewide, and develop recommendations to guide the state's flood risk management strategic policies and investment decisions. The program inventoried existing and future flood management needs in the state's regions, identified opportunities for integrated flood management, and formulated potential integrated flood management solutions. The program published the report titled "Report on Flood Future: Recommendations for Managing California's Flood Risk" (Flood Future Report). In addition, SFMP includes integration of flood management into the California Water Plan.*

### **FLOOD FUTURE REPORT**

- California's Flood Future Report products included: Technical Memoranda, Flood Future Report, and Highlights.
- The final draft of the Flood Future Report was produced on November 4, 2013.
- Work is beginning on the development of a Phase 2 effort to further expand on the seven recommendations from the Flood Future Report and provide a Finance Strategy document.

### **INTEGRATED FLOOD MANAGEMENT IN THE CALIFORNIA WATER PLAN**

- The Public Review Draft Flood Management Resource Management Strategy has been completed.
- Work is ongoing to finalize flood content into the final version of all the Water Plan Update 2013 volumes.

## **CONSERVATION STRATEGIES**

*The Conservation Strategies Element is designed to provide support and integrate environmental stewardship into the CVFMP Program. Therefore, major progress, such as the status of key documents, progress on major milestones, and upcoming events, is described under the Central Valley Flood Management Planning section above.*

- **Conservation Strategy Document**

Staff has incorporated comments on the March 2013 draft into several revised sections of the administrative draft. They are also drafting several new appendices that provide more detailed information on specific topics. These topics include baseline environmental conditions, constraints and opportunities, species conservation needs, regional permitting approaches, fish passage priorities, and vegetation management. Staff is also conducting a series of focused briefings with different stakeholders about the key elements of the Strategy in advance of completing the administrative draft. That draft is anticipated to be available in late January or early February.

- **Basin-Wide Feasibility Studies Alignment & Integration**

Staff has been working closely with CVFPO to integrated ecosystem elements into system-wide flood improvement options, for both the Sacramento BWFS and the San Joaquin BWFS elements. Staffs from both FESSRO and CVFPO are also working to clarify a methodology for integrating RFMP projects into both BWFSs.

- **Feather River HCP/2081**

The Fish TAC met on Dec. 5<sup>th</sup> to discuss salmonid goals and objectives for the HCP and the process for developing numerical targets/ranges for goals and objectives.

- **Regional Flood Management Plan (RFMP) environmental support**

Staff continue to regularly attend the RFMP meetings and share information about the Conservation Strategy, environmental problems in the flood system, and available environmental data useful for RFMP planning. Staff met with representatives of the **Upper/Mid Sacramento RFMP** to discuss FROA-plus, revetment, and related datasets, and methods used to develop restoration opportunity areas. Staff has been working with the **Lower Sacramento/Delta North RFMP** group to plan their December 9<sup>th</sup> public meeting. For that meeting, CVFPO and FESSRO are preparing updates on the BWFS, Conservation Strategy and October Technical Workshop outcomes mtg. Staff met with representatives from the **Upper San Joaquin River RFMP** and the San Joaquin River Restoration Program to discuss common goals and potential opportunities for collaboration.

## **FUNCTIONAL AREA 7    LEGISLATION, BUDGETS, AND COMMUNICATION**

*The primary goal of the Legislation, Budget, and Communication functional area is to facilitate legislation, budget, and communication matters to aid the efficient work of all functional areas in improving flood safety. This functional area will work to secure sustainable funding to implement the FloodSAFE initiative and to secure legislative support for all other functional areas that must continue indefinitely into the future. It is also responsible for coordination and public outreach consistency.*

### **COMMUNICATION AND BRIEFING MATERIALS**

- No new information to report this month.

### **FUNDING ADVOCACY & AGENCIES' ALIGNMENT**

DWR staff visited Washington DC the week of November 11<sup>th</sup> for their annual trip to maximize California's federal funding and influence federal policies. They met with the Office of Management and Budget, USACE HQ, Assistant Secretary of Army, Members and Staff from various congressional Offices and Staff from Senate and House committees on Authorization and Appropriations. The timing of this trip was optimal with Senate and House passing of WRDA and WRRDA bills and the formation of Conference Committee to resolve the differences between the two bills. DWR team expressed their support of the a WRDA/WRRDA 2013 and identified the preferred languages between the two bills to address three key policy issues; Section 221 crediting, Section 408 approvals, and Vegetation. We also expressed support for the two California projects, Natomas Basin and San Clemente Shoreline, being authorized by both bills.