

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

**By**

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\*Prepared for the Central Valley Flood Protection Board for November 22 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 continue with fall levee inspections and continue to inspect Encroachment Permit projects. 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, Region Plans, and Unacceptable Vegetation.

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

No new information this month.

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

No new information 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 September 30, end of Water Year 2013, statewide hydrologic conditions were as follows: precipitation, 80 percent of average to date; runoff, 60 percent of average to date; and reservoir storage, 80 percent of average for the date. Sacramento River Region unimpaired runoff, for Water Year 2013, observed through September 30, 2013 was about 11.9 million acre-feet (MAF), which is about 65 percent of average. For comparison during Water Year 2012, the observed Sacramento River Region unimpaired runoff through September 30, 2012 was about 11.8 MAF, or about 65 percent of average.

On September 30, the Northern Sierra 8-Station Precipitation Index Water Year total was 46.2 inches, which is about 92 percent of an average water year (50.0 inches). During September, the total precipitation for the 8-Stations was 1.8 inches, or about 200 percent of average. Last year on September 30, the Water Year 2012 total for the 8-Stations was 41.6 inches, or about 83 percent of average. The combined total January through May precipitation, in Water Year 2013, is the driest in about 90 years of record.

On September 30, the San Joaquin 5-Station Precipitation Index Water Year total was 26.5 inches, which is about 65 percent of an average water year (40.8 inches). During September, the total precipitation for the 5-Stations was 0.2 inches, or about 25 percent of average. Last year on September 30, the Water Year 2012 total for the 5-Stations was 25.0 inches, or about 61 percent of average. The combined total January through May precipitation, in Water Year 2013, is the driest in about 90 years of record.

Selected Cities Precipitation Accumulation as of 09/30/2013 (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	3.22	298	0.78	72	8
Redding	1.39	153	0.00	0	4
Sacramento	0.59	174	0.03	9	3
San Francisco	0.43	159	0.02	7	2
Fresno	0.01	5	0.00	0	0
Bakersfield	0.00	0	0.02	17	0
Los Angeles	0.03	10	0.00	0	0
San Diego	0.05	25	0.00	0	0

Key Reservoir Storage (1,000 AF) as of 09/30/2013								
Reservoir	River	Storage	Average Storage	% Average	Capacity	% Capacity	Flood Control Encroachment	Total Space Available
Trinity Lake	Trinity	1,303	1,700	77	2,448	53	---	1,145
Shasta Lake	Sacramento	1,906	2,810	68	4,552	42	-2,646	2,646
Lake Oroville	Feather	1,633	2,252	73	3,538	46	-1,717	1,905
New Bullards Bar Res	Yuba	550	590	93	966	57	-361	416
Folsom Lake	American	361	558	65	977	37	-616	616
New Melones Res	Stanislaus	1,047	1,331	79	2,420	43	-1,226	1,373

Don Pedro Res	Tuolumne	1,077	1,363	79	2,030	53	-695	953
Lake McClure	Merced	302	509	59	1,025	29	-551	723
Millerton Lake	San Joaquin	317	203	156	520	61	-203	203
Pine Flat Res	Kings	154	348	44	1,000	15	-846	846
Isabella	Kern	56	184	30	568	10	-248	512
San Luis Res	(Offstream)	504	993	51	2,039	25	--	1,535

The latest National Weather Service Climate Prediction Center (CPC) long-range, 1-month precipitation outlook for October 2013, issued September 30, 2013, suggests no tendency for above or below average rainfall for California.

### **HYDRO-CLIMATE ANALYSES**

No new information this month.

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

No new information this month.

### **HYDROLOGIC DATA MANAGEMENT**

No new information this month.

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

No new information 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 this month.

### **RIVER FORECASTING**

No new information 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**

The Flood Operations Center (FOC) participated in the Forecast Coordinated Operations training exercise on 10 October. Individual roster position training continues.

## **OUTREACH**

With a final preseason meeting in Eureka remaining, the FOC will complete its seasonal outreach program by the end of November. The program focused on reinforcing the Standardized Emergency Management System (SEMS), providing information to ensure operational readiness, improving coordination between locals, and encouraging Operating Areas (OA) and Local Maintaining Areas (LMA) to conduct their own preseason meetings.

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

No new information 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 this month.

## **HYDRAULIC ANALYSIS AND EVALUATION**

In October 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 90% and 90% completed, respectively; and for the Upper and Lower San Joaquin River System, 66% and 87%, 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 also kicked off the effort of populating Library of models with CVFED models as they are completed.

In addition, we processed seven more requests for CVFED topographic data. In the month of October, we have processed nine requests for data and transferred a total of 5,615 LiDAR tiles and 1,720 tiles of Aerial Imagery. Five of these requests were from within DWR, and the other four were from outside public agencies. Approximately 1,730 GB of data were transferred, covering a land area of approximately 5,035 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.*

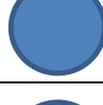
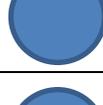
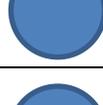
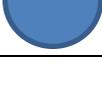
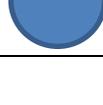
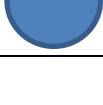
### **LEVEE MAINTENANCE**

*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 couple erosion repairs. The pre-emergent must be applied late fall just before seeds are to germinate. Much of the 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:

	Vegetation Control	Rodent Grouting	Inspection Corrections	Levee Restoration	Levee Roads	Minor Structures
MA 1				N/A		N/A
MA 3				N/A		N/A
MA 4		N/A		N/A		N/A
MA 5		N/A		N/A		N/A
MA 7		N/A		N/A		N/A
MA 9				N/A		N/A
MA 12		N/A		N/A		N/A
MA 13		N/A		N/A		N/A
MA 16		N/A		N/A		N/A
MA 17		N/A		N/A		N/A
State Maintained (WC 8361)						

## **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 about 50% complete in mowing, vegetation removal, and spraying.
- Butte Creek Hydraulic Model - DWR's Northern Region Office (NRO) completed the bathymetric survey of six additional cross sections requested by FMO and model is being revised to incorporate these additional cross sections.
- Cherokee Canal Hydraulic Model - No new information this month.
- Chico Area Streams Hydraulic Model – Staff from NRO, FMO, and Sutter Maintenance Yard met to review initial modeling results. NRO is finalizing model based on comments received from FMO and CVFED consultants.
- Linda and Arcade Creek Hydraulic Model – No new information this month.
- Natomas Cross Channel (NCC) Hydraulic Model – Finished preparing separate models of NCC and the East Side Canal and ran preliminary 1957 design flow simulations. Requested levee survey data done for SAFCA from PSOMAS. Received 2009 survey data of NCC north and south levees and reviewed survey materials. Began preparing maps to develop levee profile comparison to evaluate levee geometry compared to design conditions.
- Natomas East Main Drainage Canal (NEMDC) - Vegetation clearing began on the reach between the American River and Arcade Creek on October 1<sup>st</sup> and initial work in this reach was completed by mid-October. Vegetation clearing above Arcade Creek began November 4<sup>th</sup> and is on-going.
- Putah Creek Hydraulic Model – Updating easterly portion of model using TO 20 LiDAR data.
- Tisdale Bypass Hydraulic Model – No new information this month.
- Wadsworth Canal Hydraulic Model – Evaluating sediment quantities between Franklin Road Bridge and Sutter Bypass and what affects removal of sediment will have on the Wadsworth Canal channel.

## **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.
- 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 underlying the Sacramento Maintenance Yard was completed on October 30, 2013. Procurement and installation of the remediation injection equipment is scheduled for the first quarter of 2014.

### **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.*

- No new information this month.

### **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 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. The Program EIR's response to comments is being finalized. SERP has officially been assigned a federal regional general permit number, number 9, and the biological opinions from the U.S. Fish and Wildlife Service and the National Marine Fisheries Service have been completed and were sent to the U.S. Army Corps of Engineers this week in support of compliance with the federal Endangered Species Act.

### **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.
- Reconnaissance efforts for 2013 are complete.

### **RURAL LEVEE REPAIR GUIDELINES (RLRG)**

- The sixth meeting of the RLRG Development Work Group will be held on November 13, 2013.

### **SACRAMENTO RIVER BANK PROTECTION PROJECT**

- The Cache Creek North Levee Setback Levee at LM 3.9 and 4.2 has been completed. Site clean-up, fence and gate installation, and final walk through will be completed by the end of November.

### **PL 84-99**

- No new information 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)**

- The Geomorphic and Ecological Modeling Technical Report describing the results of low-flow modeling for stage and sediment transport at various storm recurrence intervals was completed by CBEC, Inc and submitted to AECOM, the primary support services contractor. This information provided input to Chapter 4, LFRCMP Proposed Management Actions (i.e., the management actions recommendations for long-term modifications and management of the channel). Chapters 4 and 6, Permitting Strategy, were submitted by AECOM for DWR review. The remaining

LFRCMP chapters are expected to be submitted to DWR for review by the middle of November.

### **WILLOW SLOUGH BYPASS CHANNEL REHABILITATION PROJECT**

- No new information 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)**

- DWR's Division of Engineering completed 95% of design drawings and specifications on behalf of DFM for the BSOG Rehabilitation Project. Flood Maintenance Office staff, including Sutter Maintenance Yard, are reviewing the documents. Preparation of the complete project description for the CEQA document and environmental permitting is in progress.

### **SUTTER BYPASS EAST BORROW CANAL – WEIR NO. 2**

- Construction activities at Weir 2 are complete. The old weir has been demolished and the new weir is successfully impounding water. The new fish ladder is operational as well. The remaining work to be completed is establishing the remote communications from the Sutter Yard.

### **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 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 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 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 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 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 COST-SHARE PROGRAM**

The Central Valley Flood Protection Board (CVFPB) continues to participate with the U.S. Army Corps of Engineers (USACE) on federal flood control projects and studies as the non-federal partner to upgrade the Central Valley's State-federal flood management.

### **USACE/CVFPB PROJECTS**

The CVFPB provides non-federal cost-share funding to the USACE to upgrade the Central Valley State-Federal Flood Control Project.

### **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 L5A, R10, L9, L9A, and the Natomas East Main Drainage Canal (NEMDC) South. 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.

### **ARCF – Natomas Basin**

The Natomas Basin Project is part of the ARCF Project's General Reevaluation Report (GRR) as an ARCF Project component. The Sacramento Area Flood Control Agency (SAFCA) and DWR have spent approximately \$375 million on improvements under the Early Implementation Program's (EIP) Natomas Levee Improvement Project generally along the northern and western levees of the basin. Significant work remains along the southern and eastern boundaries of the basin to improve flood protection to modern engineering standards.

- The entire Natomas Basin Project is identified by name for authorization in the current Water Resources Reform and Development Act 2013 (WRRDA 2013) Bill under consideration by Congress that identifies federal cost at \$943,300,000, and non-federal cost at \$479,500,000 for work in the basin. SAFCA and DWR are ready to begin applying for credit for the approximate \$375,000,000 invested so far. This credit has been approved in concept by USACE in its December 10, 2013, Chief of Engineer's letter to the Assistant Secretary of the Army.
- Additional funds will be required to make the non-federal sponsor's 5% minimum cash contribution of approximately \$71,140,000.

### **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.

- USACE, SAFCA, and DWR partners are currently working together to draft a project partnership agreement (PPA) and this is expected to be completed by November 2013.
- The Flood Projects Office will request CVFPB approval and signatures of the PPA in the Board's December 2013 consent calendar.

### **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. The estimated completion for the JFP is October 2017.

- Construction and Design – The project status as of August 31, 2013, is as follows:

Phases	Planning & Design	Construction
Pre-construction Engineering and Design	100%	N/A
Phase III – Control Structure	100%	62%
Phase IV – Approach Channel, Chute, and Stilling Basin	100%	0%
Phase V – Site Restoration	16%	0%
Project Overall	90%	28%

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

The Lake Kaweah Enlargement Project was completed in 2006. The remaining work is focused on turning over the operation and maintenance to the local sponsors, finalizing all accounting, and completing the final real estate documents.

- The local sponsor, Kaweah Delta Water Conservation District (KDWCD), and DWR met with USACE on September 26, 2013, to discuss the dispute over allocation of operation and maintenance (O&M) costs of the expansion project versus the original Terminus Dam Project. Sacramento District Colonel Farrell proposed some resolutions to the dispute. KDWCD has proposed a revision to the WRRDA 2013 that would allow for clear allocation of O&M costs between the original reservoir project and the later expansion project.

### **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 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. Portions of the project were completed on the four creeks, and additional improvements are planned for Florin Creek in this area.

- The Morrison Creek floodwall construction is 99% complete, and 100% completion is expected by early November 2013.
- USACE re-started design on the Florin Creek flood control improvements after a two month delay requested by DWR. DWR and SAFCA are actively working with the City of Sacramento, utility owners, County representatives, elected officials, and the public to design and construct this project. Complete design is expected by September 2014, and then 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 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.

### **American River Common Features (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.

- The non-federal sponsors continue to work toward an alternative for the GRR that fulfills State, local, and federal policies. The non-federal sponsors have developed a draft locally preferred plan (LPP) discussion paper in anticipation of an LPP waiver. The LPP waiver is intended to allow USACE to recommend the LPP in lieu of the National Economic Development Plan (NED). The non-federal sponsors believe that the NED may bring opposition to USACE's vegetation and land acquisition policies.

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

This study is a coordinated effort by the State, USACE, and the San Joaquin Area Flood Control Agency 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.

- USACE has identified a final array of alternatives from which a NED plan will be identified. All of the alternatives appear to qualify for federal interest due to their high benefit to cost ratios (2.7 to 3.0). The five identified project alternatives have preliminary construction cost estimates ranging from \$1.5 to \$2 billion, including real estate acquisition and interest over an eight year assumed construction period.

### **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 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 Rock Creek and Keefer Slough levee systems in Butte County.

- No new information 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.

- The Sutter Basin Pilot Feasibility Report was unanimously approved by the U. S. Army Corps of Engineers' Civil Works Review Board in Washington D. C. on October 22, 2013. The report will be released for State and Agency review then public review resulting in a Chief's Report being transmitted to Congress in the March 2014 timeframe.

### **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 wants GRRs to be independent of each other, and has decided to remove the Sacramento Weir and Bypass improvements from the West Sacramento GRR and only have these improvements in the ARCF GRR. Sacramento Weir and Bypass improvements have been shifted to the ARCF GRR because it will benefit more from the improvements than the West Sacramento GRR.
- The non-federal sponsors accepted the USACE proposal for removal of the Sacramento Weir and Bypass improvements and the Deep Channel Closure Structure as elements of the Tentatively Selected Plan for the West Sacramento GRR.

### **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.

- USACE completed the Orestimba Creek Chief's Report on September 25, 2013. USACE and the non-federal sponsors will begin closeout procedures for the Study.

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

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

- No new information this month

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

This study is a State, USACE, and 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.

- The Project Development Team has determined an initial array of alternatives to reduce the risk of flood damage to areas of Woodland and the town of Yolo. Alternatives include repairing existing levees in place, setback levees, and several floodwater bypass alternatives.

### **Cache Creek Settling Basin**

This settling basin was initially constructed in 1937 and modifications were completed in 1993. As a part of the federal authorization for the most recent improvements completed in 1993, the project authorization specified additional improvements to be considered at year 25 or when the sediment trapping efficiency fell below 30%.

- No new information 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 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.

### **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 of the Feather River to provide increased flood protection for Yuba City.

- No new information 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 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.

- No new information this month

### **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 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 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 DGS of a \$35 Million Funding Agreement Amendment which is expected in the next 30 days.

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

The 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.

- SJAFCA received its first payment from DWR for \$224,700. In addition, Peterson Brustad was selected by SJAFCA as the prime consultant for the design project.

### **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 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.

- USACE is currently releasing sections of the Southport Environmental Impact Statement/Environmental Impact Report (EIS/EIR) for review and comment by DWR and the WSAFCA. Release of the EIS/EIR Public Draft is still scheduled for January 2014.

### **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.

- The design funding agreement expired on September 30, 2013. An agreement amendment was signed by the Chief of the Division of Flood Management and is at the Department of General Services for execution to continue this agreement.
- The construction funding agreement for \$56.78 million in State funds was signed by the Chief of the Division of Flood Management and is at the Department of General Services for execution.
- 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 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 acquisitions and a 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.**

- DWR staff mailed work agreements to 67 local agencies for signature. DWR has received signed work agreements from 65 agencies.
- The CVFPB executive officer executed 65 work agreements.
- To date, staff has received five final claims. Final claims are due November 1, 2013.

**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 drafted and 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 (PSPs).

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 the 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

No.	Urban Study Area	Historic Data Collection (TRM)	Initial Field Investigations (P1GDR)	Preliminary Analyses	Supplemental Field Investigations (SGDR)	Final Analyses & Report (GER)
3	RD 784	Done	Done	Done	Done	Print 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 Submitted
8	Davis	Done	Done	Done	Preparing Final	In Progress
9	Woodland	Done	Done	Done	Preparing Final	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 87% 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; Draft 1 for RD 404; and Draft 1 for Sacramento River under review by DWR.
- The agenda for the 20<sup>th</sup> ICB meeting, to be held on October 21 and 22, 2013, has been distributed to attendees.
- 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, Draft volume 2 under review by ICB
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
11	Ash Slough	Done	Done	Print check version under review	In Progress
12	Berenda Slough	Done	Done	Print check version under preparation	In Progress
13	Black Rascal/Fairfield	Done	Done	Print check version under preparation	In Progress
14	Diverting Canal/Mormon	Done	Done	Print check version under preparation	In Progress
15	ESB/Chowchilla	Done	Done	Print check version under preparation	In Progress
16	Fresno River	Done	Done	Print check version under preparation	In Progress
17	Gravelly Ford	Done	Done	Print check version under review	Final volume 1 in Progress, Draft volume 2 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)
18	RD 2064	Done	Done	Print check version under preparation	In Progress
19	RD 2075	Done	Done	Pre-final draft in progress	In Progress
20	RD 2095	Done	Done	Print check version under preparation	In Progress
21	SJRRP/CCID	Done	Done	Print check version under preparation	In Progress

### **NULE Summary**

- Overall, Non-Urban Levee Evaluations are 88% 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.
- The agenda for the 20th ICB meeting, to be held on October 21 and 22, 2013, has been distributed to attendees.

### **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 levees 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).

Additionally, ULE and NULE data were used to refine the breach definitions used in hydraulic modeling (e.g., width of breach based on embankment material).

A Technical Memorandum describing the refinement process was completed and delivered to MWH on September 4, 2013.

### **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. Pre-feasibility Cost Estimate Reports are in preparation. The reports for north and south leveed areas are finalized Outreach to LMAs is underway, with the planning for the second phase of outreach underway

In addition to supporting the FSRP, NULE project information is being used to support development of the Rural Levee Repair Criteria including preparation of templates for typical repairs.

### **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 nearly complete for soil samples from these explorations. Planning of a geophysical resistivity study is underway. Analyses for areas with significant channel fill have been completed and a summary technical memorandum was prepared. Planning for maximizing geotechnical engineering evaluation and analysis with a limited budget are currently under way.

### **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.*

### **Vegetation Issues**

Joint research with Sacramento Area Flood Control Agency (SAFCA) continues with ULE/NULE logistical and technical support. 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 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.

## **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.*

### **BWFS/CS Technical Workshop #2**

On October 23-24, FESSRO and CVFPO hosted a joint workshop related to flood and ecosystem planning objectives, tools, and data. It was attended by about 100 people, representing a variety of local, state, and federal agencies, other private organizations of environmental and agricultural interests, and participants in the Regional Flood Management Planning groups. DWR staff from CVFPO and FESSRO, as well as individuals involved in RFMP groups informed participants about how objective topics from the Workshop #1 (May 2012) were modified, described the data and tools being used for the Conservation Strategy and the BWFS work, and how these data and tools are being used in RFMP work already. Participants were very interested to learn about this information and how they could use it for their flood-related planning work. They also provided many constructive comments on ways to improve these data and tools.

### **Grasslands Giant Garter Snake mitigation bank**

The Sales Agreement for \$4.1 million was signed by the contractor and FESSRO. This and the following project are FESSRO's first successful funding of advance mitigation projects for CVFPP flood improvements.

### **Hidden Valley Ranch**

The final Conservation Easement for \$4.9 million was agreed to by DWR and Wildlife Conservation Board, regulatory agencies, and the Conservation Easement Grantor and Grantee. The signed copy (by River Partners and Tuolumne River Preservation Trust) was sent by overnight mail to the title company by River Partners on October 14.

### **Other Advance Mitigation Projects**

FESSRO is making progress to fund several other advance mitigation projects. DWR is soliciting requests for proposals for a Salmonid Mitigation Bank on the Sacramento River, with proposals due to DWR by November 12.

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

Staff are attending the RFMP meetings and assisting participants with information about the Conservation Strategy, environmental problems in the flood system, and available environmental data useful for RFMP planning. Staff has met several times with the Upper San Joaquin River (USJ) RFMP, sharing information about Conservation Strategy goals, objectives, targets and data products. The USJ RFMP consultants have used FESSRO's data to help them create maps of Refuges and Habitat Areas; Levee Conditions and Potential Project Locations; Proposed Projects and Improvements; and Levee Issues and Problem Areas. USJ RFMP planners have expressed their appreciation for FESSRO engagement and technical support and helping the RFMP team create a more robust document. FESSRO staff have met with the Lower Sacramento/Delta North RFMP and presented environmental

data sets. In the Feather River RFMP, staff has collaboratively worked with CVFPO to identify key problems that the RFMP needs to consider. Staff also briefed this regional group on key environmental data sets and reviewed the October 8<sup>th</sup> draft plan for the Feather River RFMP group.

### **Agricultural Land Stewardship Strategies**

FESSRO staff has collaborated with multiple DWR programs on draft strategies for agricultural land stewardship. The team has been briefing multiple DWR programs, as well as working with other agencies and interest groups. The strategies are provided online at <https://bdcpdf.water.ca.gov/>.

### **Implementation of the Safe Harbor Agreement / Voluntary Local Program**

The USFWS has agreed to the draft agreement format for Safe Harbor Agreements within the Sacramento River Conservation Area Forum planning area. USFWS also supported the Forum moving forward without the CA DFW Voluntary Local Program, which is still stalled.

### **Protocol for Identifying Trees that May Pose Unacceptable Threat to Levee Integrity**

A working group of the California Levee Vegetation Research Program held a workshop on September 30<sup>th</sup> related to developing a protocol for identifying trees that pose unacceptable threat to levee safety. Agenda topics for the workshop session included reviewing existing procedures used by LMA and others to identify trees that needed to be removed, consideration of levee failure modes and how trees interact with these failure modes, and consideration of format for the assessment tool. The working group has continued to meet during the past month to integrate results from the workshop into a multi-tier approach that includes a simple screening tool to identify trees that may pose an unacceptable threat.

### **Feather River HCP/2081**

DFW and NMFS have recommended that DWR pursue an HCP/2081 on the Feather River. A Section 2081 planning effort will provide state T&E permits, but without other features of an NCCP. Staff have briefed the IAC Regional Permitting subcommittee on the geographic scope and other features of this plan and received comments for improvement. Work has started to identify near-term actions for developing this plan.

### **Focused Species Planning**

Staff has drafted focused species conservation plans for all 17 target species. These plans provide basic life history and conservation needs for each species, describe how flood management affects these species, and how flood management activities can be modified to help contribute to species recovery. This helps meet one of the objectives contained in the Central Valley Flood Protection Act. Ten of these plans have already been reviewed internally and externally by resource agencies.

### **Flood Management Association**

Staff presented a talk on the Conservation Strategy to the FMA monthly luncheon on Oct. 17, which was well-attended.

**Habitat Tracking System**

Staff has been working with the Department of Fish and Wildlife to develop a tool for tracking gains and losses of habitat within the flood system over time. DFW and USFWS developed an initial version of this tool for the San Diego Multi-Species Conservation Plan to help track habitat gains and losses. FESSRO staff will be leading an effort, in coordination with the regulatory agencies and other stakeholders, to improve the database content and functionality as necessary to meet DWR's requirements under the Programmatic EIR and the Conservation Strategy.

## **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 this month.

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

DWR staff was in Washington, DC, during the week of November 11<sup>th</sup>. They met with the Office of Management and Budget, USACE Headquarters and staff from the Assistant Secretary of Army's office, members and staff from various congressional offices and staff from Senate and House sub-committees on Authorization and Appropriations. The team discussed the funding needs for Federal Fiscal Year 2015 cost-shared flood control projects, DWR's proposed legislation for crediting and reimbursement, and policy changes concerning Section 104 credit and Section 408 approvals.