Agenda Item 4

REPORT OF ACTIVITIES OF THE DEPARTMENT OF WATER RESOURCES

By

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*Prepared for the Central Valley Flood Protection Board for August 9, 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

Summer channel and structure inspections are underway. Inspectors are also busy with Encroachment Permit inspections. The Encroachment Permit and Levee Log databases continue to be updated and consolidated under task orders.

FLOOD PROJECT INTEGRITY/VULNERABILITY ASSESSMENT ACTIVITIES

No new information this month.

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

The summer workshop flyer has been mailed to the 89 Local Maintaining Agencies (LMAs) on July 17. LMAs begin to respond to attend one of the two sessions to be held in the Flood Operations Center on August 20. Enhancements are continuing to take place in the LMA web application program. A package is being prepared and will be mailed to the LMAs to gather information on their jurisdictional non-Project levees shortly.

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 June 30, statewide hydrologic conditions were as follows: precipitation, 75 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 June 30, 2013 was about 10.8 million acre-feet (MAF), which is about 64 percent of average. For comparison during Water Year 2012, on June 30, 2012, the observed Sacramento River Region unimpaired runoff through that date was about 10.7 MAF, or about 63 percent of average.

Aside from a strong, unseasonal storm near the end of the month, June continued this calendar year's very dry pattern. On June 30, the Northern Sierra 8-Station Precipitation Index Water Year total was 44.2 inches, which is about 91 percent of the seasonal average to date and 88 percent of an average water year (50.0 inches). During June, the total precipitation for the 8-Stations was 1.8 inches, which is about 180 percent of the monthly average. Last year on June 30, the seasonal total for the 8-Stations was 41.3 inches, or about 85 percent of average for the date. The combined total January through May precipitation is the driest in about 90 years of record.

On June 30, the San Joaquin 5-Station Precipitation Index Water Year total was 26.2 inches, which is about 66 percent of the seasonal average to date and 64 percent of an average water year (40.8 inches). During June, the total precipitation for the 5-Stations was 0.3 inches, which is about 50 percent of the monthly average. Last year on June 30, the seasonal total for the 5-Stations was 24.6 inches, or about 62 percent of average for the date. The combined total January through May precipitation is the driest in about 90 years of record.

Selected Cities Precipitation Accumulation as of 06/30/2013 (National Weather Service Water Year. July through June					
City	July 1 to Date 2012 – 2013 (in inches)	% Average	July 1 to Date 2011 – 2012 (in inches)	% Average	% Avg "Water Year" July 1 to June 30 2012 - 2013
Eureka	32.31	80	40.81	101	80
Redding	28.46	82	23.62	68	82
Sacramento	15.20	82	12.21	66	82
San Francisco	16.61	70	15.64	66	70
Fresno	5.67	49	8.15	71	49
Bakersfield	3.15	49	4.93	76	49
Los Angeles	6.89	54	7.61	59	54
San Diego	6.50	63	8.03	78	63

Key Reservoir Storage (1,000) AF) as of 06/30/2013								
Reservoir	River	Storage	Average Storage	% Average	Capacity	% Capacity	Flood Control Encroachment	Total Space Available
Trinity Lake	Trinity	1,812	2,125	85	2,448	74	---	636
Shasta Lake	Sacramento	2,938	3,724	79	4,552	65	-1,614	1,614
Lake Oroville	Feather	2,558	2,942	87	3,538	72	-980	980
New Bullards Bar Res	Yuba	739	828	89	966	76	-227	227
Folsom Lake	American	665	830	80	977	68	-312	312
New Melones Res	Stanislaus	1,253	1,517	83	2,420	52	-1,167	1,167
Don Pedro Res	Tuolumne	1,390	1,600	87	2,030	68	-640	640
Lake McClure	Merced	525	752	70	1,025	51	-500	500
Millerton Lake	San Joaquin	405	415	97	520	78	-116	115
Pine Flat Res	Kings	358	696	51	1,000	36	-642	642
Isabella	Kern	86	308	28	568	15	-275	482
San Luis Res	(Offstream)	425	1,350	31	2,039	21	---	1,614

The latest National Weather Service Climate Prediction Center (CPC) long-range, 1-month precipitation outlook for July 2013, issued June 30, 2013, suggests no tendency for above or below average rainfall for most of California, except for the extreme southeastern portion of the State where above average rainfall is expected.

HYDRO-CLIMATE ANALYSES

The State Climatologist continues his involvement with the National Climate Assessment Water Management Indicators workgroup looking at data and metrics to track climate change for water management issues. A draft report of candidate indicators is under review. The State Climatologist is also working with the State's Climate Action Team Research Subcommittee to develop a research plan for the next five years. Draft materials are being reviewed and commented upon.
A schedule is under consideration to have a draft of the plan out by the end of the calendar year. The University of California studies supporting the climate change hydrology program continue. The State Climatologist met with contractors assisting with the further development of the Bulletin 195 programs and other climate tools to review progress and suggest next steps in the process.

REAL-TIME DATA COLLECTION NETWORK

The first of four atmospheric river observatories (AROs) is now operational at Bodega Bay Marine Laboratory. These AROs will enable the observation and computation of onshore atmospheric moisture fluxes associated with atmospheric river events. Administrative paperwork between the National Oceanographic and Atmospheric Administration (NOAA) and the Navy has delayed the second ARO installation at Point Sur. The delay is likely to extend six months while a land agreement is worked out between the two federal agencies. A conference call was held between NOAA, the Navy and DWR to try to resolve some of the issues raised by the Navy. Other elements of the 21st Century Extreme Precipitation Monitoring Network continue to be installed to fulfill the plan in the first Memorandum of Understanding (MOU) between the Department and the National Oceanographic and Atmospheric Administration's Earth Systems Research Laboratory. The second MOU to further refine and develop the Network and associated data products for

emergency response and climate change is currently going through the contracting process.

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 HAFOO Flood Operations Branch is busy preparing to participate in the second annual California Flood Preparedness Week scheduled for November 4th through 9th. The Branch will be conducting flood preparedness training and exercise activities involving local and regional agencies.

In addition, the Branch launched a newly redesigned ICS/SEMS/NIMS training course that focuses class room instruction on specific DWR flood emergency response activities and past lessons learned. Students attending this new class format will receive instruction and will be tested on SEMS concepts in a classroom setting. Class participants are required to pass ICS on-line courses prior to taking the classroom portion of the training.

OUTREACH
No new information this month.

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)
Continued work and addressed USACE review comments on rainfall-runoff modeling of un-gauged streams.

Additional information is available on the CVHS Web forum:

Site	www.cvhydrology.org
Guest username	CVHS_GEN
Guest password	featherriver.

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.

- Mowing is 100% complete at the East Levee of the Sutter Bypass (15.24 miles), 100% complete at MA3 (1 mile), 100% complete at MA1 (17.12 miles), 100% complete at Willow Slough Bypass (40 acres), 100% complete at Sacramento Bypass (31 acres), and 30% complete at Cache Creek.
- Tree trimming is 85% complete for MA9 (3 acres) and 100% complete at Putah Creek (4 acres).

- Burning slopes are 100% complete at MA3 (5 miles), 100% complete at Sacramento Bypass (16 acres), 100% complete at Yolo Bypass Unit 3 (15 acres), 20% complete at Putah Creek (10 acres), 80% complete at Cache Creek (170 acres), 90% complete at Yolo Bypass Unit 2 (10 acres), and 50% complete at Yolo Bypass Unit 1 (25 acres).
- Rodent control is on-going in all areas maintained by the Yards.
- Fire guarding/spraying is 50% complete at MA9 (5 acres), 50% complete at MA4 (5 acres), 60% complete at Putah Creek (4 miles), 90% complete at Willow Slough Bypass (80 acres), 10% complete at Cache Creek (25 acres), 50% complete at Yolo Bypass Units 2 and 3 (1 mile), and is on-going in all areas in the Sutter Maintenance Area.
- Repair of a levee slough is 70% complete at Yolo Bypass Unit 1.
- Stump removal is 20% complete at MA9 (8 each).
- Crown road graveling is ongoing at MA13 (10 miles) and ongoing at MA5 (2 miles).
- Grading crown roadways is 100% complete on Cache Creek (19 acres).
- USACE Periodic Inspections Item #0286 – Swimming Pool Slope Stability and Seepage Analysis Report submitted to CVFPB staff for review and possible enforcement action.

Nelson Road Culvert Replacement Emergency Repair
FMO obtained authorization from the Central Valley Flood Protection Board (CVFPB) and the USACE for the emergency replacement of a 125 linear foot, 30 inch diameter corrugated metal culvert under a levee near Nelson Road on Butte Creek. The USACE had previously issued a deficiency notice for the culvert because of a defective flap gate. A recent inspection by Sutter Maintenance Yard staff revealed that the culvert had severely deteriorated and was leaking water to an extent that could have comprised the levee prism. This situation warranted immediate replacement of the culvert with an HDP pipe of the same size and length. A positive closure device was added below the water side crown road hinge, a new precast headwall with a flap gate was placed on the water side, and a new precast headwall was placed on the land side. A screw gate at the riser pipe was installed. The repair is complete.

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.

- Beaver dam removal is on-going in all channels in the Sutter Maintenance Area.
- Butte Creek Hydraulic Model - Completed field hydraulic inspection with Sutter Yard. Finalizing model report with recommended channel maintenance options.
- Cherokee Canal Hydraulic Model - No new information this month.

- Chico Area Streams Hydraulic Model – Received model developed by DWR's Northern Region Office (NRO) for FMO. Initiating review of model. CVFED requested copy of model to incorporate into their system model. FMO provided copy of model with understanding model is still under review.
- Debris removal is on-going in 50 miles of Sutter Area seepage ditches, Little Chico Creek, and Little Chico Diversion.
- Llano Seco Restoration Project – DFM and FMO Office personnel, as well as Sutter Yard staff, visited the site of the proposed Bank Protection removal at Camp 2 Bend on the Sacramento River and also visited the M&T Flood Relief Structure (both part of the Butte Basin Plan of Flood Control Project). As a follow up, FMO Management participated in a conference call with River Partners (proponents for the Llano Seco Project) to discuss concerns with the proposed Bank Protection removal and provided a list of concerns expressing DFM's belief that a more detailed Hydraulic evaluation is needed prior to allowing modifications to the Butte Basin Plan of Flood Control Project.
- Linda and Arcade Creek Hydraulic Model – Completed initial LiDAR data extraction.
- Natomas Cross Channel Hydraulic Model – Beginning initial LiDAR data collection and O&M data review.
- Natomas East Main Drainage Canal (NEMDC) - Completed vegetation mapping field work and incorporating vegetation management into Draft Channel Management Plan. Field visit including FMO, Sacramento Yard Superintendent, and CDFW scheduled for final week of July to review proposed vegetation maintenance work.
- Putah Creek Hydraulic Model - Incorporating recent field bathymetric survey data into model as well as data previously collected by CVFED4.
- Toe road maintenance is 100% complete on the East Levee of the Sutter Bypass (20.39 miles), 100% complete at the Colusa Weir (5 miles), 100% complete at Moulton Weir (3 miles), and 100% complete at MA1.
- Wadsworth Canal Hydraulic Model – Modified model as needed based on QA/QC comments received from Northern Region Office. Comparing existing levee geometry to design requirements to determine if any deficiencies. Completed field hydraulic inspection with Sutter Yard.

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.

- Pipe inspections are 100% complete at Cache Creek, MA9, and Putah Creek (120 miles), and are ongoing in the Sutter maintenance area.
- Testing is on-going at Sutter Pumping Plants 1-3.
- Debris removal is on-going at all Sutter Pumping Plants.
- Levee gate repairs are 100% complete at the Colusa Weir.

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 Criteria (RLRC) 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)
No new information for this month.

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 have begun, with the intent of verifying previously identified sites and identifying new sites for repair.

Rural Levee Repair Criteria (RLRC)

Progress on RLRC development was presented at the July 12, 2013 meeting of the CVFPB. A Draft RLRC is anticipated to be presented to the Board in November, 2013

Sacramento River Bank Protection Project

Final bids for construction of the Cache Creek North Levee Setback at LM 3.9 and 4.2 were received and DWR's Division of Engineering has awarded contract to Teichert Construction. Pre-construction job walk is scheduled for August 1, 2013, with construction anticipated to begin August 12, 2013.

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)

DWR, AECOM (LFRCMP Consultant), Three Rivers Levee Improvement Authority, River Partners (Consultant to TRILIA), National Marine Fisheries Service, U.S. Fish and Wildlife Service, and Department of Fish and Wildlife met on June 17th to discuss the results of the hydrodynamic and ecological modeling and evaluate the proposed future scenarios in relation to the modeling results. AECOM provided a list of proposed actions for channel modifications and anticipated benefits. A follow-up meeting with the same partners will occur to discuss the ecosystem and species benefits of the proposed actions. The meeting will also discuss the goals of the resource agencies for the proposed actions and how the LFRCMP fits in with the CVFPP Conservation Strategy. Decisions from this and follow-up meetings will guide completion of the plan. An administrative draft is expected to be completed for DWR review by late July 2013.

Willow Slough Bypass Channel Rehabilitation Project
The scope of this project has been reduced from regrading 25,000 linear feet of the channel and waterside levee to repairing the existing slipouts (7 total). The main reason for this was the lack of funding for the full channel restoration project.

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)
Environmental permit applications were submitted and are being processed for in-water borings and geotechnical exploration. Geotechnical drilling work in the channel is anticipated beginning late August or early September 2013.

Sutter Bypass East Borrow Canal – Weir No. 2
Construction at Weir 2 is on schedule for completion by October 1, 2013. The contractor has completed the foundation and the walls for Phase 2 and has started installing the bottom hinged gates.

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.

Senate Bill (SB) 1278 Urban Area 200-year Informational Floodplain Maps

These informational maps were provided to the 10 urban areas identified in the State System-wide Investment Approach on or before July 2, 2013, as required by SB 1278. These maps identify facilities of the SPFC and provide information that assists these urban areas in determining their level of flood protection. These informational maps were developed using DWR hydrologic and hydraulic models and inputs configured and adapted to the Draft Urban Level of Flood Protection (ULOP) Criteria, and the Urban Levee Design Criteria (ULDC). On July 10, 2013, staff briefed Senator Lois Wolk on the map development and delivery status, and she was subsequently provided with a complete set of the urban area maps.

The map delivery package provided to the urban communities included a request form to assist the communities and their consultants in requesting background technical information, models, and data associated with the production of these maps. Numerous requests have been received and information and data is being compiled and packaged for delivery per each request.

In addition to packaging and delivering SB 1278 map information requested by these communities and their consultants, Hydraulic Analysis Section staff efforts have also returned to ensuring review and completion of the existing condition Sacramento and San Joaquin System hydraulic models.

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.

The following items list the current status for developing the 2013 notification.

- The design of flyer and text is completed for the final proof.
- The final QA/QC for the similarity of parcel data will be completed by August 9 and sent to the printer on August 12.
- DWR is working with OSP for the review and proof of the printing and mailing
- DWR is targeting on Sept 1 for releasing the 2013 FRN.
- DWR and the Corps are working together to produce the second flood risk video for DWR's Flood Risk Notification Program. The second video will focus on educating the public on the probability of flooding. The Corps plans to interview flood survivors and local residents for the video. This video would be posted on the Flood Risk Notification Program homepage on the second week of Sept.

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.

CENTRAL VALLEY FLOOD PROJECTS

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

EARLY IMPLEMENTATION PROGRAM PROJECTS

EIP includes projects ready to proceed in advance of the Central Valley Flood Protection Plan (CVFPP). 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 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.

- New deficiencies have been identified under DWR's Urban Levee Evaluations Program. As a result, staff is preparing a decision memo requesting authorization to add work on the Western Pacific Interceptor Canal, with an amendment to the existing funding agreement.

Sacramento Area Flood Control Agency (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 U.S. Army Corps of Engineers (USACE) complete the remaining work.
No new information this month.

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.

- On July 10, 2013, SJAFCA's Board approved the results of the 218 election held and requested SJAFCA staff to: select an engineering firm, complete all the design elements, and complete the Smith Canal Gate's required permitting.

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 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 County.

- The Director's decision memo was signed and authorizes the Division of Flood Management's Chief to sign the funding agreement with SBFCA for $56.78 million for Project Area C.
- USACE's 408 permit is expected by July 19, 2013. SBFCA will be able to complete the critical repair scheduled for the 2013 construction season if the permit is issued no later than July 31, 2013.
- SBFCA scheduled a groundbreaking ceremony for Project Area C on August 7, 2013.

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).

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 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.
No new information this month.

USACE/CVFPB PROJECTS

The Central Valley Flood Protection Board (CVFPB) continues to participate with 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 River.

- Sites L5A, R10, Natomas East Main Drainage Canal (NEMDC) South, and Jacob Lane C have begun construction and are scheduled for completion in fiscal year (FY) 2013. L9 and L9A are scheduled to begin in August 2013.
- USACE just completed 100% design on sites R3A, L10, L7, R7, and NEMDC North.

ARCF – Natomas Basin

The Natomas Basin Project is part of the ARCF Project's General Reevaluation Report (GRR) as an ARCF Project component. It has not yet been authorized by Congress, but SAFCA and DWR have spent approximately $350 million on improvements under EIP's Natomas Levee Improvement Project. Significant improvements need to be completed in the Natomas Basin to improve flood protection to modern engineering standards.

- The proposed Water Resources Development Act (WRDA) 2013 bill has a provision for authorizing projects with a completed Chief's Report (as of the WRDA 2013 enactment date). The Natomas Basin Project is included under part of the larger umbrella of the American River Watershed Project. The bill passed the U.S. Senate in early May 2013 as Senate Bill 601, and House committee meetings were held in early July 2013 to develop its own version of the WRDA bill. More House information will be forthcoming in the next few months.

- DWR continues its cooperative efforts to assist USACE in completing the ARCF Project's GRR. USACE has halted GRR work due to lack of funding, and DWR is considering a funding partnership to see a completed GRR effort in the next two 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. The project is tentatively subdivided into three work packages: (1) tainter gate improvements, (2) dam raise, and (3) temperature shutters and ecosystem restoration. Currently, 35 percent design plans for the tainter gate improvements are scheduled to be completed in December 2013. However, the project is still in the early design stage, and the schedule is being updated by USACE this month. Project Development Team meetings are occurring monthly and additional information will be provided when the project schedule is available.

Folsom Dam Modifications Joint Federal Project (JFP)

The purpose of the Folsom Dam Modifications Project JFP is to construct an auxiliary spillway at 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 status as of May 31, 2013:

Phases	Planning & Design	Construction
Pre-construction Engineering and Design	100%	N/A
Phase III Control Structure	100%	54%
Phase IV Approach Channel, Chute, and Stilling Basin	100%	0%
Phase V Site Restoration	15.5%	0%
Project Overall	89%	23%

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 (O&M) to the local sponsors, finalizing all financial balancing, and completing the final real estate documents.

- DWR submitted a credit package for lands, easements, rights-of-way, relocations, borrow, dredged or excavated material disposal areas, and DWR project management expenses. The package was submitted in late April 2013 and is under USACE review. The total credit request was $1,519,820. DWR expects to receive USACE credit after the credit package is approved, since the contributions will be well under the 45% cost-share maximum limit, after which reimbursements are made.

- DWR is working with USACE and Kaweah Delta Water Conservation District (KDWCD) to resolve an issue between USACE and KDWCD related to O&M costs for the constructed expansion project. USACE lacks funds for completion of the required O&M, and KDWCD contends such O&M is not required of KDWCD as stated in the Project Cooperation Agreement.

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 design is 95% complete and the Phase 4A construction award is planned for the fall of 2013.
- Phase 2A design is 60% complete.
- Phase 2B design will begin the summer of 2013.
- Phases 2C and 3 designs will begin the winter of 2013.

Mid-Valley Area Levee Reconstruction Project

The Mid-Valley Reconstruction Project extends from the Tisdale Bypass to the Sacramento Bypass, and includes levees adjacent to the Sacramento River, the Feather River, Yolo and Sutter Bypasses, and the Knights Landing Ridge Cut.

- The Final Environmental Assessment/Initial Study has been placed on the consent calendar for approval at the July 26 CVFPB meeting.

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 this area.

- Approximately 95% of construction on a 3,000-foot floodwall was completed in 2012. The remaining construction is delayed from the July 1, 2013, start date due to USACE's consideration of a $500,000 change order request from the contractor to re-start work this year.
- DWR requested a two-month delay for the USACE Florin Creek improvements project design in an attempt to evaluate alternative design approaches that would be less expensive to construct. USACE is currently planning to spend $8 million or more based on 65% design. This more than doubles the costs based on preliminary Florin Creek work estimates. Design work on the 95% plans should begin in August 2013.

West Sacramento Area Project, Slip Repair

The West Sacramento Slip Repair Project is complete and awaiting close-out by USACE.

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.

ARCF GRR

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

- SAFCA and the State continue to coordinate the development of the Locally Preferred Plan (LPP) for the ARCF GRR. A meeting was held July 12, 2013, to develop a strategy for moving forward with the GRR and LPP. The choices available include advancing funds or entering into a feasibility cost-sharing agreement (FCSA); it was decided to move forward with the FCSA. This choice, along with a memorandum of agreement, will allow the non-federal money spent to be credited toward the continued GRR effort. CVFPB forwarded an email to USACE stating that they are willing to move forward with an FCSA. This was needed to avoid USACE Headquarters classifying the GRR as inactive. The non-federal sponsors anticipate an LPP by the end of January 2014. USACE will require a Letter of Intent to continue the GRR by entering into an FCSA. The FCSA will establish a new cost-share and schedule with a December 2014 completion date.

Lower San Joaquin River Feasibility Study

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

- Amendment No. 1 to the local feasibility cost share agreement was approved by CVFPB on June 28, 2013. This amendment provides a mechanism for the State to reimburse SJAFCA directly for study contributions and approved expenses.
- The USACE Civil Works FY 2013 Work Plan funding commitment was made public last week. The Lower San Joaquin River Feasibility Study received $563,870 from this federal funds redistribution.

Merced County Streams Project-Bear Creek GRR

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

- USACE scheduled the Civil Works Review Board for the study for September 18, 2013.

West Sacramento GRR
The GRR is being conducted to study future work necessary to provide a minimum 200-year level of protection for the city of West Sacramento.
No new information this month

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 flood protection level.
No new information 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 the White River and Deer Creek existing levee system in Tulare County.
No new information this month

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

- The CVFPB Executive Officer authorized an accelerated payment to USACE to provide funds for work in preparation of the planning charette scheduled for later this summer. The $146,500 accelerated payment by the State will be matched by the City of Woodland.
- On July 16, 17, and 18, USACE conducted a planning charette for the Lower Cache Creek Feasibility Study. This activity is the most significant effort required to reach Milestone #1 under the new USACE Planning Modernization Effort (3x3x3 Rule). Milestone #1 identifies an array of alternatives for the Study. The charette resulted in a mutual understanding of the flood risk and other issues within the study area.

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

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 2011-2012

- DWR staff completed 62 joint levee inspections and received Department of Fish and Wildlife approval letters for 59 final claims. Payments will be made for the approved claims.

Work Agreements for FY 2012-2013.

- DWR staff mailed work agreements to 67 local agencies for signature and, to date, have received signed work agreements from 64 agencies.
- The agreements received will be forwarded to the Board's executive office for execution.
- Final claims are due November 1, 2013.

Work Agreements for FY 2013-2014.

- DWR has received 66 applications totaling $56.5 million for participation in the FY 2013-14 Subventions Program. Applications were due by July 1, 2013, in order to be considered in the FY 2013-14 funding plan. The allocated fund is $12 million.
- Staff will review the applications and develop the FY 2013-14 funding to be CVFPB approved.

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.

No.	Urban Study Area	Historic Data Collection (TRM)	Initial Field Investigations (P1GDR)	Preliminary Analyses	Supplemental Field Investigations (SGDR)	Final Analyses & Report (GER)
1	Chico	Done	Done	Done	Done	In Progress
2	Marysville	Done	Done	Done	Done	In Progress
3	RD 784	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)
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	In Progress
8	Davis	Done	Done	Done	Final draft in review	In Progress
9	Woodland	Done	Done	Done	Final draft in review	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	In Progress	In Progress
17	RD 404	Done	Done	Done	Done	In Progress
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 85% 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.
- Based on local stakeholder input, additional drilling and hydraulic permeability testing was completed in the Sacramento study area.
- An updated template for GERs was completed in July 2013.
- Draft GER volume 1 for RD 784 was submitted to DWR reviewers and ICB members in July 2013.
- The current delivery 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.
- The 19th Independent Consultant Board meeting occurred July 23 and 24, 2013.

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 nine 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.

No.	Non-Urban Study Area	Geotechnical Assessment Report (GAR)	Remedial Alternatives and Cost Estimate Report (RACER)	Geotechnical Data Report (GDR)	Geotechnical Overview Report (GOR)
1	Chico/North/South	Done	Done	Done	In Progress
2	Clarksburg	Done	Done	Done	Final volume 1 in Progress, Draft volume 2 in Progress
3	Colusa Drain	Done	Done	Done	In Progress
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 Complete; conversion to template in progress
8	Sutter	Done	Done	Done	Draft volume 1 Submitted to DWR, Draft volume 2 in Progress
9	Wheatland	Done	Done	Done	In Progress
10	Woodland South	Done	Done	Done	Draft Complete; conversion to template underway
11	Ash Slough	Done	Done	Pre-final draft reviewed by DWR	In Progress
12	Berenda Slough	Done	Done	Pre-final draft in progress	In Progress
13	Black Rascal/Fairfield	Done	Done	Pre-final draft submitted to DWR	In Progress
14	Diverting Canal/Mormon	Done	Done	Pre-final draft submitted to DWR	In Progress
15	ESB/Chowchilla	Done	Done	Pre-final in progress	In Progress
16	Fresno River	Done	Done	Pre-final draft in progress	In Progress
17	Gravelly Ford	Done	Done	Pre-final draft reviewed by DWR	Draft volume 1 Submitted to DWR and ICB, Draft volume 2 in Progress
18	RD 2064	Done	Done	Pre-final draft in progress	In Progress
19	RD 2075	Done	Done	Pre-final draft in progress	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)
20	RD 2095	Done	Done	Pre-final draft reviewed by DWR	In Progress
21	SJRRP/CCID	Done	Done	Pre-final draft submitted to DWR	In Progress

NULE Summary

- Overall, Non-Urban Levee Evaluations are 86% 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.
- No drilling occurred during this reporting period or is planned for the above reports.
- 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 the third quarter of 2013.
- Preparation of GORs is continuing, with the current delivery dates scheduled for mid-late 2013 and early 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 19th Independent Consultant Board meeting occurred July 23 and 24, 2013.

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).

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. Field reconnaissance for the FSRP project was completed by eight teams comprised of a combination of DWR and contractor staff. The final Field Reconnaissance Summary Report for the Sacramento River Basin was prepared to support the preparation of the pre-feasibility cost estimate (final reports for north and south Tier 1 critical and serious sites are completed. Draft pre-feasibility leveed area reports for repair of Tier 2&3 critical sites are in preparation). The Field Reconnaissance Summary Reports for the San Joaquin River Basin have been finalized. Outreach to LMAs is underway, with outreach expected to be completed during the third quarter of 2013.

San Joaquin River Restoration Program
Task Order SJ105 is being implemented during the reporting period and draft geomorphology mapping is complete. Field explorations have been completed along the majority of Priority 1 levees in the Restoration Project. Laboratory testing is being performed on soil samples from these explorations. Current field work plans are being developed for the remainder of the Priority 1 levees. A new Task Order has been awarded to help define the next phase of work, including analyses of seepage and stability conditions. A pilot study to define the analysis approach is being planned, with priority focus on areas with channel fill issues. Bureau (USBR) plans for agricultural seepage mitigation are being reviewed from a flood perspective.

USACE Lower San Joaquin General Reevaluation Report
Estimating support – protocol developed for ULE/NULE levee repair cost estimating has been provided to USACE to assist their GRR program.

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 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.

Levee Vegetation

For 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 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?

Seismic Studies

In addition to the ULE static evaluation process, two seismic studies are being performed. The objective of the first study is to develop conceptual seismic remediation alternatives and associated costs for areas of 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 during this reporting period.

Miscellaneous

- Participated in various FloodSAFE Functional Area Cross Coordination Teams).
- Continuing to provide support to the CVFED program.

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, respectively. 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 2012 CVFPP was presented to the Board on schedule by January 1, 2012. The Board adopted the plan 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 Systemwide 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 RFMP's include a Regional Flood Atlas, information on Regional Flood Management Priorities, and a Regional Financial Plan. RFMP's are being coordinated with the two BWFS's 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) have been initiated. The studies are 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 systemwide 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. In July, the Central Valley Flood Protection Board (Board) was briefed on the BWFS' approach to considering climate change and the USACE/DWR/Board Central Valley Integrated Flood Management Study (CVIFMS) Feasibility Cost Sharing Agreement (FCSA) Amendment Number 1. At the July 26th meeting, the Board was asked to consider approval of Resolution No. 2013-17 to approve Amendment No. 1 to the FCSA.
- The Urban Level of Flood Protection (ULOP) Criteria Refinement Work Group is working to develop text that will refine the draft criteria or help draft potential legislative amendments. The Work Group met in July to discuss the outcome of the topic specific subgroups of representative experts that worked on details of the criteria.

STATEWIDE INTEGRATED FLOOD MANAGEMENT PLANNING

The Statewide Integrated Flood Management Planning Program (SFMP) will assess the 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 will inventory existing and future flood management needs in the state's regions, identify opportunities for integrated flood management, and formulate potential integrated flood management solutions. The program will publish a 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.
- Staff is reviewing and addressing all comments received during the public comment period for the Public Review draft.
- The final draft of the Flood Future Report is anticipated to be completed by October 2013.

- Work is beginning on the development of a Phase 2 effort to further expand on the seven recommendations from the Flood Future Report.

INTEGRATED FLOOD MANAGEMENT IN THE CALIFORNIA WATER PLAN

- The Administrative draft Flood Management Resource Management Strategy has been completed.
- Work continues on incorporating the flood content into the Regional Reports.
- Work is continuing on developing flood content for the Volume 1 chapters.

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

Technical Objectives Workshops

Staff and contractors continue planning for the Oct 23-24 Technical Workshop #2, which will cover the objectives, tools, and methods for getting to metrics. The workshop will discuss the implementation of any suggestions from the first workshop as well as getting input into specific tools and methodologies for the current objectives in the draft plans. They are also continuing to develop a response to comments received during Workshop #1 in May 2013.

AGRICULTURAL STEWARDSHIP

Safe Harbor Agreement

Staff are working with contractors in the development of Safe Harbor Agreement and a Corridor Management Plan strategy for a segment of the Sacramento River.

BDCP Agricultural Land Stewardship Strategies

Staff met with the ALS group on July 24th to discuss pending Ag Land Stewardship Strategies still in development. In addition, the draft background paper that summarizes the impacts and mitigation measures described in the BDCP Administrative Draft EIR/EIS was discussed. This draft will be presented to the Interagency Committee on August 14. After discussion with the Committee, it will be available on the BDCP Webpage.

VEGETATION MANAGEMENT

Invasive Species Strategy

A kick-off meeting for the Steering Committee was held July 10th. Discussion topics included an overview of the Invasive Species Management Plan (ISMP) technical memorandum, draft ISMP policy, goal, and objectives, and engagement strategy for DWR organizations and external partners.

INVENTORY, RESEARCH, ANALYSIS, AND MODELING

River Meander Model Development and Training

Contractors are using River Meander Migration Analyses with the Standard

Assessment Methodology (SAM) Model to evaluate potential future channel positions and conditions on several Sacramento River sites. This modeling helps support conservation planning for several target anadromous fish species to the River Meander Migration Work Group. This tool will help evaluate and track the potential losses (from projects) and gains in aquatic and riverine habitats and improvements in fluvial geomorphic processes.

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

No new information this month.