



ZONE 3 ADVISORY COMMITTEE

San Luis Obispo County Flood Control and Water Conservation District

AGENDA

Thursday, September 21, 2017 6:30 P.M.
City of Grover Beach

- I. CALL TO ORDER AND ROLL CALL
- II. PUBLIC COMMENT
This is an opportunity for members of the public to address the Committee on items that are not on the Agenda
- III. APPROVAL OF MEETING MINUTES OF JULY 20, 2017
- IV. OPERATIONS REPORT
 - A. Water Plant Operations, Reservoir Storage, Downstream Releases
 - B. Projected Reservoir Levels
- V. INFORMATION ITEMS
 - A. 4th Quarter Budget Status
 - B. Climate Update
 - C. Discussion of AGP Televised Meetings and Option of Audio Only
 - D. Update on the Lopez Spillway
- VI. CAPITAL PROJECTS UPDATE
 - A. Bi-Monthly Update
- VII. ACTION ITEMS (No Subsequent Board of Supervisors Action Required)
- VIII. ACTION ITEMS (Board of Supervisors Action is Subsequently Required)
- IX. FUTURE AGENDA ITEMS
 - A. Fall Update to Board of Supervisors
 - B. Lopez Lake Safe Yield
- X. COMMITTEE MEMBER COMMENTS

Next Regular Meeting is Tentatively Scheduled for
Thursday, November 16, 2017 at 6:30 PM at City of Arroyo Grande
Agendas accessible online at SLOCountyWater.org

**SAN LUIS OBISPO COUNTY FLOOD CONTROL
AND WATER CONSERVATION DISTRICT
ZONE 3 ADVISORY COMMITTEE
DRAFT MEETING MINUTES
THURSDAY July 20, 2017**

- I. Call to Order/Roll Call** -- The Zone 3 Advisory Committee Meeting was called to order at 6:35 PM at the Oceano Community Services District by Vice-Chair and Agriculture Representative, Vard Ikeda.

County Public Works Department Utilities Division Program Manager and Secretary to Zone 3 Advisory Committee, Andrea Montes, called roll. Members in attendance were:

- Kristen Barneich, City of Arroyo Grande
- Andrew Brunet, Oceano Community Services District
- Marcia Guthrie, City of Pismo Beach
- Vard Ikeda, Vice Chair and Agriculture Representative
- Jim Garing, Member at Large
- Mariam Shah, City of Grover Beach

- II. ANNUAL FISCAL YEAR ROTATION - Position of Chairman and Vice-Chairman** -- Agricultural representatives, Member Brian Talley and Member Vard Ikeda are moved to Chairman in accordance with the Zone 3 Advisory Committee By-laws.

Member at large, Jim Garing, was moved to Vice-Chairman in accordance with the by-laws.

- III. Public Comment** -- No public comment was made.

- IV. Approval of Meeting Minutes of May 18, 2017**-- Member Barneich motioned approval; Member Brunet second. All approved the minutes.

- V. Operations Report** --

A. Water Plant Operations, Reservoir Storage, Downstream Release -- Ms. Montes indicated the Lopez Lake elevation was 497.26 feet. Storage was 29,445 acre-feet (AF), which is 59.8% capacity. Rainfall to date was 0 inches (water year reset on July 1). Plant production was 4.75 million gallons per day (MGD). Downstream release was 3.8 MGD. State Water was 1.7 MGD. No public comment was given.

B. Projected Reservoir Levels -- County Public Works Engineer, David Spiegel, presented the projected reservoir levels. The projection of the Lopez Reservoir is mimicking the same usage from June/July of last year and is looking accurate. No public comment was given.

VI. Information Items

A. Climate Update -- Ms. Montes indicated that according to the United States Drought Monitor, San Luis Obispo County is an abnormally dry climate. According to NOAA, the temperature forecast for July is above average temperatures. There are equal chances of above average, average, and below average rainfall for July.

No public comment was given.

B. Cost/Benefit Analysis of Televised Meetings -- Ms. Montes indicated that televising the Zone 3 Advisory Committee meetings are not mandatory; however, publishing the meeting minutes for public knowledge are. The cost of televising meetings from AGP is \$750/meeting. Options discussed to lower costs included: audio taping the meetings with a recorder; purchasing audio only from AGP Video (who currently televises the meetings); or live-streaming the meetings via the web. Options will be further researched and discussed at the September meeting.

C. Cloud Seeding Feasibility Report -- County Public Works Deputy Director, Mark Hutchinson, presented a brief update on the Cloud Seeding Feasibility Report.

Mr. Hutchinson indicated a presentation was made at the Zone 3 Technical Advisory Committee (TAC) in May 2017. The North American Weather Consultants (who worked with County of Santa Barbara cloud seeding program) recommended a land and air based program. According to their cloud seeding model, there is an estimated 9% increase in precipitation, with additional runoff of 3,000 AF into Lopez storage reservoir and 10,000 AF into the watershed. The cost is approximately \$29/AF.

According to Mr. Hutchinson, the TAC recommended to proceed with initiating the cloud seeding process and the next step is to prepare a California Environmental Quality Act (CEQA) document, which is currently funded in this year's Flood Control Budget. A final cloud seeding report can be viewed at SLOCountyWater.org.

Mr. Hutchinson indicated the hope is to partner with Santa Barbara County for operational costs, such as aircraft.

D. Water Supply Contract Changes - Modeling Update -- Mr. Hutchinson presented the modeling update. He indicated an amended contract was signed

with ECORP Consulting Inc. to use the reservoir model that was developed for the Habitat Conservation Plan (HCP). The intent is to use the same model to model different types of contract arrangements.

Mr. Hutchinson indicated the TAC and a sub-committee group is refining ECORP's scope and looking at modeling a couple of options based on existing contracts, but adding the ability to have stored water (i.e., carry over water). The contract elements will be developed and plugged into the model to show each agency what its water supply availability would've been from when the reservoir went into operation.

Another model is the Whale Rock Reservoir Model. Whale Rock allocates 100% of reservoir water to three (3) participants based on their percentage of investment in the project. The total reservoir volume is looked at, along with how much is in the reservoir to date and how much each agency uses through the water year.

According to Mr. Hutchinson, the Whale Rock Reservoir participants have a downstream requirement into the creek and into the Cayucos water entities. Downstream releases is accounted for in a proportional obligation to all participants. This provides a simple model to look at in regard to storing water.

Mr. Hutchinson informed the Committee that ECORP is moving forward with their technical evaluation, will develop recommendations and bring a draft memorandum to the TAC summarizing their results. Zone 3 agencies will then be able to decide what their interest is in contract changes.

No public comment given.

VII. Capital Projects Update

A. Bi-Monthly Update -- Mr. Spiegel presented a brief update of the Capital Projects listed below.

Turnout Systems Control and Data Acquisition (SCADA) Project -- I.T. is compiling the data and making it user friendly. The next step is the login process which was underway.

Parking & Roadway Resurfacing Project -- Construction has started throughout the county. Most of the Zone 3 projects should start and finish within the month of August. The Lopez Water Treatment Plant (LWTP) Resurfacing Project will begin after the Membrane Strainer Replacement Project is complete to avoid damage from equipment to the LWTP resurfaced lot.

Membrane Strainer Replacement Project -- This project is scheduled for the second week of August and will last two (2) weeks. The programmable logic controllers (PLCs) and membrane strainers will be replaced August 7

through August 11; and the 6th Rack Addition Project will take place August 14 through August 18. All three of these projects should be completed by August 18, 2017.

Equipment Audit & Replacement -- This project will be worked on after the bigger projects listed above are complete.

No public comment was given.

VIII. Action Items -- (No Subsequent Board of Supervisors Action Required)

None discussed.

IX. Action Items -- (Board of Supervisors Action is Subsequently Required)

A. Update on Resolution to remain under the LRRP -- Mr. Hutchinson recalled the presentation made to the County Board of Supervisors (BOS), encouraging them to not terminate the Low Reservoir Response Plan (LRRP) with the focus on allowing the Zone 3 Agencies to maintain water storage in the Lopez Reservoir. The BOS agreed and directed staff and County Counsel to prepare resolutions and supporting documents to make this happen. The documents are currently being finalized. The goal is to continue the LRRP through the end of the water year, March 31, 2018 and adapt a formal resolution by the August 22, 2017 BOS meeting.

B. Department of Water Resources (DWR) Division of Safety of Dams (DSOD) Lopez Spillway Assessment Letter – Mr. Hutchinson indicated after the Oroville Dam Spillway failure, the California Department of Water Resources (DWR), specifically the Division of Safety of Dams (DSOD) directed a condition assessment of the Lopez Dam Spillway. He indicated the Lopez Dam Spillway is one of about seventy (70) spillways to be assessed and presented a PowerPoint addressing the topics below.

What happened at Oroville?

On February 7, 2017, the main spillway fractured. By February 11, 2017, the emergency spillway was used for the first time. The following day, geologic failure of the rock downstream of the emergency spillway was discovered, leading the Sheriff of Butte County to order an evacuation for 188,000 people. Two (2) days later the evacuation was lifted. The main spillway was shut down for the summer, causing water to be released through the powerhouse at the base of the dam. A \$275 million repair contract was issued on April 18, 2017 and initial repairs are targeted for completion in November 1, 2017.

What does DWR/DSOD require of the SLO County Flood Control District?

DSOD has directed the San Luis Obispo County Flood Control and Water Conservation District (District) to develop a work plan as to how the District will evaluate the Lopez Dam Spillway concrete lining and look at the drainage system underneath the spillway to make sure there is no potential for slab undermining or hydraulic jacking (the situation where water from above can

flow underneath and has no way to get out). This occurs when the water from above continues to push and actually lifts it up the concrete slab into the flow. The site investigation should look at the characterization of spillway foundation materials and susceptibility to erosion and instability (i.e., type of rock under foundation).

Mr. Hutchinson indicated on July 20, 2017, DWR came out with a more detailed description of what is expected as an outline for the initial site assessment and investigation due September 1, 2017, which was consistent with the information he presented.

He further indicated in 1970 after the Lopez Dam first filled during 1968/1969, the spillway was discovered to have damage including movement, cracking and separation of slabs. The DSOD recommended the District watch these issues carefully. By 1990 the County Public Works Department, TAC and Zone 3 Agencies were concerned and commissioned an outside engineering firm to conduct an analysis of the spillway which found the issues to be more troubling than DSOD and began moving towards a project to make significant repairs on the spillway. At the same time, statewide and local liquefaction and seismic information became concerning, and repairs were made during 2000 to 2003 with the seismic retrofit of the dam including: broken concrete repairs, fixed cracks, relocation of rebar, and inspection and cleanout ports were added to the drain system. Mr. Hutchinson pointed out the spillway has not gone untouched since 1968, and was actually upgraded seventeen (17) years ago.

Mr. Hutchinson referred to the Zone 3 District funded reserves. He recalled that the Zone 3 TAC and Advisory Committee identified uses for the reserves, including capital projects and unanticipated actions related to water supply and public safety. He indicated the TAC agreed that utilizing \$25,000 to \$30,000 of the reserves is appropriate to put towards a workplan that describes to DSOD, what will be done based about what is known about Lopez Dam (i.e., bringing in an outside engineering geologist to look at geologic reports regarding instability if there were a water leak). He noted there is no set date to have the work plan completed.

Member Barneich motioned to utilize the Zone 3 District funded reserves to fund the first \$25,000 towards a workplan to submit to DSOD related to the Lopez Spillway assessment; Member Shah second. All approved and motion passed.

Santa Maria Groundwater Modeling – Proposed Funding & Agreement --

Mr. Hutchinson indicated a few years ago the agencies involved in the Santa Maria Groundwater Basin desired to prepare a groundwater model to help understand the how/why/where the water moves. There was a discussion on a

possible cost share between Flood Control General, Northern Cities Management and Nipomo Mesa Management Area. However, since initial discussions, the Sustainable Groundwater Management Act (SGMA) was passed, which redirected District funds, and the City of Pismo Beach reclamation water project to supplement into the groundwater basin plan came along.

Mr. Hutchinson pointed out a proposal to use a portion of the District funded reserves to help fund the Santa Maria Groundwater Basin modeling project. A year ago, the Zone 3 Advisory Committee earmarked \$250,000 from the District funded reserve pool. Mr. Hutchinson indicated this agenda item was created to move the project forward and have a reduction in the cost share amount via District funded reserves.

Dan Heimel with Water Systems Consulting, Inc. further explained that the development of a groundwater model for the Santa Maria Basin has been a top priority for the Northern Cities Management Area technical group since the detection of seawater intrusion in 2009.

Mr. Heimel indicated the group hasn't been able to get all the funding sources to get the project started. However, as part of the Regional Groundwater Sustainability Project, which is the regional recycled water program that is currently being undertaken by City of Pismo Beach, South San Luis Obispo County Sanitation District and member agencies (City of Arroyo Grande, City of Grover Beach, and Oceano Community Services District), the initial steps have been taken towards developing a groundwater model.

Mr. Heimel explained the request put forward to the Zone 3 Advisory Committee is to use a portion of the \$250,000 in earmarked funds to help continue the groundwater model. Spill event settlement funds negotiated from the South San Luis Obispo County Sanitation District and Regional Water Quality Control Board will pay for majority of the Phase 1 modeling (approx. \$221,000) and \$117,259.44 is a supplemental source that will allow the full model to be developed.

The vision for the model is to support the recycled water program. It will look at the scenarios for injecting the recycled water into the groundwater basin to prevent sea water intrusion and pump the water back out to produce a renewable, sustainable supply for the region. The model can then be used as a building block for a larger regional model that will help answer more comprehensive water resource questions in the area.

Chairman Ikeda asked if the Nipomo Mesa agencies are contributing financially to the Phase 1 modeling effort. Mr. Heimel indicated they are not at this point, partly because this modeling effort is really focused on the recycled water

program. However, it is envisioned the model generated would include portions of the Nipomo Mesa Management Area and could be useful in future modeling evaluations of groundwater resources and the entire Santa Maria Basin within San Luis Obispo County.

Vice-Chair Garing motioned to approve utilizing \$117,259.44 of earmarked District funds to contribute towards cost sharing of the Santa Maria Groundwater Modeling. Member Barneich second; all approved. The motion to fund the Santa Maria Groundwater Modeling project passed.

No public comment was made.

X. Future Agenda Items --

A. Fall Update to Board of Supervisors --

Ms. Montes explained that after we get the reads on the groundwater levels from October we will update the board, which will tie in with the LRRP.

B. Lopez Lake Safe Yield --

Ms. Montes indicated Member Lee asked for this item to be discussed in the future.

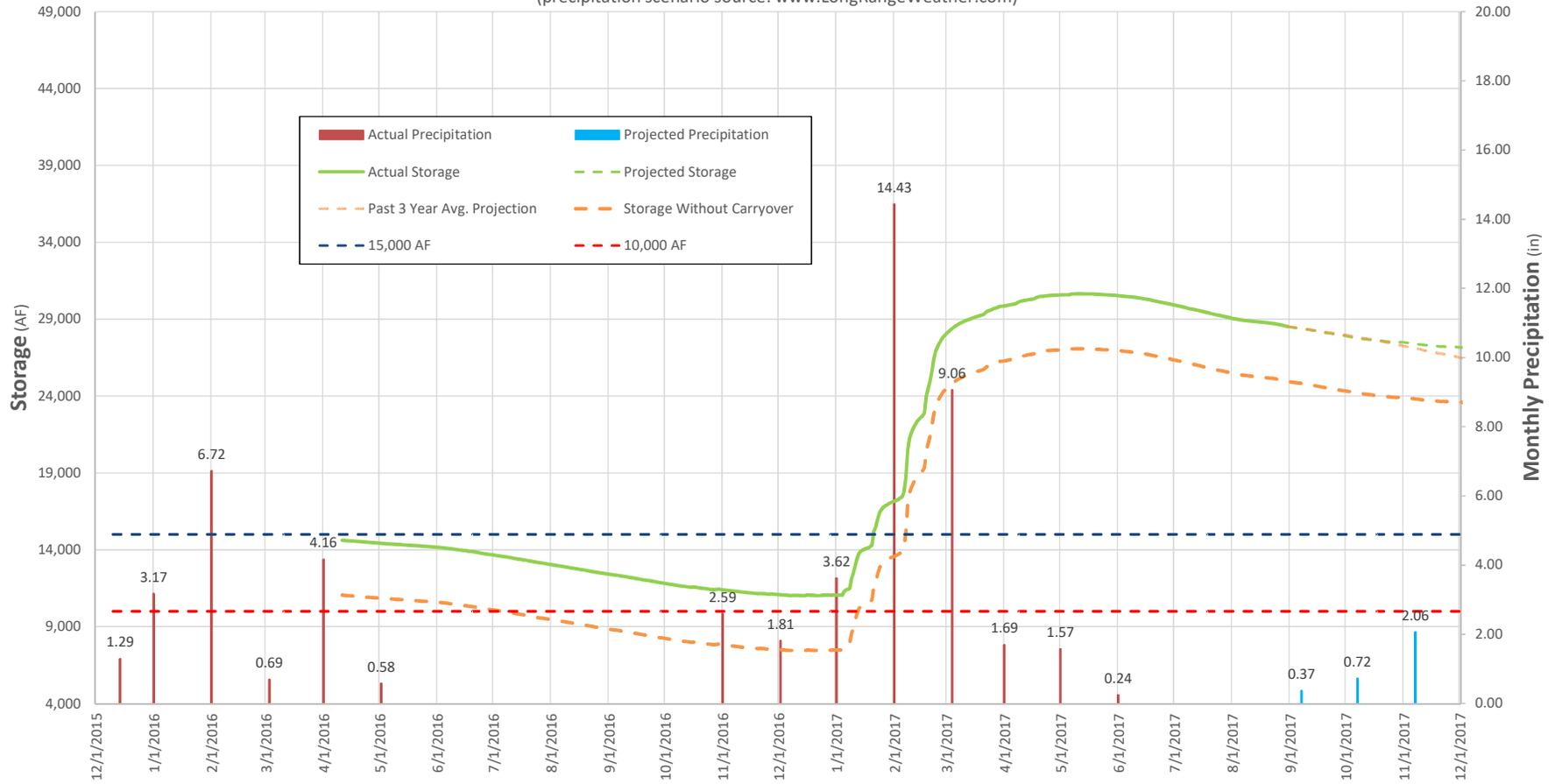
XI. Committee Member Comments – No comments made.

Meeting Adjourned at 7:50 PM

Respectfully Submitted,

Andrea M Montes
County of San Luis Obispo Public Works Department

Lopez Reservoir Storage Projections
 (precipitation scenario source: www.LongRangeWeather.com)



Notes:

- For "Dry Months" (April - October), projected increases and/or decreases in storage estimated to mimic conditions from 2015.
- For "Wet Months" (November - March), projected storage declines assume LRRP annual downstream release of 3,800 AFY and de



September 21, 2017

MEMORANDUM

TO: Flood Control Zone 3 Advisory Committee
FROM: Kristi Smith, Accountant
SUBJECT: Flood Control Zone 3, Fourth Quarter Budget Status, Fiscal Year 2016/17

Recommendation

The item to be received and filed.

Summary

Attached please find the fourth quarter budget versus actual results for fiscal year 2016/17. The \$5.1 million dollar budget is broken into three categories: Routine O&M expenses, Non-Routine O&M expenses, and Capital Outlay expenses. At the end of the fiscal year, expenses totaled approximately 75% of the annual budget. Of the remaining \$1.3 million, approximately \$1.1 million will be carried into fiscal year 2017/18 to continue Non-Routine efforts and complete Capital projects. This results in an approximate O&M credit back to the agencies in the amount of \$237,424.

Total Budget	Expenses through Q4	Balance Available	% of Budget Expended
5,168,546	3,854,402	1,314,144	75%
Estimated Carryforward:		(1,076,720)	
Est. O&M Credit to Agencies:		237,424	

Routine O&M annual budget is approximately \$3.5 million dollars. At the end of the fiscal year, expenses were 91% of the annual budget, which results in approximately \$324,000 dollars of savings.

Total Budget	Expenses through Q4	Balance Available	% of Budget Expended
3,506,162	3,181,895	324,266	91%

Non Routine O&M annual budget is approximately \$828,000 dollars. At the end of the fiscal year, expenses were 50% of the annual budget, which results in approximately \$411,000 dollars of savings, which will carry into FY 2017/18 for continued work.

Total Budget	Expenses through Q4	Balance Available	% of Budget Expended
828,477	417,198	411,279	50%

The majority of the balance available in this category is due to the Lopez Water Rights/Habitat Conservation Plan (HCP). The contract issue was resolved in early May, and work has begun to move forward again.

Combined, Routine and Non-Routine O&M have a savings of \$735,545. Of this amount, approximately \$500,000 will carry into FY 2017/18 and approximately \$237,424 will be credited back to the agencies.

Capital Outlay annual budget is approximately \$834,000 dollars. At the end of the fiscal year, expenses were 31% of the annual budget, which results in approximately \$578,000 dollars of savings, most of which will carry into FY 2017/18 to continue the projects through completion.

Total Budget	Expenses through Q4	Balance Available	% of Budget Expended
833,908	255,310	578,598	31%

The majority of the balance available in this category is due to the pH Suppression & Scaling Control project.

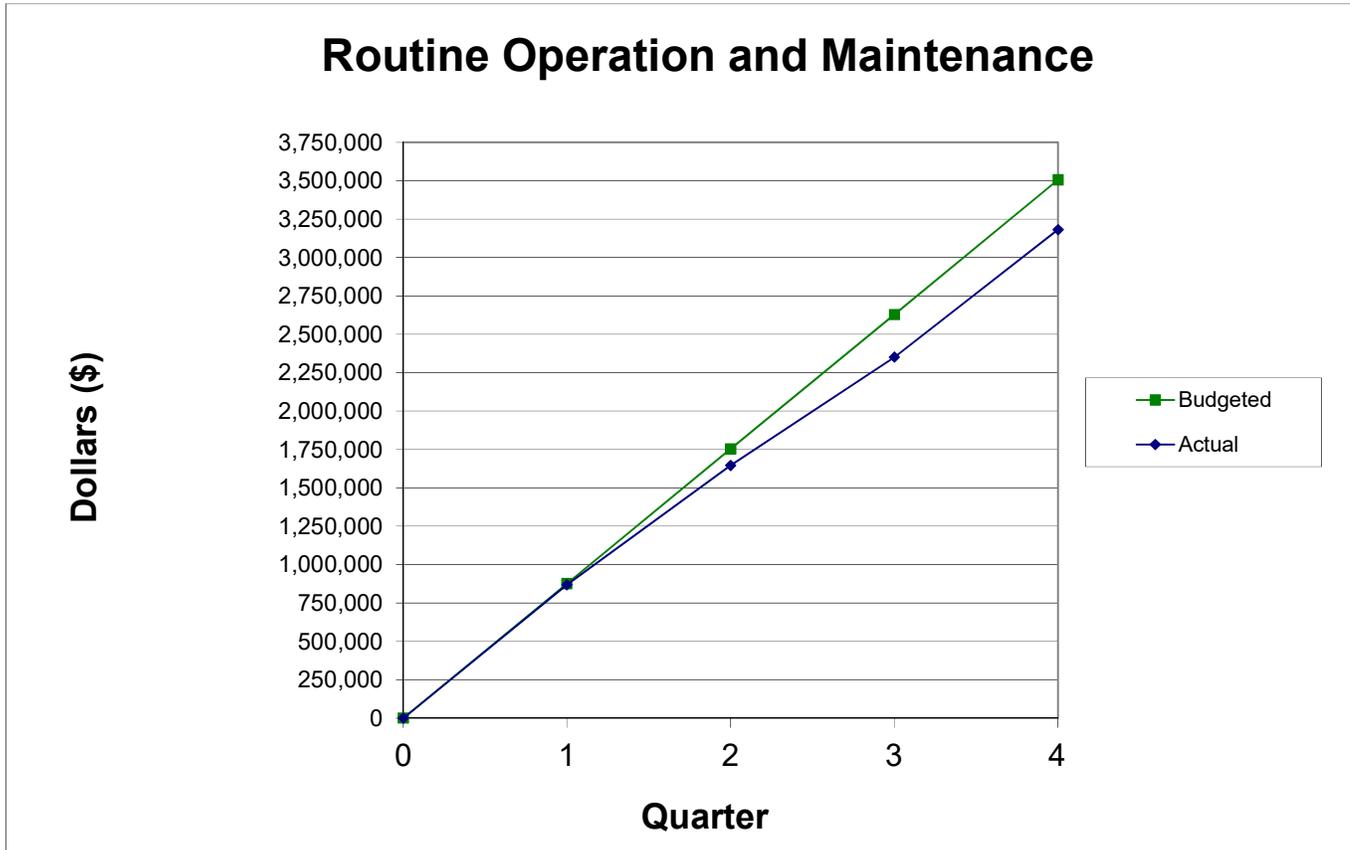
Other Agency Involvement/Impact

The agencies involved are: City of Arroyo Grande, City of Grover Beach, City of Pismo Beach, Oceano Community Services District, and County Service Area 12. Subcontractors of CSA 12 include Port San Luis Harbor District and Avila Beach Community Services District.

Financial Consideration

All agencies are current on their payments. Estimated credits for FY 2016/17 in the amount of \$237,424 will be allocated to the agencies and mailed along with the 2nd installment of the FY 2017/18 billings that are due January 1, 2018.

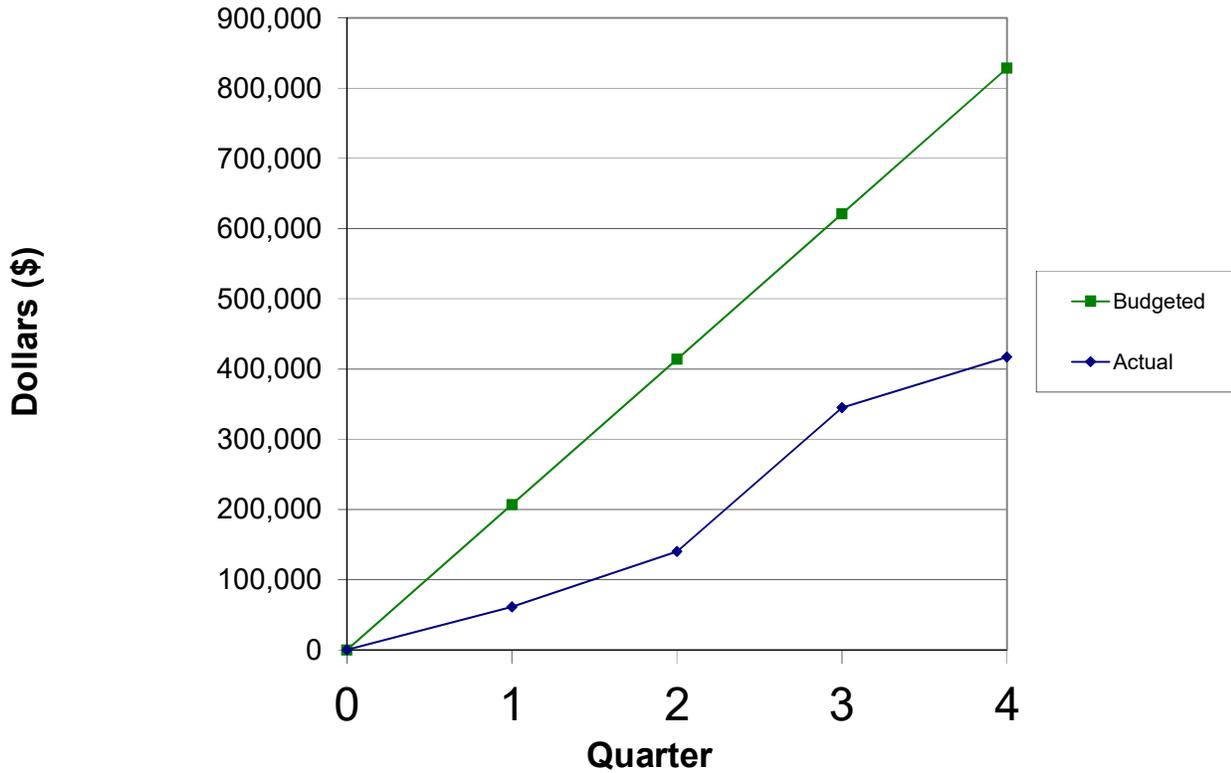
Zone 3 Budget Status
4th Quarter FY16/17



O&M Routine Category	Total Budget	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Total	Total Exp as % of Budget	Total Balance Avail
Labor Hours	22,367	5,679	4,773	5,683	5,142	21,277	95%	
Chemicals - Water Treatment Plant	306,952	73,341	54,500	83,029	95,056	305,926	100%	1,026
Utilities - Water Treatment Plant	172,875	50,665	41,667	36,043	49,652	178,027	103%	(5,152)
All Other Costs - Water Treatment Plant	1,882,980	506,004	478,981	394,263	428,990	1,808,239	96%	74,741
Terminal	157,803	24,851	24,620	23,006	39,491	111,968	71%	45,835
Main Dam	208,334	96,559	4,489	40,871	89,455	231,374	111%	(23,040)
Other	777,218	117,342	172,815	128,329	127,875	546,360	70%	230,858
Expenses		868,762	777,072	705,541	830,519	3,181,895	91%	324,267
Budget	3,506,162	876,540	876,540	876,540	876,540	3,506,162		
Variance (over)/under		7,778	99,468	170,999	46,021	324,266		
% Variance		1%	11%	20%	5%			

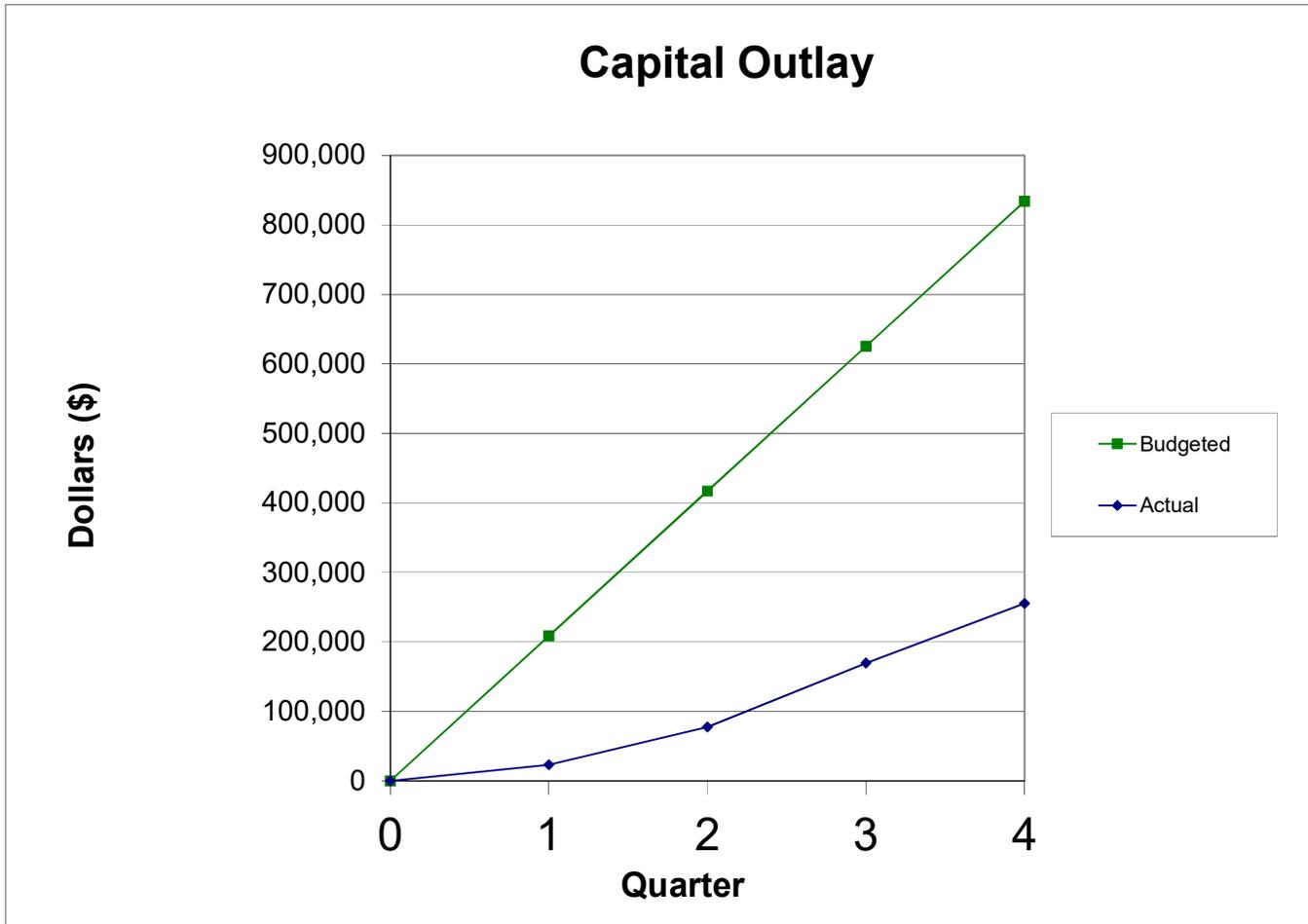
Zone 3 Budget Status
4th Quarter FY16/17

Non-Routine Operation and Maintenance



O&M Non Routine Category	Total Budget	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Total	Total Exp as % of Budget	Total Balance Avail
Lopez Water Rights IHCP	294,026	10,045	7,028	6,506	12,539	36,117	12%	257,909
Cathodic Protection Maint	14,172	-	-	-	-	-	0%	14,172
Terminal Resvr Intake Repair	28,953	39,813	-	-	-	39,813	138%	(10,860)
Dam Intake Fac & Ops Assessment	25,000	-	-	4,101	-	4,101	16%	20,899
Structural Assessment Term Resv Dam	-	-	-	-	-	-	0%	-
Equip Storage Garage Design	-	-	-	-	-	-	0%	-
Meadow Creek Diversion Channel	6,946	(9,138)	13,553	-	-	4,415	64%	2,531
Pressure Transducers	-	-	-	-	-	-	0%	-
Pigging-Unit B	117,195	-	-	-	-	-	0%	117,195
PLC Replacement & Programming	94,227	2,126	1,804	10,563	9,971	24,464	26%	69,763
Replace Membrane Strainers	175,000	-	4,502	152,403	7,909	164,814	94%	10,186
Existing Bypass Pipeline Condition Asmt	-	-	7,274	21,293	2,176	30,744	0%	(30,744)
Other	72,958	18,429	44,796	10,021	39,483	112,730	155%	(39,772)
Expenses		61,275	78,957	204,888	72,079	417,198	50%	411,279
Budget	828,477	207,119	207,119	207,119	207,119	828,477		
Variance (over)/under		145,844	128,163	2,232	135,041	411,279		
% Variance		70%	62%	1%	65%			

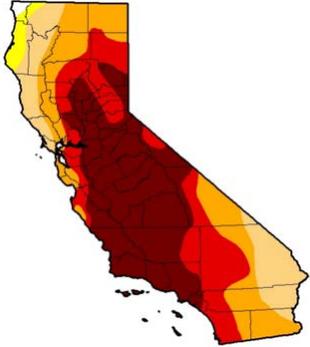
Zone 3 Budget Status
4th Quarter FY16/17



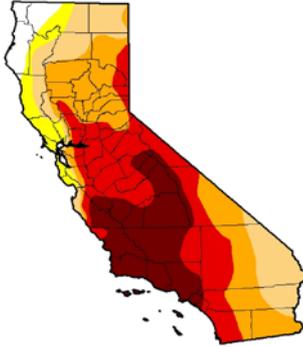
Capital Outlay Projects	Total Budget	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Total	Total Exp as % of Budget	Total Balance Avail
Lopez Turnouts SCADA System	50,367	14,633	14,115	7,242	19,642	55,633	110%	(5,266)
WTP 6th Membrane Filtration Module Addit	30,403	1,405	1,897	2,650	5,014	10,966	36%	19,437
VFD Replacement Project	9,188	174	6,859	3,369	-	10,402	113%	(1,214)
Power Monitoring Project	3,328	3,278	51	-	-	3,328	100%	(0)
Lopez Dam Repair V-Ditch Adjacent to Sp	45,629	3,023	29,682	231	-	32,936	72%	12,693
WTP Resurface Parking Lot	44,933	421	586	4,182	15,076	20,265	45%	24,728
Improved Boat Access at Term Resv	-	-	-	-	-	-	0%	-
Ammonia Analyzer Equip Repl	-	-	-	-	-	-	0%	-
pH Suppression & Scaling Control	625,000	-	1,410	74,175	46,195	121,780	19%	503,220
Capital Equipment								
Coagulant Feed Alarm System	-	-	-	-	-	-	0%	-
Water Purify System Milli-Q Double DI	-	-	-	-	-	-	0%	-
Water Treatment Barge	-	-	-	-	-	-	0%	-
Various Equipment Replacement	25,000	-	-	-	-	-	0%	25,000
Expenses		22,934	54,599	91,850	85,928	255,310	31%	578,598
Budget	833,908	208,477	208,477	208,477	208,477	833,908		
Variance (over)/under		185,543	153,878	116,627	122,549	578,598		
% Variance		89%	74%	56%	59%			

U.S. DROUGHT MONITOR

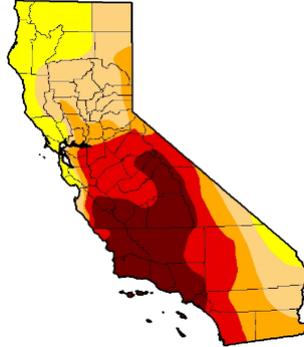
March 2016



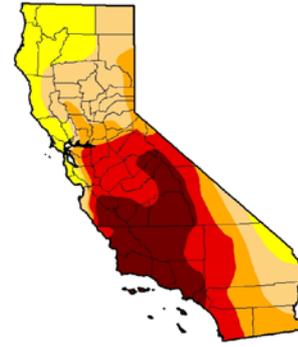
May 2016



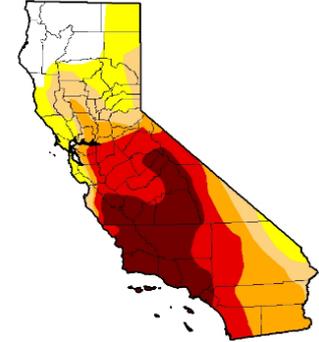
July 2016



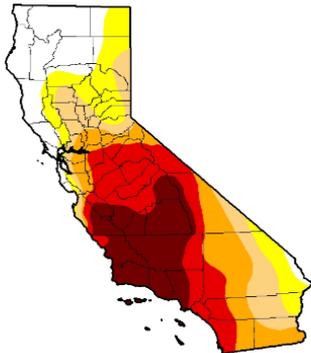
September 2016



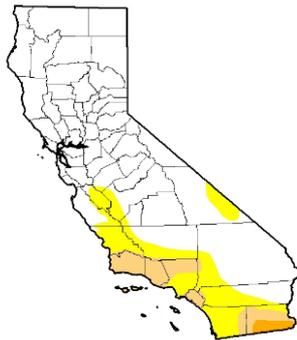
November 2016



January 2017



March 2017



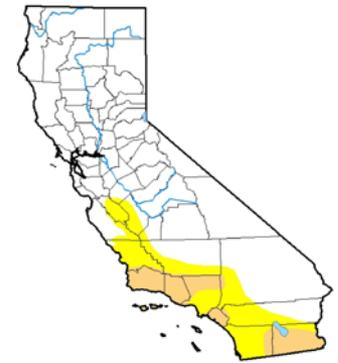
May 2017



July 2017



September 2017



Intensity:

- D0 - Abnormally Dry
- D1 - Moderate Drought
- D2 - Severe Drought

- D3 - Extreme Drought
- D4 - Exceptional Drought

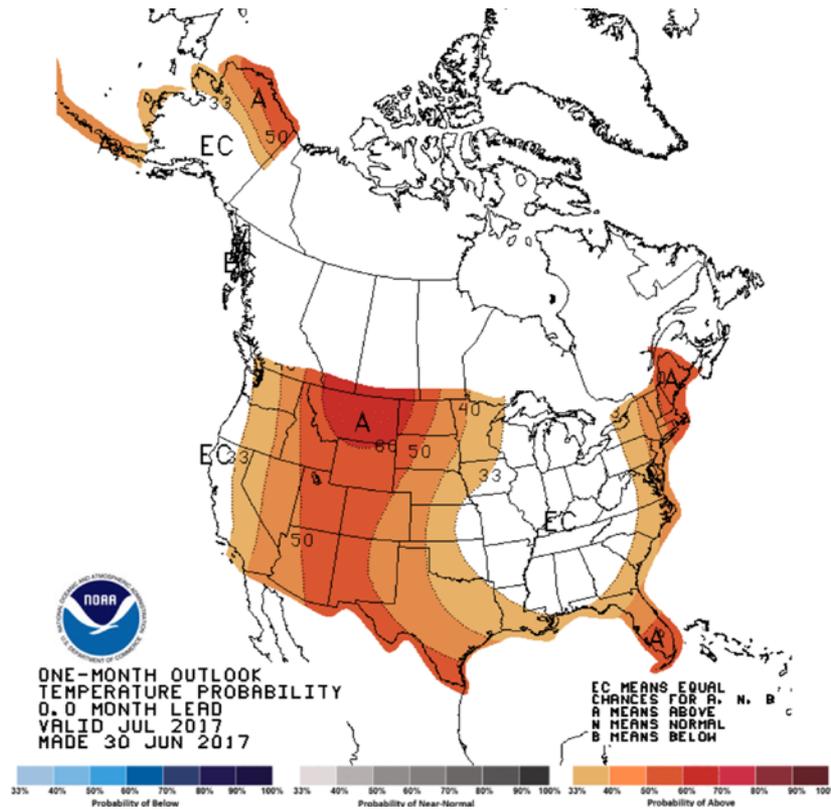
Permission to reproduce the map

If you reproduce the U.S. Drought Monitor map, please use this wording:

The U.S. Drought Monitor is jointly produced by the National Drought Mitigation Center at the University of Nebraska-Lincoln, the United States Department of Agriculture, and the National Oceanic and Atmospheric Administration. Map courtesy of NDMC-UNL.

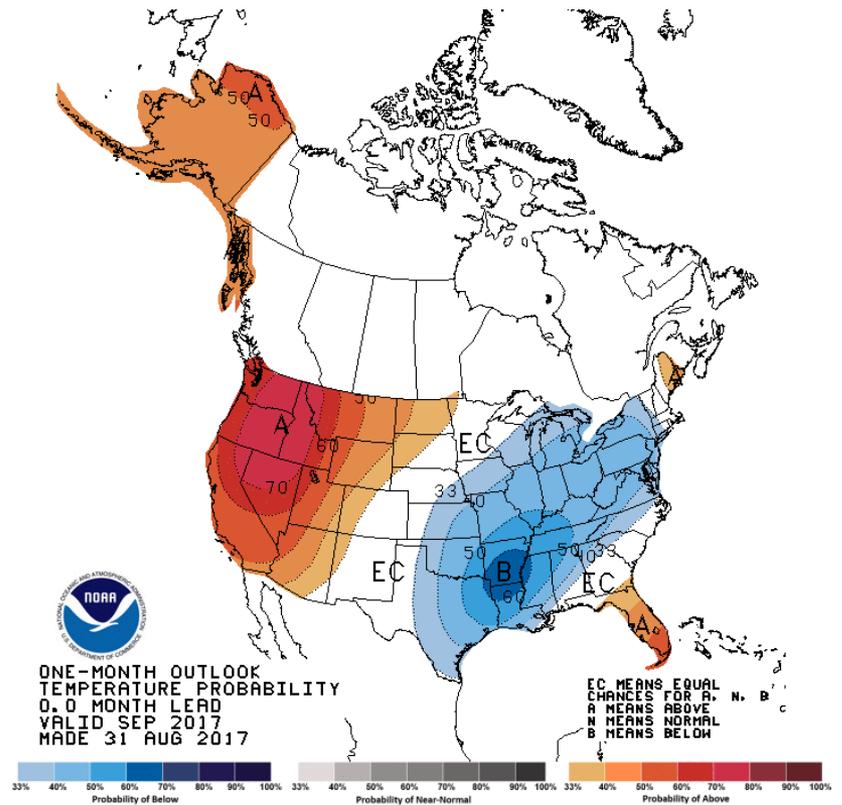
NOAA TEMPERATURE FORECAST

July



July Meeting

September

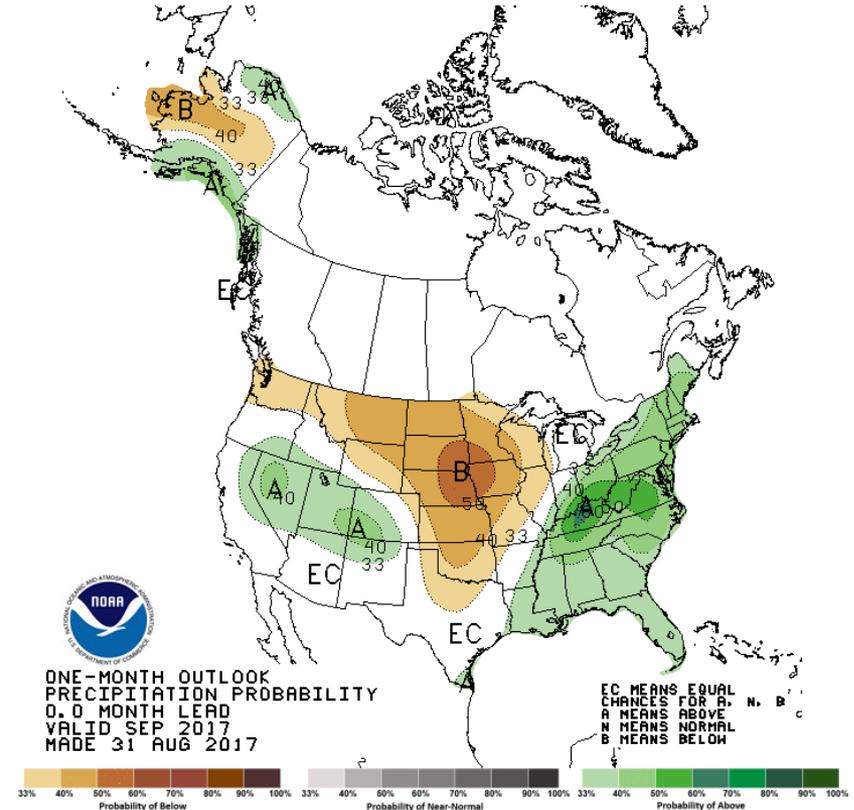
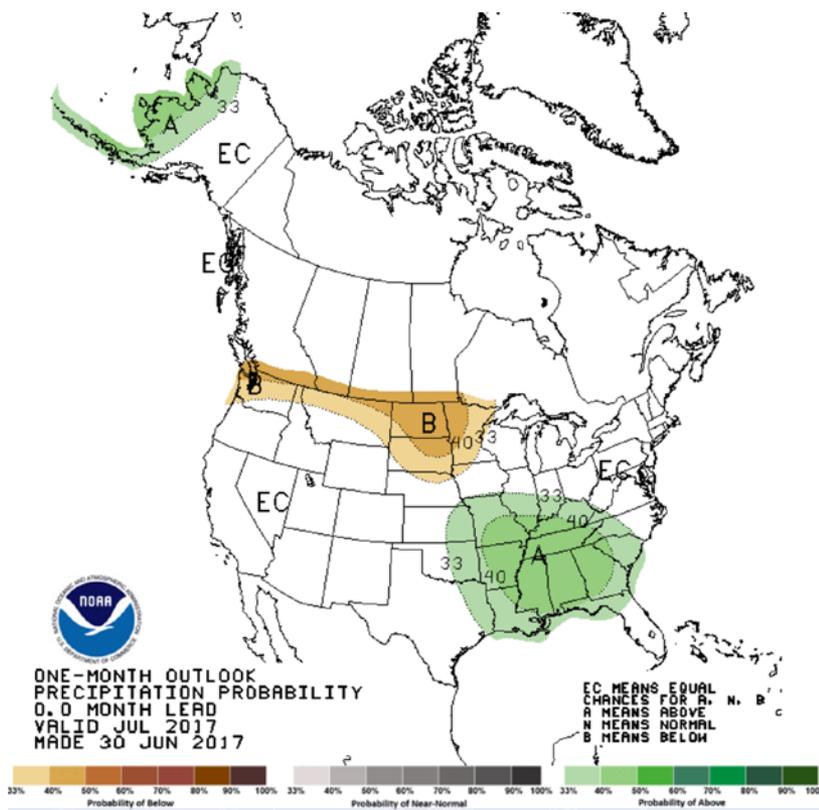


September Meeting

NOAA PRECIPITATION FORECAST

July

September



July Meeting

September Meeting



TO: Zone 3 Advisory Committee

FROM: Mark Hutchinson, Deputy Director
David Spiegel, Project Manager

DATE: September 21, 2017

SUBJECT: Update on the Lopez Spillway

Discussion

On February 7, 2017, the main spillway at the Oroville Dam suffered severe damage during a moderate flow release, eventually necessitating use of the emergency spillway. By February 12 high inflows combined with damage to both the main and emergency spillways triggered an emergency evacuation order that affected over 150,000 people. An independent review panel has been convened by the Federal Energy Regulatory Commission to investigate the Oroville event. The panel's report is expected in the fall.

Both the Governor and the Legislature have responded to the Oroville event with Executive Orders and new legislation. The Governor has ordered detailed evaluations of dam appurtenant structures, such as spillways, to strengthen the State's inspection program. The Legislature has passed, and the Governor signed, amendments to the California Water Code that change the Hazard Classification of dams across the State, requires updated inundation maps, and the preparation of Emergency Action Plans (EAP).

Executive Order

On June 12, 2017, the Flood Control District received a letter from the California Department of Water Resources Division of Safety of Dams (DSOD) (copy attached), directing actions to implement the Governor's order. At this time, there is no specific information on any issues associated with the spillway at Lopez Dam. The identical letter was sent to 93 State regulated dams throughout California (list attached). Based on a "reconnaissance-level assessment" the letter notes that Lopez "may have potential geologic, structural, or performance issues that could jeopardize its ability to safely pass a flood event." No specific issues are identified.

The letter required a Work Plan to be prepared and submitted by September 1, 2017. The scope of

the site investigation required in the work plan is to focus on “characterization of the foundation materials underlying and adjacent to the spillway and their susceptibility to erosion and instability”. Although not yet documented in any final official reports, it is evident that the foundation materials underlying the Oroville spillway likely contributed to the failure of that structure in a significant way. Therefore, one key focus of the investigation is to determine if such a failure mode could occur at Lopez.

The Department of Public Works has formed a Project Team to respond to the spillway order. Team members and their respective roles are:

Project Manager – David Spiegel, Staff Engineer. Coordinate project activities, conduct document reviews, consult with DSOD, ensure communication with management, staff and stakeholders. Control scope, schedule and budget. Prepare required Work Plan.

Consulting Engineer – John Hollenbeck. Review documents, participate in site investigations, participate in Work Plan development and provide an independent professional review of project team actions.

Management Oversight – Mark Hutchinson, Deputy Director of Public Works. Provide overall team direction, ensure availability of resources, timely and efficient completion of team work efforts and appropriate communication. Act as agency contact person for the public and the media.

Principal Engineer – Wade Horton, Director of Public Works. Ensure consistency with all County, Department, and professional engineering best practices.

In addition, the team may seek assistance on specific issues from Department staff who have expertise and/or experience with specific issues that may need to be addressed in the Work Plan.

The required Work Plan was submitted to DSOD on September 1, 2017 (attached). We expect that DSOD may request modifications to the submitted Work Plan and will respond to those requests as they occur. Once the Work Plan is approved, a more detailed scope, schedule and budget will be developed to move the project forward.

As part of the development of the Work Plan the Department of Public Works, together with outside consultant assistance, has conducted a preliminary field assessment of the spillway. We noted no significant issues of concern relative to the spillway’s ability to safely pass a flood event. The concrete spillway, basin, and discharge chute appears in good condition. Recent inspections of the subdrain system verified that it is in good functional condition. We noted no erosion surrounding the spillway structure and verified that all items identified during the annual inspections have been addressed.

Water Code Amendments

Effective July 1, 2017, the Division of Safety of Dams (DSOD) updated the hazard potential classifications for all State jurisdictional dams in accordance with newly enacted state law in Sections

6160 and 6161 of the California Water Code. This classification is being used, in part, to prioritize the development of inundation maps and emergency action plans.

The classifications are based solely on downstream hazard potential, not the actual condition of the dam or its major appurtenances. DSOD considered the number of persons within the inundation area, expected flood wave characteristics, and warning times to evaluate the potential for loss of human life. The downstream land usage, impacted infrastructure, incremental flood risk, and environmental impacts were all considered for the economic, environmental, and lifeline losses.

As shown below, DSOD’s hazard potential classifications are based on Federal guidelines published by the Federal Emergency Management Agency (FEMA). FEMA recommends a three-step rating system that defines low, significant, and high-hazard potential classifications, which are determined from the potential for loss of life, economic loss, and environmental damage resulting from a hypothetical dam failure. DSOD further subdivides FEMA’s “High” classification into an “Extremely High” classification to identify dams upstream of highly populated areas or extensive development and dams with short evacuation warning times. Whenever the population at risk within the inundation area is 1,000 persons or more, the dam is generally assigned an “Extremely High” classification. Consequently, the Hazard Classification for Lopez Dam has been changed from “High” to “Extremely High”.

Effective July 1, 2017		
Criteria for DSOD’s Downstream Hazard Potential Classification		
Downstream Hazard Potential Classification	Loss of Human Life	Economic, Environmental, and Lifeline Losses
Low*	None expected	Low and principally limited to dam owner’s property
Significant*	None expected	Yes
High*	Probable (One or more expected)	Yes (but not necessary for this classification)
Extremely High	Considerable	Yes – major impacts to critical infrastructure or property
*Reference FEMA P-946, July 2013, Federal Guidelines for Inundation Mapping of Flood Risks Associated with Dam Incidents and Failures		

The Water Code Amendments also required that Inundation Maps and EAPs be updated every ten years. The Lopez Inundation Map, although accurate and well-done, was last updated in 1999. Also, in lieu of an EAP the County uses the Countywide Dam and Levee Failure Evacuation Plan (updated 2016) as the emergency plan for Lopez. Although the Plan contains information specific to Lopez, a separate EAP may need to be prepared to fully respond to the Water Code amendments. In addition, and for the first time, the State has issued a separate requirement for an Inundation Map and EAP for the Lopez Terminal Reservoir and Dam. Staff is working to fully understand the State’s requirements for the Terminal Reservoir as the facility does not appear to meet size requirements for inclusion in the updated requirements.

Financial Implications

Costs associated with production of the Work Plan are not expected to exceed \$25,000. It should be noted that Zone 3's District Funded Reserves contain approximately \$300,000 designated to fund "public safety related to water quality and quantity" efforts. The funding approach to the Work Plan was reviewed and confirmed with the Technical Advisory Committee at their regular meeting on July 6.

Costs associated with the implementation of the Work Plan are dependent on DSOD's final approval of the effort. Once those costs are known staff will work with the Technical Advisory Committee to develop a funding approach for review by your committee. Costs associated with updating the Inundation Map and EAP should fall within existing operational budgets for the Lopez project.

Next Steps

The project team will continue to coordinate with DSOD to finalize the Work Plan and will work with the Technical Advisory Committee on the details of scope and cost and then report back to your Committee as the process moves forward.

Attachments:

- DSOD June 6, 2017 Spillway Letter

- DSOD July 14, 2017 Hazard Classification Letter

- DSOD July 27, 2017 Spillway Re-Evaluation Program Letter w/list of dams

- September 1, 2017 Lopez Spillway Work Plan

DEPARTMENT OF WATER RESOURCES

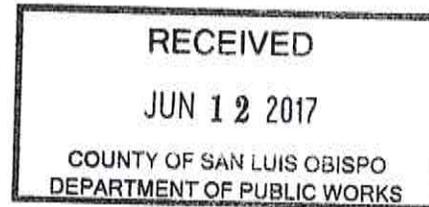
1416 NINTH STREET, P.O. BOX 942836
SACRAMENTO, CA 94236-0001
(916) 653-5791

CF 210,129.01



JUN - 6 2017

Mr. Dean Benedix, Manager
Utilities Division
San Luis Obispo County Flood Control and Water Conservation District
County Government Center Room 207
San Luis Obispo, California 93408



Lopez Dam, No. 1055
San Luis Obispo County

Dear Mr. Benedix:

As a result of the recent major incidents at Oroville Dam, which led to significant damage and erosion of the Service and Emergency Spillways, Governor Brown issued a plan to bolster the State's dam safety program. To strengthen the State's inspection program, the Governor has ordered detailed evaluations of dam appurtenant structures, such as spillways. This new review is being expedited for dams that have large spillways and structures similar to Oroville Dam. Based on this directive, the Division of Safety of Dams is immediately conducting detailed re-evaluations of large spillways at high-hazard dams.

We completed a reconnaissance-level assessment of the spillway at Lopez Dam and have noted that the structure may have potential geologic, structural, or performance issues that could jeopardize its ability to safely pass a flood event. Therefore, we are requesting that you perform a comprehensive condition assessment of the spillway as soon as possible. This spillway may also require a site investigation to provide supporting information for completing this assessment.

Please submit a work plan by September 1, 2017, for our review and approval. The scope of the detailed condition assessment of the spillway should include an evaluation of the concrete lining, the existing drainage system, and the potential for slab undermining and hydraulic jacking. The scope of the site investigation should focus on identifying potential geologic hazards associated with the spillway, including characterization of the foundation materials underlying and adjacent to the spillway structure and their susceptibility to erosion and instability.

My staff is available to discuss with you ways to expedite development of the required assessment. The site investigation and condition assessment report must be completed expeditiously. Additionally, any known damage to the spillways must be repaired before the next flood season.

Mr. Dean Benedix

JUN - 6 2017

Page 2

If you have any questions or need additional information, please contact Design Engineer Dino Bernardi at (916) 227-4339 or Project Engineer Daniel Meyersohn at (916) 227-4624.

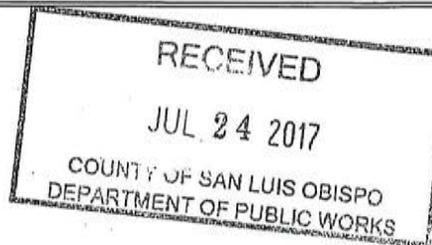
Sincerely,

A handwritten signature in black ink that reads "Michael Waggoner FN". The signature is written in a cursive style.

Sharon K. Tapia, Chief
Division of Safety of Dams

DEPARTMENT OF WATER RESOURCES

1416 NINTH STREET, P.O. BOX 942836
SACRAMENTO, CA 94236-0001
(916) 653-5791



July 14, 2017

Mr. Dean Benedix, Manager
Utilities Division
San Luis Obispo County Flood Control and Water Conservation District
County Government Center Room 207
San Luis Obispo, California 93408

Lopez Dam, No. 1055.000
San Luis Obispo County

The Division of Safety of Dams (Division) has updated the hazard classification for all dams under State jurisdiction with respect to dam safety. This classification is based solely on downstream hazard considerations, not the actual condition of the dam or its critical appurtenant structures. We have determined that the dam listed above has an "extremely high" hazard classification. Dams in this category have the potential to cause considerable loss of life and major impacts to downstream property should they fail or undergo an uncontrolled release from the dam or major water impounding barrier.

Newly enacted state law that became effective July 1, 2017, requires dam owners to prepare an emergency action plan (EAP) for their dams and critical appurtenant structures under certain conditions and in specific time limits (Water Code Sections 6160 and 6161). For dams meeting the "extremely high" hazard classification, the EAP must be completed and submitted for the subject dam by **January 1, 2018**. Prior to this date, as required under the new law, an inundation map must be submitted for review and approval by the Division.

Although this Division will be responsible for reviewing and approving the inundation maps, the California Office of Emergency Services (Cal OES) will oversee and approve EAPs in accordance with Government Code Section 8589.5. More information regarding EAPs and the legal responsibilities of dam owners is available at the following websites: www.water.ca.gov/damsafety and www.caloes.ca.gov. Additionally, the full text of the new law (SB 92, Committee on Budget and Fiscal Review, Statutes of 2017) can be found here: www.leginfo.legislature.ca.gov.

If there was an existing EAP as of March 1, 2017, the inundation map contained in the plan must still be submitted for our review and approval in accordance with Section 6161.(a)(4) of the Water Code. Once we determine the inundation map is sufficient, the EAP must be finalized and submitted to Cal OES and our office in accordance with Section 6161.(a)(3).

In accordance with the Federal Emergency Management Agency's guidelines, we consider EAPs a critical component of a responsible dam safety program. Therefore, we advise you to work closely with your local emergency management agency (EMA) and Cal OES and to coordinate your activities with them in order to facilitate an effective EAP development process. As part of our efforts to assist in these matters, local EMAs are being advised of these new requirements.

We will notify you if any changes occur that could affect these requirements. We look forward to working with you and appreciate your cooperation.

If you have any questions or need additional information, please contact Area Engineer William Vogler at (916) 227-4625 or Regional Engineer Andrew Mangney at (916) 227-4631. Questions concerning EAPs should be directed to Cal OES at eap@caloes.ca.gov.

Sincerely,

A handwritten signature in black ink that reads "Sharon K. Tapia". The signature is written in a cursive style with a large initial 'S'.

Sharon K. Tapia, Chief
Division of Safety of Dams

Certified Mail

State of California
Natural Resources Agency
Department of Water Resources
Division of Safety of Dams

Spillway Re-Evaluation Program
July 27, 2017

The Division of Safety of Dams (DSOD) was nationally recognized for its dam safety program by a peer review conducted in May 2016 by the Association of State Dam Safety Officials. However, as a result of the major incidents at Oroville Dam, which led to significant damage and erosion of the Service and Emergency Spillways, Governor Brown issued a plan to bolster California's Dam Safety Program. To strengthen the State's inspection program, the Governor has ordered comprehensive re-evaluations of dam appurtenances, such as spillways.

Within its inventory of approximately 1,250 dams, DSOD immediately reviewed large spillways of over 100 dams that were identified based on the age of the spillway, the height and storage capacity of the dam, and the hazard potential downstream of the reservoir. DSOD conducted a reconnaissance-level review that considered the spillways' design features and construction methods, geologic conditions, and maintenance records. This screening resulted in DSOD notifying owners of 93 dams (see attached) that a comprehensive assessment of their spillway(s) is required. These assessments may require acquiring additional information to adequately evaluate the spillways' ability to perform satisfactorily during a flood event. It will not be known which spillways, if any, will need repairs until the comprehensive assessments are completed and reviewed by DSOD. Dam owners of these spillways have been directed to perform any needed maintenance repairs prior to the next flood season. DSOD has already received immediate responses from many dam owners in compliance with the notice.

Similar to most dams and infrastructure in general across the nation, California's dams are aging with the average age being about 70 years old. An integral component of DSOD's Dam Safety Program continues to be its re-evaluation of dams and appurtenant structures that pose the highest risk to the public living downstream of these structures. Numerous dams and appurtenant structures have been remediated as a result of these efforts, and given the Governor's directive to bolster dam safety, DSOD is committed to developing a more robust re-evaluation program to ensure the safety of dams in California for the protection of life and property.

State of California
Natural Resources Agency
DEPARTMENT OF WATER RESOURCES
DIVISION OF SAFETY OF DAMS

SPILLWAY RE-EVALUATION PROGRAM

July 27, 2017

Dam Number	Dam Name	Owner
1.021	Rector Creek Dam	California Department of Veteran Affairs
1.050	Antelope Dam	California Department of Water Resources
1.058	Castaic Dam	California Department of Water Resources
1.063	Cedar Springs Dam	California Department of Water Resources
1.056	Del Valle Dam	California Department of Water Resources
1.043	Frenchman Dam	California Department of Water Resources
1.052	Grizzly Valley Dam	California Department of Water Resources
1.066	Pyramid Dam	California Department of Water Resources
642.004	Los Padres Dam	California American Water Company
10.010	San Andreas Dam	City and County of San Francisco
10.021	James Turner Dam	City and County of San Francisco
6.034	Long Valley Dam	City of Los Angeles Department of Water and Power
7.003	Conn Creek Dam	City of Napa
1012.000	Villa Park Dam	City of Orange
16.003	Bell Canyon Dam	City of Saint Helena
8.007	El Capitan Dam	City of San Diego
8.003	Lake Hodges Dam	City of San Diego
8.005	Morena Dam	City of San Diego
8.004	Savage (Lower Otay) Dam	City of San Diego
11.000	Gibraltar Dam	City of Santa Barbara
23.002	Newell Dam	City of Santa Cruz
14.000	Lake Curry Dam	City of Vallejo
31.015	Briones Dam	East Bay Municipal Utility District
31.016	Camanche Dam	East Bay Municipal Utility District
31.005	Chabot Dam	East Bay Municipal Utility District
31.031	New Upper San Leandro Dam	East Bay Municipal Utility District
31.006	San Pablo Dam	East Bay Municipal Utility District
53.014	Sly Park Dam	El Dorado Irrigation District
2045.000	Sugar Pine Dam	Foresthill Public Utility District
460.003	Mark Edson Dam	Georgetown Divide Public Utility District
1013.000	Robert W. Matthews Dam	Humboldt Bay Municipal Water District
817.000	Lake Hemet Dam	Lake Hemet Municipal Water District
32.005	Cogswell Dam	Los Angeles Department of Public Works
32.009	Puddingstone Dam	Los Angeles Department of Public Works
33.007	Peters Dam	Marin Municipal Water District
33.008	Seeger Dam	Marin Municipal Water District
33.009	Soulajule Dam	Marin Municipal Water District
58.002	New Exchequer Dam	Merced Irrigation District
58.004	McSwain Dam	Merced Irrigation District
35.012	Robert A Skinner Dam	Metropolitan Water District of Southern California
35.000	Mathews Dam	Metropolitan Water District of Southern California
1008.000	Nacimiento Dam	Monterey County Water Resources Agency
1008.002	San Antonio Dam	Monterey County Water Resources Agency
61.020	Jackson Meadows Dam	Nevada Irrigation District
61.021	Rollins Dam	Nevada Irrigation District
61.018	Scotts Flat Dam	Nevada Irrigation District
77.000	North Fork Dam	Pacheco Pass Water District

Dam Number	Dam Name	Owner
93.000	Butt Valley Dam	Pacific Gas and Electric Company
97.119	Courtright Dam	Pacific Gas and Electric Company
95.003	Crane Valley Dam	Pacific Gas and Electric Company
97.124	Iron Canyon Dam	Pacific Gas and Electric Company
93.003	Lake Almanor Dam	Pacific Gas and Electric Company
97.028	Lake Fordyce Dam	Pacific Gas and Electric Company
97.029	Lake Spaulding Dam	Pacific Gas and Electric Company
97.074	Main Strawberry Dam	Pacific Gas and Electric Company
97.123	McCloud Dam	Pacific Gas and Electric Company
97.066	Salt Springs Dam	Pacific Gas and Electric Company
97.104	Tiger Creek Regulator Dam	Pacific Gas and Electric Company
97.118	Wishon Dam	Pacific Gas and Electric Company
91.003	Iron Gate Dam	PacifiCorp
73.000	Magalia Dam	Paradise Irrigation District
73.002	Paradise Dam	Paradise Irrigation District
557.000	Big Creek Dam	Pine Mountain Lake Association
1009.000	Ice House Dam	Sacramento Municipal Utility District
1009.003	Union Valley Dam	Sacramento Municipal Utility District
1025.002	Hernandez Dam	San Benito County Water District
9.007	Cherry Valley Dam	San Francisco Public Utilities Commission
9.005	O'Shaughnessy Dam	San Francisco Public Utilities Commission
1055.000	Lopez Dam	San Luis Obispo County Flood Control and Water Conservation District
72.004	Almaden Dam	Santa Clara Valley Water District
72.003	Calero Dam	Santa Clara Valley Water District
72.002	Coyote Dam	Santa Clara Valley Water District
72.011	Elmer J. Chesbro Dam	Santa Clara Valley Water District
72.005	Guadalupe Dam	Santa Clara Valley Water District
72.008	James L. Lenihan Dam	Santa Clara Valley Water District
72.009	Leroy Anderson Dam	Santa Clara Valley Water District
72.007	Stevens Creek Dam	Santa Clara Valley Water District
72.012	Uvas Dam	Santa Clara Valley Water District
75.000	Santiago Creek Dam	Serrano Water District & Irvine Ranch Water District
63.006	Sly Creek Dam	South Feather Water and Power Agency
63.003	Little Grass Valley Dam	South Feather Water and Power Agency
104.009	Florence Lake Dam	Southern California Edison
104.010	Huntington Lake 1 Dam	Southern California Edison
104.018	Shaver Lake Dam	Southern California Edison
104.033	Bishop Creek Intake No. 2 Dam	Southern California Edison
104.023	Vermilion Valley Dam	Southern California Edison
62.004	Beardsley Dam	Tri-Dam Project
62.005	Donnells Dam	Tri-Dam Project
62.006	Tulloch Dam	Tri-Dam Project
68.007	Don Pedro Dam	Turlock Irrigation District
1.040	Whale Rock Dam	Whale Rock Commission
1080.002	Indian Valley Dam	Yolo County Flood Control and Water Conservation District
1034.000	New Bullards Bar Dam	Yuba County Water Agency



COUNTY OF SAN LUIS OBISPO
Department of Public Works
Wade Horton, *Director*

September 1, 2017

Dino Bernardi
CA Department of Water Resources
Division of Safety of Dams
1416 Ninth Street, P.O. Box 942836
Sacramento, CA 94236-0001

Subject: Work Plan for a Comprehensive Spillway Condition Assessment at Lopez Dam,
No. 1055, San Luis Obispo County

Dear Mr. Bernardi,

This letter transmits the Work Plan for a Comprehensive Spillway Condition Assessment at Lopez Dam, No. 1055, San Luis Obispo County, as requested by your letter of June 6, 2017. Please note that the Lopez Water Supply Project, which includes the Lopez Dam and appurtenant facilities, is owned by the San Luis Obispo County Flood Control and Water Conservation District and operated by the County of San Luis Obispo Department of Public Works. Consequently, all efforts associated with the Work Plan will be conducted by the County Department of Public Works

Lopez Dam and spillway were completed in 1968 and underwent rehabilitation repairs and upgrades as part of the Lopez Dam Seismic Strengthening project in 2000 -2003. Therefore, our initial assessment included a review of design and construction documents from the 1960's as well as a review of spillway engineering assessments conducted in 1990 - 1991, and the design and construction documents detailing repairs and underdrain access upgrades implemented in 2001- 2003.

In addition, the Department of Public Works, together with outside consultant assistance, has conducted a preliminary field assessment of the spillway. We noted no significant issues of concern relative to the spillway's ability to safely pass a flood event. The concrete spillway, basin, and discharge chute appears in good condition. Recent inspections of the subdrain system verified that it is in good functional condition. We noted no erosion surrounding the spillway structure and verified that all items identified during the annual inspections have been addressed.

Our project manager for this effort David Spiegel, may be contacted at (805) 788-2111 or DSpiegel@co.slo.ca.us. We look forward to working with your agency to complete the spillway assessment as soon as possible.

County of San Luis Obispo Department of Public Works

County Govt Center, Room 206 | San Luis Obispo, CA 93408 | (P) 805-781-5252 | (F) 805-781-1229

pwd@co.slo.ca.us | slocounty.ca.gov

Sincerely,



MARK HUTCHINSON
Deputy Director

Enclosures

cc: Wade Horton, Director of Public Works
Dean Benedix, Utilities Division Manager
John Hollenbeck, Hollenbeck Consulting

File: CF 210.129.01

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WORK PLAN FOR COMPREHENSIVE SPILLWAY CONDITION ASSESSMENT

for the

**San Luis Obispo County Flood Control and Water Conservation District
Lopez Water Supply Project
Lopez Dam, State of California Dam No. 1055**



Revision 02, 1 SEP 2017
WORK PLAN FOR COMPREHENSIVE SPILLWAY CONDITION ASSESSMENT

for the

San Luis Obispo County Flood Control and Water Conservation District
Lopez Water Supply Project
Lopez Dam, State of California Dam No. 1055

Introduction and Background

The San Luis Obispo County Flood Control and Water Conservation District (District) owns and operates the Lopez Water Supply Project, which consists of the Lopez Dam, raw water conveyance to the Terminal Reservoir, the Lopez Water Treatment Plant adjacent to the Terminal Reservoir, and the Lopez Treated Water Transmission Pipeline which delivers potable water to the cities of Arroyo Grande, Grover Beach, and Pismo Beach, and the communities of Oceano and Avila, all located in southern San Luis Obispo County.

The Lopez Dam and appurtenant facilities (spillway and outlet works) are located about seven miles east of the City of Arroyo Grande. The original dam project was completed in late 1968, and a seismic strengthening project was constructed in 2001, which included modification repairs to the spillway structure. Several studies, analyses, and reports that involve the spillway were prepared by the District's consultants throughout the 1990's. **Attachment A** presents a list of reference documents that include information about the Lopez Dam spillway.

The dam is under the jurisdiction of the State of California Department of Water Resources, the Division of Safety of Dams (DSOD), and is referenced as Dam No. 1055. The dam is considered by DSOD to be in the large high hazard classification. The following is a summary of the dam and reservoir:

▪ Dam Description	Zoned earthfill with central core
▪ Dam Maximum Height Above Original Streambed	166-feet
▪ Dam Crest Width	180-feet
▪ Dam Crest Length	1,120-feet
▪ Dam Crest Elevation (minimum)	536-feet
▪ Reservoir Storage Capacity	49,388 acre-feet
▪ Reservoir Normal Maximum Elevation	520-feet
▪ Outlet Works Description	One (1) 42-inch Low Level Outlet Two (2) 12-inch River Release Outlets
▪ Spillway Type	Uncontrolled Fixed Crest Ogee Weir, L-shaped side-channel concrete gravity structure
▪ Spillway Crest Elevation	520-feet
▪ Spillway Crest Length	254-feet
▪ Spillway Discharge Chute Description	60-feet wide rectangular concrete, 804-feet long
▪ Watershed Area above the Dam	70 square miles
▪ Probable Maximum Flood (PMF) Peak Inflow Developed Using Hydrometeorological Report (HMR) No. 36	76,913 cubic feet per second (cfs)
▪ Routed PMF Peak Outflow	44,369 cfs
▪ PMF Peak Reservoir Elevation	533.3-feet
▪ PMF Minimum Freeboard	2.7-feet

Proposed Work Plan

The District is submitting the following work plan to DSOD for review and approval. The work plan should be considered a dynamic document and subject to modification throughout the assessment period and process. Modifications likely will be required as the assessment progresses. The proposed work plan is based on the DSOD 6 JUN 2017 letter, and general guidelines suggested by DSOD.

Work Plan Steps	Description	Estimated Schedule Duration
Step 1	Procurement of Professional Engineering Services (Consultant) to Conduct Detailed Assessment of the Spillway <ul style="list-style-type: none"> - Prepare Request for Proposal (1 month) - Advertise Request for Proposal (2 months) - Receive and Evaluation Proposals (1 month) - Board of Supervisors Award and Execute Agreement for Professional Services (2 months) 	6 months
Step 2	Consultant Perform Assessment of Spillway. Anticipated Tasks include, but are not necessarily limited to: Task 1 – Document Review, Desktop Design Assessment of Spillway, Staff Interviews, Initial Site Assessment, and Draft of Detailed Work Plan Task 2 – Field Investigation of Structure. Subtasks likely to including: crack mapping and assessment, non-destructive testing of structural features, field measurements of points of interest, survey of movement monuments, and inspection of the under drain systems. Evaluate the effectiveness of the circa 2001 modifications, and comparison of recommendations in 1990’s studies relative to the 2001 modifications. Task 3 – Desktop structural review and computations, including a structural analysis using modern loading and analysis techniques. This design exercise is intended to be used as a comparison of today’s design recommendations with the as-constructed features of the spillway. Task 4 – Desktop assessment of the substructure drainage system and construction joint details. Task 5 – Desktop assessment of the geologic conditions beneath and alongside the spillway structure. The geology has been extensively documented in several existing reports. Task 6 – Desktop assessment of the PMF routing into the spillway and through the spillway chute. Assessment to evaluate the freeboard of the chute walls. Task 8 – Prepare deliverables for District review and comment. Task 9 – Prepare deliverables for DSOD review and comment. Attend and support discussions at DSOD meetings.	10 months
Step 3 (if needed)	Field exploration plan developed by consultant: Task 1 – Develop plan Task 2 – Review/comment by Lopez Zone 3 contractors Task 3 – Revise plan and submit to DSOD for review/comment/authorization Task 4 – Implement plan. Consultant issue draft report for District review Task 5 – Draft final plan issued by District to DSOD for review /comment Task 6 – Finalize plan	TBD
Step 4 (if needed)	Prepare construction documents for rehabilitations directed by DSOD and/or by the District’s Board of Supervisors	TBD

ATTACHMENT A

San Luis Obispo County Flood Control and Water Conservation District

Reference Documents for the DSOD Request to Evaluate the Lopez Dam Spillway

Item No.	Item Date	Item Titled	Prepared By ¹
1.	APR 2005	Lopez Dam Seismic Strengthening Project, Record Drawings	URS
2.	8 DEC 2000	Lopez Dam Seismic Remediation Project, Conformed Specifications	URS
3.	JUN 2000	Lopez Dam Seismic Strengthening Project, Final Design Report	URS Greiner Woodward Clyde
4.	30 JUN 2000	Lopez Dam Seismic Strengthening Project, Geotechnical Data Report	URS Greiner Woodward Clyde
5.	21 SEP 1999	Lopez Dam Seismic Strengthening Project, Geotechnical Data Report	URS Greiner Woodward Clyde
6.	7 AUG 1998	Lopez Dam Seismic Remediation Project, Alternatives Analyses Engineering Report	Woodward-Clyde
7.	FEB 1992	Lopez Dam No. 1055, Monitoring Program	Woodward-Clyde Consultants
8.	DEC 1991	Lopez Dam No. 1055, Stability Analysis of the Right Abutment Slope Above the Spillway	Woodward-Clyde Consultants
9.	23 SEP 1991	The Construction of a Cutoff Wall at Lopez Dam Spillway, Contract No. P230234	Woodward-Clyde Consultants and the County of San Luis Obispo, Engineering Department, Design Division
10.	JUN 1991	Lopez Dam No. 1055, Spillway Repair Interim Report	Woodward-Clyde Consultants
11.	OCT 1990	Lopez Dam No. 1055, Spillway and Left Abutment Seepage Total Dissolved Solids Evaluation	Woodward-Clyde Consultants
12.	MAY 1990	Spillway Evaluation	Woodward-Clyde Consultants

¹ The company of Woodward Clyde Consultants is the firm principally responsible for the design of Lopez Dam. When the dam was designed in the late 1960's, the firm of Koebig & Koebig were the lead engineer for all of the Lopez Water Supply Project, and Woodward, Clyde, Sherard & Associates was the subconsulting engineer responsible for the dam's design. Over time, Woodward, Clyde, Sherard & Associates became known as Woodward-Clyde Consultants through the early to mid 1990's, and later simply known as Woodward-Clyde. In the late 1990's, Woodward-Clyde was purchased by URS, and the firm was known as URS Greiner Woodward-Clyde, and later in the mid-2000's, the previous firm names of Greiner and Woodward-Clyde were dropped, and the company only used the name URS Corporation. The URS Corporation was later acquired in a purchase by AECOM in October 2014. As of the creation of this reference document manifest, the engineering company which has historical knowledge of the Lopez Dam project is the AECOM company.

Item No.	Item Date	Item Titled	Prepared By¹
13.	FEB 1967	Lopez Water Supply Project, Dam and Appurtenant Facilities Volume I – Conformed Specifications Volume II – Record Drawings Volume III – Geological Data	Koebig & Koebig (designer of record) Woodward, Clyde, Sherard & Associates (subconsultant)
14.	Circa 1966	Excerpts from design related document (found in project files)	Woodward, Clyde, Sherard & Associates
15.	12 DEC 1966	Lopez Water Supply, Structural Calculations	Koebig and Koebig



TO: Zone 3 Advisory Committee
FROM: David Spiegel, PE
DATE: September 21, 2017
SUBJECT: Zone 3 Projects Update

Project Updates:

- Turnout SCADA Project – Due to Complete Oct.
 - Data Screen complete, Log In process in development
- Parking & Roadway Resurfacing – Due to Complete Sept. 13th.
 - Construction to begin in September 25, 2017 at Lopez WTP.
- HCL Tank for pH Suppression – Due to be complete Nov 2017
 - Rent HCL tank for pH suppression
- Membrane Strainer Replacement Project – Complete
- 6th Rack Addition – Complete
- Program Logic Control (PLC) Replacement & Programming – Complete
 - PLC's have been replaced and programming updated.
- Equipment Audit & Replacement - Ongoing
 - Work proposed to continue in 2017/18
- Spillway Assessment – Due to be completed TBD
 - Work Plan Submitted to DSOD
- Lopez Dam and Terminal Dam Hazard Classification – Due to be completed TBD
 - Inundation Map RFQ's are being prepared
 - Emergency Action Plan is in preparation

Upcoming Projects (Requested FY 2017/18):

- Lopez WTP Safety Upgrades
- Pressure Transducers
- Structural Assessment of Terminal Reservoir
- Cathodic Protection Survey
- Replace Membrane Feed Pumps (1 per year)
- Fault Zone Repair – Dam Left Abutment
- Repair Domestic & Fire Tanks
- Equipment Storage
- Replace Ammonia Analyzer

The 2018/2019 proposed project list will be presented to the Zone 3 TAC on October 5th.

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