



ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT, ZONE 7

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ORIGINATING SECTION: ENGINEERING
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AGENDA DATE: October 21, 2015

SUBJECT: Drought Update

ITEM NO. 17e

SUMMARY:

- Lake Del Valle's water level has been dropping due to seasonal releases in preparation for the rainy season and evaporation. As of September 30, the lake level in Del Valle is around 692 feet above MSL (32, 600 AF).
- Raw water TOC concentrations are observed to be around 3.4 to 3.8 mg/L at the treatment plants in September. The drop in TOC from approximately 4.5 mg/L in August could be the result of this month's releases from the Central Valley Project (federal CVP) reservoir, Lake Shasta.
- Filter performance testing with a blend of coagulants continues at PPWTP in an effort to find a more optimum blend for water treatment with reduced sludge production. In September, with the slightly better water quality, Zone 7 Operations has been using a coagulant blend of 20 to 25 mg/L aluminum chlorohydrate (ACH) and 25 to 30 mg/L ferric chloride. This blend of coagulants appears to be performing reasonably well in terms of plant filter run times and treated water quality.
- Following is the status of the ongoing emergency projects approved by the board:
 1. Busch Valley Well No. 1, Phase 1 – Zone 7 entered into a Progressive Design-Build (D/B) contract with Conco West, Inc. (with Stantec as sub-consultant). Along with the Basis of Design, Zone 7 is proceeding with Phase 1 work to provide a connection for the new well to the Zone 7 transmission system. In the near term, in case of limited to no surface water, this connection would give Zone 7 the option of using a temporary booster pump station to pump well water from the west side to the east side of the Zone 7 transmission system. This will be the final work to be undertaken before the remainder of the Busch Valley Well project is deferred. The Zone 7 Board approved up to \$2.15 million which includes Zone 7 staff time, PG&E service, right-of-way engineering, and contingencies for the remaining work.

As of October 1, the only major Phase 1 work remaining is the installation of the electrical service. Conco West was able to get the switchgear and have it installed by their subcontractor in late September. Coordination with PG&E for installation

of the transformer and ancillary work to connect to the switchgear would take place in the October-November period. Conco West is currently working on punchlist work for the pipeline tie-in and aesthetics for the site. Due to the electrical work and PG&E coordination, completion of this project is still anticipated in December 2015.

2. Stoneridge Cross Valley Isolation Valve – Stoneridge Well is Zone 7's highest producing well. By itself the well produces water that is just below the current hexavalent chromium (Cr6) drinking water standard or maximum contaminant level (MCL). By blending with surface water, water at the turnouts can be easily managed well below the Cr6 MCL. This new isolation valve enables Zone 7 to direct Stoneridge Well water in a westerly direction in the event the well water exceeds the hexavalent chromium and there is limited surface water. During times of limited to no surface water, Stoneridge Well water can stay well below the MCL by blending with other wells and water from the Mocho Groundwater Demineralization Plant on the west side of the Zone 7 transmission system. The Zone 7 Board approved a project budget of up to \$566,000 which includes Zone 7 staff time, installation of the valve, vault, electrical and control systems.

Zone 7 entered into a Progressive Design-Build contract with Conco West, Inc. (with Stantec as sub-consultant) for a not-to-exceed amount of \$452,000. Construction to install the new valve and valve vault is complete. As of October 1, Conco West is working on punch list items that include painting of the metal piping components, vault ventilation, corrosion protection issues, and documentation (e.g. O&M Manuals, record drawings, etc). With change orders, the total Conco West effort is expected to be \$475,000-500,000.

During the month of September, both Treatment Plants were online and groundwater use made up only 2% of supply. Semitropic Water Storage District continued to recover water for Zone 7 in September while Cawelo continues on hold until further notice. Zone 7 made releases on Arroyo Valle to recharge the groundwater basin for about two-thirds of the month. The Mocho Groundwater Demineralization Plant (MGDP) operation was limited to minimum reverse osmosis (RO) feed to maintain the membranes. Minimal MGDP use reduces discharge of the concentrate which minimizes water loss (waste stream is approximately 15% of the amount of groundwater pumped).

- DWR's pumping filled Lake Del Valle to capacity in April. Zone 7 also had a claim to about 3,000 AF of local runoff minus a portion that is lost to evaporation. Local water stored in the lake has been used and any runoff captured this fall will be used in 2016.
- Zone 7 continues to store any excess surface water supply (i.e., surface water from the State Water Project that could not be used directly at this time) in San Luis Reservoir. Estimated storage at the end of 2015 is 12,000 AF.

BACKGROUND:

Calendar Year 2013 was the driest year in recorded state history. 2013 also set a new record as the driest year measured in the Livermore-Amador Valley, with total precipitation of only 4.5 inches out of the average yearly rainfall of 14.47-inches (only 31% of average recorded at Livermore Station 15e). In early January 2014, the snowpack's statewide water content was estimated at about 20% of the recorded average for this time of year. On January 17, 2014, Governor Jerry Brown declared a State of Emergency in California due to the current drought conditions and asked all citizens to cut back water use by 20%. On January 29, 2014 at a Special Meeting of the Zone 7 Board, a Local Drought Emergency was declared and a Drought Emergency Response Plan was accepted. In addition, on January 31, 2014, the California Department of Water Resources (DWR) announced they were reducing State Water Project allocations from 5% to zero for the first time in history.

On January 29, 2014, the General Manager was authorized and directed to establish an appropriate level of conservation for the Livermore-Amador Valley, consistent with the governor's proclamation of a drought emergency (20% or greater). The initial conservation level was set at 20%.

On April 16, 2014, the Zone 7 Board received the annual Sustainability Report and authorized the General Manager to implement Stage Two Actions under the 2010 Urban Water Management Plan to achieve 25% demand reductions. On April 25th, Governor Jerry Brown issued a second drought proclamation.

On July 29, 2014, a State Water Resources Control Board (SWRCB) emergency regulation to increase conservation practices for all Californians went into effect. The new conservation regulation targets outdoor urban water use and mandates conservation reporting by retail water agencies.

On August 14, 2014, the California Public Utilities Commission ordered the water companies under its jurisdiction to provide notice to their customers of the July 29th emergency regulation.

While conditions have improved from Calendar Year 2013, the drought still continues. The Fall of 2014 was relatively dry. A wet December 2014 was followed by a record dry January 2015, the driest January in recorded history for the State and Bay Area. Some rain in February and April helped locally.

On April 1, 2015, DWR's manual snow survey found the statewide snowpack with less water content than any April 1st since 1950. The dismal snow survey results were followed by a new Executive Order from the Governor mandating 25% demand reduction across California underscoring the continued severity of the drought.

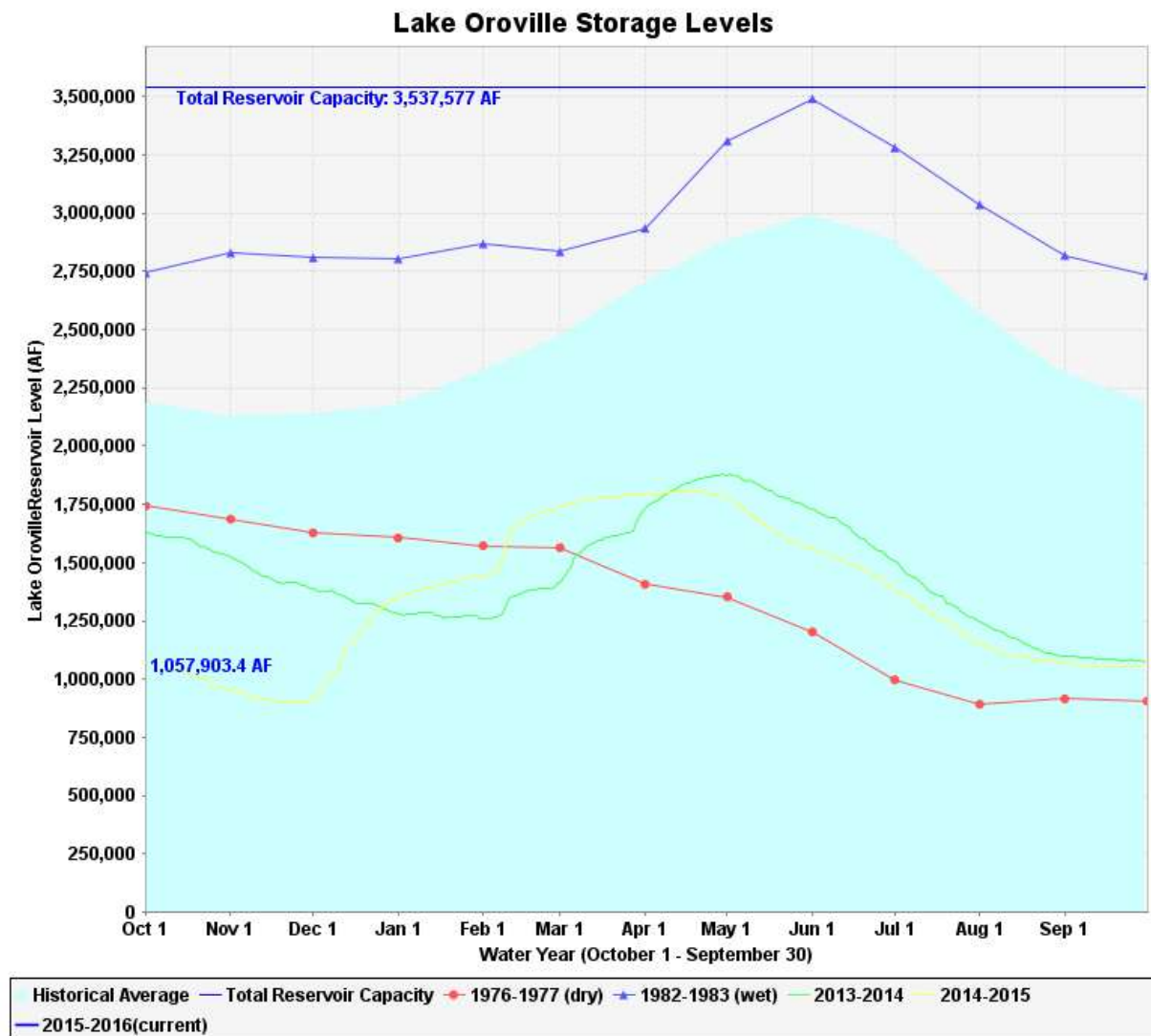
On April 15, 2015, the Zone 7 Board extended the local state of drought emergency, lifting the Stage 2 actions, and shifting to support the new statewide water conservation requirements.

On May 5, 2015, the SWRCB adopted an emergency conservation regulation in accordance with the Governor's latest directive. The provisions of the emergency regulation went into effect on May 15, 2015. This regulation set specific conservation targets for each water retailer.

While Lake Oroville levels continue to be above the 1976-1977 critical dry year conditions (see Oroville graph, below), the storage level is starting out Water Year 2015-2016 around 1,058,000 AF of storage represents 30% of Lake Oroville's total capacity and approximately 46% of the historic average. This storage level is roughly around the same level as this time last year.

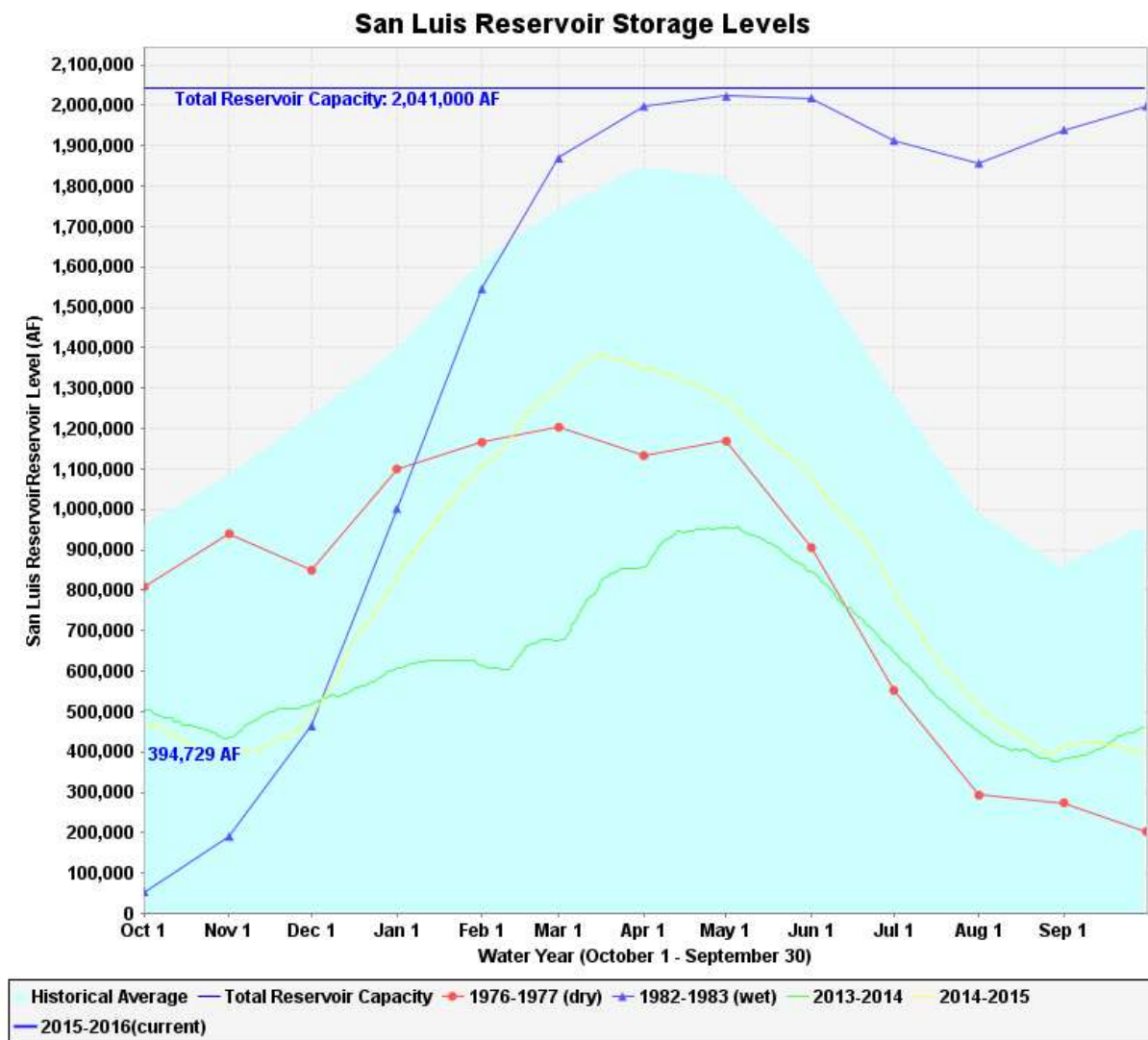
Although levels in Oroville are low, salinity at the pumps is slightly improved due to releases from the Central Valley Project (federal CVP) reservoir, Lake Shasta. Based on the charts below, a wet winter is desperately needed to refill both the federal and state project storage facilities.

Lake Oroville storage levels can be tracked on the DWR data website at <http://cdec.water.ca.gov/cdecapp/resapp/resDetailOrig.action?resid=ORO>



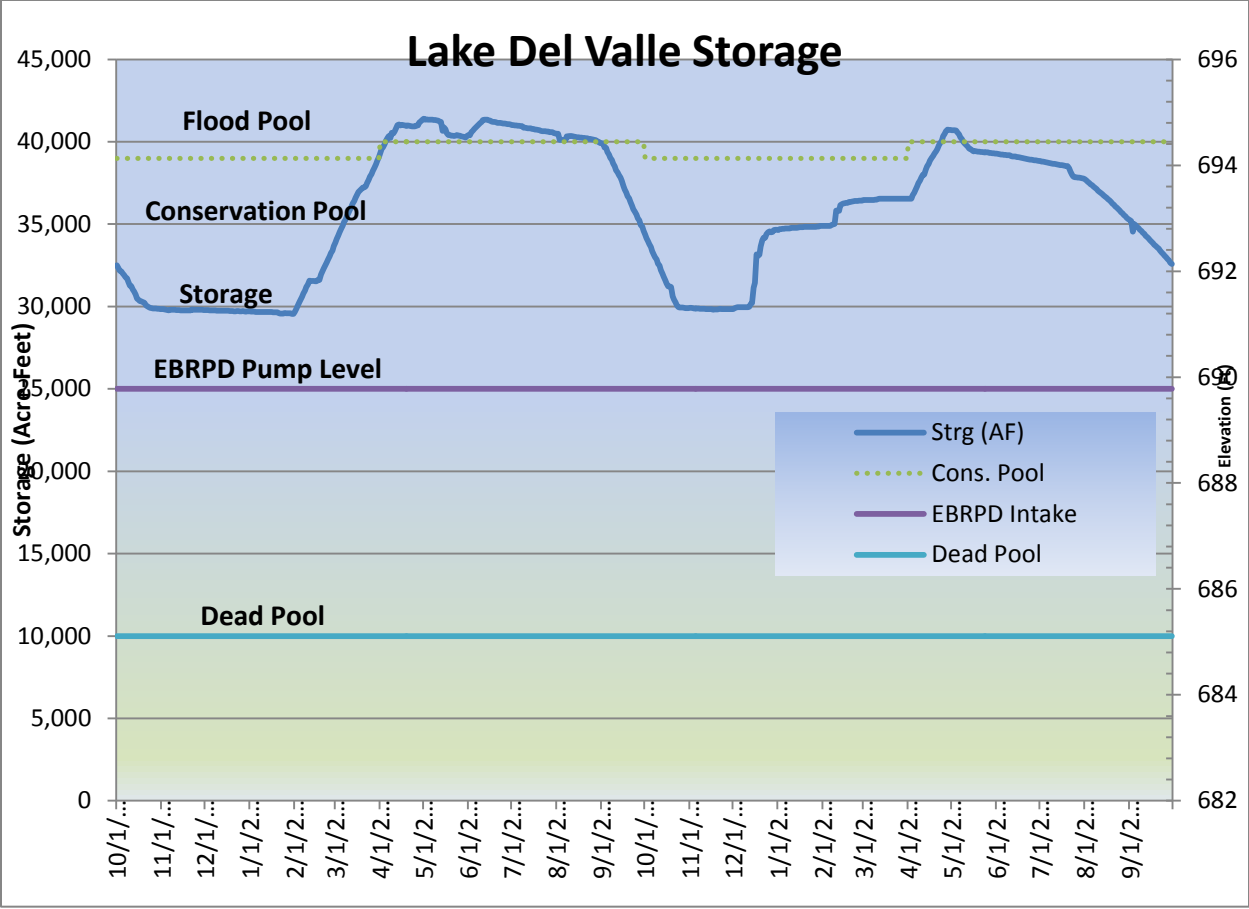
San Luis Reservoir storage levels for Water Year 2014-2015 finished around 395,000 AF which is slightly lower than Water Year 2013-2014. The 395,000 AF of storage represents 19% of San Luis Reservoir's total capacity and approximately 41% of the historic average. Last year, San Luis Reservoir water levels were higher than other reservoirs as water purveyors saved water for carryover.

San Luis Reservoir storage levels can be tracked on the DWR data website at <http://cdec.water.ca.gov/cdecapp/resapp/resDetailOrig.action?resid=SNL>

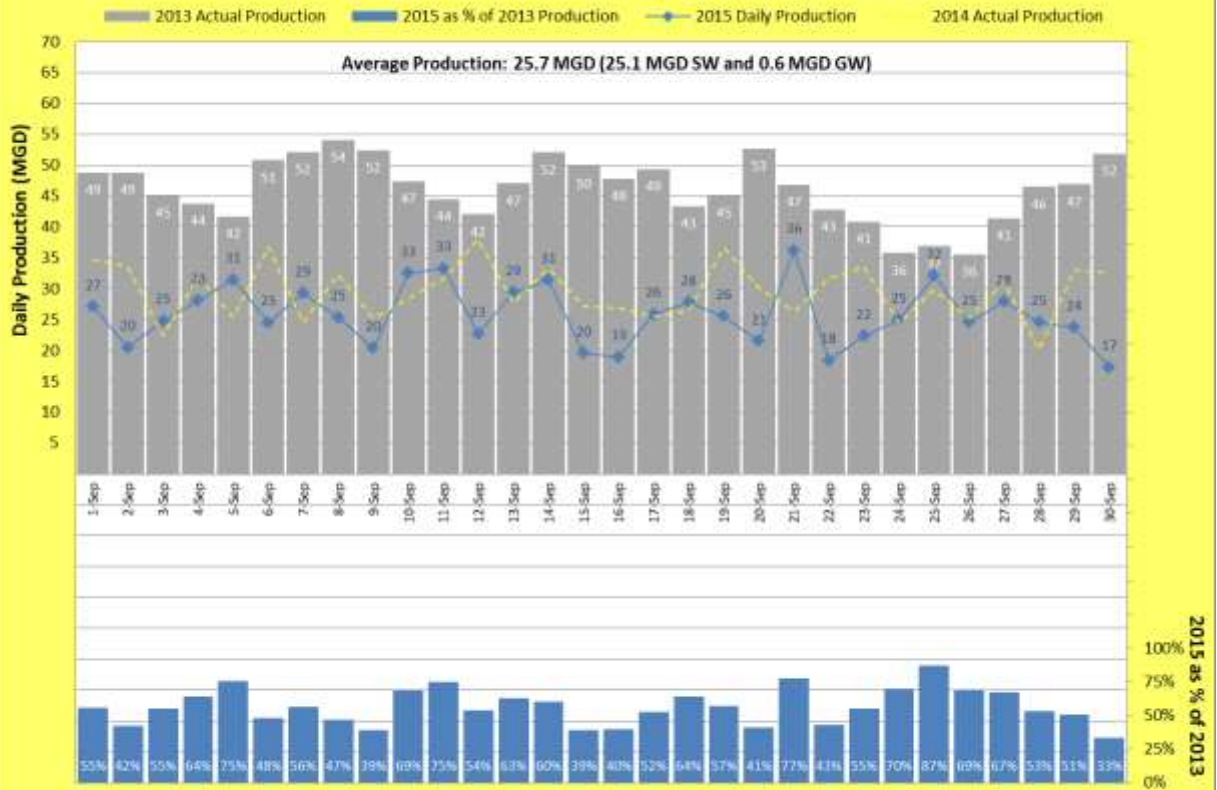


Local demands for treated water in September 2015 slightly decreased from 27 MGD in August to 26 MGD in September, which is significantly lower than the September 2013 demand of 46 MGD. Surface water made up 98% of the water supply in September. The Del Valle Water Treatment Plant and the Patterson Pass Water Treatment Plant together produced an average of 25.1 MGD with wells supplying 0.6 MGD for a total average production of 25.7 MGD.

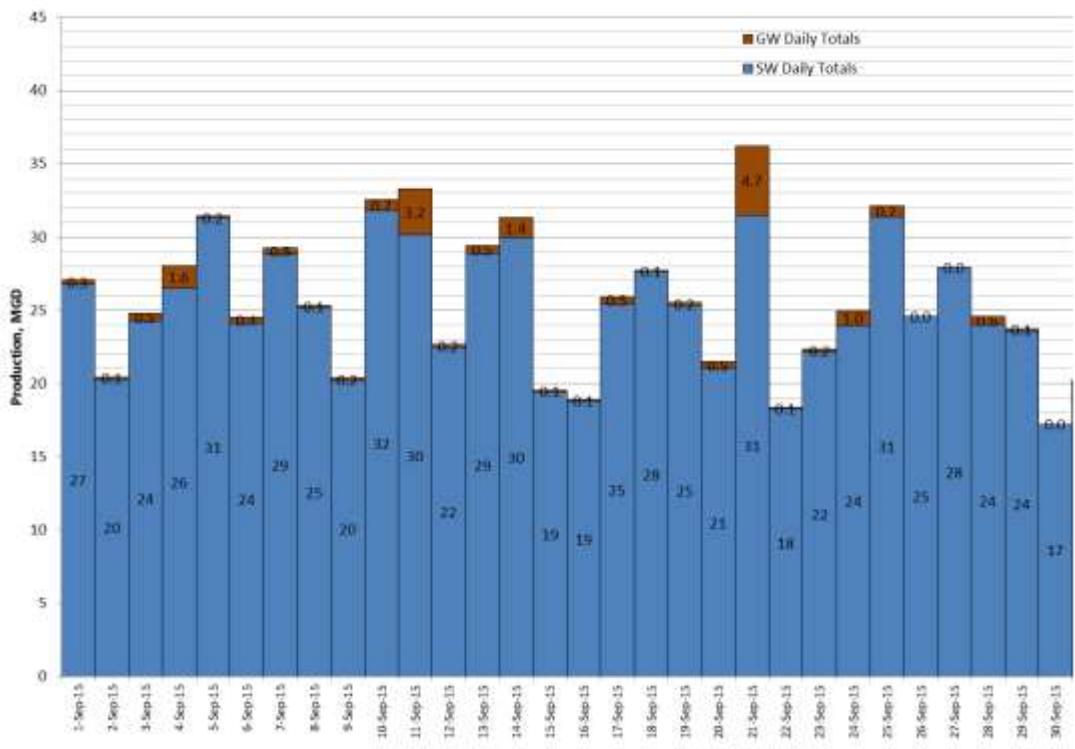
Lake Del Valle storage levels are shown in the graph below. After Labor Day, lake elevations are lowered for flood control purposes and to capture storm water runoff. In the summer months, lake elevations are raised for recreational purposes. The conservation pool (dotted line) designates the amount of water that can be stored for water supply purposes. Lake Del Valle's current water level has been dropping with seasonal releases to the South Bay Aqueduct. On September 30, the lake level in Del Valle was around 692 feet (32,600 AF), accounting for evaporative losses.



Daily Treated Water Production (MGD): September 2015



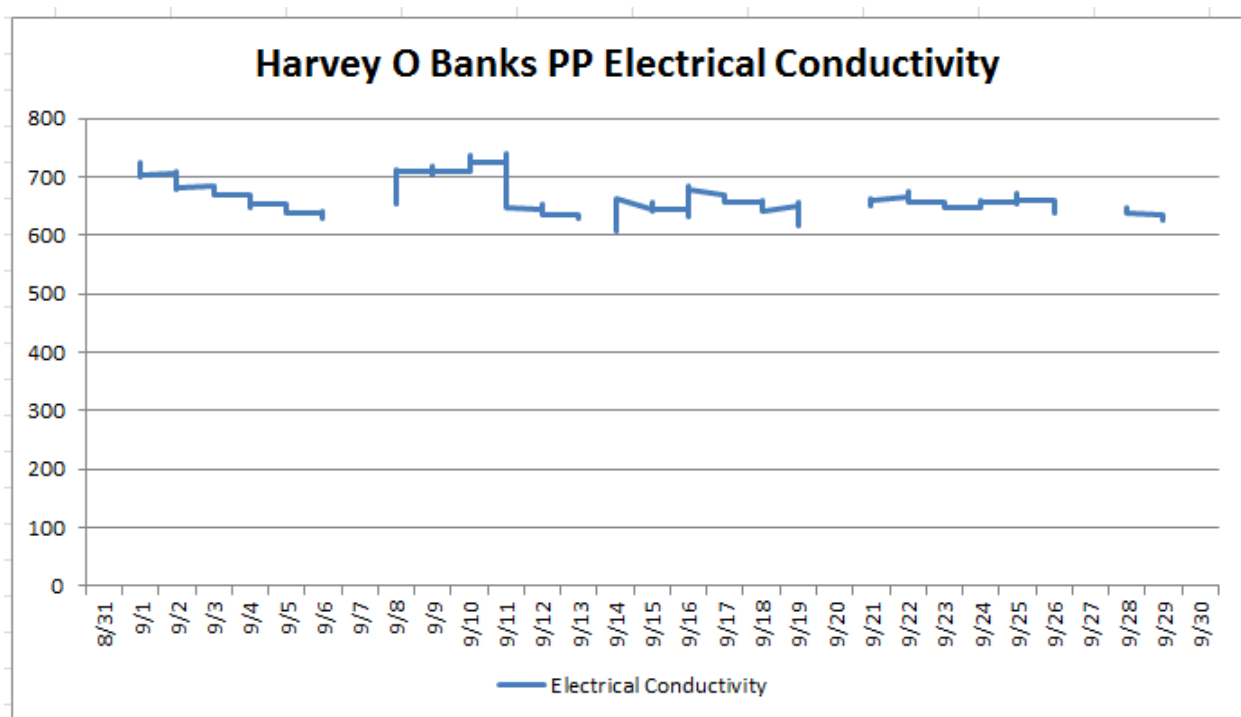
September 2015 Surface Water and Groundwater Production



Semitropic Water Storage District continues recovering water for Zone 7 for 2015 and is planning on returning about 12 TAF by the end of December and an additional 600 AF in January 2016. Cawelo Water District recovery water deliveries are currently on hold since every acre-foot that is recovered by Zone 7 must be eventually replaced with two acre-feet.

Zone 7 continues to bolster regional water supply management tools by exploring various forms of water exchanges. Zone 7 continues to work with Contra Costa Water District on an exchange that would allow storage of up to 2,500 AF in Los Vaqueros Reservoir, located upstream of the Tri-Valley service area, in the fall. The first half of the exchange (storage of Zone 7 water in Los Vaqueros) is currently expected to start in November.

Electrical conductivity ($\mu\text{S}/\text{cm}$) is measured as a surrogate for TDS (TDS is approximately equal to 0.58 times EC):



Based on the above data, in the month of September, raw water at Harvey O. Banks Pumping Plant has total dissolved solids (TDS) ranging around 350 to 430 mg/L.

Total Organic Carbon (TOC) levels have lowered slightly over the month of September. This may be due to water releases from the Central Valley Project (federal CVP) reservoir, Lake Shasta which could be a short term benefit. Ferric chloride dosages have been around 65 mg/l throughout September at DVWTP. Staff continues to monitor TOC and other water quality parameters and explore potential for reducing coagulant dosage.

Filter performance testing with a blend of coagulants continues at PPWTP in an effort to find a more optimum blend for water treatment with reduced sludge production. TTHM levels during

the test are an ongoing challenge and mitigation measures included the addition of powdered activated carbon (PAC) and ferric chloride. Zone 7 Operations has been using a coagulant blend of 25 mg/L aluminum chlorohydrate (ACH) and 20 to 25 mg/L ferric chloride which appears to be performing reasonably well in terms of plant filter run times and treated water quality.