



REVISED

ORIGINATING SECTION: Integrated Planning

CONTACT: Brad Ledesma/Amparo Flores/Carol Mahoney

AGENDA DATE: April 16, 2014

ITEM NO. 7

SUBJECT: 2014 Annual Review of Sustainable Water Supply for Zone 7 Water Agency

SUMMARY:

- Due to unprecedented and extreme drought conditions in 2013 and 2014, Zone 7 received a 0% allocation from the SWP, lost access to a majority of key drought supplies stored in Kern County, and will not likely receive water supply from the Yuba Accord, its BBID contract, or its water right permit on Arroyo del Valle. Long-term average water supply remains unchanged at 55,050 AF.
- Although Zone 7 has 197,600 AF of water supply in storage, only 38,800 AF is available for 2014, including SWP Carryover, groundwater, and a small amount of non-local storage.
- Projected treated and untreated water demands for 2014 (50,300 AF) are 2.6% higher than actual 2013 deliveries (49,092 AF), and water demands are projected to increase by 6% percent between 2014 and 2018. This anticipated loss of SWP calls for a Stage 2 Action under Zone 7's 2010 UWMP.
- Zone 7 can only deliver 77% of expected water demands in 2014, and even assuming drought conditions are less severe next year, may only be able to deliver 75% of expected 2015 water demands.
- Zone 7 is implementing approved drought emergency projects (Lake I recharge and two new groundwater wells), negotiating at the State level for additional non-local storage, and pursuing water transfers to wheel through existing interties.
- The Board of Directors will be considering a resolution directing the retailers to reduce demands under the Agenda Item entitled "Declaring May as Water Awareness Month."

FUNDING:

A 25% total reduction in water use will decrease water sales revenue. A financial impact analysis for the current drought emergency is currently underway.

RECOMMENDED ACTION:

Discuss and provide direction.

ATTACHMENTS:

1. Memorandum providing additional background and discussion of the agenda item

INTEROFFICE MEMORANDUM

DATE: April 11, 2014
TO: Jill Duerig, General Manager
FROM: Brad Ledesma, Associate Engineer
Amparo Flores, Associate Engineer
SUBJECT: Annual Review of Sustainable Water Supply for Zone 7 Water Agency

On October 17, 2012, Zone 7 Water Agency (Zone 7) adopted the Water Supply Reliability Policy (Resolution 13-4230).¹ Resolution 13-4230 requires that Zone 7 staff complete an annual review of sustainable water supplies (Annual Review); the purpose of this memorandum is to comply with this requirement.

The 2014 annual review covers the following:

- 2014 Drought and Key Planning Assumptions
- Projected Water Demands: Next Five Years
- Available Water Supplies to Zone 7 at the Beginning of 2014
- Comparison of Supply and Demand: Next Five Years
- Programs Necessary to Meet Water Demands

SUMMARY OF FINDINGS

Due to unprecedented and extreme drought conditions in 2013 and 2014, Zone 7 received a 0% allocation from the State Water Project (SWP), and the only water supplies available to Zone 7 (~38,800 AF) include SWP Carryover, groundwater, and a small amount of non-local storage.

A comparison of water supply and demand indicates that Zone 7 can meet 77% of expected water demands in 2014, and if drought conditions persist into next year, then Zone 7 may only be able to deliver 75% of expected 2015 water demands. In order to conserve water supplies in preparation for drought conditions in 2015, Zone 7 will be considering a resolution directing the retailers and untreated customers to assure 25% total reduction for 2014 under the Agenda Item entitled "Declaring May as Water Awareness Month."

Zone 7 is implementing approved drought emergency projects (Lake I recharge and two new groundwater wells). Moreover, Zone 7 staff is negotiating at the State level for additional delivery of Zone 7 drought supplies stored in Kern County, and pursuing water transfers that can be wheeled through existing interties.

Zone 7 will also continue to monitor local and statewide conditions, adjust operations as necessary to optimize use of available resources, remain prepared for a second year of drought, and continue to meet with local water supply retailers and untreated customers.

¹ A copy of Resolution 13-4230 is provided as Attachment A.

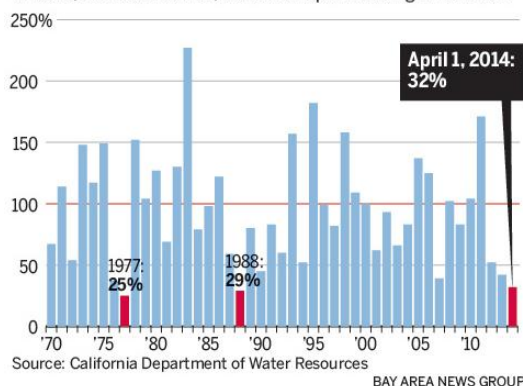
2014 DROUGHT EMERGENCY AND KEY PLANNING ASSUMPTIONS

Due to record dry conditions in 2013 and an extremely dry January in 2014, Zone 7 received word from DWR that there may be no allocation from the SWP. No allocation from the SWP limits water supply exchange opportunities, which could prevent delivery of Zone 7's drought supplies stored in Kern County. Furthermore, due to potential degraded water quality in the Delta during the summer, there was discussion of stopping all pumping for the SWP. These dire conditions would have cut off all imported water supplies, leaving Zone 7 with limited supplies in Lake Del Valle and previously recharged surface water in the local groundwater basin.

Consequently, on January 29, 2014, at a Special Meeting of the Zone 7 Board, a Drought Emergency was declared and a Drought Emergency Response Plan was accepted for the Livermore-Amador Valley. The General Manager was also authorized and directed to establish an appropriate level of conservation. The initial conservation level was subsequently set at 20%, consistent with Governor Brown's earlier statewide emergency drought declaration.

Updated Water Supply Impacts to Zone 7

Despite recent storms, the Sierra Nevada snowpack, a key source of water, is 32% of normal, the lowest April 1 reading since 1988.



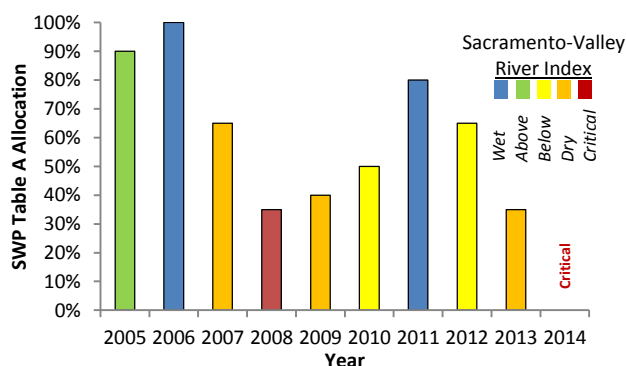
Since the January 29 Board meeting, DWR has committed to delivering Zone 7's carryover, has filled Lake Del Valle, and in late March, notified Zone 7 that 1,500 AF of SWP deliveries would be counted as delivery of Semitropic pump back. However, water quality in the Delta remains a concern, and continues to cast uncertainty on access to any additional water supplies (e.g., BBID or additional Semitropic water).

Hydrologic conditions continue to evolve, and have improved since the January 2014 outlook. Zone 7 will continue to monitor local and state-wide conditions and adjust operations as necessary to optimize use of available resources and remain prepared for a second year of drought. For the latest data on precipitation, snowpack, and reservoir levels, see Attachment A.

Assumptions for the Annual Sustainability Report

As a precaution, Governor Brown has directed DWR to prepare for two years of severe drought conditions. Therefore, this report conservatively assumes critically dry 1977 conditions in 2015. Given that 2007 through 2014 were below normal, dry, or critically dry, with the exception of a wet 2011, the years 2016, 2017, 2018 were assumed to be normal years. This scenario conservatively assumes a nine-year drought (2007-2015), which includes two consecutive critically dry years (2014 and 2015), followed by

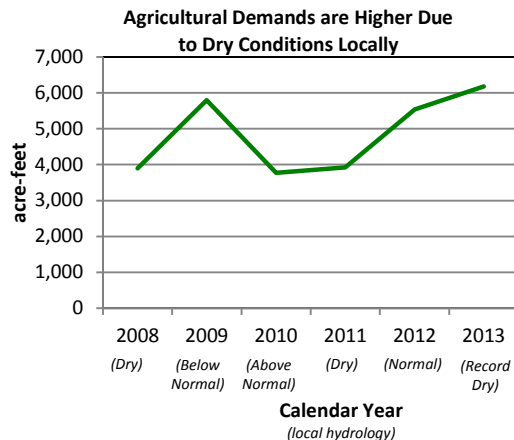
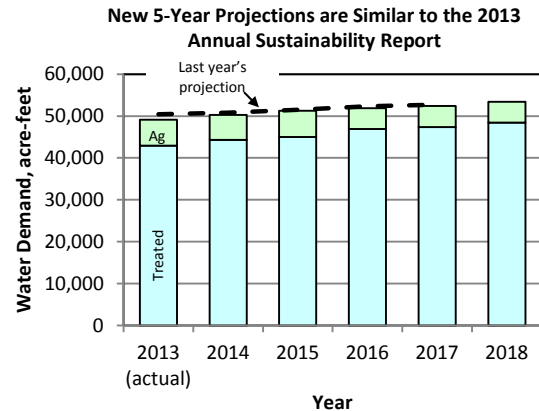
DWR reduced the SWP Allocation to 0% on January 31, 2014, and runoff in 7 of the last 10 years have been below normal or worse



a return to normal conditions.

PROJECTED WATER DEMANDS: NEXT FIVE YEARS

Every year Zone 7 develops baseline water demands for all of its customers for the next five years (assuming no conservation)—Table 1 summarizes these projections from 2014 to 2018, and presents 2013 actual water production for comparative purposes. As shown in Table 1, 2014 projections are about 2.6% higher than actual 2013 demands, and water demands are projected to increase by 6% percent between 2014 and 2018.



Zone 7's untreated water demands (i.e., agricultural and other irrigation needs) range from 4,000 to 6,000 AF depending on hydrologic conditions; agricultural water needs are higher during dry conditions. As shown in Table 1, untreated water demands are currently over 6,000 AF – this is likely due to dry hydrologic conditions since no substantial amounts of new acreage have been put into production. As discussed previously, the analysis assumes that hydrologic conditions would be normal from 2016 to 2018, and therefore, untreated water demands decrease to 5,000 AF.

Table 1. 5-Year Water Demand Projections are Similar to Last Year's Report, acre-feet^(a)

Component	2013 (actual)	2014	2015	2016	2017	2018
M&I ^(b,c,d)	42,918	44,300	45,000	46,900	47,400	48,400
Untreated ^(e)	6,174	6,000	6,300	5,000	5,000	5,000
Total	49,092	50,300	51,300	51,900	52,400	53,400
2013 Annual Report		50,800	51,500	52,300	52,700	--
% Decrease from 2013 Annual Report		1%	0.4%	0.7%	0.6%	--

^(a) Demands were rounded to the nearest 100 acre-feet.

^(b) M&I = Municipal and Industrial.

^(c) Demands include California Water Service Company, Dublin San Ramon Services District, City of Livermore, City of Pleasanton, Zone 7's direct retail customers, and Zone 7's unaccounted-for water.

^(d) Demands include unaccounted-for water and groundwater-pumping quota for Dublin San Ramon Services District.

^(e) Zone 7's untreated water demand is primarily for irrigation.

AVAILABLE WATER SUPPLIES TO ZONE 7 AT THE BEGINNING OF 2014

The purpose of this section is to review the water supplies, including contracted supply and storage, available to Zone 7 at the beginning of 2014.

Projected Yield from Contracted Water Supplies in 2014

Each year Zone 7 receives water from its contracts with the DWR for importing SWP water, its water right permit for diversions from Arroyo del Valle, its contract with BBID, and its contract with DWR for Yuba Accord Water.

Zone 7 is expecting no water supply from existing contracts in 2014

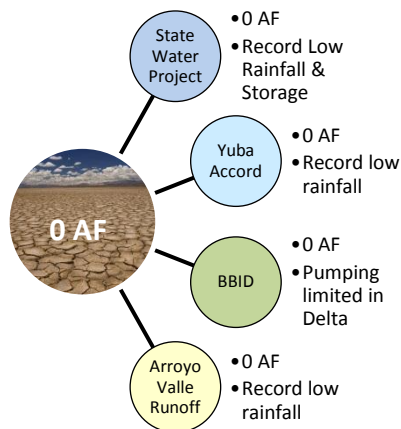


Table 2 presents the projected yield in 2014 based on DWR estimates through March 2014 and local rainfall, an estimate for 2015 assuming 1977 hydrologic conditions, and then a comparison to the long-term average yield.

As shown in Table 2, Zone 7 does not expect any water from its current contracts in 2014 due to extreme drought conditions.² However, assuming overall conditions are less severe in 2015 (i.e., 1977 conditions), Zone 7 may receive 9,100 AF in 2015. The long-term average is unchanged.

Table 2. Projected Yield in 2014 from Existing Contracted Water Supplies, acre-feet

Source ^(a)	Available in 2014, acre-feet	Assumed Supply in 2015, acre-feet	Long-term Average (2016 to 2018)	
			Yield	% of Total
State Water Project	0 ^(b)	8,100 ^(b)	48,400 ^(c)	83.5 %
Arroyo del Valle Runoff	0	500	7,300	12.6 %
BBID	0	1,000	2,000	3.5 %
Yuba Accord (via DWR)	0	0	250	0.4 %
Subtotal	0	9,600	57,950	100.0 %
Operational Losses ^(d)	0	(500)	(2,900)	5.0%
Total	0	9,100	55,050	95.0%
Yield from 2013 Annual Report	31,000	55,050	55,050	
% Decrease	100%	84%	0%	

² As of April 11, local rainfall is still below total rainfall for Water Year 1977 conditions.

- (a) The 2010 Urban Water Management Plan provides additional detail on each contract; see <http://www.zone7water.com/publications-reports/reports-planning-documents>.
- (b) 2014 yield is based on 0% (current 2014 allocation) of Zone 7's Table A amount of 80,619 AF.
- (c) Long-term average yield is based on about 60% of Zone 7's Table A amount of 80,619 AF, as presented in DWR's 2013 Reliability Report.
- (d) Operational losses include the losses associated with artificial recharge in the groundwater basin, brine losses, evaporative losses, and putting water into either Semitropic and/or Cawelo. Quantity is based on the Annual Operations Plan for 2014, updated in April 2013.

Available Storage at the Beginning of 2014

Zone 7 currently stores water in various storage facilities, including groundwater-banking programs, to help meet water demands when needed. Table 3 summarizes the total accumulated water in storage available to Zone 7 over the next five years, the estimated water in storage available in 2014, and estimated annual water supply from storage between 2015 and 2018. As shown in Table 3, Zone 7 has about 15% less accumulated storage and 45% less storage available for use in 2014 than in 2013. If drought conditions persist into 2015, then Zone 7 expects 20% less storage than was projected in 2013.

All of Zone 7's 2014 Water Supply is from Storage

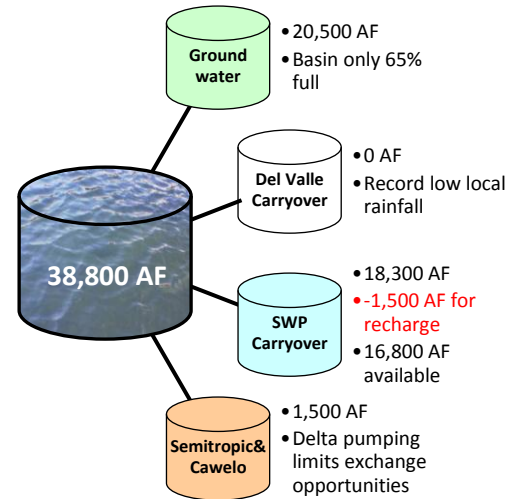


Table 3. Available Storage in 2014, acre-feet

Storage Facility or Program	Total Accumulated Water in Storage ^(a)	Estimated Water Supply in Storage Available for Use in 2014	Estimated Water Supply in Storage Available for Use in 2015	Estimated Annual Water in Storage Available for Use between 2016 and 2018
Main Groundwater Basin	82,000	20,500 ^(b)	10,400 ^(b)	5,000 ^(c)
Lake Del Valle Carryover	0	0	0 ^(e)	0 ^(e)
State Water Project Carryover	18,300	16,800 ^(d)		
Semitropic	81,950	1,500 ^(f)	9,100 ^(g)	9,100 ^(g)
Cawelo	25,150	0 ^(f)	10,000 ^(h)	5,000 ^(h)
Total	197,600	38,800	29,500	24,100
<i>Available Storage from 2013 Annual Report</i>	<i>232,000</i>	<i>70,600</i>	<i>36,900</i>	<i>36,900</i>
<i>% Decrease from 2013 Annual Report</i>	<i>15%</i>	<i>45%</i>	<i>20%</i>	<i>35%</i>

(a) Accumulated storage estimate is through April 11, 2014.

(b) As the amount of water stored decreases in the main basin, the amount of groundwater available in any given year also decreases due to well locations, physical/hydrogeological conditions, and defined historic lows. For 2014, Zone 7 staff estimates that approximately 20,500 acre-feet would be available based on fall water levels recorded in October 2013.

- (c) A conservatively small pumping amount of 10,400 acre-feet was used in 2015 since pumping was assumed so high in 2014; minimal pumping from 2016 to 2018 was assumed to plan for recovery of the groundwater basin.
- (d) Zone 7's total carry over was 18,300 AF, but 1,500 AF was recharged into the groundwater basin, leaving 16,800 AF.
- (e) Zone 7 does not expect to have significant carryover into 2015 since there will be no surplus water supply in 2014. Additionally, the analysis also conservatively assumed that there would be no carryover between 2016 and 2018.
- (f) Water supply exchanges between State Water Contractors are required for Zone 7 to receive any water from either Semitropic or Cawelo; however, due to SWP facility constraints and water quality in the Delta, DWR and KCWA have indicated that there are limited opportunities for water supply exchanges. Kern County Water Agency has confirmed, however, that it was able to deliver 1,500 AF of pump back to Zone 7 in February 2014.
- (g) Zone 7 can pump back up to 9,100 acre-feet from Semitropic, and depending on the SWP allocation, also request exchange water. This analysis assumed that Zone 7 can only request up to 9,100 acre-feet between 2015 and 2018.
- (h) For this analysis, it was assumed that Zone 7 would be able to access 10,000 acre-feet in 2015, and that the remainder (15,150 acre-feet) could be used in equal amounts between 2016 and 2018, or about 5,000 acre-feet per year.

COMPARISON OF SUPPLY AND DEMAND: NEXT FIVE YEARS

Table 4 compares available water supplies to projected baseline water demands over the next five years. For comparative purposes in this memorandum, long-term average supplies and water supply in storage available for use over the next five years were used to compare with projected water demands between 2016 and 2018. As shown in Table 4, Zone 7 can only deliver enough water supply to meet 77% and 75% of projected water needs in 2014 and 2015, respectively, due to extreme drought conditions and if drought conditions persist into next year. Table 4 also shows that Zone 7 can meet 100% of water deliveries if normal hydrologic conditions return in 2016.

Zone 7 can only deliver 77% of expected demands in 2014, and if drought conditions persist, only 75% in 2015

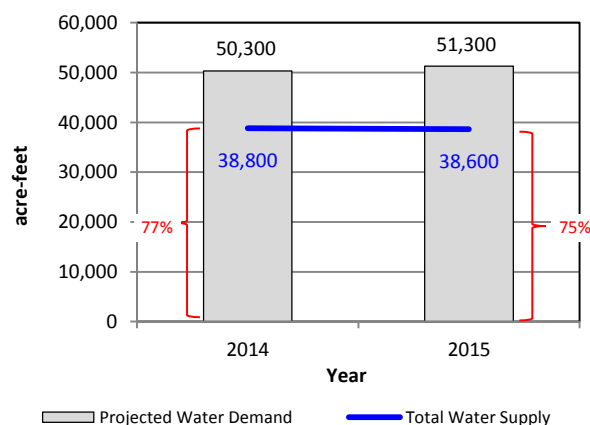


Table 4. Comparison of Supply and Demand: Next Five Years

Component	2014	2015	2016	2017	2018
Water Supply	0	9,100	55,050	55,050	55,050
Water Supply in Storage Available for Use	38,800	29,500	24,100	24,100	24,100
Total Water Supply	38,800	38,600	79,150	79,150	79,150
Water Demand ^(a)	50,300	51,300	50,500	51,100	52,000
% of Demand To Be Delivered	77%	75%	100%	100%	100%

^(a) Includes both M&I and Untreated water demands.

PROGRAMS NECESSARY TO MEET WATER DEMANDS

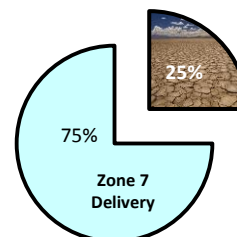
The review completed as part of this memorandum indicates that Zone 7 cannot meet 100% of estimated 2014 baseline water demands, and if drought conditions persist, may not be able to

meet 100% of estimated 2015 baseline water demands either. The purpose of this section is to outline the demand reduction programs necessary to meet the water demands over the next two years. Stage 2 Actions include water conservation and new drought emergency projects.

Short-Term Water Conservation Need: 25% Relative to 2013 Water Demands

Zone 7 has sufficient water supply to meet 77% of expected water demands in 2014, or about 79% of last year's water use. Additionally, if drought conditions persist into next year, then Zone 7 may only be able to deliver 75% of expected 2015 water demands. In order to conserve water supplies in preparation for drought conditions in 2015, Zone 7 needs the retailers and untreated customers to assure a 25% total reduction for 2014.

Zone 7 needs its customers to assure a 25% reduction from 2013 water use to conserve water supplies for potential drought conditions in 2015



Zone 7 staff will continue to support and help the local water supply retailers and untreated customers to implement necessary water conservation programs (e.g., limits on outdoor irrigation with potable water) that will assure a total reduction in 2014 of 25%. These programs may continue into 2015 depending on whether the drought persists into next year.

Emergency Drought Projects

On January 29, 2014, the Zone 7 Board of Directors approved three emergency drought projects that will help optimize management of groundwater supplies necessary to meet water demands over the next two years.

Lake I to Cope Lake Pipeline Project

Historically, gravel-mining companies (e.g., Vulcan) actively pumped and then discharged groundwater supplies into the local arroyos under an approved National Pollution Discharge Elimination System permit to access valuable gravel located below the water table. These discharges reduced groundwater supply available to Zone 7 and the Tri-Valley during droughts, like the current drought emergency.



Zone 7 is firming up groundwater supplies for this summer by constructing a pipeline that will recharge mining discharges back into the groundwater basin.

Consequently, in November 2013, Zone 7, in partnership with Vulcan, constructed a pipeline that would allow Zone 7 to preserve groundwater supplies by capturing these discharges in Cope Lake; however, the clay-like bottom of Cope Lake prevents percolation (i.e., recharge) of captured groundwater discharges.

This new project will construct a pipeline that will allow Zone 7 to transfer captured groundwater discharges into Lake I, which does have the ability to percolate mining discharges back into the groundwater basin.

Zone 7 will have this project completed in May 2014; thereby, optimizing the management of

groundwater supply through the summer of 2014.

Chain of Lakes Well No. 5 and Busch Valley Well No. 1

As part of its two-year drought-planning horizon, Zone 7 is expediting the completion of two wells in key areas identified in the 2003 Well Master Plan to help increase well production capacity. Both wells will not only add to the overall reliability of the system (i.e., maintain production capacity in case of unexpected mechanical failure), but also allow access to additional emergency groundwater supply.

The Chain of Lakes Well No. 5 will be located near the northwest corner of Lake H, and is expected to be in production by August of this year. The Busch Valley Well No. 1 will be located near the intersection of Stanley Boulevard and Valley Avenue, and is expected to be in production by February of 2015.



Zone 7 is expediting two new wells to firm up production capacity and increase access to emergency drought supplies

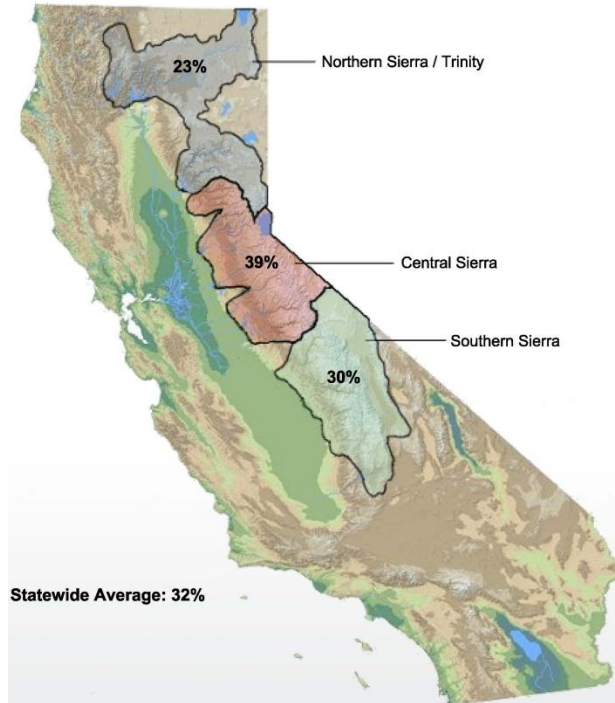
Other Efforts in Support of the Drought Emergency

In addition to the emergency projects approved by the Board of Directors on January 29, 2014, Zone 7 continues to pursue several other projects to help alleviate the impacts of the drought. These other projects include negotiating at the State level for a portion of Zone 7's water previously stored in Kern County, securing water transfers to potentially wheel through existing emergency interties, and continuing to support recycled water projects that reduce existing potable water demands.

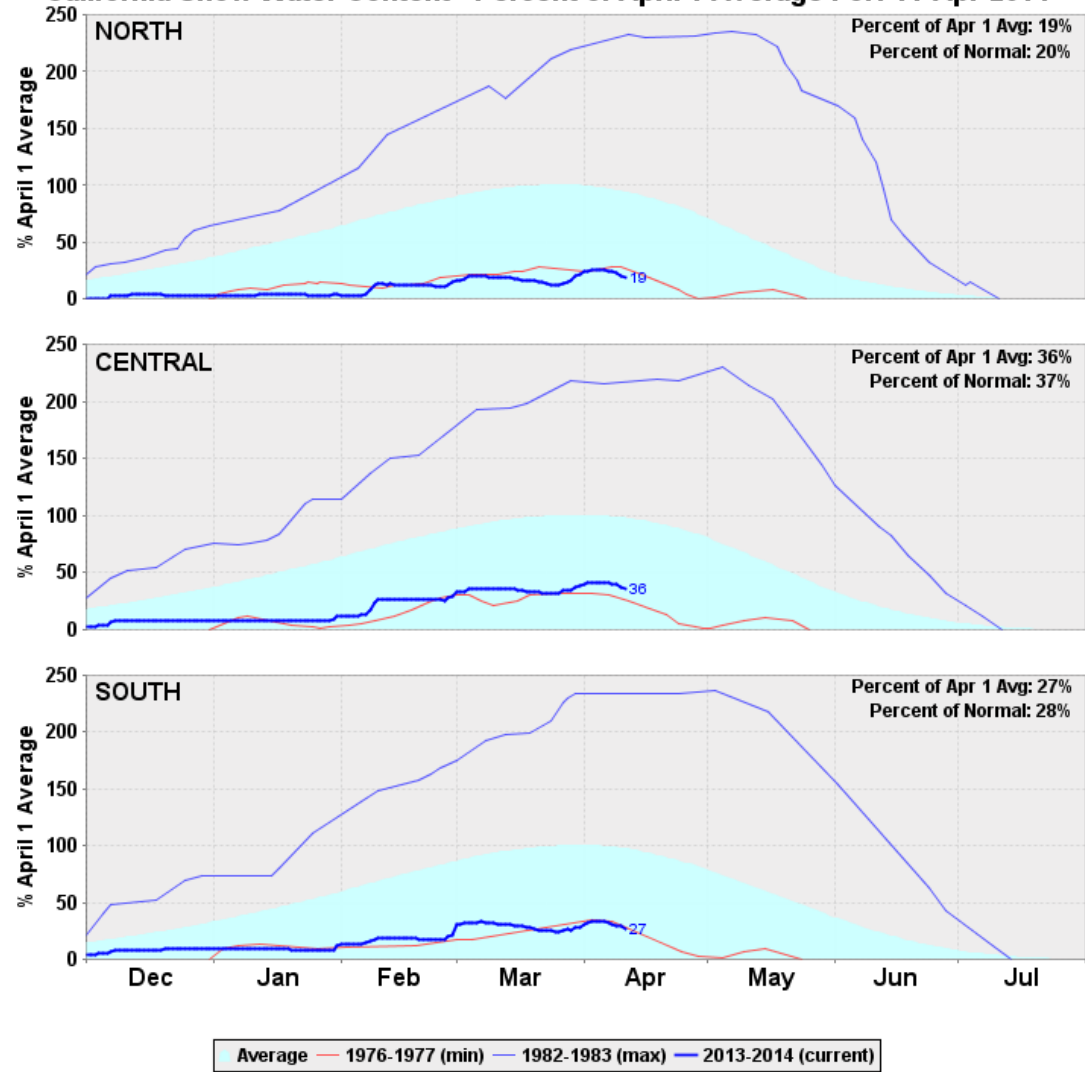
Zone 7 will also continue to monitor local and statewide conditions, adjust operations as necessary to optimize use of available resources, remain prepared for a second year of drought, and continue to regularly meet with its local water supply retailers and untreated water customers.

ATTACHMENT A: LATEST HYDROLOGIC CONDITIONS

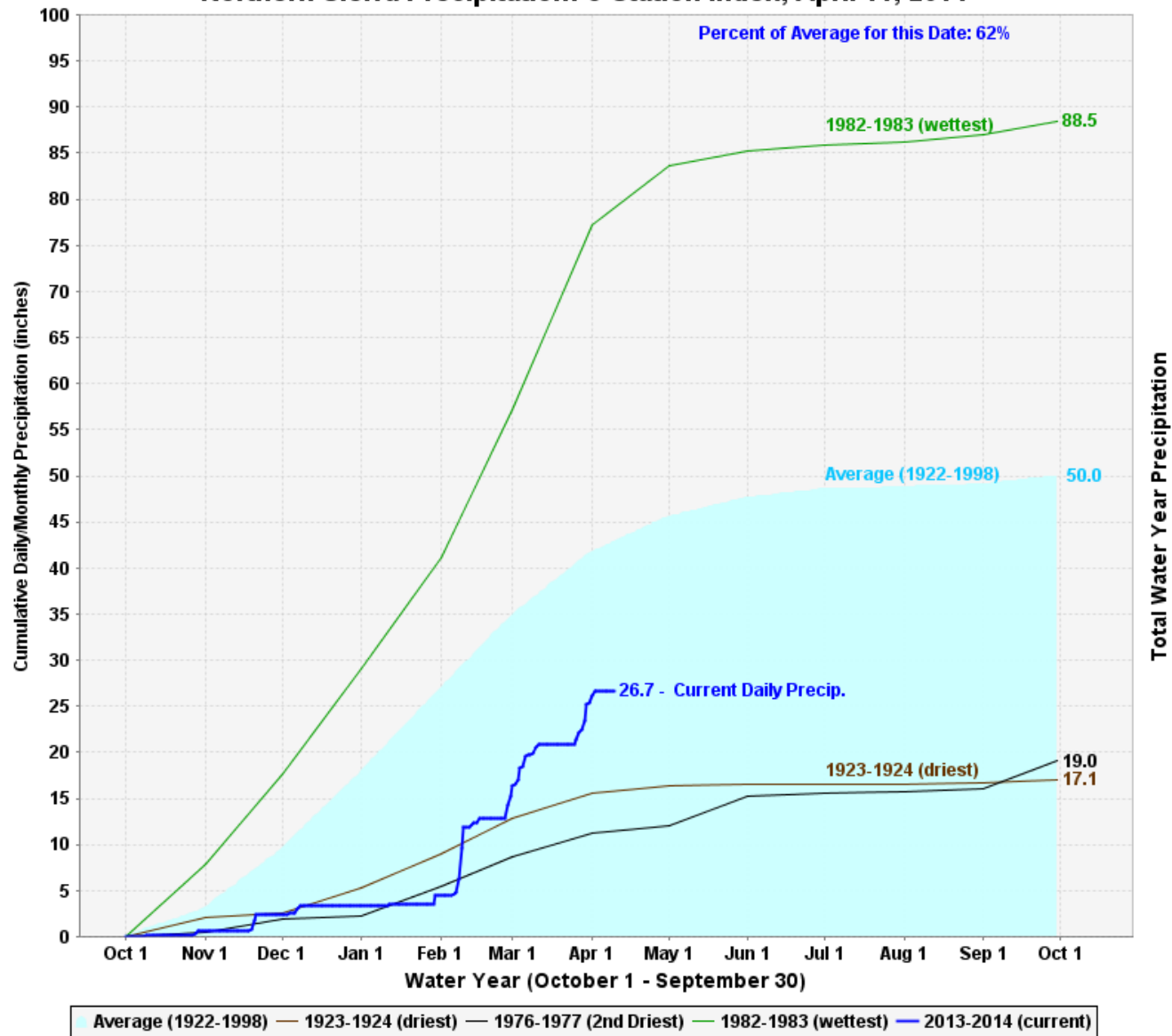
California Snow Water Content



California Snow Water Content - Percent of April 1 Average For: 11-Apr-2014



Northern Sierra Precipitation: 8-Station Index, April 11, 2014



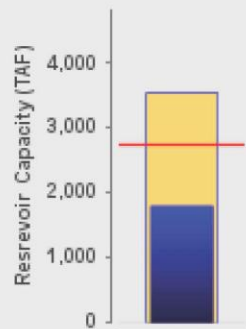


Reservoir Conditions - Lake Oroville



Lake Oroville Conditions

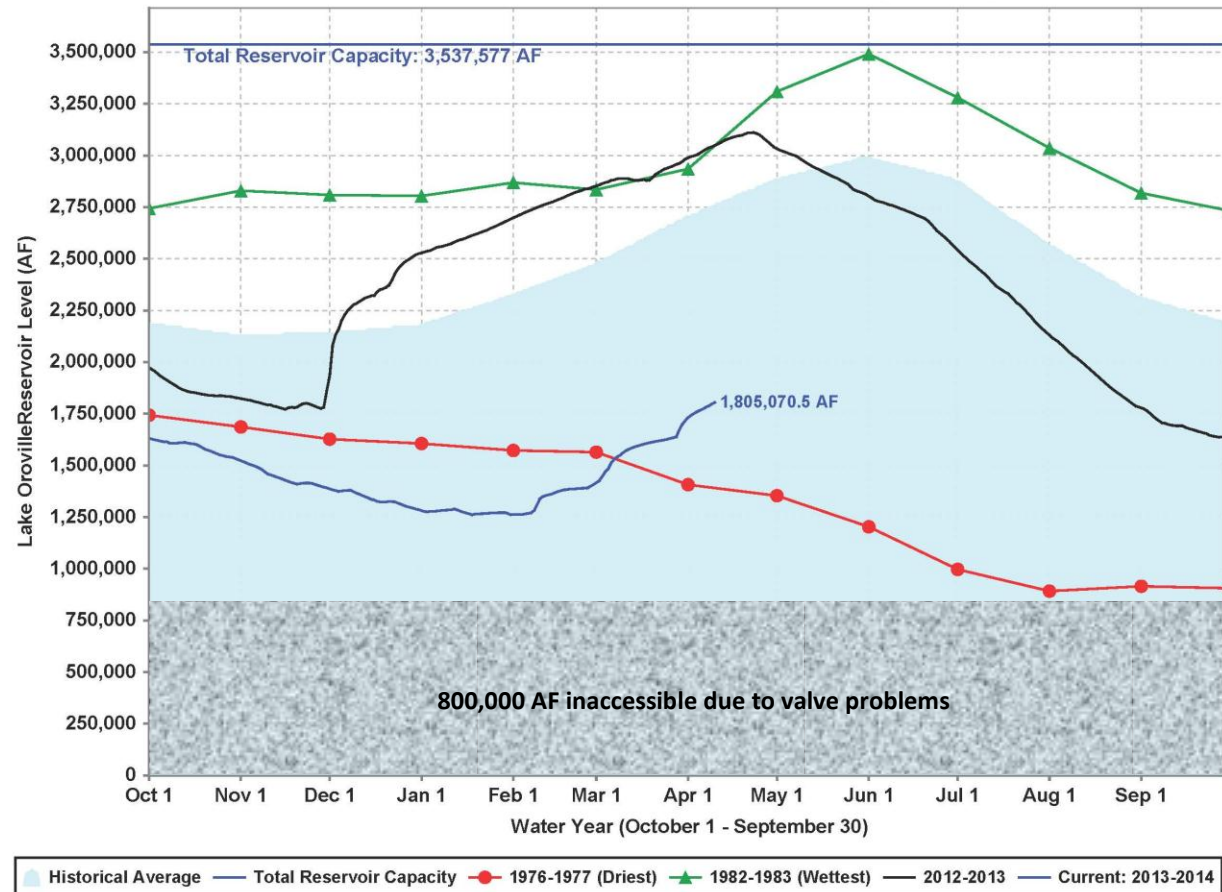
(as of Midnight - April 10, 2014)



Current Level: 1,805,070.5 AF

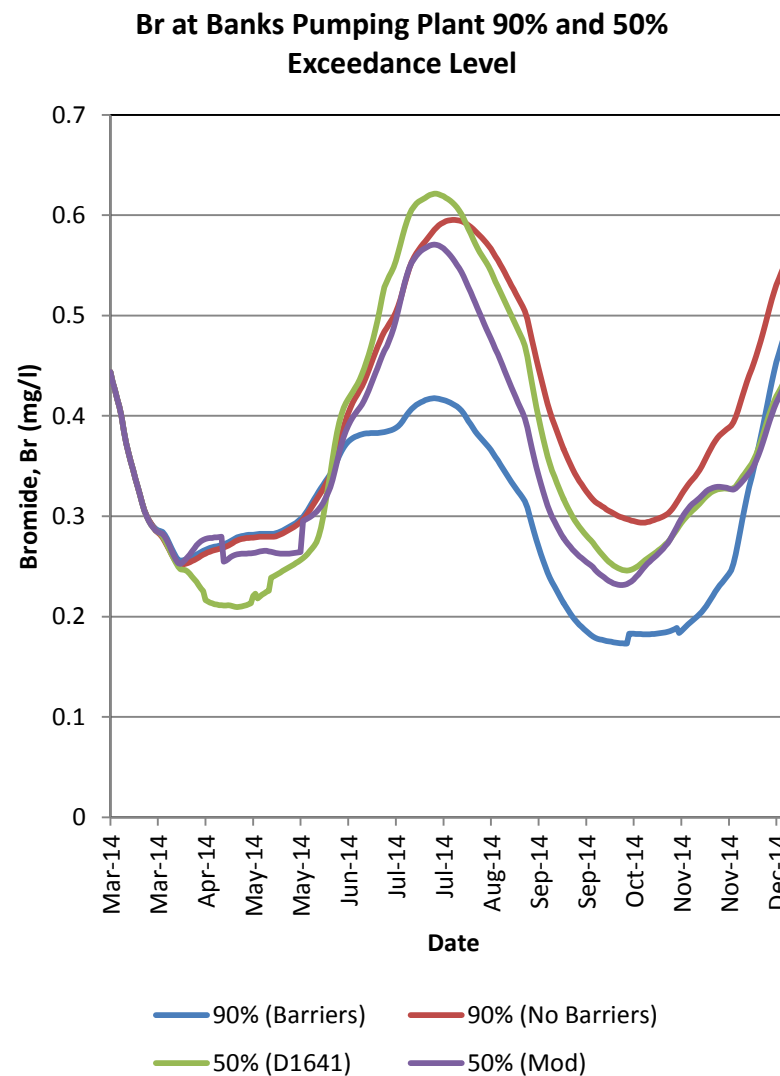
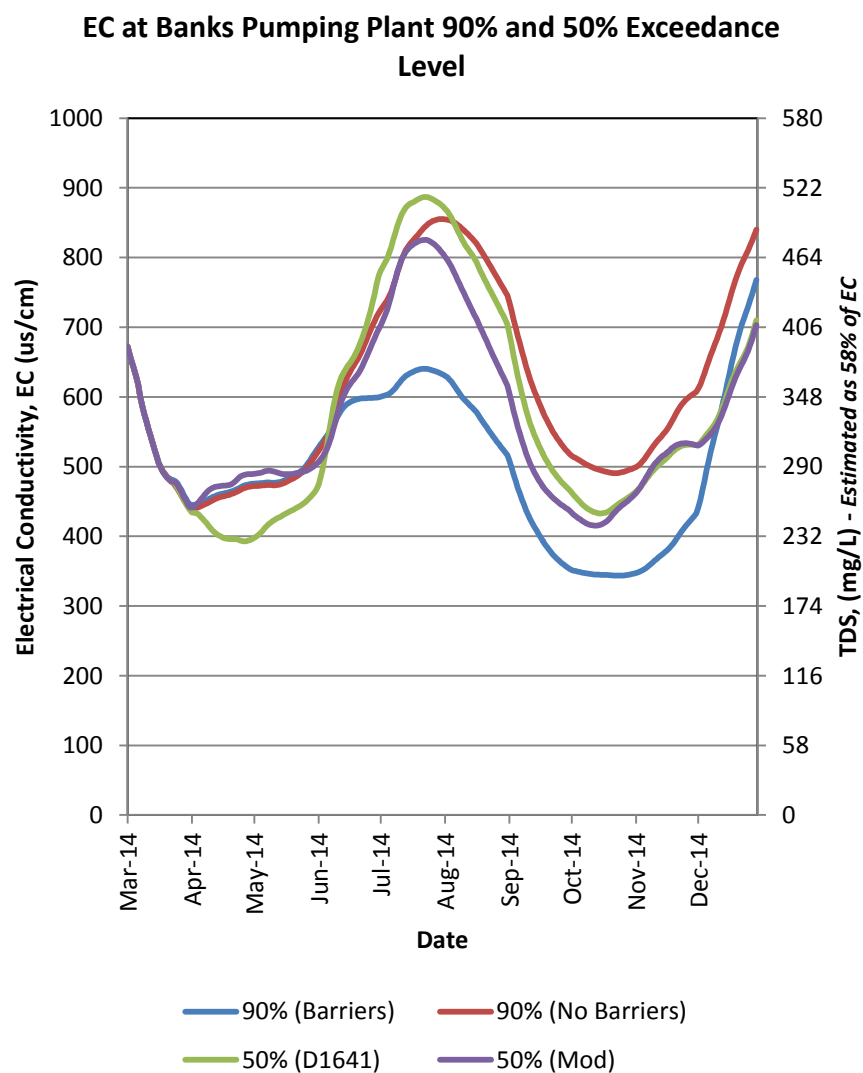
51% (Total Capacity) | 65% (Historical Avg.)

Lake Oroville Levels: Various Past Water Years and Current Water Year, Ending At Midnight April 10, 2014

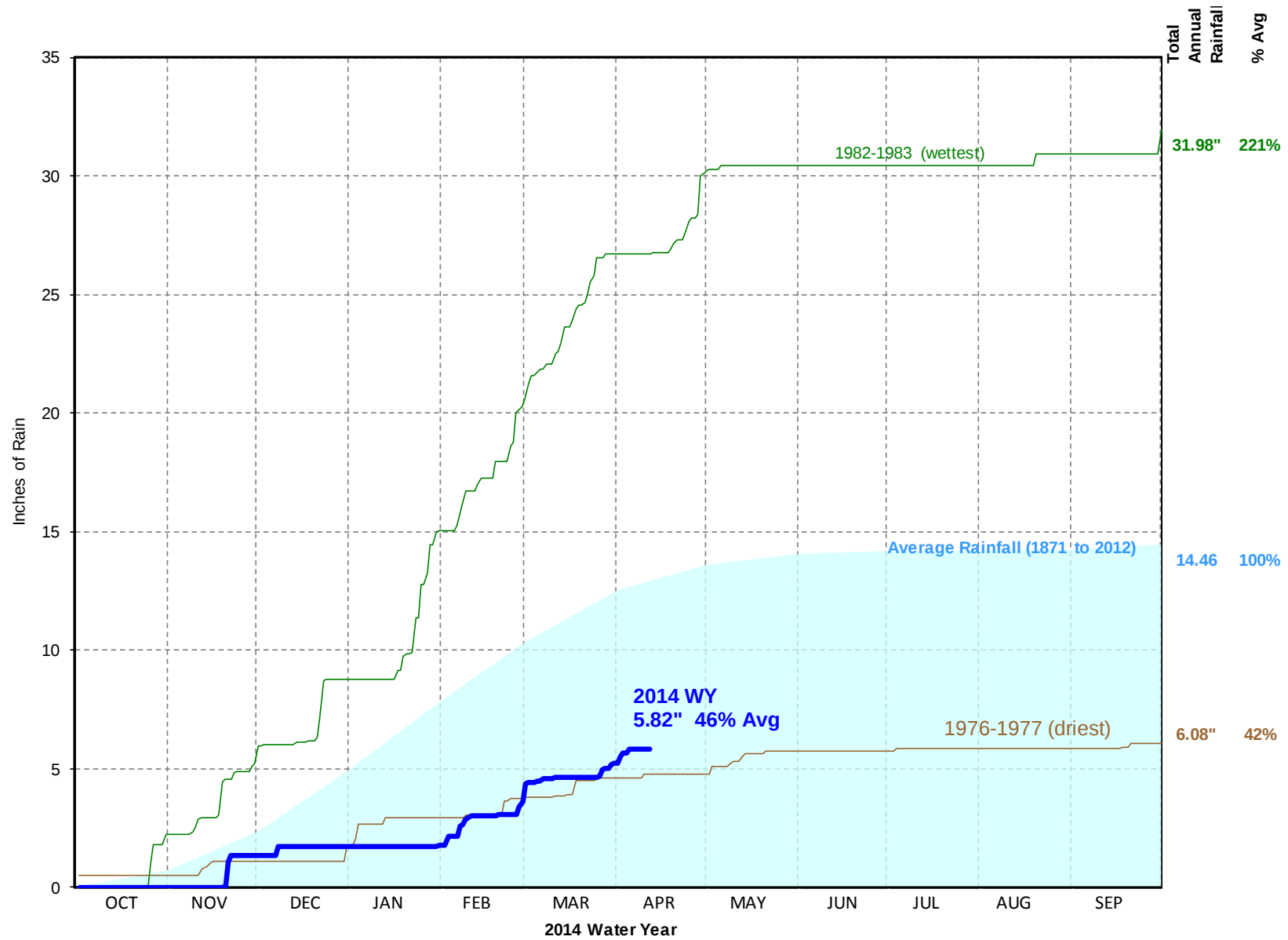


Data Updated 04/11/2014 09:15 AM

Projected Water Quality in the Delta: March to December 2014 (source: March 2014 Barrier Allocation Study)



Local Rainfall (Livermore Station 15e)



ATTACHMENT B: WATER SUPPLY RELIABILITY POLICY

[RESOLUTION DELETED – SEE “MAY AS WATER AWARENESS MONTH”]