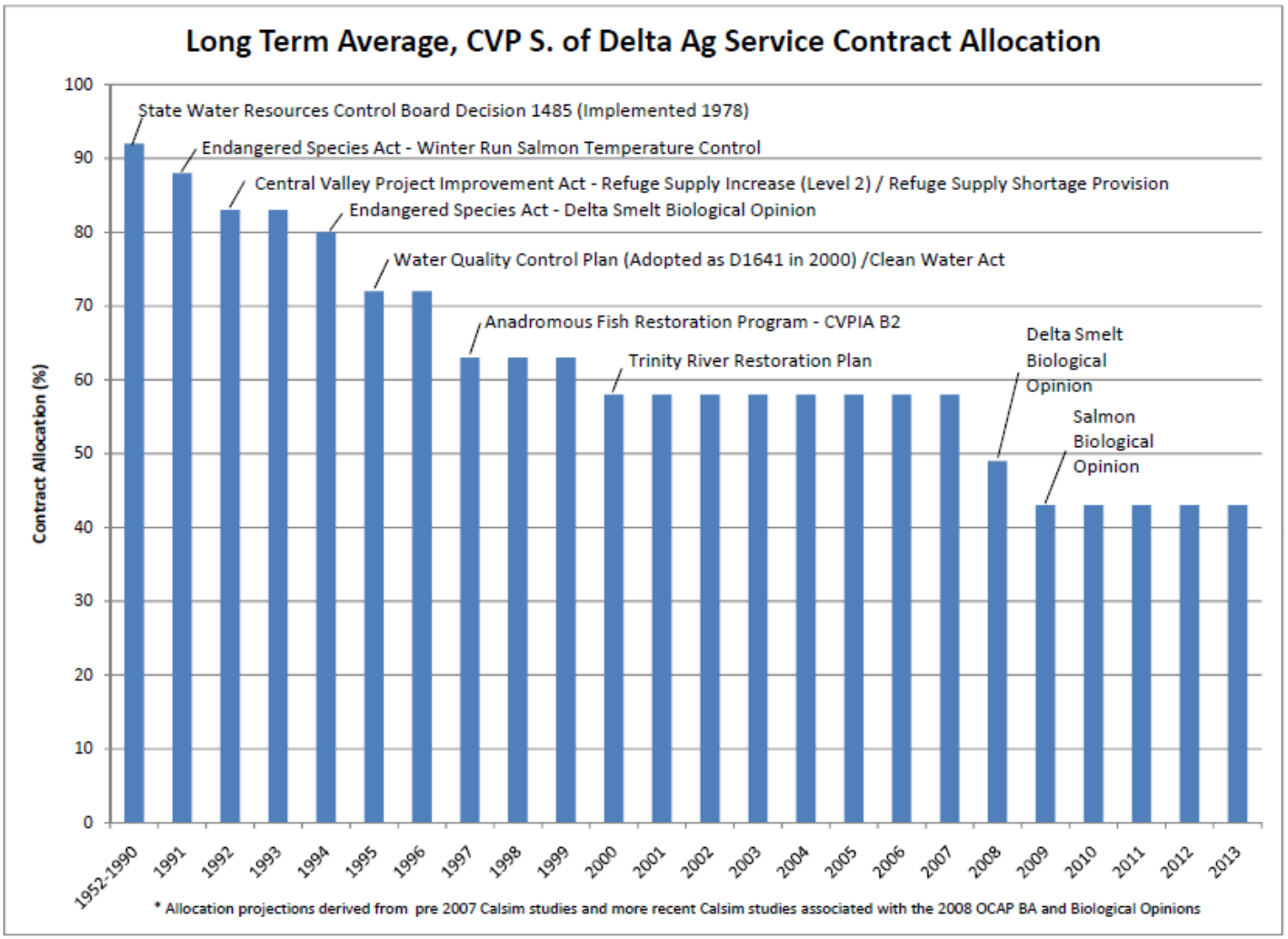
THE WATER AGENCY, INC.
Water Supply Update

I was recently asked, "Where has all the water gone?" They noted that the first four years of the drought in the late 1980's and early 1990's were drier than this 4-year period and yet the allocations were 100%, 100%, 100%, and 50% for South of Delta farmers. This time we've gotten 40%, 20%, 0%, and 0%.

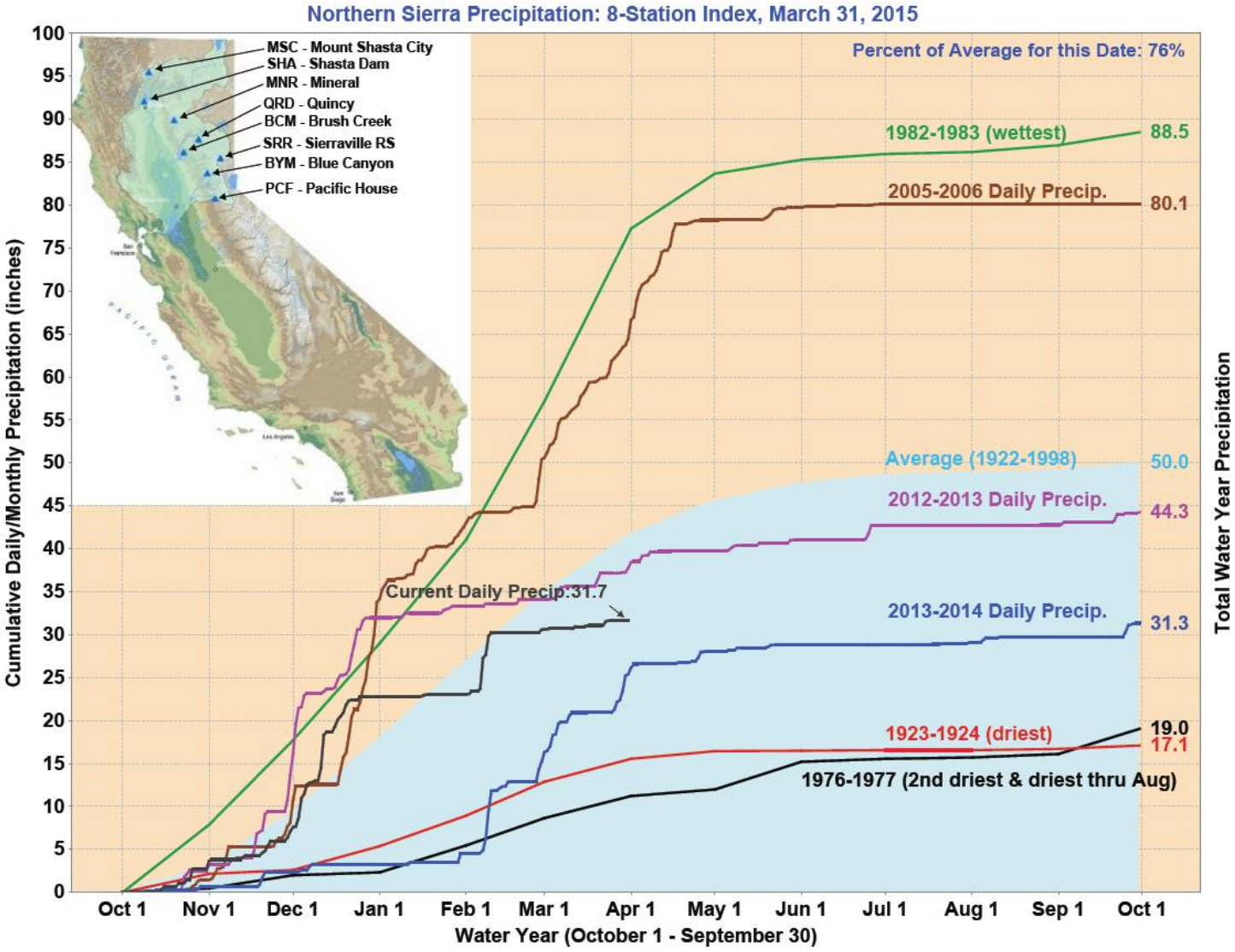
Yes, the snowpack is dreadfully low and the regulators are doing a good job of hiding behind that. The system of reservoirs and canals our forefathers developed anticipated a time like this. This water supply catastrophe is government made.

The real story is the death of a dozen water cuts by different regulators. The graph below was done by Tom Boardman at the San Luis and Delta Mendota Water Authority. It shows what the average allocation in an average year would be given the various cuts (slightly over 40% in an average year). A year like this shows that we can't even get any water allocation for South of Delta Central Valley Project water contractors/farmers.



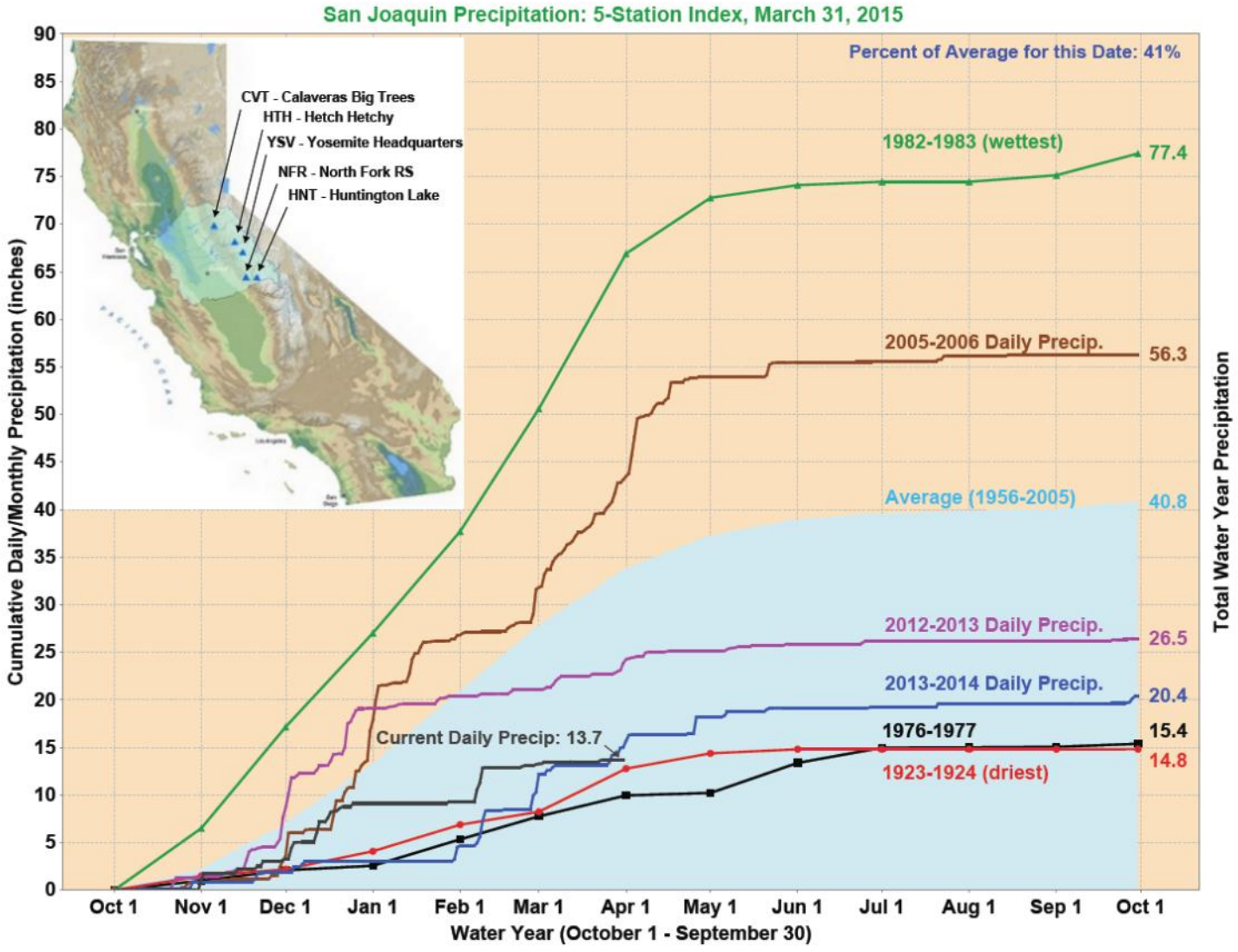
T. Boardman, SLDMWA
11/8/2013

As of the morning of March 31st, the 8-station Northern California index has recorded 31.7 inches of precipitation (up 0.1 of an inch from last week). This represents 76% of the typical average rainfall to date. The average total for the normal season is 50.0 inches.



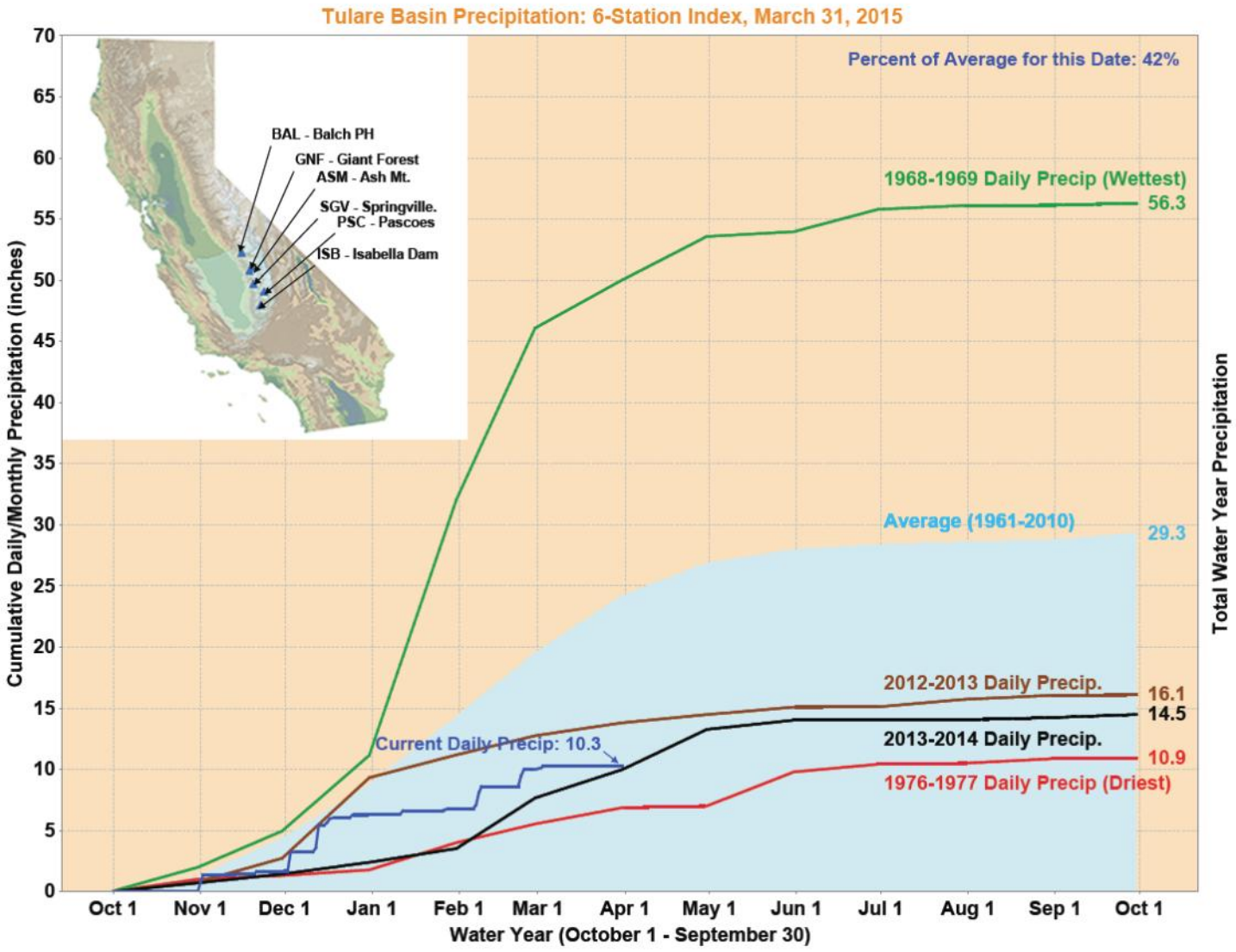
Preceding Graph from http://cdec.water.ca.gov/cgi-progs/products/PLOT_ESI.pdf

As of the morning of March 31st, the 5-station San Joaquin index has recorded 13.7 inches of precipitation (unchanged from last week). This represents 41% of the typical average rainfall to date. The average total for the normal season is 40.8 inches.



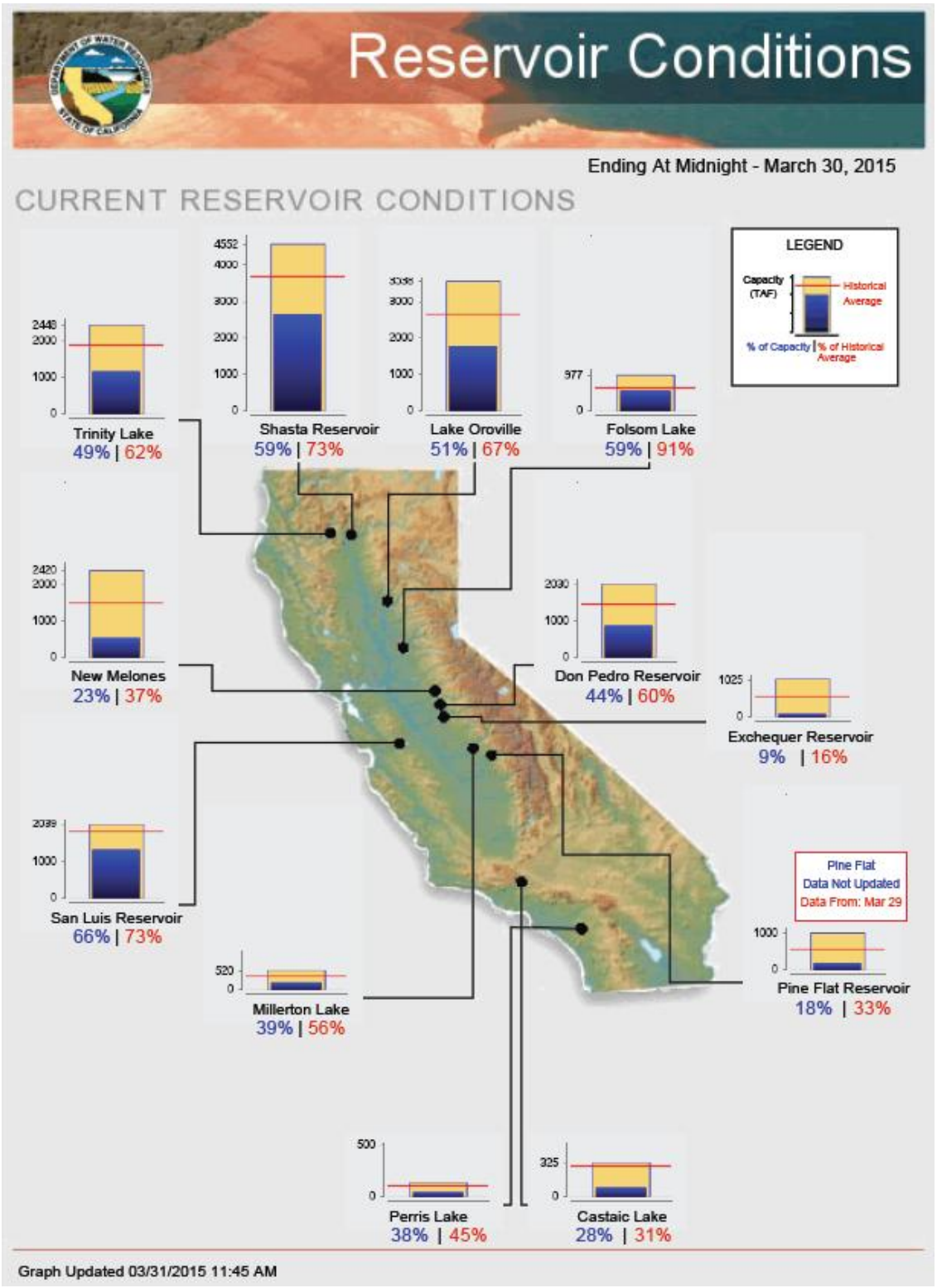
NEW Tulare Lake Basin Precipitation

As of the morning of March 31st, the 6-station Tulare Basin index has recorded 10.3 inches of precipitation (unchanged from last week). This represents 42% of the typical average rainfall to date. The average total for the normal season is 29.3 inches.



Reservoir Storage

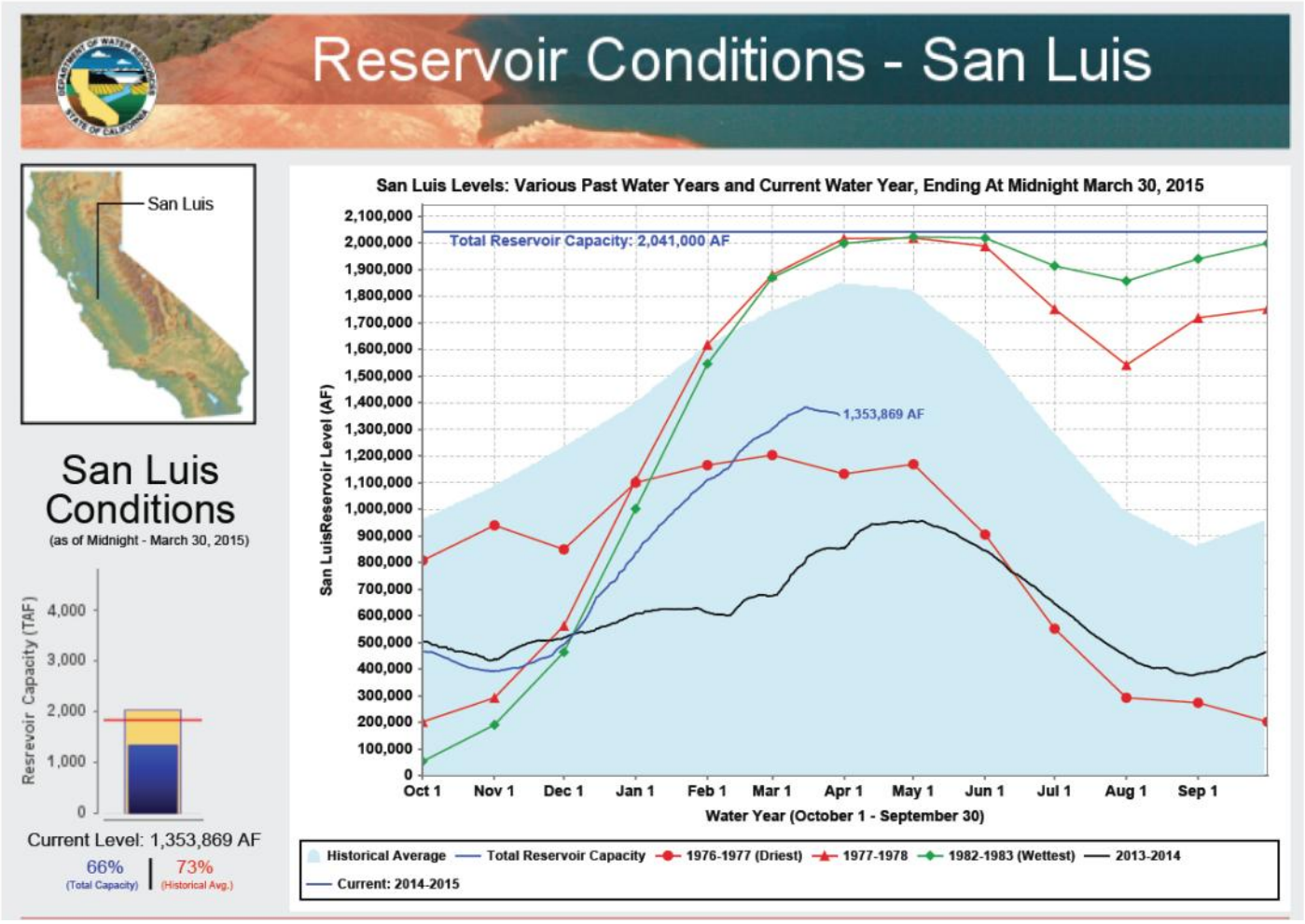
The Northern California reservoirs are between 62-91% of historical average and 49-59% of capacity. Trinity and Oroville are up 1% of capacity from last week. The central ones are between 16-73% of historical average and 9-66% of capacity. San Luis is down 1% of capacity.



http://cdec.water.ca.gov/cgi-progs/products/rescond.pdf

San Luis Reservoir Storage

As of March 30th, San Luis storage is at 1,353,869AF and is at 66% of capacity (down 14,074AF from last week and down 1% of capacity). The historical average is at 73% of this time of year.



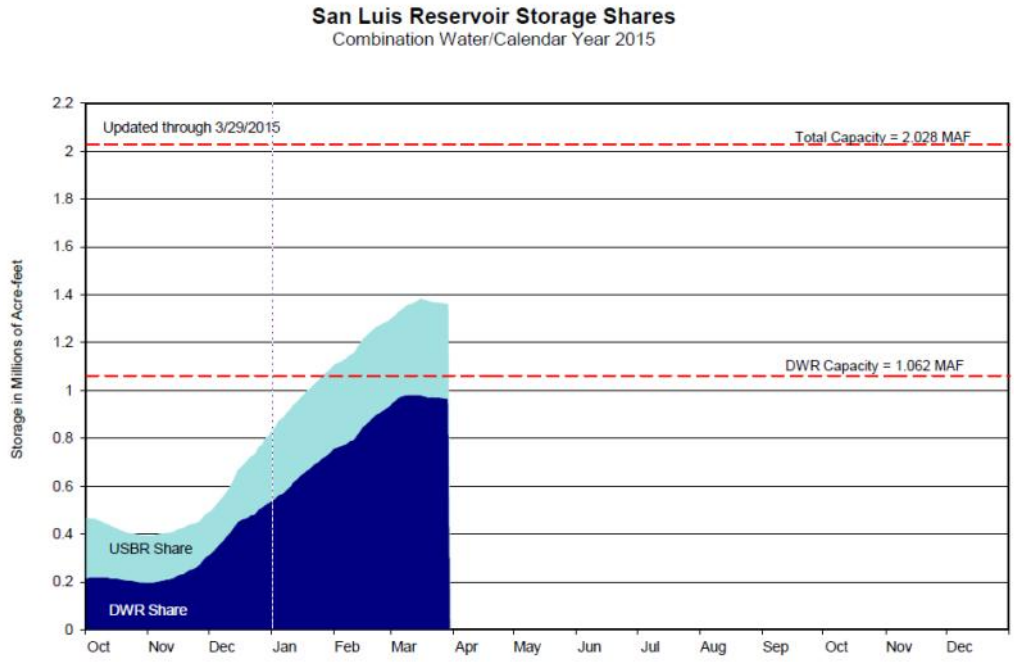
http://cdec.water.ca.gov/reservoir_map.html

Federal Storage within San Luis Reservoir

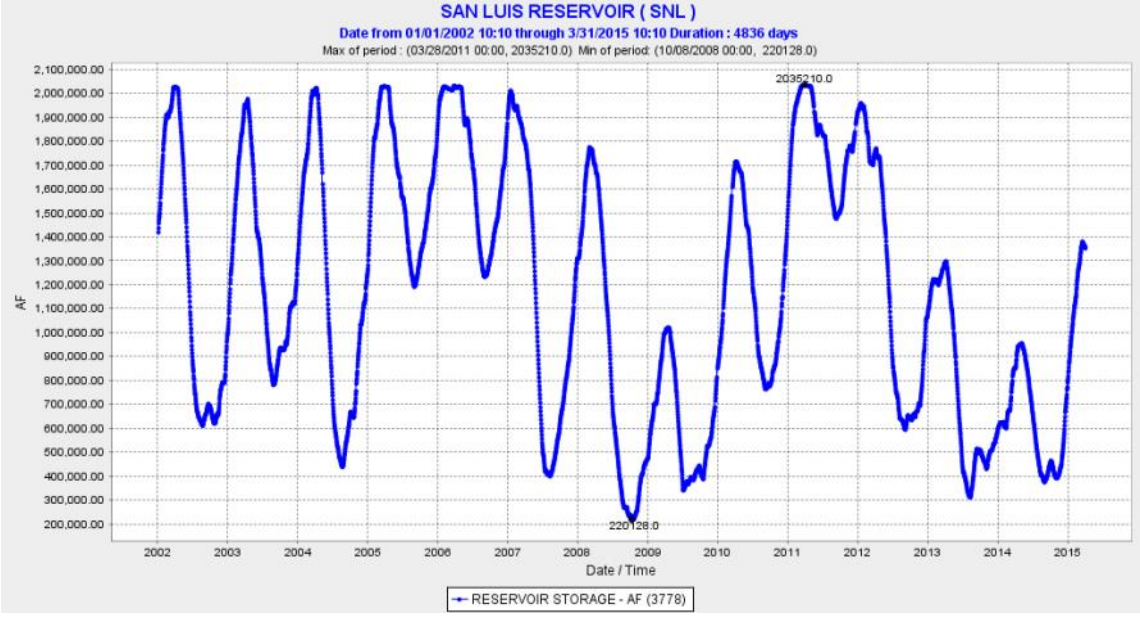
As of March 30th, federal storage was at 395,046AF (40.91% full—down 1,051AF) and compares to 467,000AF one year ago. Total federal storage capacity is 965,655AF. The federal share of the reservoir is approximately 49% of the 15-year average of 800,000AF.

State Storage within San Luis Reservoir

As of March 30th, state storage was at 958,823AF (now at 90.27% capacity—down 13,023AF). The total state storage capacity in SLR is 1,062,180AF. Total State and Federal storage reported is 1,353,869AF. The reservoir is at 66% of capacity.



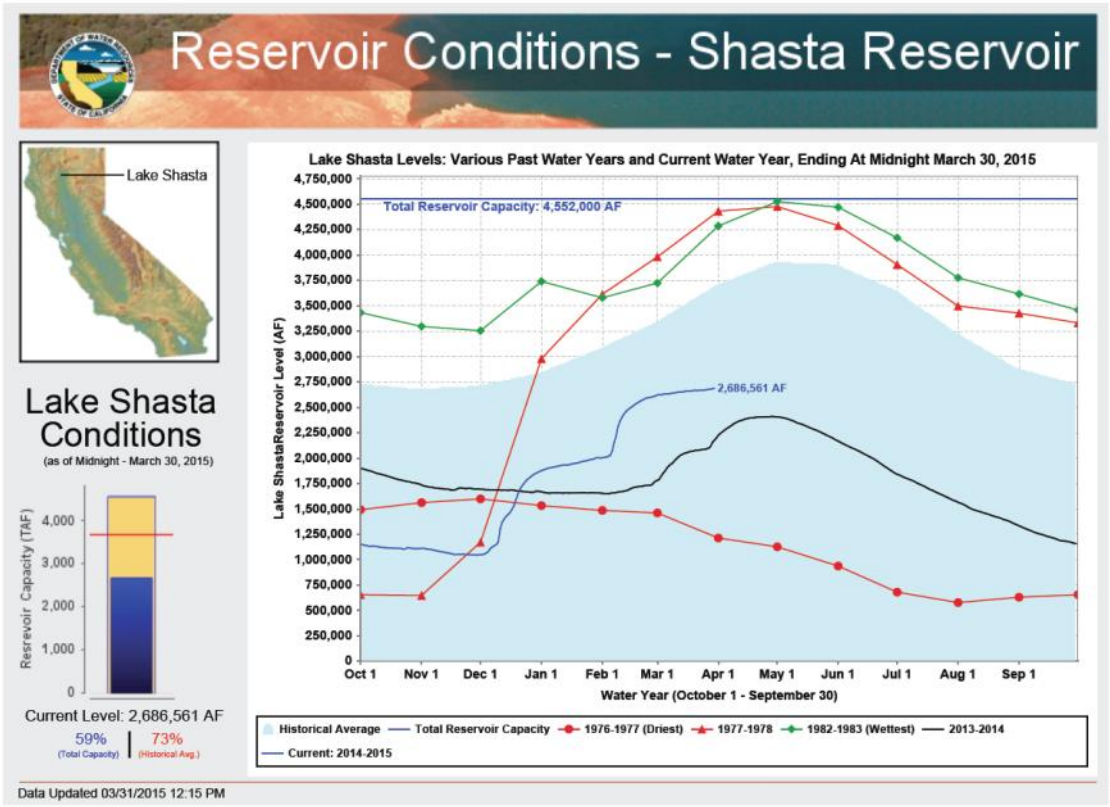
http://www.water.ca.gov/swp/operationscontrol/docs/storsanl.pdf



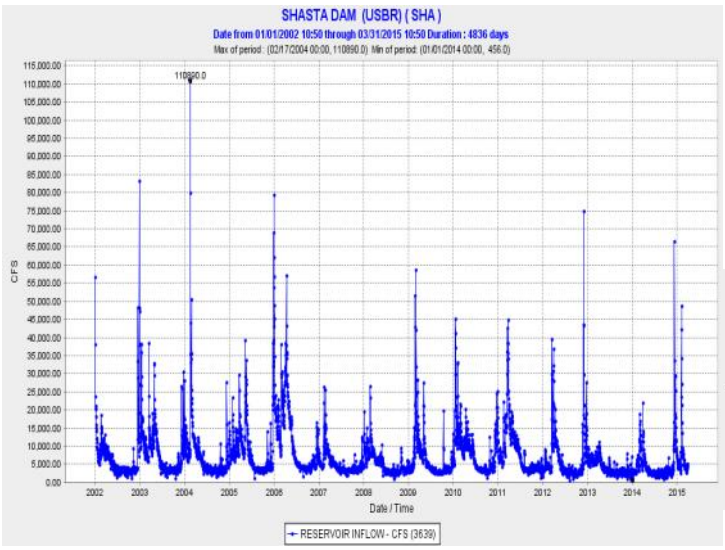
http://cdec.water.ca.gov/jspplot/jspPlotServlet.jsp?sensor_no=3778&end=3%2F31%2F2015+10%3A10&geom=huge&interval=4837&cookies=cdec01

Shasta Storage

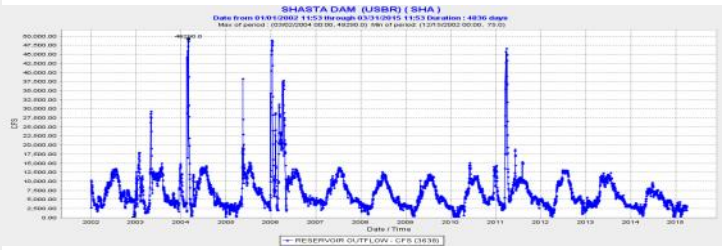
As of March 30th, storage was approximately 2,686,561AF (up 18,438AF and at 59% of capacity — unchanged from last week) and compares to 2,176,000AF one year ago. The current level is 73% of the historical average. Total capacity of Shasta is about 4,552,000AF. Shasta's weekly average inflows are about 8,736AF/day, and outflows are about 6,434AF/day as of Monday.



Inflows

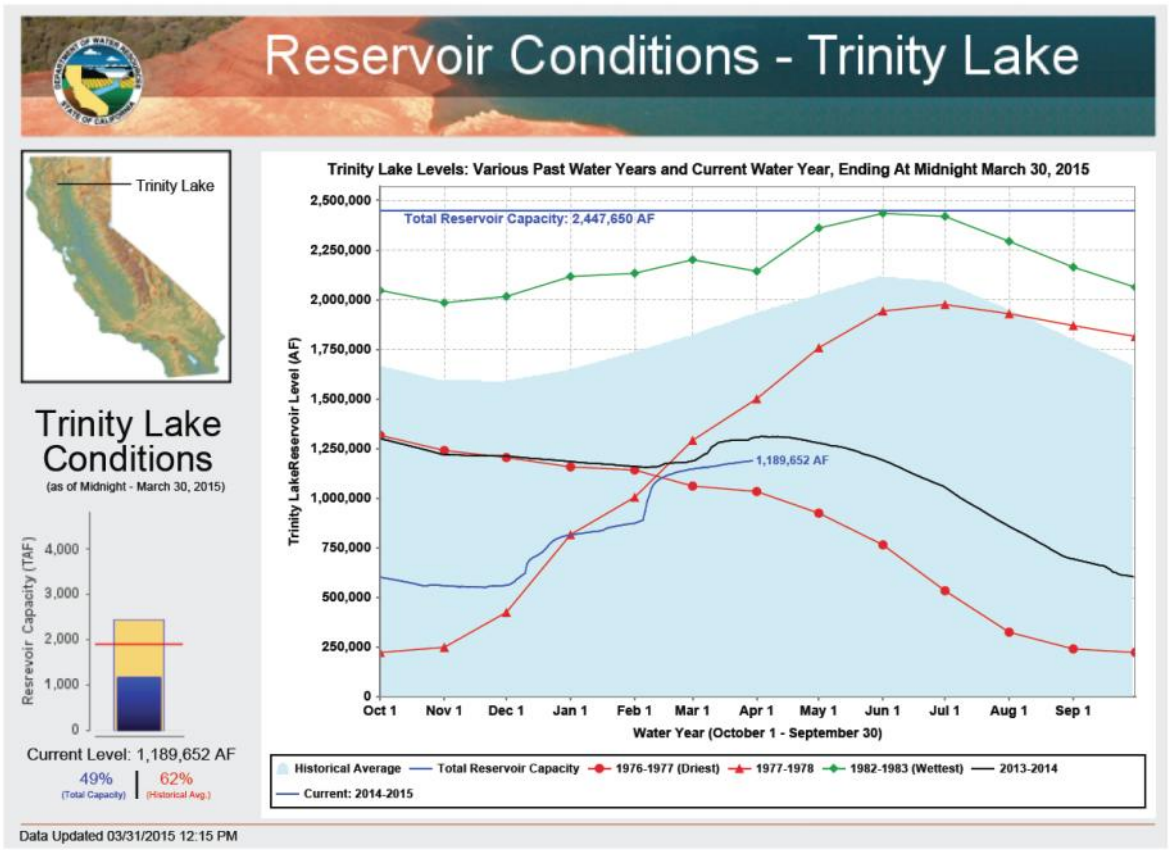


Outflows



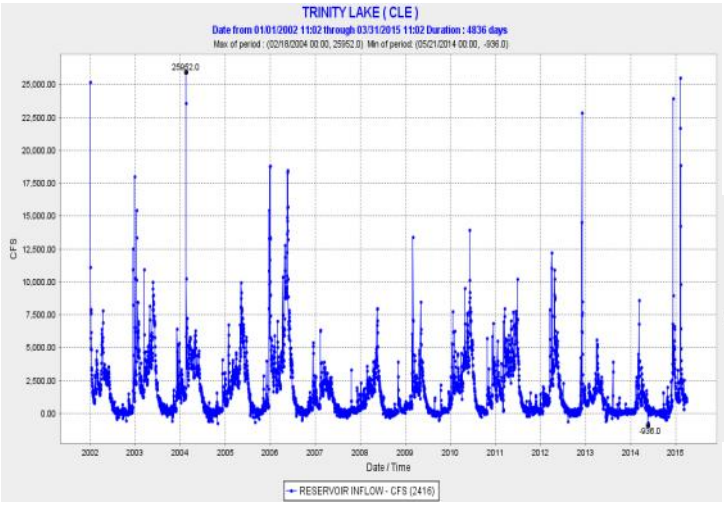
Trinity Lake Storage

As of March 30th, storage was approximately 1,180,598AF with capacity being at 49% (up 9,054AF and up 1% from last week) and compares to about 1,305,000AF one year ago. The current level is 62% of the historical average. Net inflows for the past week averaged 2,145AF/day. Total capacity of the Trinity is about 2,448,000AF. On Monday, releases to the Trinity River were about 591AF/day.

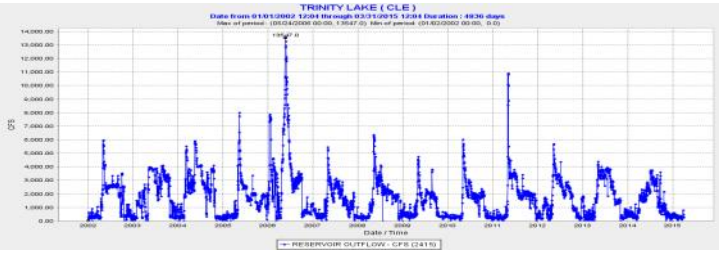


Reservoir graphs from: http://cdec.water.ca.gov/reservoir_map.html

Inflows

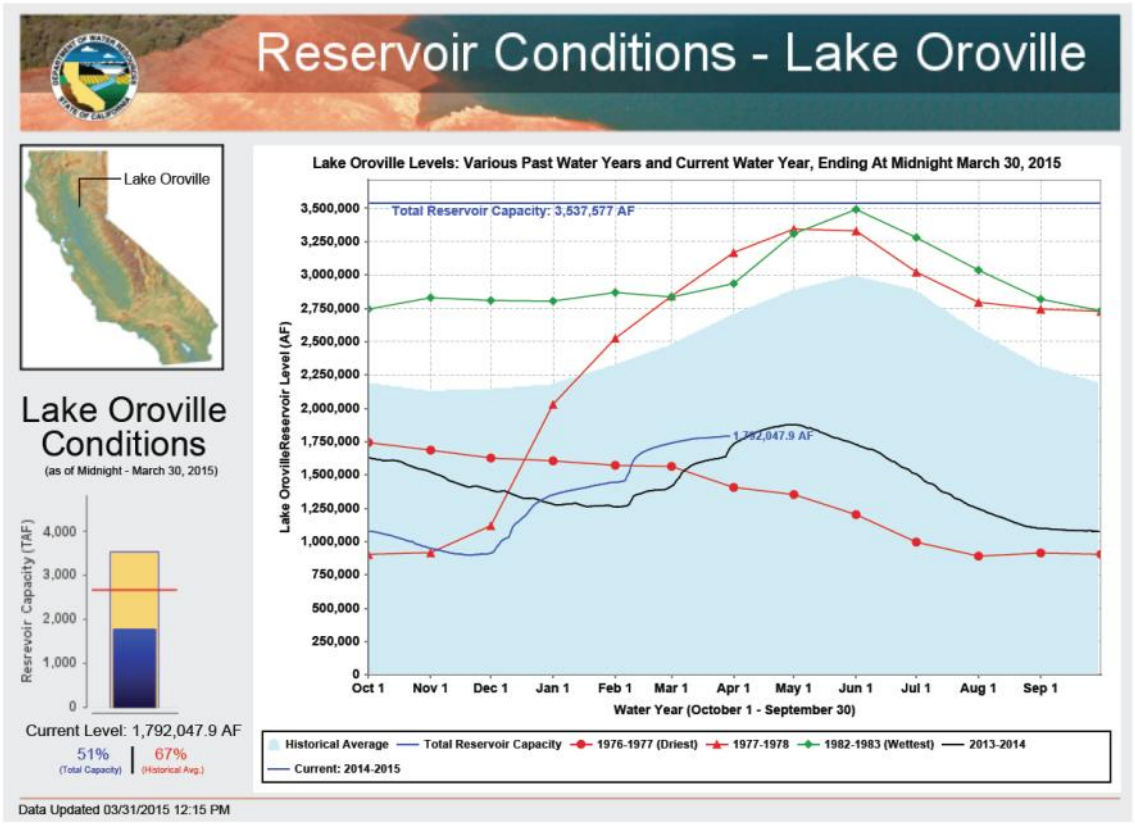


Outflows

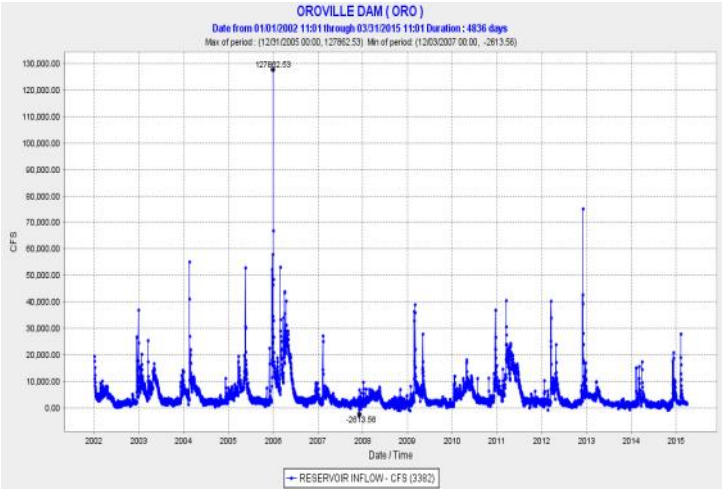


Oroville Storage

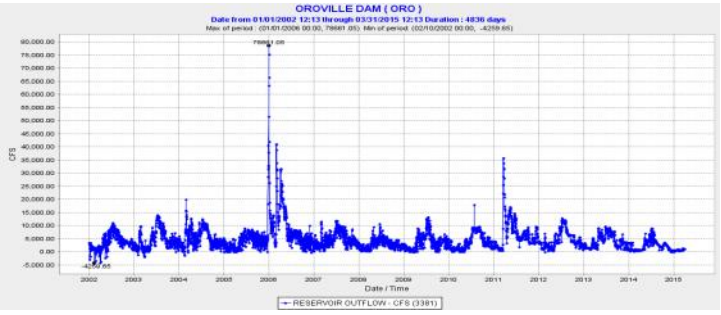
As of March 30th, storage was approximately 1,783,955AF (up 8,093AF and at 51% capacity—up 1% from last week) and compares to 1,671,000AF one year ago. The current level is 67% of the historical average. Inflows for the past week averaged 3,401AF/day. Total capacity of Oroville is 3,538,000AF. Current releases into the Feather River as of Monday have gone to 2,222AF/day.



Inflows

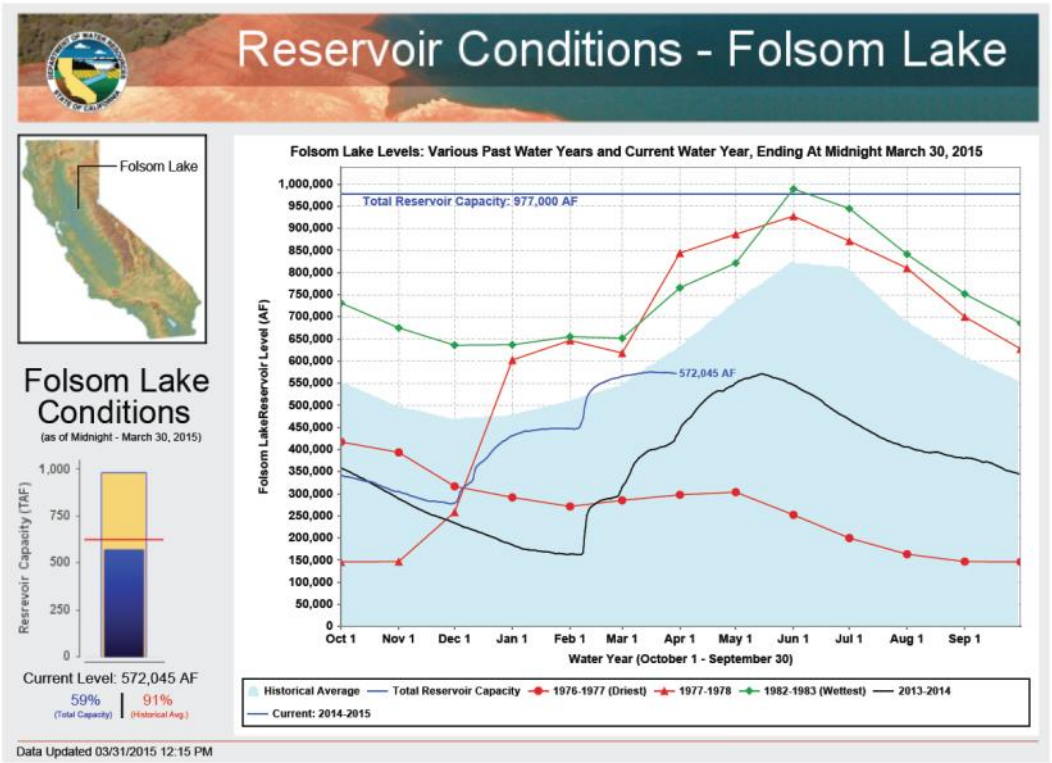


Outflows

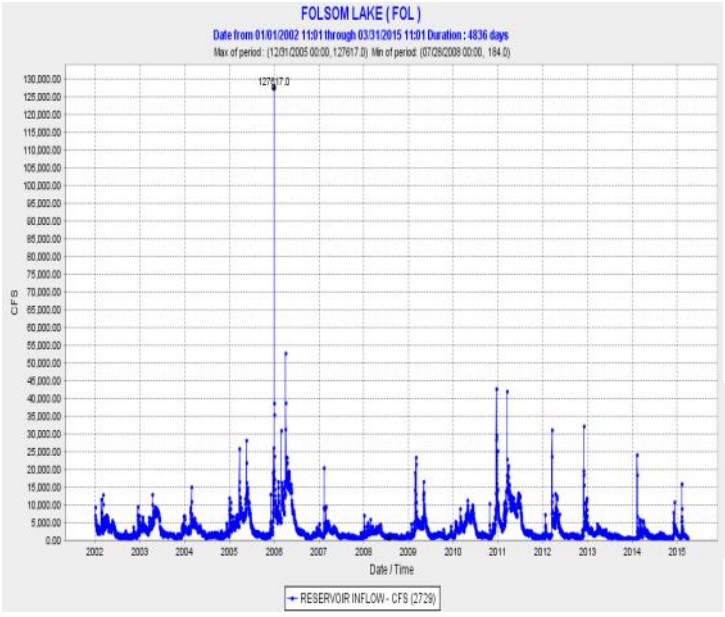


Folsom Storage

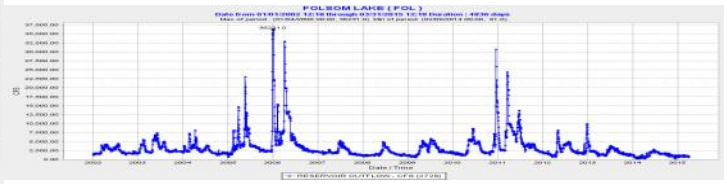
As of March 30th, storage was approximately 572,045AF (down 1,291AF and at 59% capacity — unchanged from last week) and compares to 431,000AF one year ago. The current level is 91% of the historical average. Inflows for the past week averaged 1,474AF/day. Total capacity of Folsom is 977,000AF. As of Monday, releases were about 1,557AF/day.



Inflows



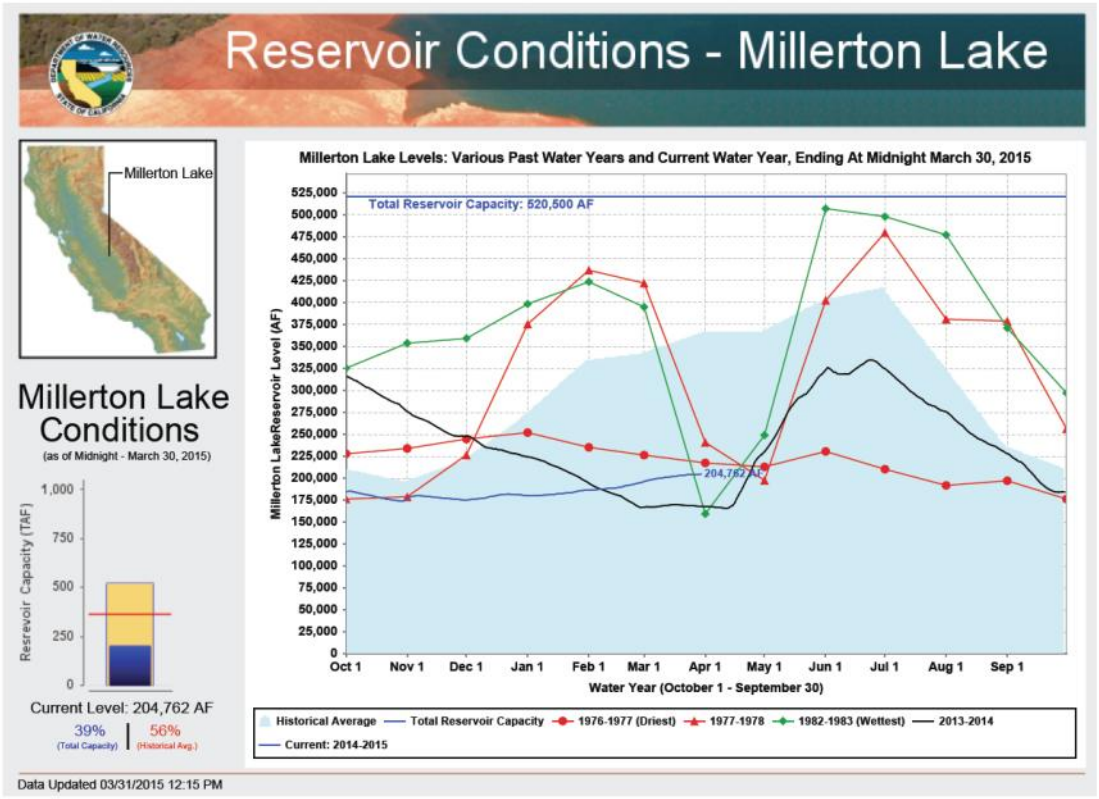
Outflows



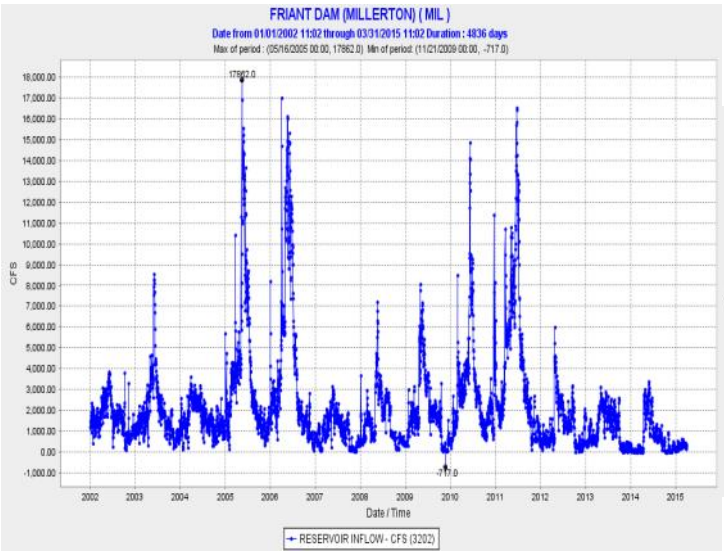
Friant Storage

As of March 30th, storage was about 204,762AF (up 571AF and at 39% capacity—unchanged from last week) and compares to 168,000AF one year ago. The current level is 56% of the historical average. Inflows for the last week averaged about 561AF/day. Total capacity of Friant is 520,500AF. On Monday, 0CFS was released into the Friant/Kern Canal, 0CFS was released into the Madera Canal, and 195CFS was released into the San Joaquin River, which is within the *critical year flow of about 150-200CFS*.

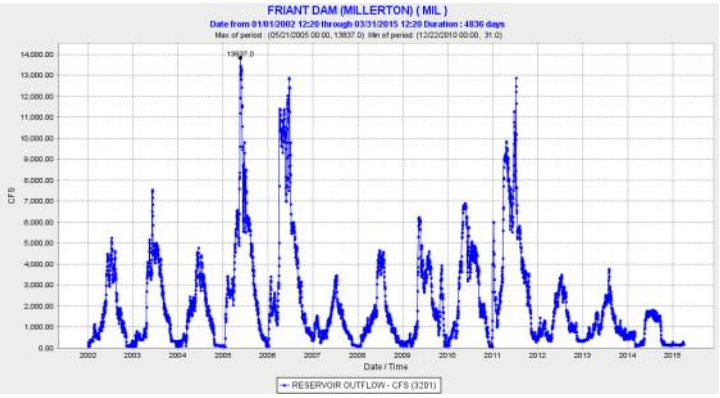
The eight upstream San Joaquin River reservoirs are about 33% full, holding 202,575AF of their 611,688AF capacity.



Inflows

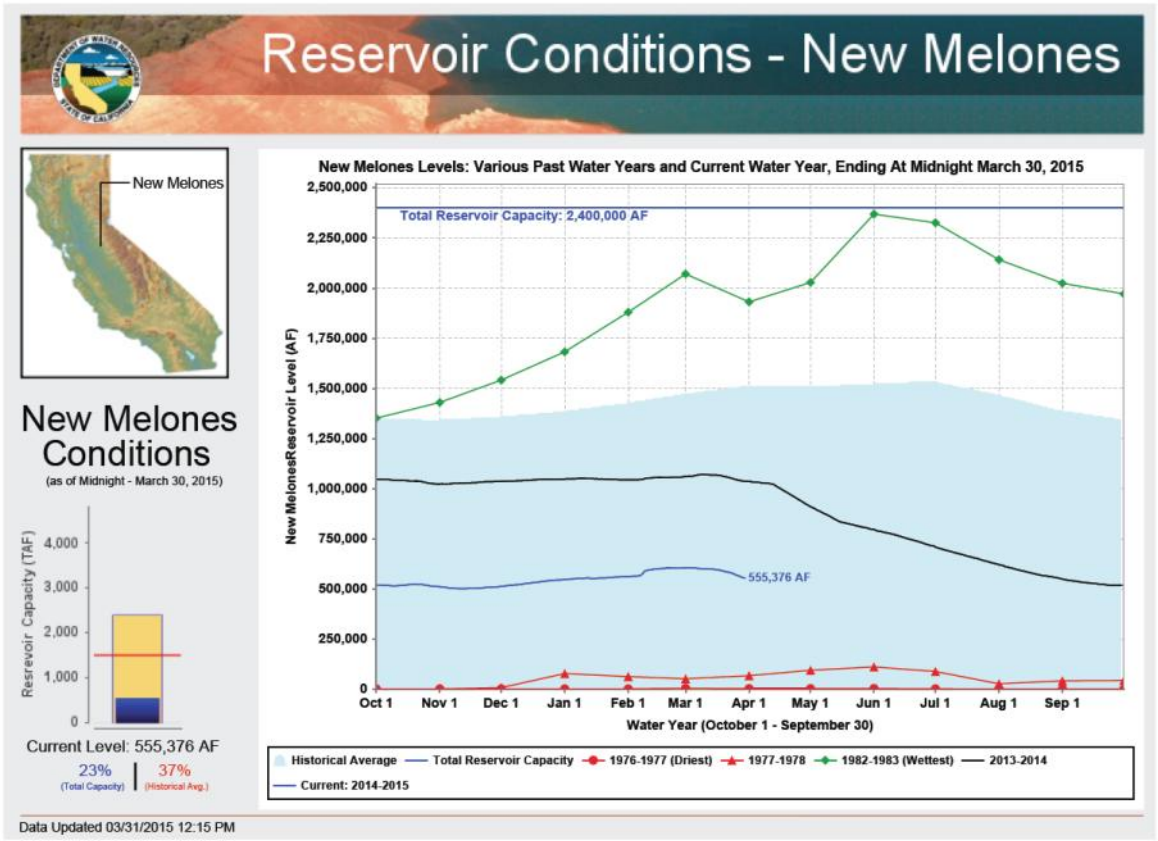


Outflows

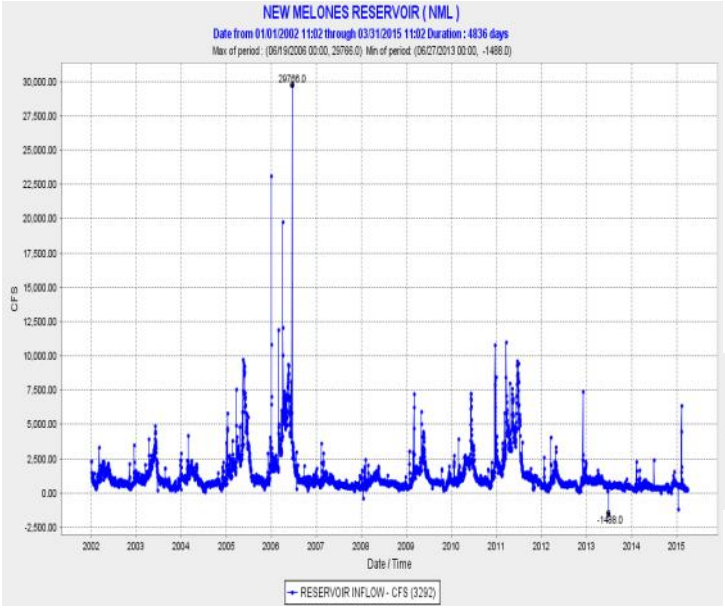


New Melones Storage

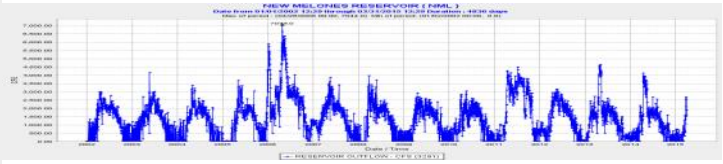
As of March 30th, storage was approximately 555,376AF (down 27,112AF and at 23% capacity – down 1% from last week) and compares to 1,038,000AF one year ago. The current level is 37% of the historical average. Inflows for the past week averaged 553AF/day. Total capacity of New Melones is 2,400,000AF. Current releases to the Stanislaus River have been adjusted to 3,231AF/day.



Inflows



Outflows



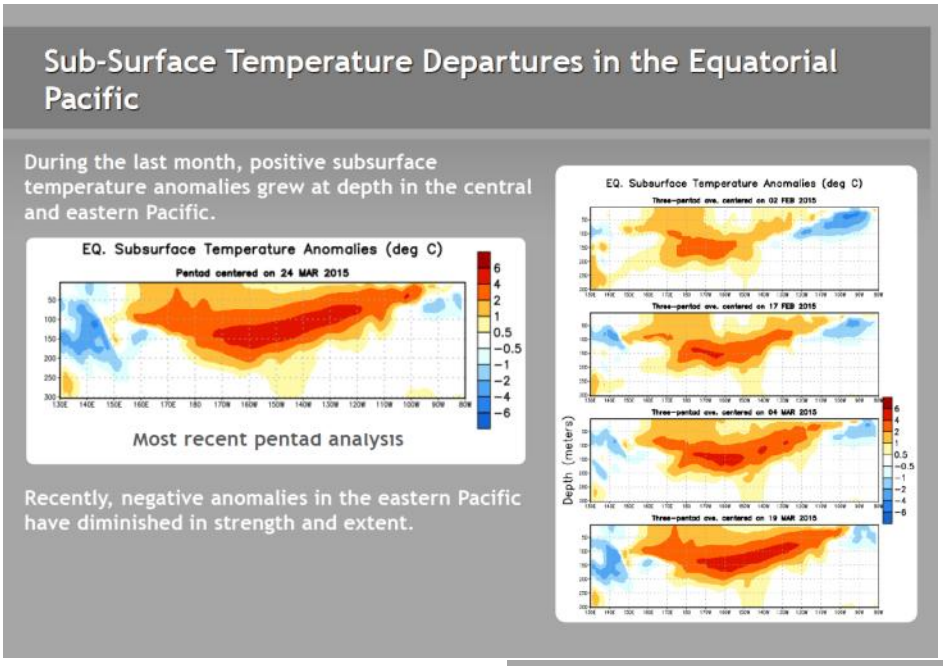
Long Range Forecast—

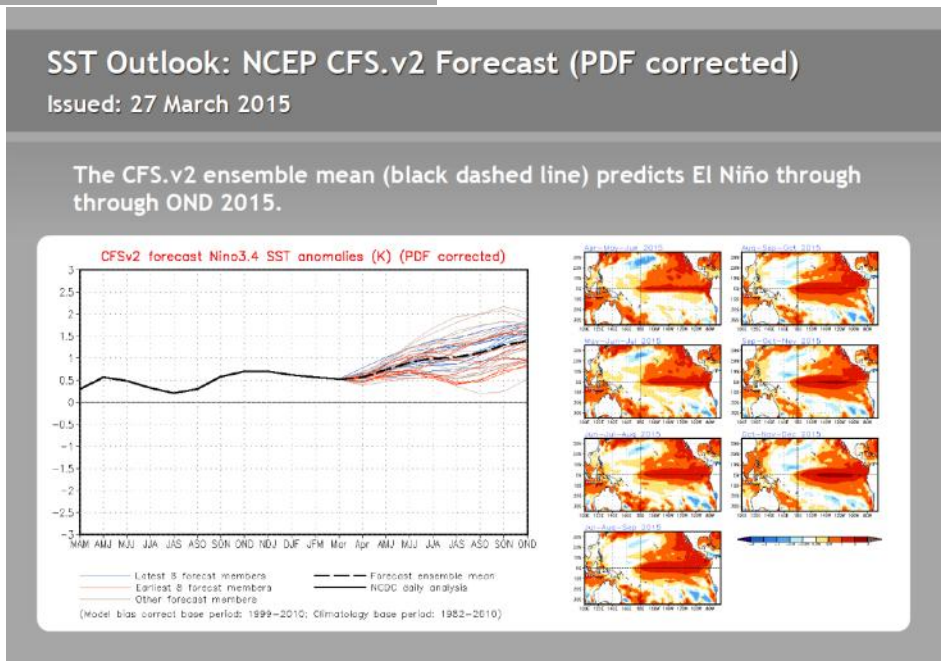
The Climate Prediction Center/NCEP issued a new Update on March 30, 2015:

ENSO Alert System Status: El Niño Advisory

- **El Niño conditions are present.***
- **Positive equatorial sea surface temperature (SST) anomalies continue across most of the Pacific Ocean.**
- **There is an approximately 50-60% chance that El Niño conditions will continue through Northern Hemisphere summer 2015.***

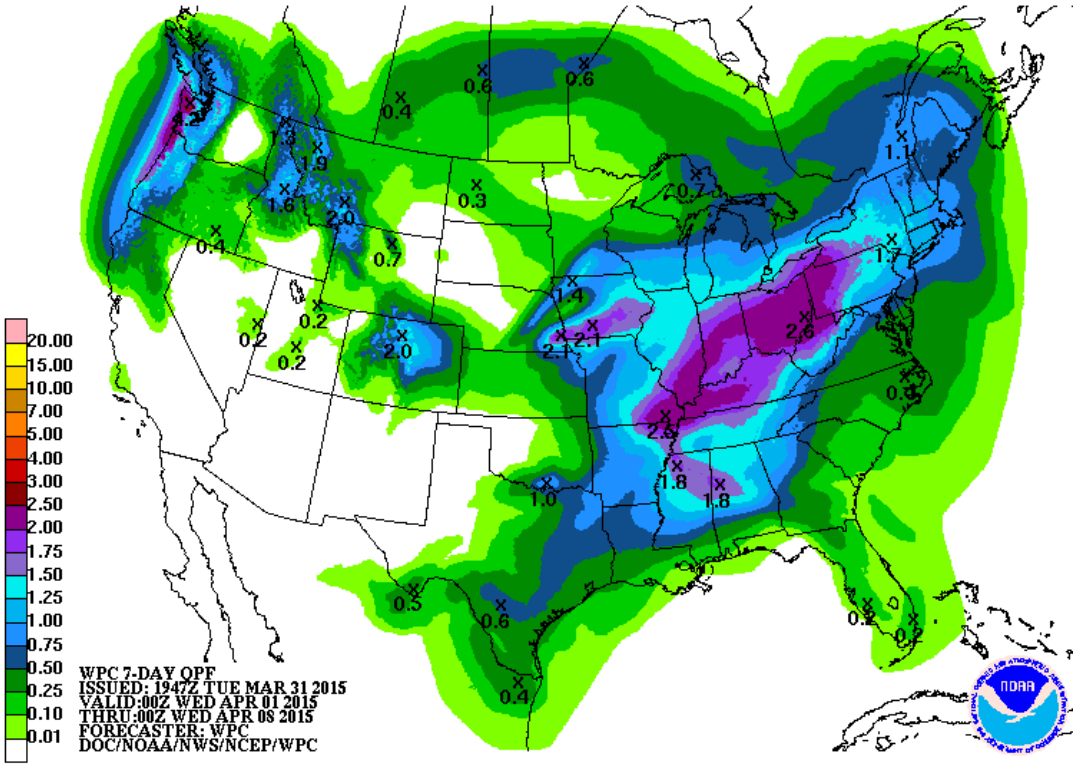
* Note: These statements (and the following charts) are updated at least once a month in association with the ENSO Diagnostics Discussion: http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/enso_advisory



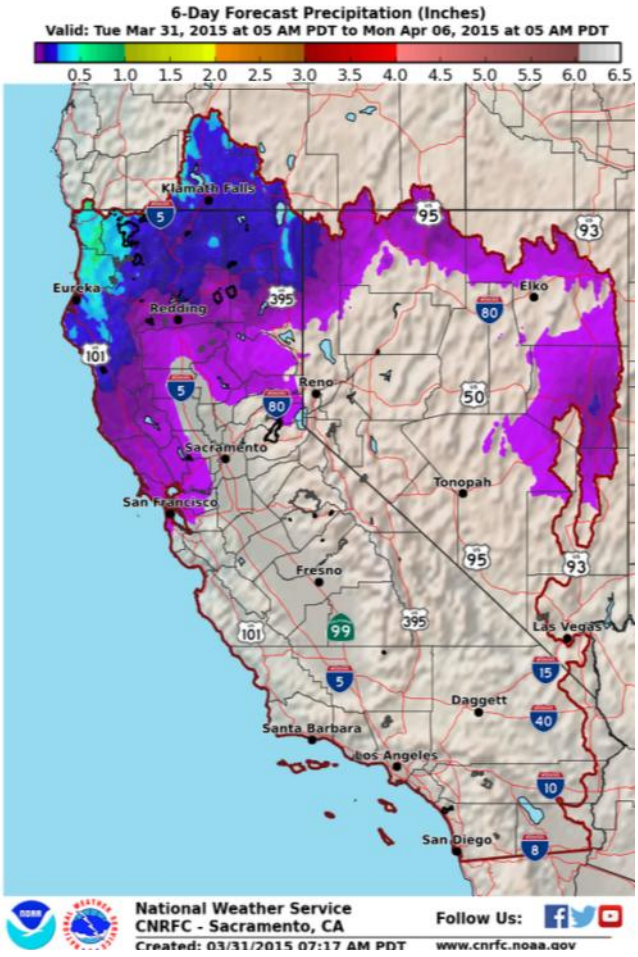


http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/lanina/enso_evolution-status-fcsts-web.pdf—pages 12 and 26

Not Much Precipitation Coming to California This Week



http://www.hpc.ncep.noaa.gov/qpf/p168i00.gif



http://www.cnrfc.noaa.gov/precipForecast.php?cwa=RSA&day=123456&img=6

10-Day Feather Basin Quantitative Precipitation Forecast (QPF)

Monday, March 30, 2015

(each day ends at 0400 PST)

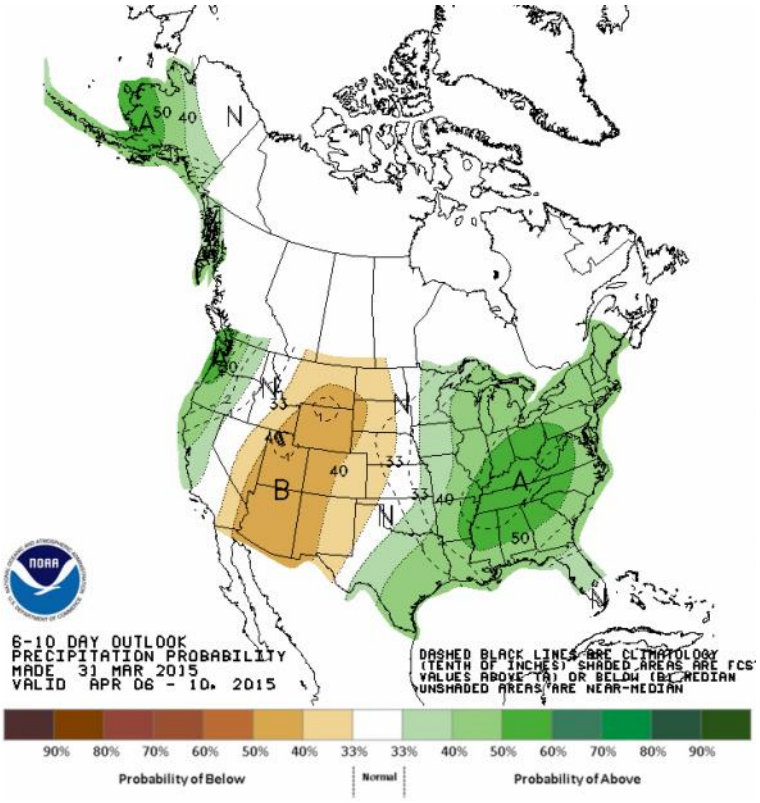
Day No.	Date		Precip (inches)	Snow Level (feet)	Average Daily* Precip (inches)	Snow Depth (inches)	Min Temp (F)
	Saturday, March 21, 2015	Actual	**0.0**	**9,500**			
	Sunday, March 22, 2015		**0.0**	**7,500**			
	Monday, March 23, 2015		**0.5**	**6,500**			
	Tuesday, March 24, 2015		**0.1**	**5,500**			
	Wednesday, March 25, 2015		**0.0**	**7,000**			
	Thursday, March 26, 2015		**0.0**	**10,500**			
	Friday, March 27, 2015		**0.0**	**11,500**			
	Saturday, March 28, 2015		**0.0**	**11,000**			
	Sunday, March 29, 2015		**0.0**	**10,500**			
	Monday, March 30, 2015		**0.0**	**11,000**	**0.13**	**0.4**	**29.7**
	Total observed:		**0.6**				
1	Tuesday, March 31, 2015	Forecast	0.0	10,500	0.13	0.3	29.8
2	Wednesday, April 01, 2015		0.0	7,000	0.13	0.3	29.9
3	Thursday, April 02, 2015		0.0	5,500	0.12	0.3	29.9
4	Friday, April 03, 2015		0.0	5,500	0.12	0.2	30.0
5	Saturday, April 04, 2015		0.0	7,500	0.12	0.2	30.1
6	Sunday, April 05, 2015		0.0	7,000	0.12	0.2	30.2
7	Monday, April 06, 2015		0.0	5,000	0.12	0.2	30.3
8	Tuesday, April 07, 2015		0.0	6,000	0.12	0.2	30.4
9	Wednesday, April 08, 2015		0.0	7,000	0.11	0.2	30.5
10	Thursday, April 09, 2015		0.0	8,000	0.11	0.1	30.5
	Friday, April 10, 2015		0.0	8,000	0.11	0.1	30.6
	10-Day Total:		**0.0**		**1.20**		
	10-Day Percent of Normal:		**0%**				
	Accumulated Observed Precip for WY 2015:		**34.6**	**(WY 2014: 35.8)**			

Comments:

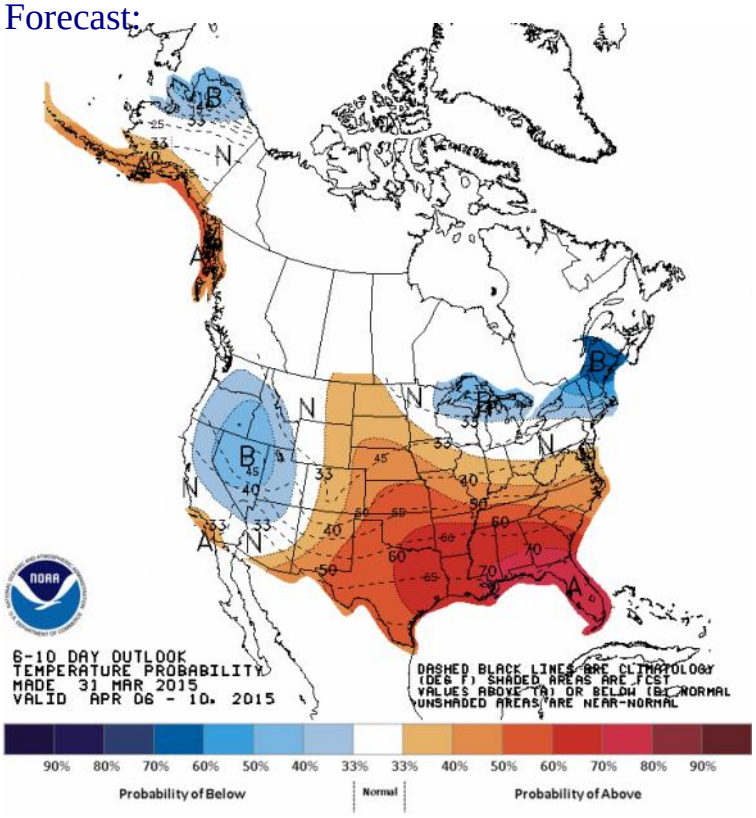
After one more day of warm, above-normal temperatures, generally dry and cooler conditions are forecasted for the Feather Basin this week. There's a slight chance of isolated rain and snow showers at times. The next update of this forecast will be about Monday, April 6, 2015, unless there are significant hydrologic changes.

http://cdec.water.ca.gov/cgi-progs/products/QPF.pdf

6-10 day Precipitation Forecast:

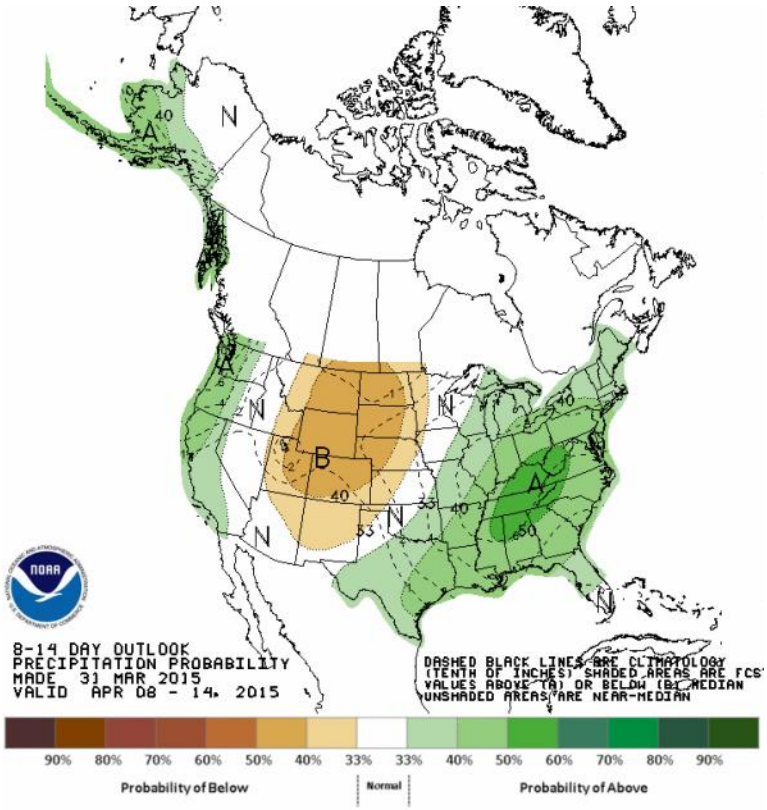


6-10 day Temperature Forecast:

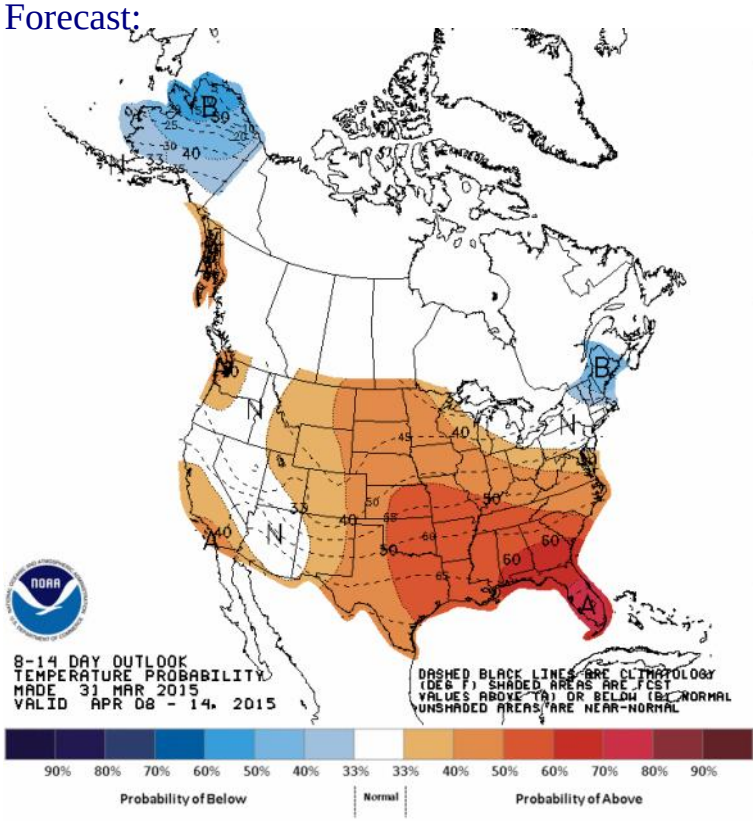


from: http://www.cpc.ncep.noaa.gov/products/predictions/610day/

8-14 day Precipitation Forecast:

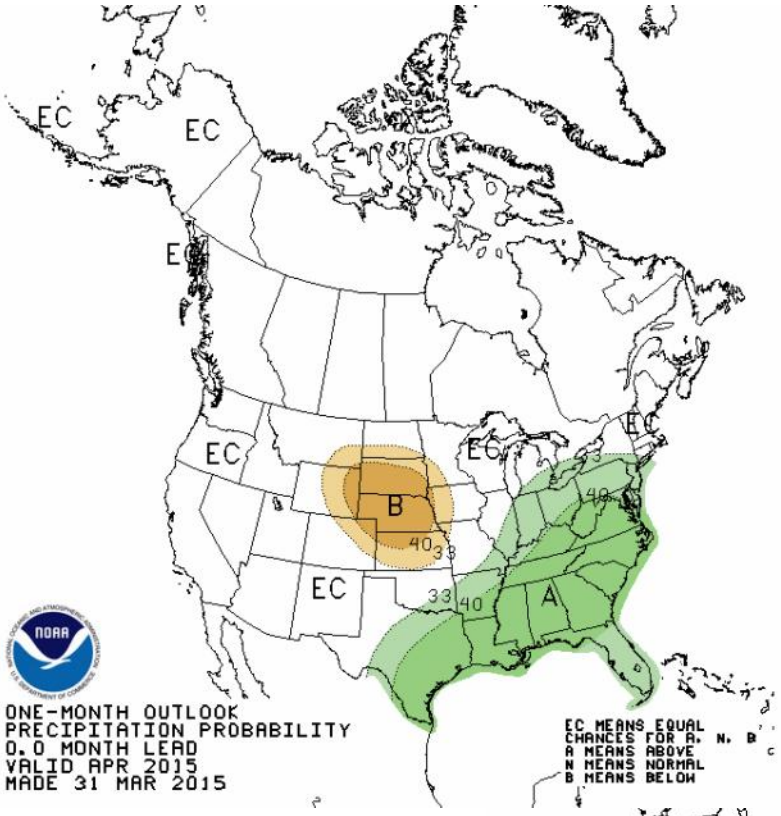


8-14 day Temperature Forecast:

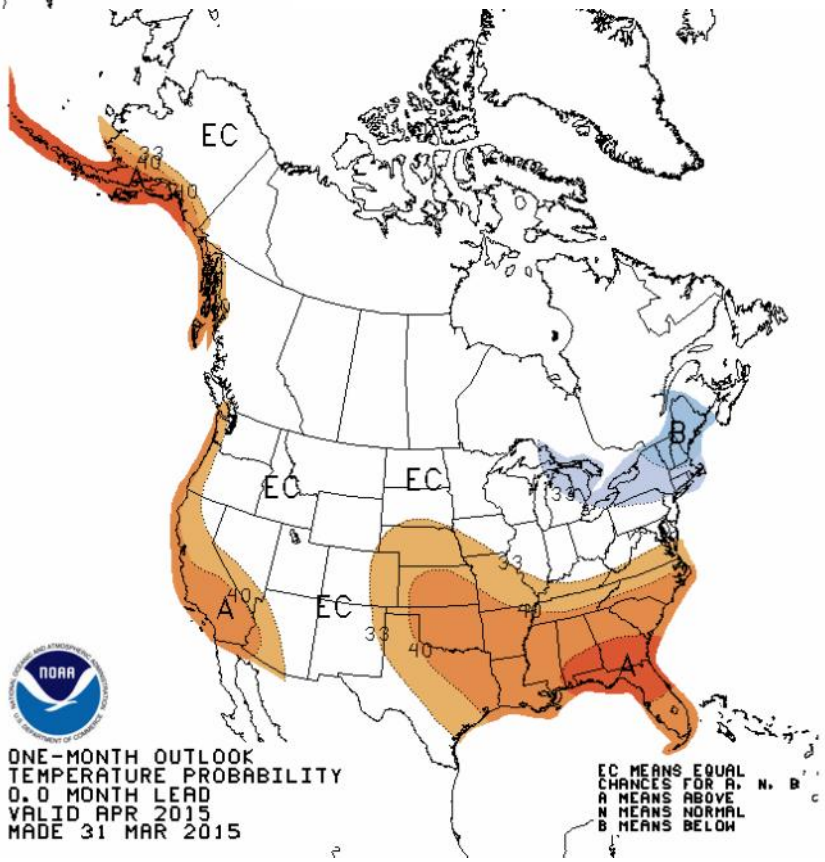


from http://www.cpc.ncep.noaa.gov/products/predictions/814day/

April Precipitation Forecast:

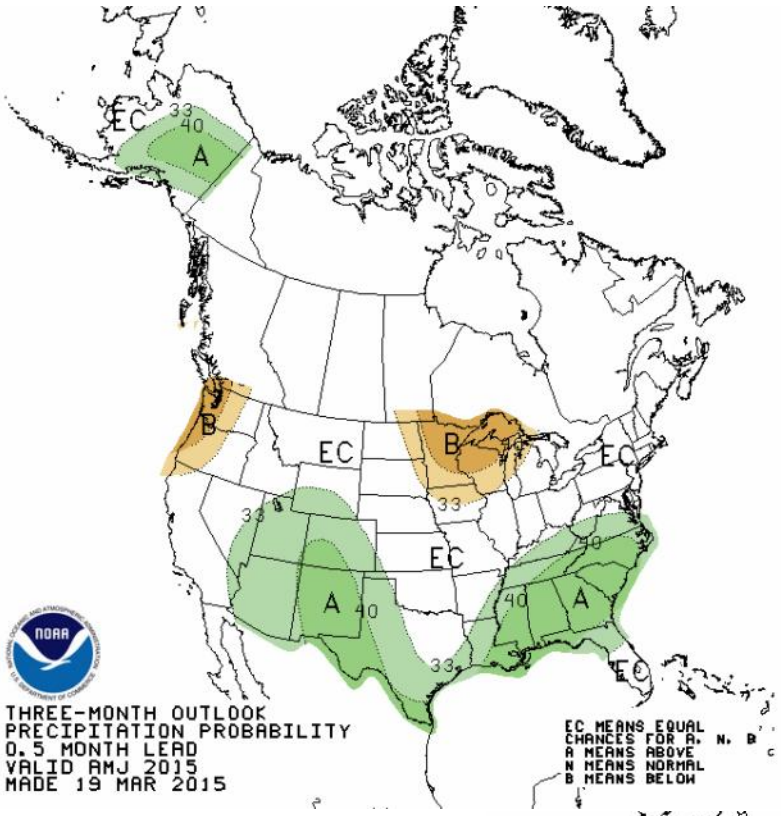


April Temperature Forecast:

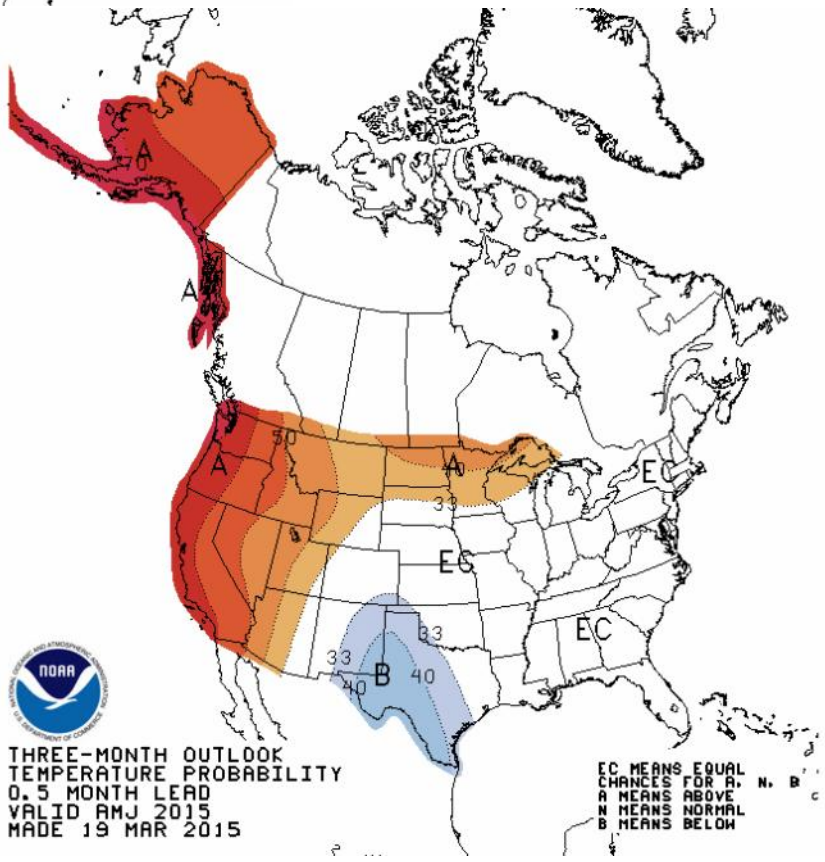


from http://www.cpc.ncep.noaa.gov/products/predictions/long_range/lead14/index.php

April–June Precipitation Forecast:



April–June Temperature Forecast:



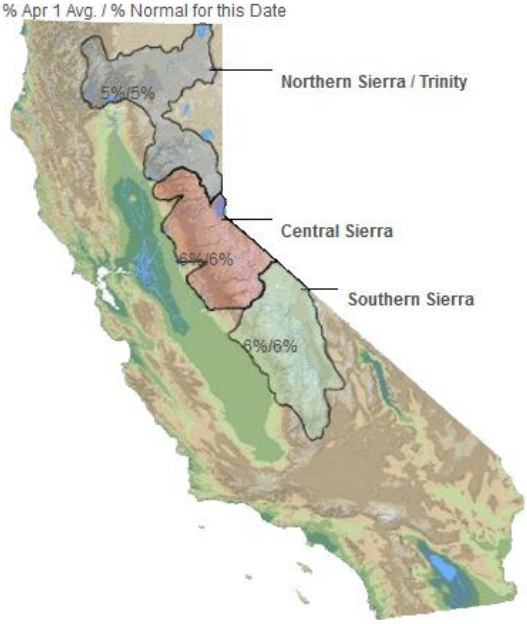
http://www.cpc.ncep.noaa.gov/products/predictions/long_range/seasonal.php?lead=1

Snow Water Equivalents (inches)

Provided by the California Cooperative Snow Surveys

Data For: **30-Mar-2015**

% Apr 1 Avg. / % Normal for this Date



Change Date : 30-Mar-2015 Refresh Data

http://cdec.water.ca.gov/cdecapp/snowapp/sweq.action

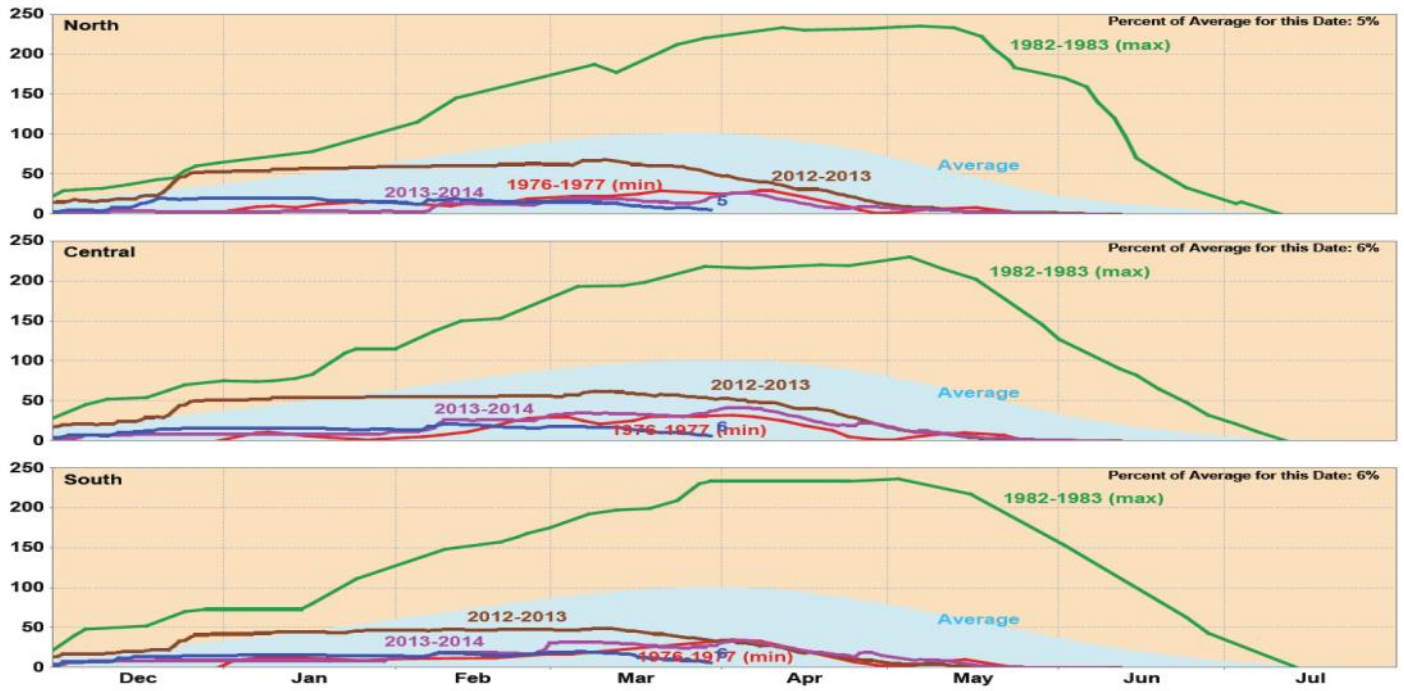
NORTH		
Data For: 30-Mar-2015		
Number of Stations Reporting	31	31 stations last week
Average snow water equivalent	1.5"	Down 0.9" snow water equivalent
Percent of April 1 Average	5%	Down 3%
Percent of normal for this date	5%	Down 3%

CENTRAL		
Data For: 30-Mar-2015		
Number of Stations Reporting	42	43 stations last week
Average snow water equivalent	1.9"	Down 1.1" snow water equivalent
Percent of April 1 Average	6%	Down 4%
Percent of normal for this date	6%	Down 4%

SOUTH		
Data For: 30-Mar-2015		
Number of Stations Reporting	22	27 stations last week
Average snow water equivalent	1.6"	Down 0.9" snow water equivalent
Percent of April 1 Average	6%	Down 4%
Percent of normal for this date	6%	Down 4%

STATEWIDE SUMMARY		
Data For: 30-Mar-2015		
Number of Stations Reporting	95	101 stations last week
Average snow water equivalent	1.7"	Down 1.0" snow water equivalent
Percent of April 1 Average	6%	Down 3%
Percent of normal for this date	6%	Down 3%

California Snow Water Content, March 30, 2015, Percent of April 1 Average



Statewide Percent of April 1: 6%

Statewide Percent of Average for Date: 6%

http://cdec.water.ca.gov/cgi-progs/products/PLOT_SWC.pdf

Northern Sierra 8-Station Precipitation (inches)

Water Year 2015

Tuesday, March 24, 2015

October Total:	**3.7 "**	**Percent of Monthly October Average:**	**123%**
October Monthly Average:	3.0 "		
November Total:	**3.9 "**	**Percent of Monthly November Average:**	**62%**
November Monthly Average:	6.3 "		
December Total:	**15.2 "**	**Percent of Monthly December Average:**	**181%**
December Monthly Average:	8.4 "		
January Total:	**0.3 "**	**Percent of Monthly January Average:**	**3%**
January Monthly Average:	9.0 "		
February Total:	**7.6 "**	**Percent of Monthly February Average:**	**95%**
February Monthly Average:	8.0 "		
March Total:	**0.9 "**	**Percent of Monthly March Average:**	**13%**
March Monthly Average:	6.9 "		
April Total:	**"**	**Percent of Monthly April Average:**	**0%**
April Monthly Average:	3.9 "		
May Total:	**"**	**Percent of Monthly May Average:**	**0%**
May Monthly Average:	2.1 "		
June Total:	**"**	**Percent of Monthly June Average:**	**0%**
June Monthly Average:	1.0 "		
July Total:	**"**	**Percent of Monthly July Average:**	**0%**
July Monthly Average:	0.2 "		
August Total:	**"**	**Percent of Monthly August Average:**	**0%**
August Monthly Average:	0.3 "		
September Total:	**"**	**Percent of Monthly September Average:**	**0%**
September Monthly Average:	0.9 "		

Total precipitation since 0400 PST Tuesday 03/17/2015:	**0.5"**

(Monthly totals may not add up to seasonal total because of rounding)

Seasonal Total to Date:	**31.6 "**	**Percent of Seasonal Average to Date:**	**79%**
Seasonal Average to Date:	40.0 "		

Water Year Average	**50.0 "**	**Percent of an Average Water Year:**	**63%**

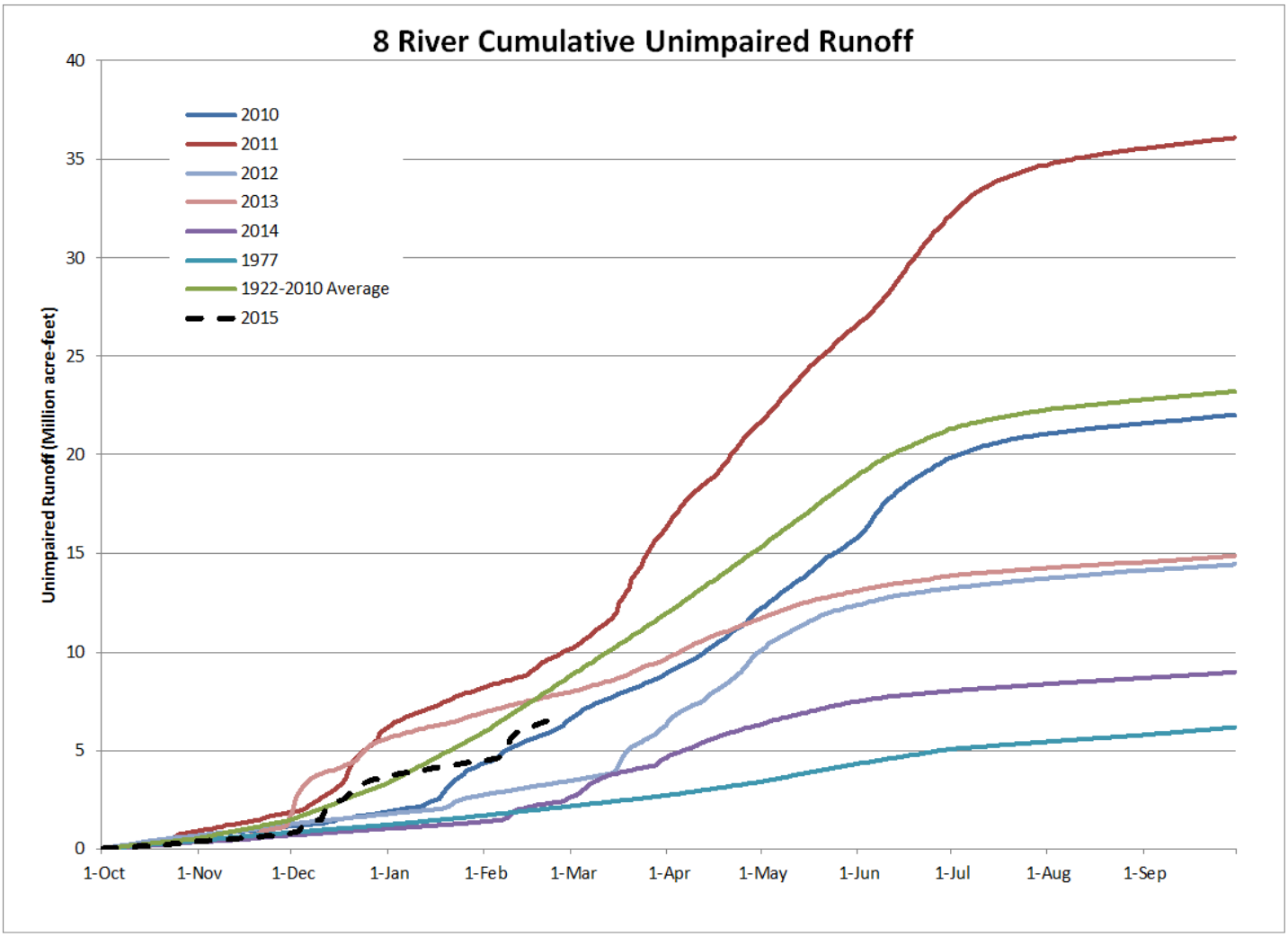
Notes:

Last year seasonal total:	21.3 " 53 %		
Last year Feb 2014 total:	11.5 " 144 %	Last year Mar 2014 total:	9.9 " 143 %

Driest Water Years		Wettest Water Years	
17.1" in 1924		1983	88.5 "
19.0" in 1977		1995	85.4 "
27.7" in 1939		1982	84.8 "
28.0" in 1931		1998	82.4 "
28.3" in 1976		2006	80.1 "

http://cdec.water.ca.gov/cgi-progs/products/8-Stations_Tab.pdf

It is really important that we realize that runoff still needs to catch up with precipitation. The drought has dried the soil down so much that runoff isn't matching the precipitation. This chart was provided by Terry Erlewine of the State Water Contractors.



MEMORANDUM

TO: DAN NELSON, EXECUTIVE DIRECTOR

FROM: TOM BOARDMAN, WATER RESOURCES ENGINEER

SUBJECT: MARCH PROJECT OPERATIONS UPDATE

DATE: FEBRUARY 27, 2015

Project Operations

- Jones pumping has been at minimum levels for all but 4 days in February due to weed problems that hindered fish salvage operations. As a result, an estimated 60 TAF of foregone CVP water was pumped at Banks and will be paid back to the CVP later this spring. Exports have been constrained by the Old and Middle river flow limit of -3500 to -5000 cfs per the BiOps in response to the salvage of 1 delta smelt last week and increased wind-related turbidity in the south delta. With delta inflows dropping and water quality beginning to deteriorate, the export constraint will shift to D1641 by early March without another storm. Without favorable changes to the State Board's Temporary Urgency Change Petition, exports will be at minimum levels while D1641 standards control operations.
- Banks pumping increased to about 6000 cfs shortly after the last storm, but has since declined to about 3,200 cfs because of the -3500 cfs OMR limit.
- Shasta storage has increased to about 2.6 MAF; a gain of nearly 600 TAF from the last storm. Releases are at minimum levels as Reclamation struggles to conserve storage for summer ESA fish protections and contractual commitments. DWR's February runoff forecast shows that a Shasta Critical Year will occur with 90% exceedance conditions. However, a 25% deficiency to exchange contractors and refuges will not be triggered under 50% exceedance hydrology.
- Folsom storage has increased by about 115 TAF since the last storm. Although the current storage is about 270 TAF more than this date last year, the basin's snow pack is only 20% of normal compared to 29% last year.
- CVP San Luis storage increased by about 20 TAF by mid February, but has since dropped by about 5 TAF due to limited CVP pumping. The current storage is about 360 TAF and is about 15 TAF less than the latest estimate of water to be rescheduled on March 1.
- CVP demands during February were about 35 TAF or 25% of the 15-year average.

2014-2015 Operations Outlook

The latest estimate of rescheduled water requests has increased to 375 TAF. However, that estimate could further increase to about 390 TAF if project operators determine that cross-delta losses for north of delta transfer water is 10% less than expected. The final determination of the carriage loss factor is overdue and is expected any day.

While the accounting per the Coordinated Operations Agreement is finally balanced, the available CVP project water in San Luis is only about 35 TAF after adjusting for rescheduled water and the recent export sharing accounting between Projects.

DWR's latest runoff projection continues to show that a Shasta Critical Year will occur under 90% exceedance conditions. Although the early February storm brought a significant boost to Shasta storage, historical hydrology trends show that similar storm events are less likely to occur during the remainder of the rainy season. As such, there is only a small chance that northern reservoirs will refill enough to support full summer exports necessary for a small allocation to ag service contractors.

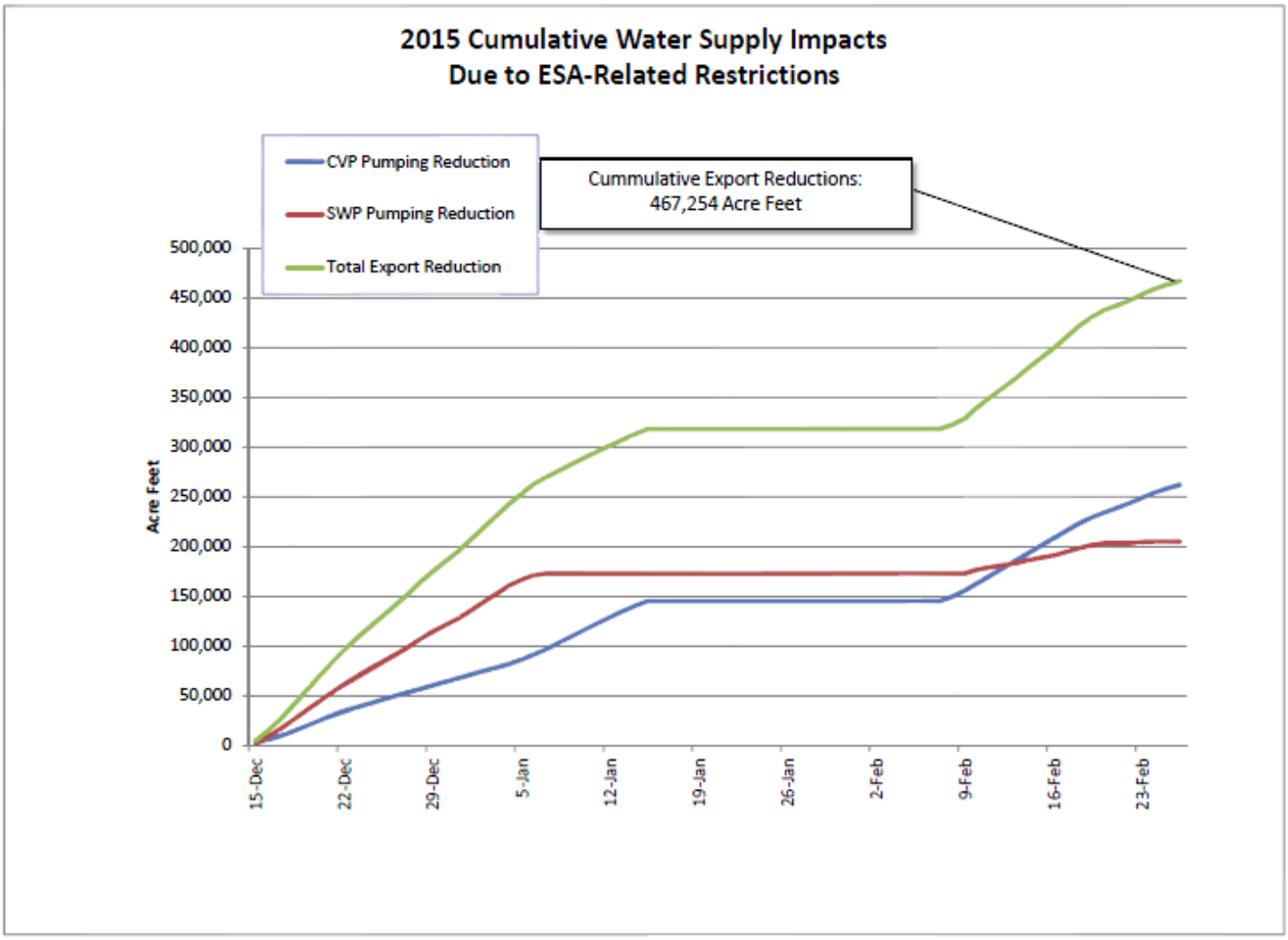
The attached chart titled "2015 CVP San Luis Reservoir Storage/Allocation Outlook" shows the maximum expected refill in CVP San Luis to be 380-500 TAF. After rescheduled water is subtracted, the remaining amount of CVP San Luis storage plus anticipated exports will likely be insufficient to meet the Exchange Contractor allocation without a 150-160 TAF call on Friant water.

The following table contains a preliminary projection of the final allocations based upon early runoff projections. The final allocation will not be made until the amount of upstream storage is known with some certainty in April or May.

Hydrology	Allocation Projections		
	Urban	Ag Service	Exchange Contractors/Refuges
Dry Conditions	Greater of 25% or H&S levels	0%	75%*
Average Conditions	Greater of 25% or H&S levels	0%	100%
Above Normal Conditions	50%	**0-5%	100%

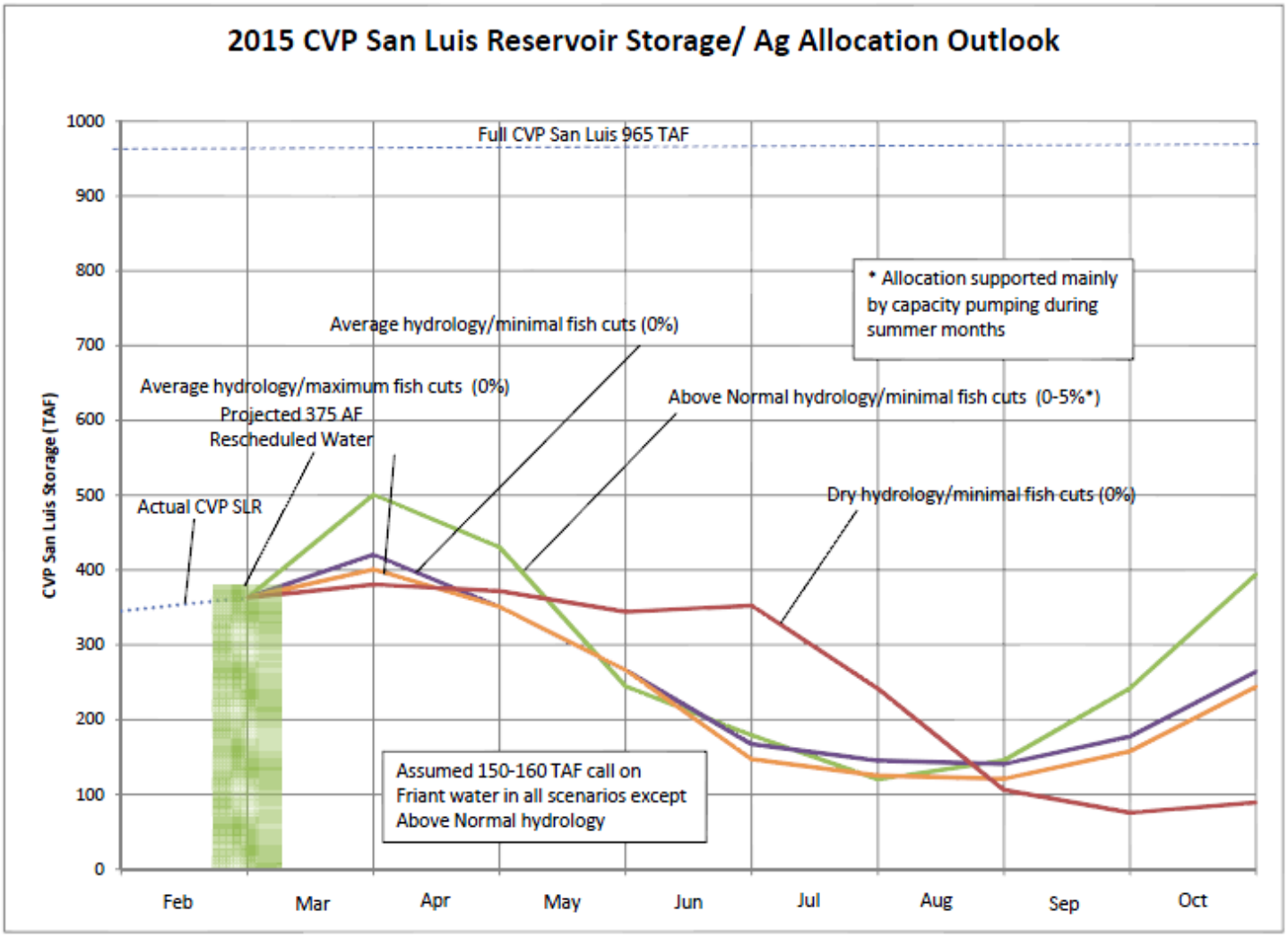
* Dependant on northern reservoirs sufficiently refilling.

** Allocation not available until summer.



T. Boardman, SLDMWA
2/27/2015

http://www.sldmwa.org/OHTDocs/pdf_documents/Tom%20Boardman/Mar15_fc.pdf



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2/27/2015

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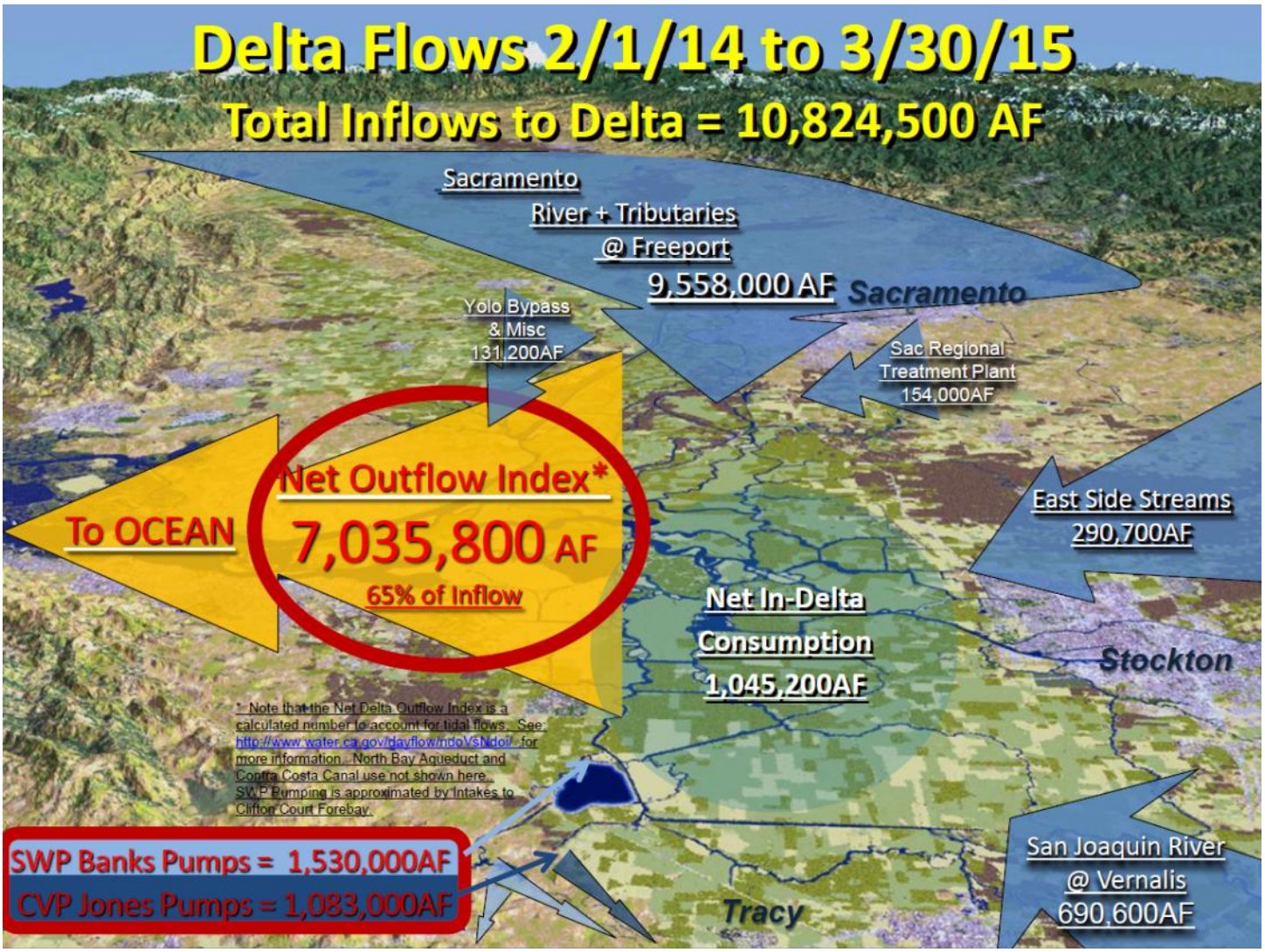
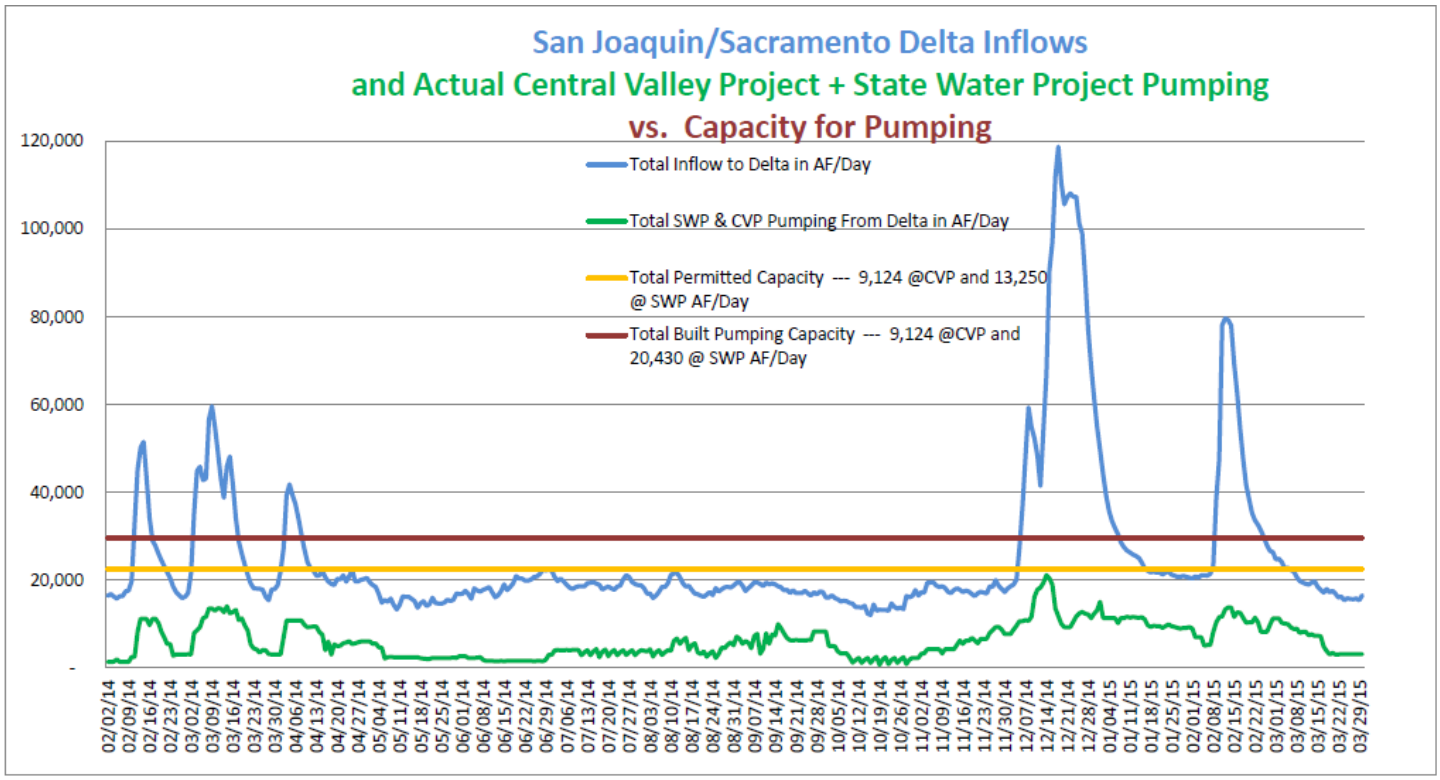

Delta Flows 2/1/14 to 3/30/15
Total Inflows to Delta = 10,824,500 AF
Sacramento River + Tributaries @ Freeport
9,558,000 AF
Sacramento
Yolo Bypass & Misc
131,200AF
Sac Regional Treatment Plant
154,000AF
Net Outflow Index*
7,035,800 AF
65% of Inflow
To OCEAN
East Side Streams
290,700AF
Net In-Delta Consumption
1,045,200AF
Stockton
* Note that the Net Delta Outflow Index is a calculated number to account for tidal flows. See http://www.water.ca.gov/dayflow/mdoVSNdoi/ for more information. North Bay Aqueduct and Contra Costa Canal use not shown here. SWP Pumping is approximated by Intakes to Clifton Court Forebay.
SWP Banks Pumps = 1,530,000AF
CVP Jones Pumps = 1,083,000AF
Tracy
San Joaquin River @ Vernalis
690,600AF

The really maddening part of the incredible waste of water has happened during flood flow events. Layer after layer of environmental rules like the Endangered Species Act Biological Opinions for the Delta Smelt and Salmonids have caused so many pumping restrictions. In all of the last 13 months, only one day in mid-December 2014 saw the pumps at Tracy pumped at the maximum permitted level. Those restrictive maximum State Water Resource Control Board pumping levels shown by the yellow line below are set at about 2/3 of the actual capacity of the pumps in Tracy which is shown by the red line. When the blue line of actual inflow into the Delta is above the red and yellow lines, you know that the excess is being dumped out to the ocean.



Meanwhile Agricultural Water Allocations Are Set At **Zero and Twenty Percent**

Agriculture Users received 0% allocation for this water year from the US Bureau of Reclamation on February 27, 2015. M&I users received enough to meet health and safety needs or 25% of historic use, whichever is greater. For the full announcement, go to the link: http://www.usbr.gov/newsroom/newsrelease/detail.cfm?RecordID=48986.

As of March 2, 2015, the State Water Project Allocation has been increased from 15% to 20% for the 2015 year. For the press release, go to this link: http://www.water.ca.gov/recent_news.cfm/030215allocation-1.pdf. **That allocation is for both the agricultural users and the municipal and industrial users.**

***Disclaimer*: The information contained herein is compiled from a number of sources. Some of what we report is gleaned from news articles or meetings we attend. While we strive for this information to be accurate, it may be in error, and much of the information and data contained herein is provisional and subject to future revisions. If you plan on using this information to make business decisions about your water assets or needs, we strongly suggest that you do your own independent verification of the accuracy of this information. THE WATER AGENCY, INC. provides no guarantee as to the accuracy or completeness of the information. Neither THE WATER AGENCY, INC., nor any of the sources of the information contained herein are responsible for any errors or omissions, or for the use or results obtained from the use of this information. Please feel free to send us information or opinions, which are contrary to what we write, so we can try to integrate them into future updates.**

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