2014 Hydrologic Progression & Delta Salinity Management

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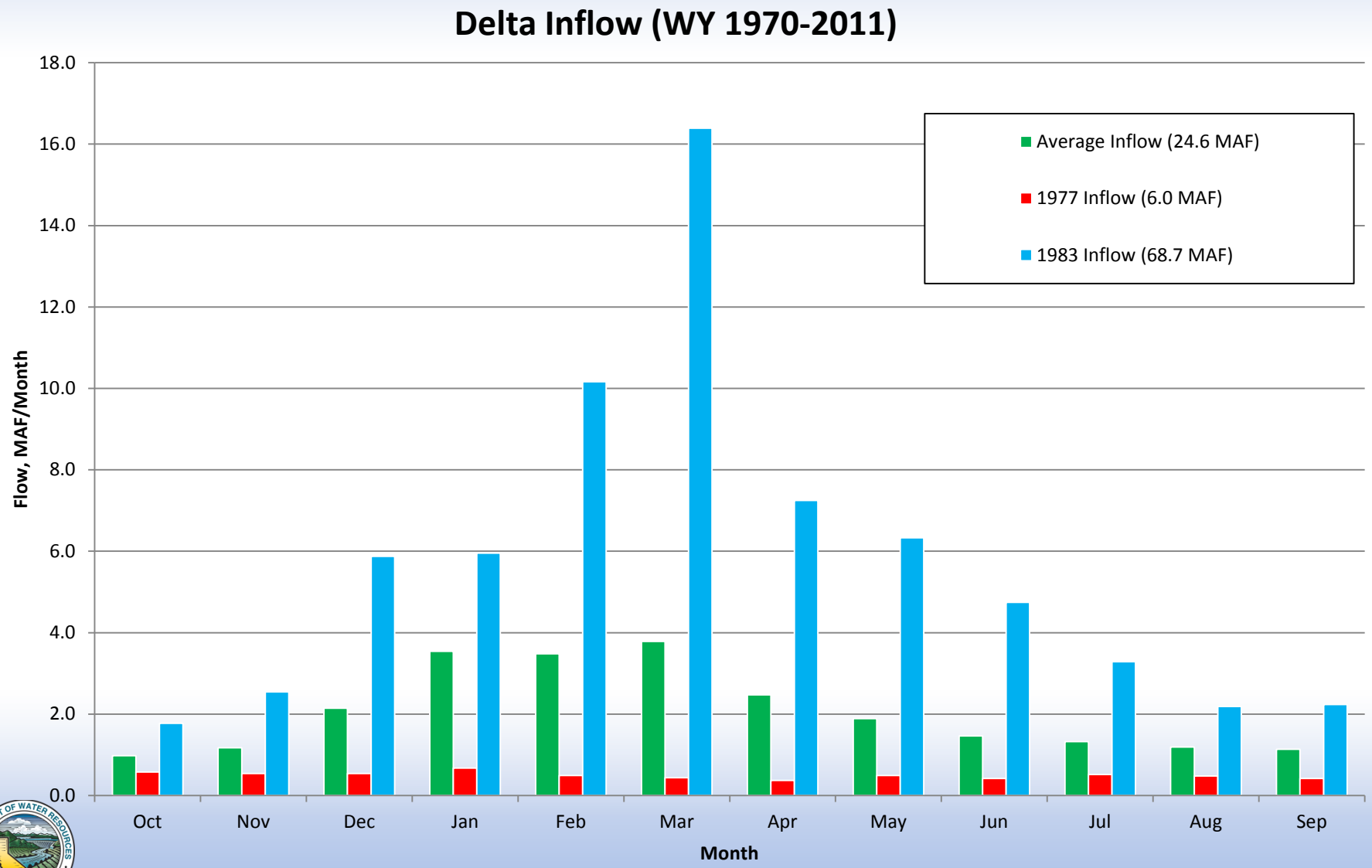
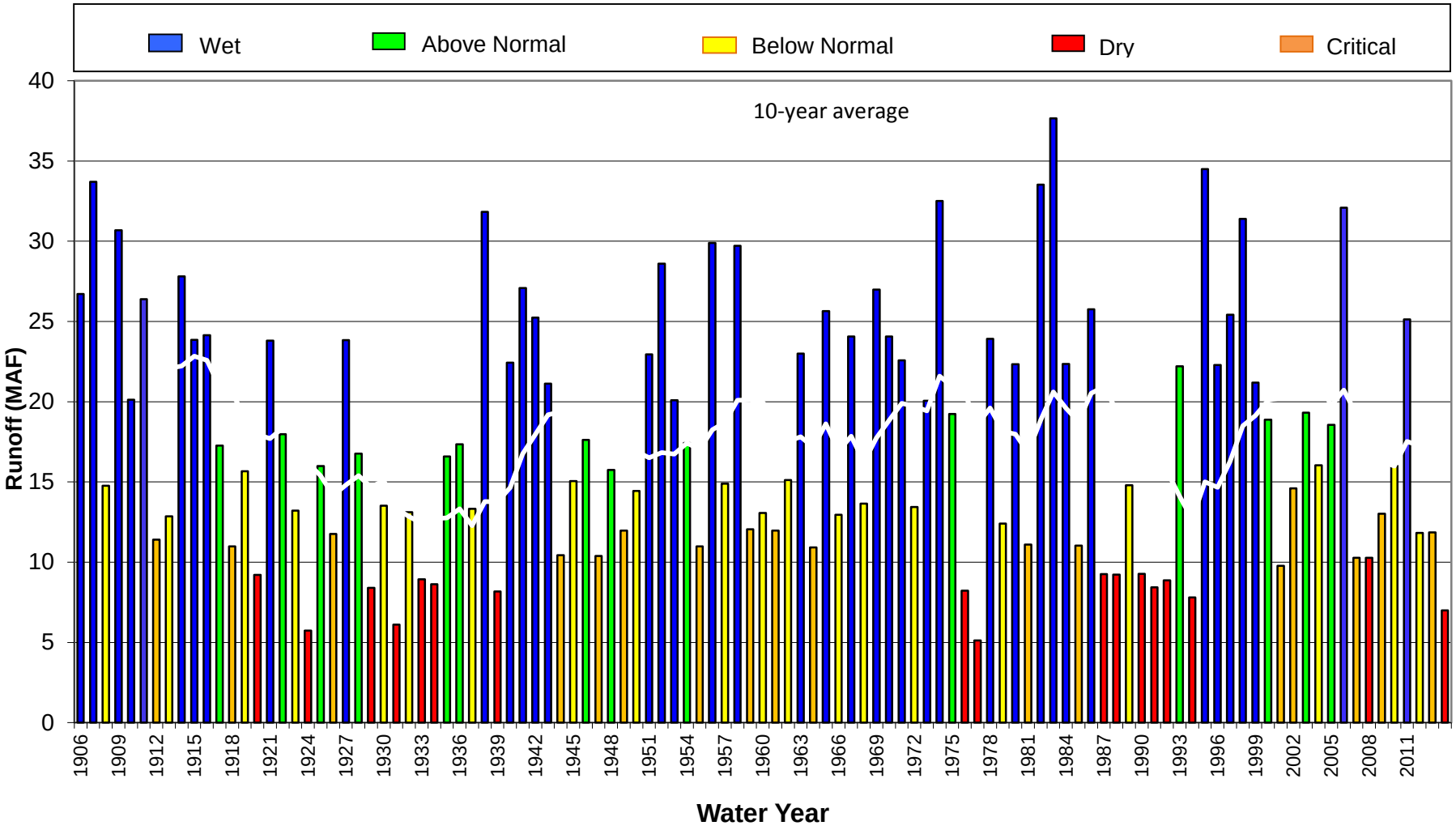
Department of Water Resources
Municipal Water Quality Investigations Meeting
July 30, 2014

- California Hydrologic Uncertainty
- 2014 Hydrology
- Drought Response
- Preparation for 2015

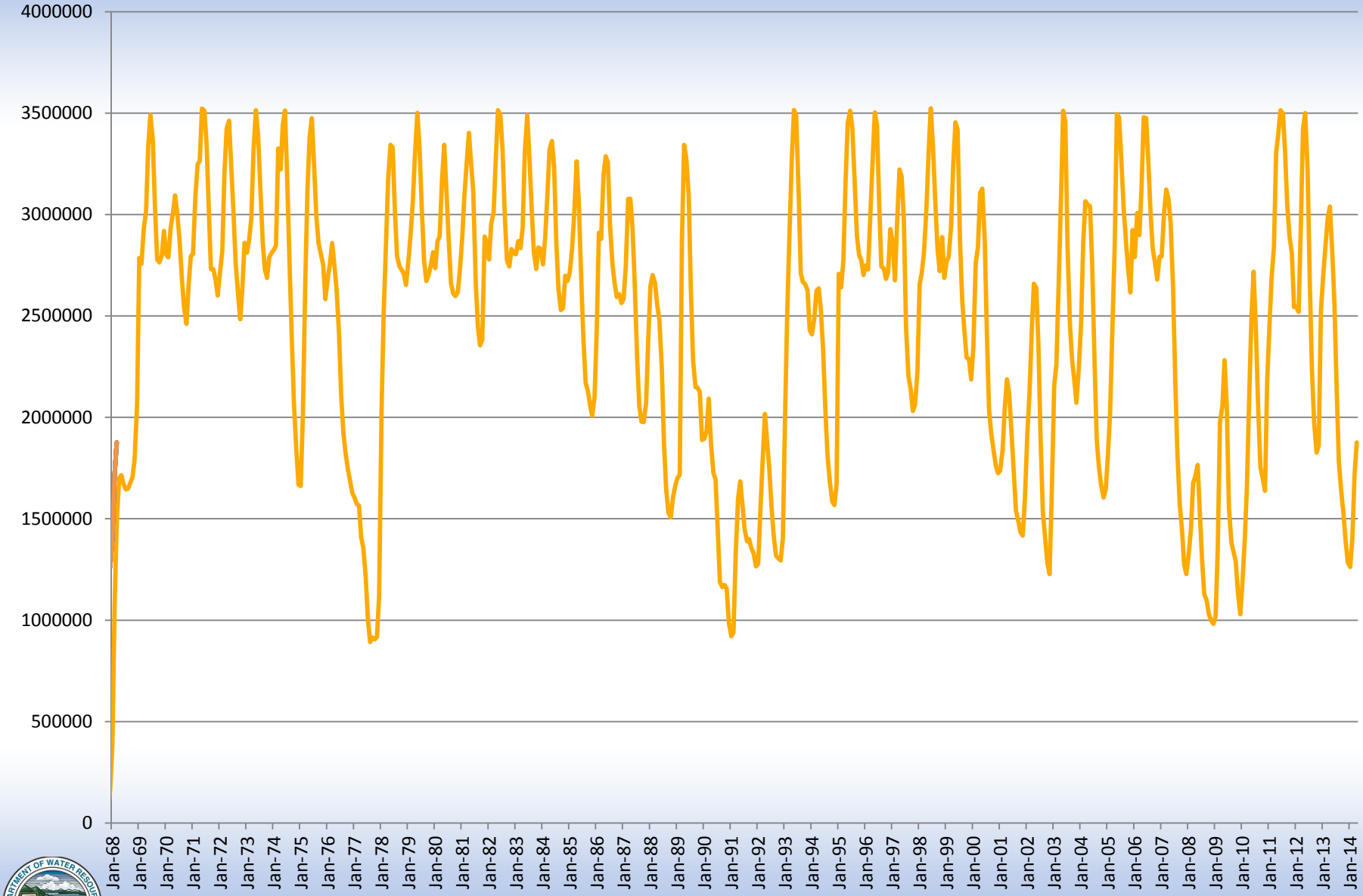
Seasonal Variation of Runoff



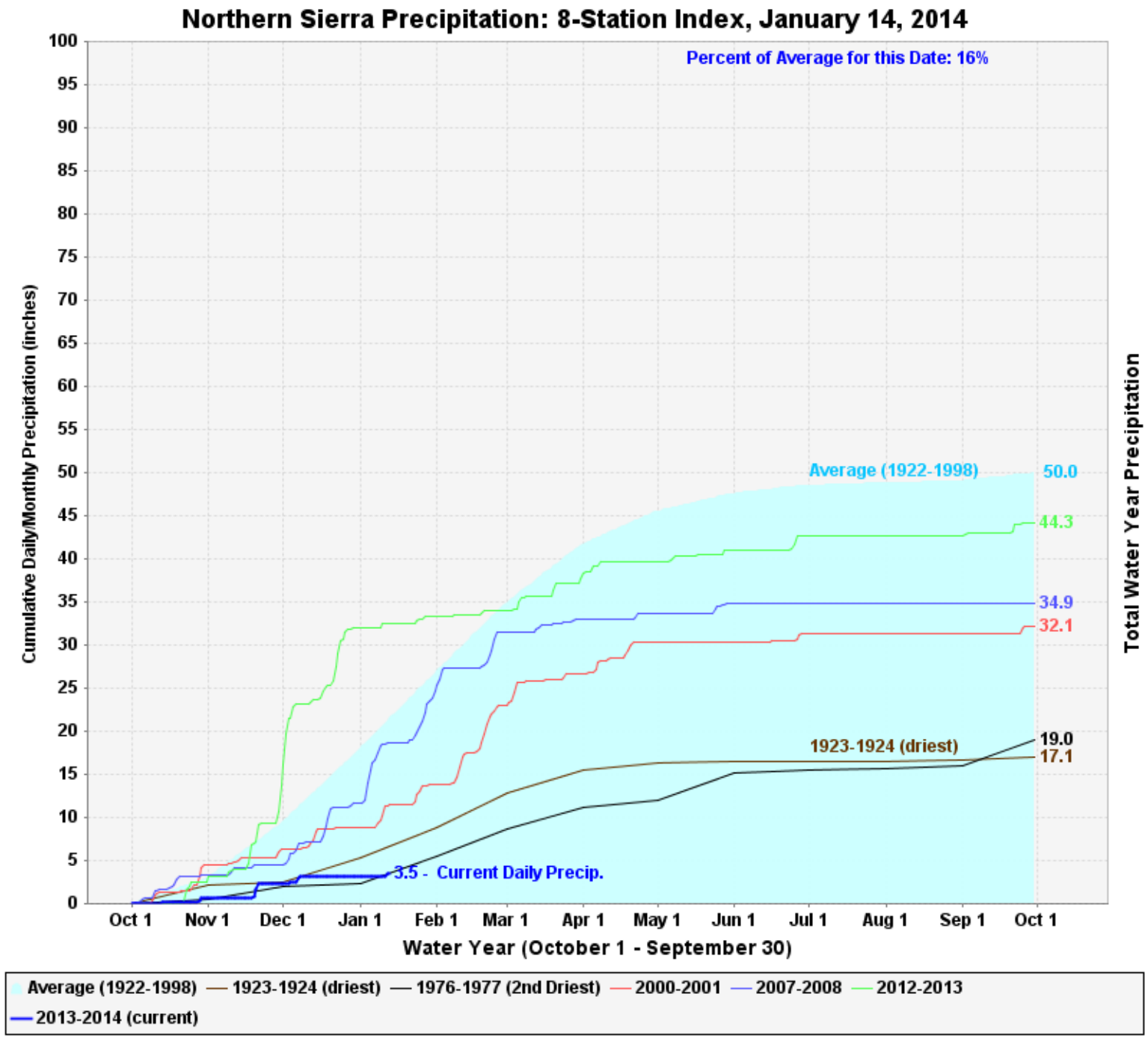
Sacramento Valley Water Year Types



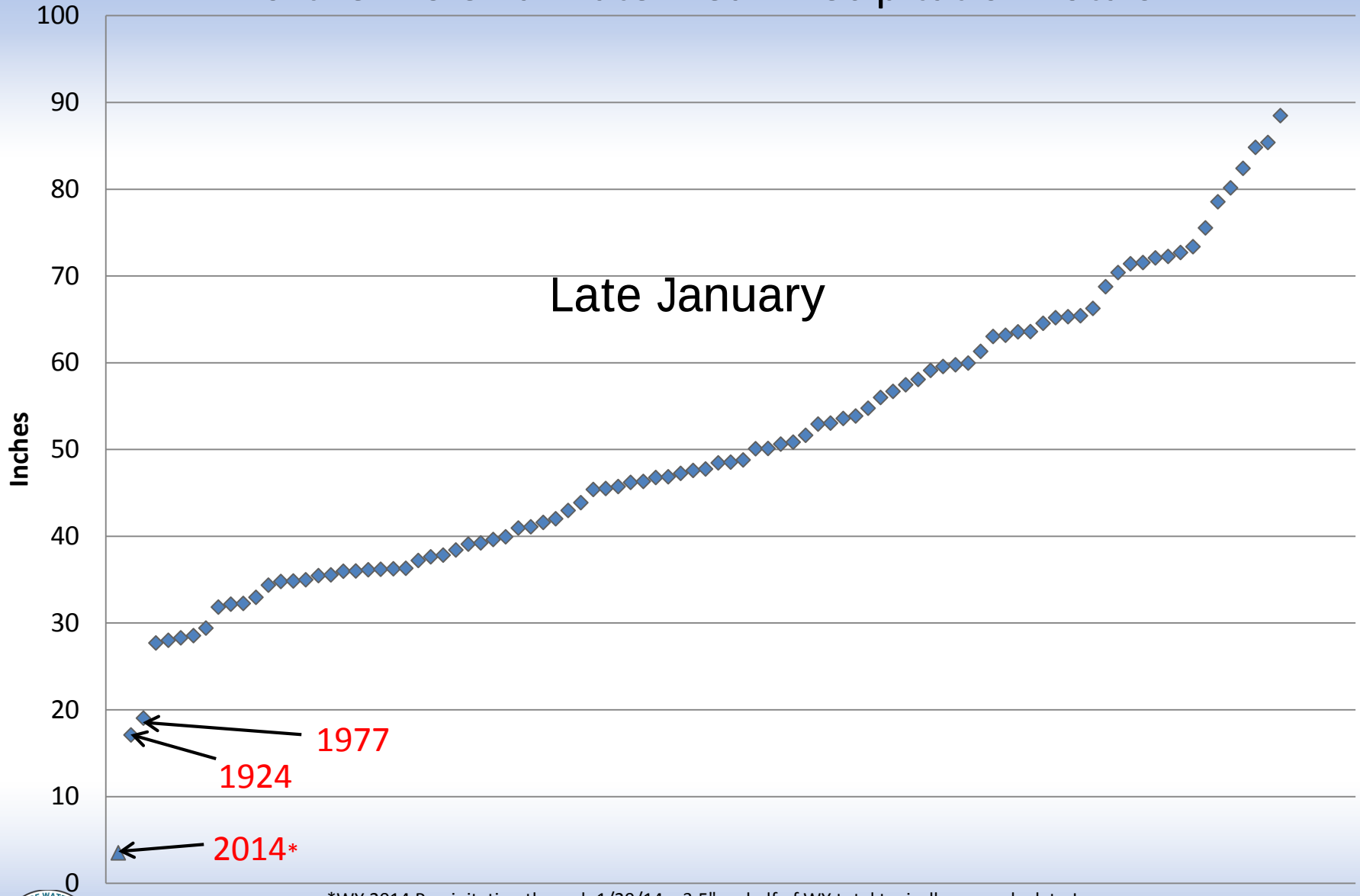
Historical Lake Oroville Storage



2014 Hydrologic Progression

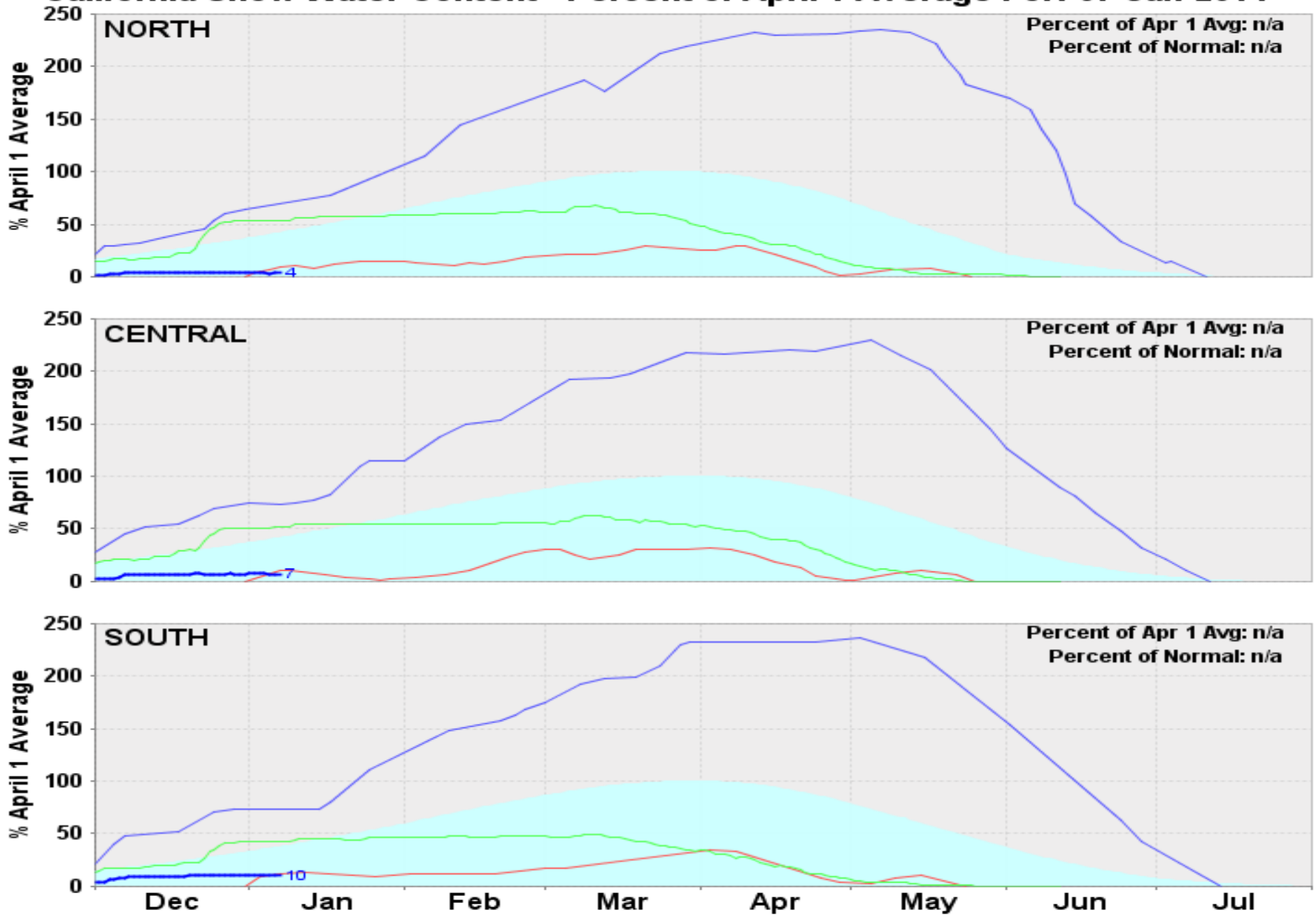

Northern Sierra Precipitation: 8-Station Index, January 14, 2014
Percent of Average for this Date: 16%
Cumulative Daily/Monthly Precipitation (inches)
Total Water Year Precipitation
Average (1922-1998)
50.0
44.3
34.9
32.1
19.0
17.1
1923-1924 (driest)
3.5 - Current Daily Precip.
Oct 1
Nov 1
Dec 1
Jan 1
Feb 1
Mar 1
Apr 1
May 1
Jun 1
Jul 1
Aug 1
Sep 1
Oct 1
Water Year (October 1 - September 30)
Average (1922-1998)
1923-1924 (driest)
1976-1977 (2nd Driest)
2000-2001
2007-2008
2012-2013
2013-2014 (current)

Northern Sierra Water Year Precipitation Totals

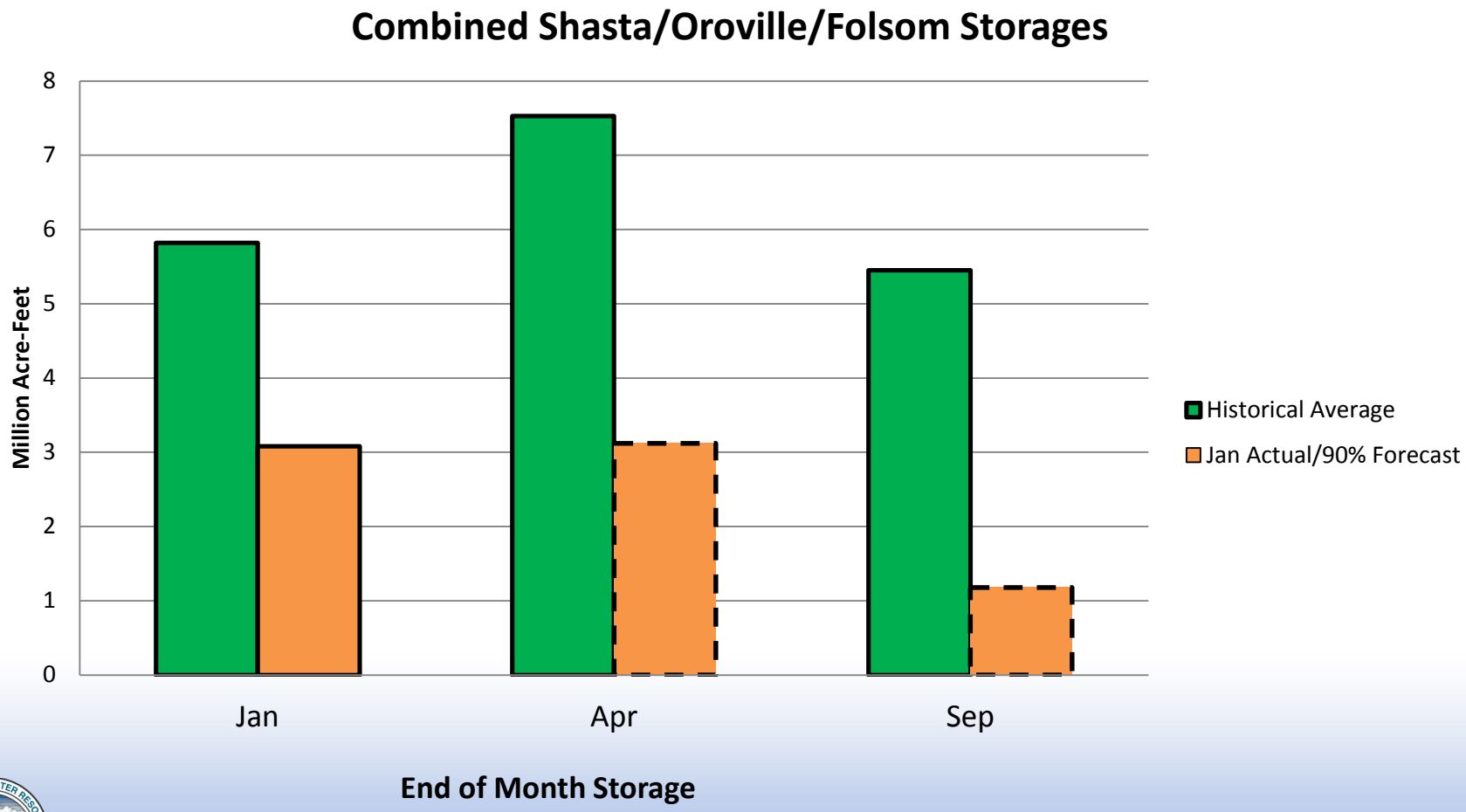


*WY 2014 Precipitation through 1/29/14 = 3.5" - half of WY total typically occurs by late January

California Snow Water Content - Percent of April 1 Average For: 07-Jan-2014

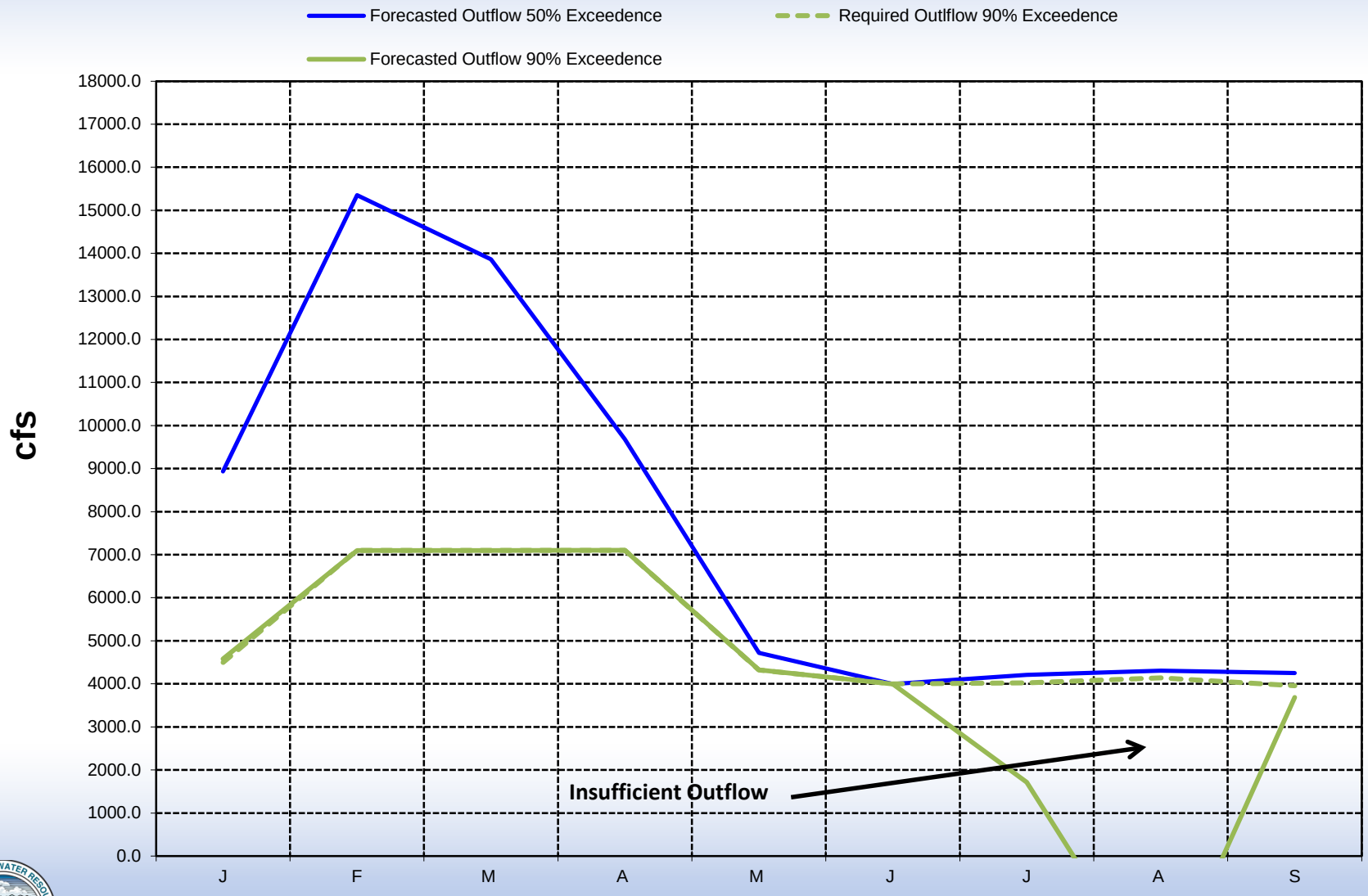


Insufficient Storage Gains in the Winter/Spring for Salinity Control in the Summer/Fall



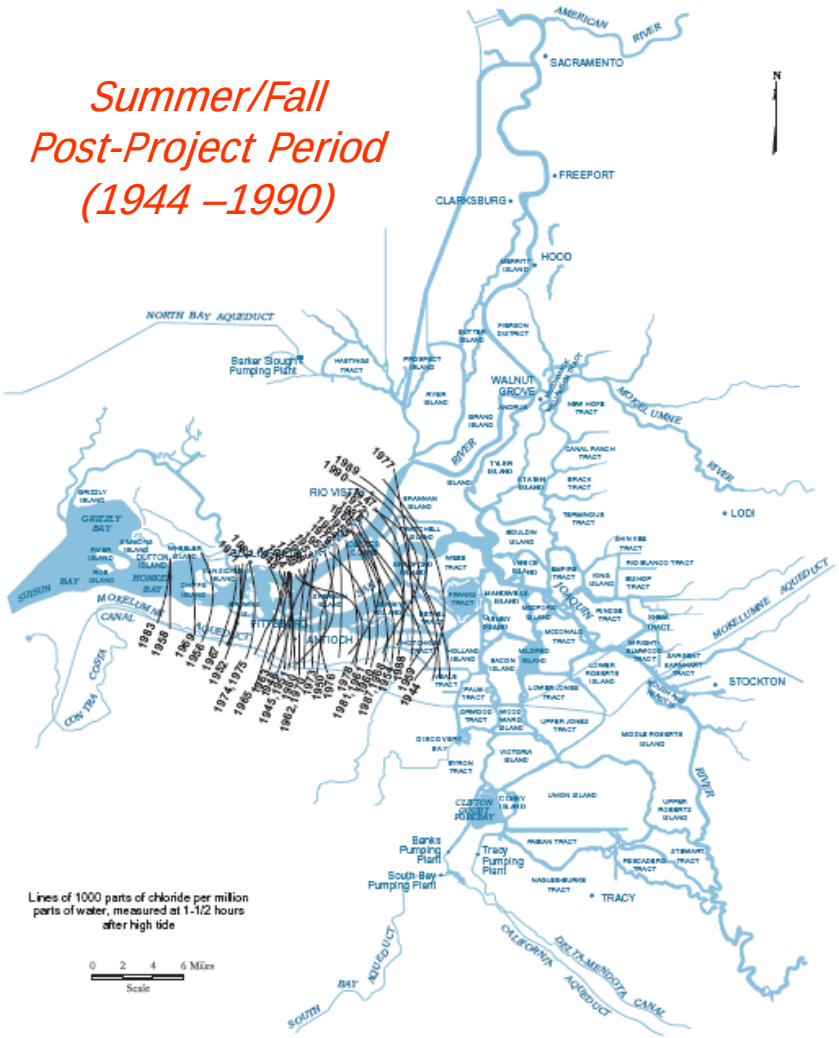
Forecasted Delta Outflow

(Based on January 1 Runoff Forecast)



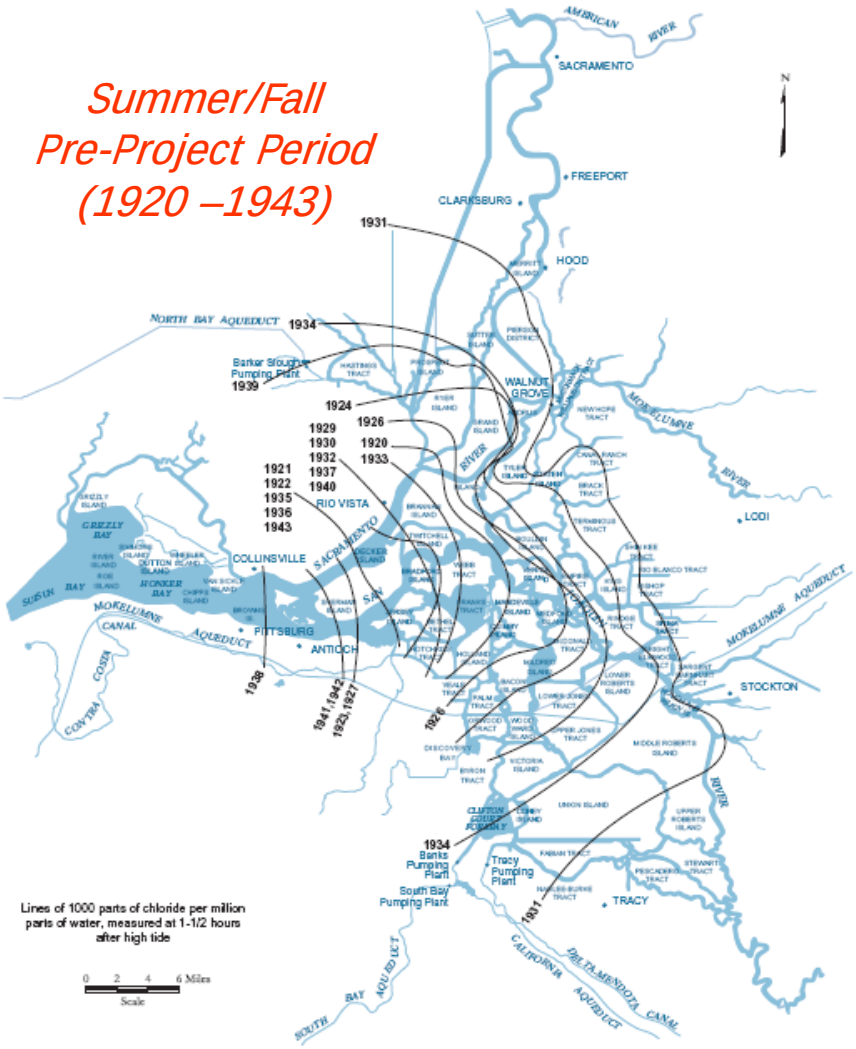
Return to Normal Precipitation Pattern
Project Controlled Salinity

Figure 4-27 Maximum Salinity Intrusion, 1944-1990



Continued Dry Conditions
Loss of Delta Salinity Control

Figure 4-26 Maximum Salinity Intrusion, 1921-1943

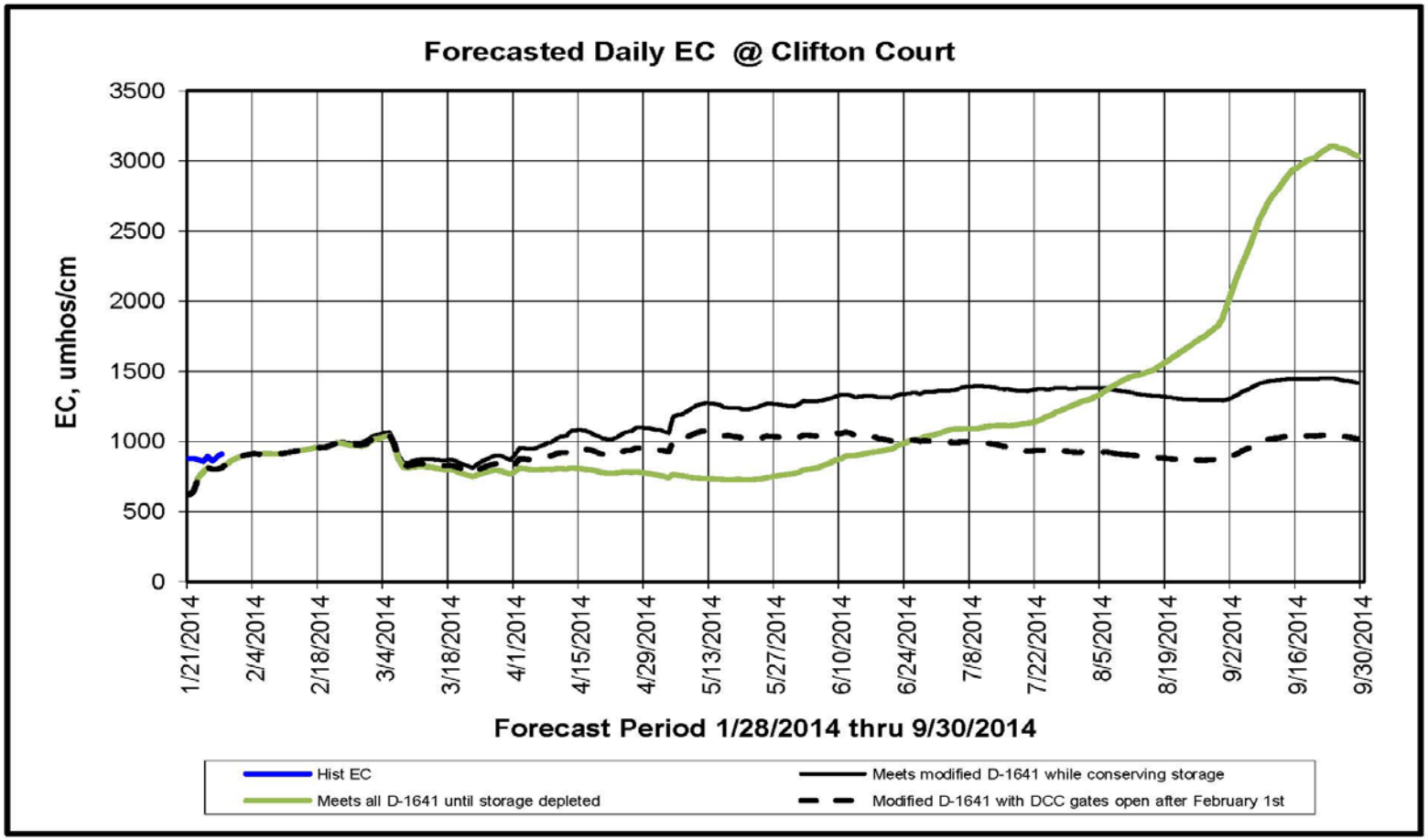


Source: Department of Water Resources, Sacramento - San Joaquin Delta Atlas, 1993

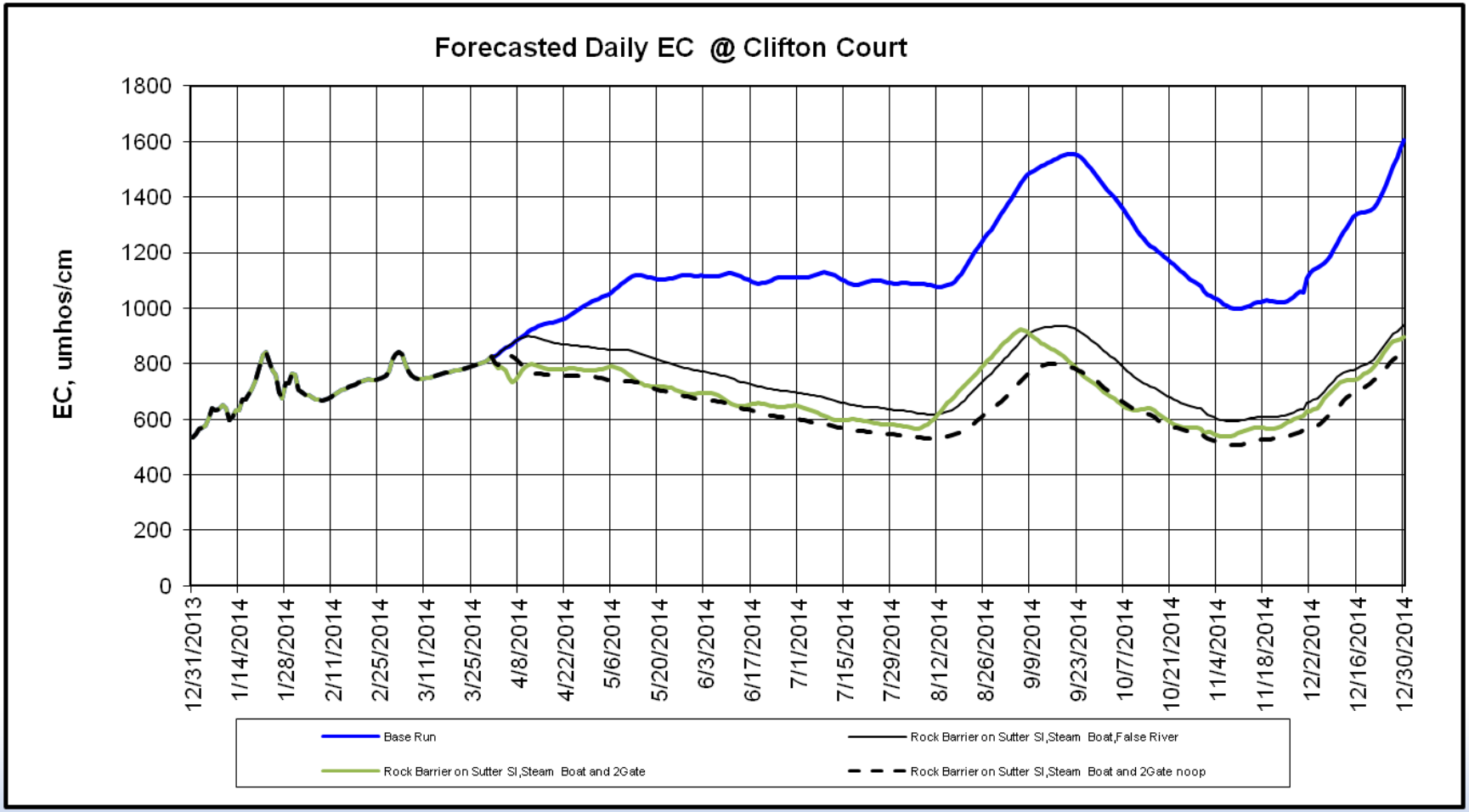
Preparing for the Worst

- Allocation Reductions
- Petition the Water Board to Modify Delta Standards
- Plan for Emergency Drought Rock Barriers
- Begin Development of the Drought Operations Plan

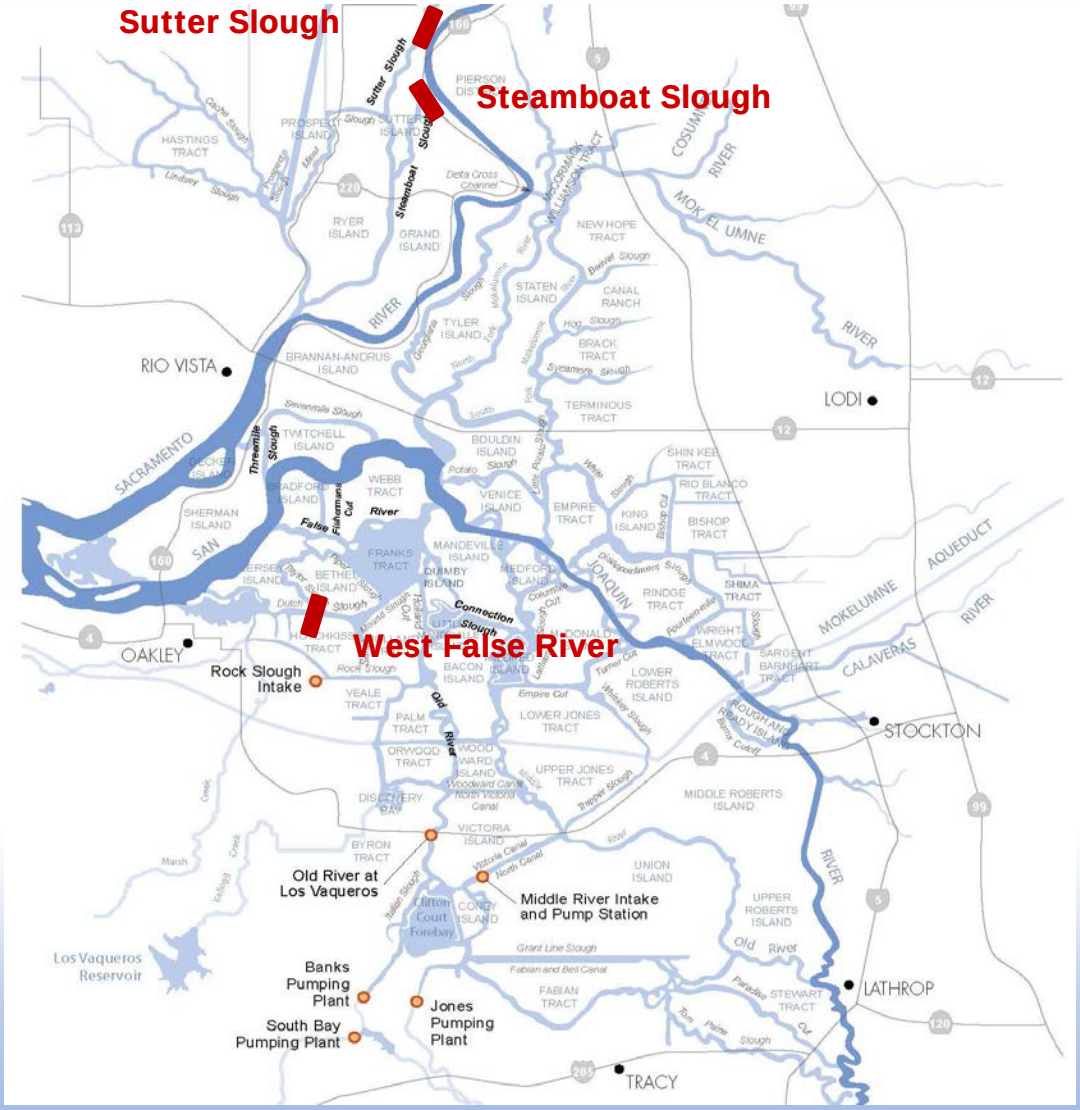
January 90% Exceedance Forecast EC at CCFB



February 90% Exceedance Forecast EC at CCFB

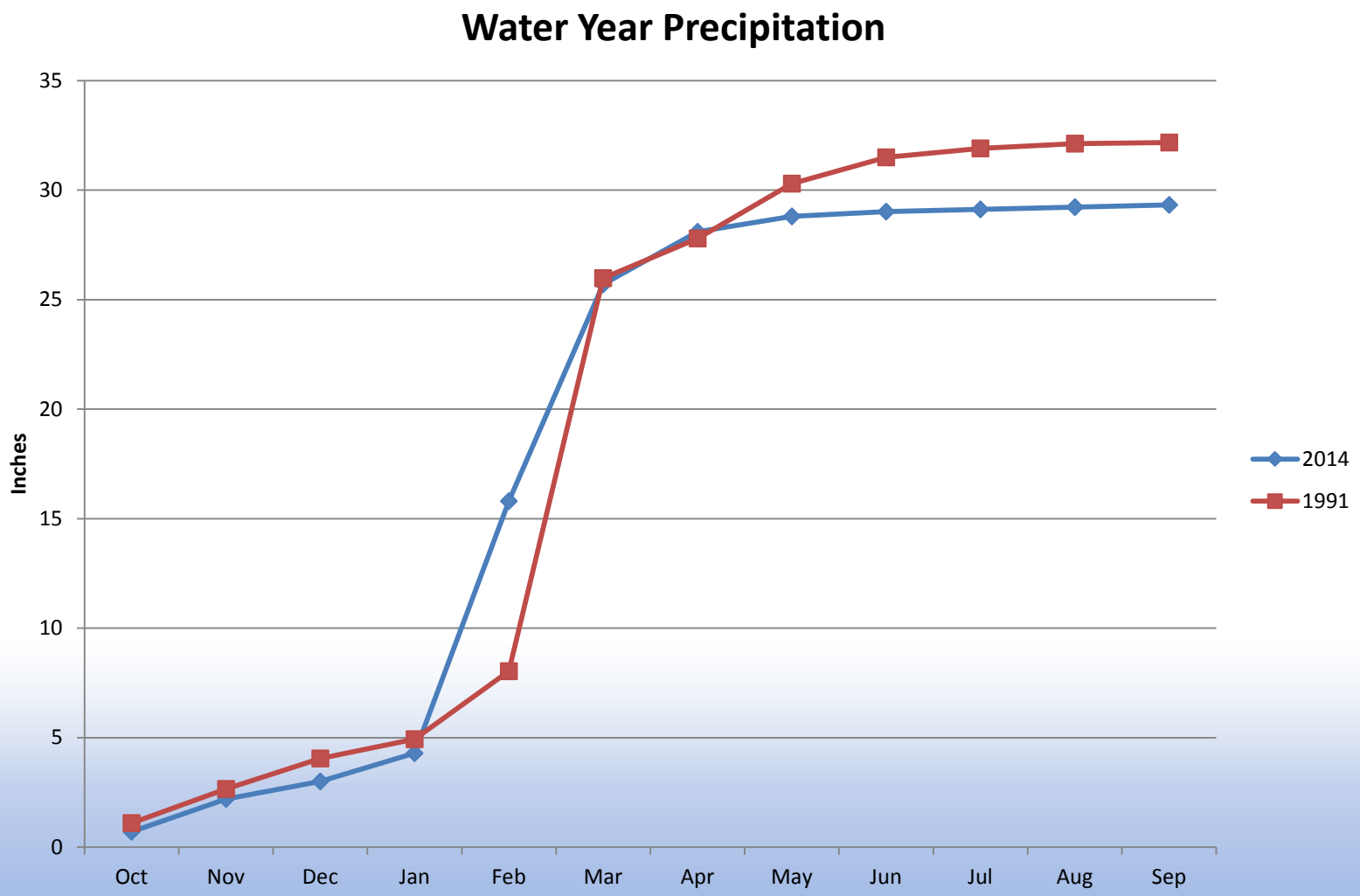


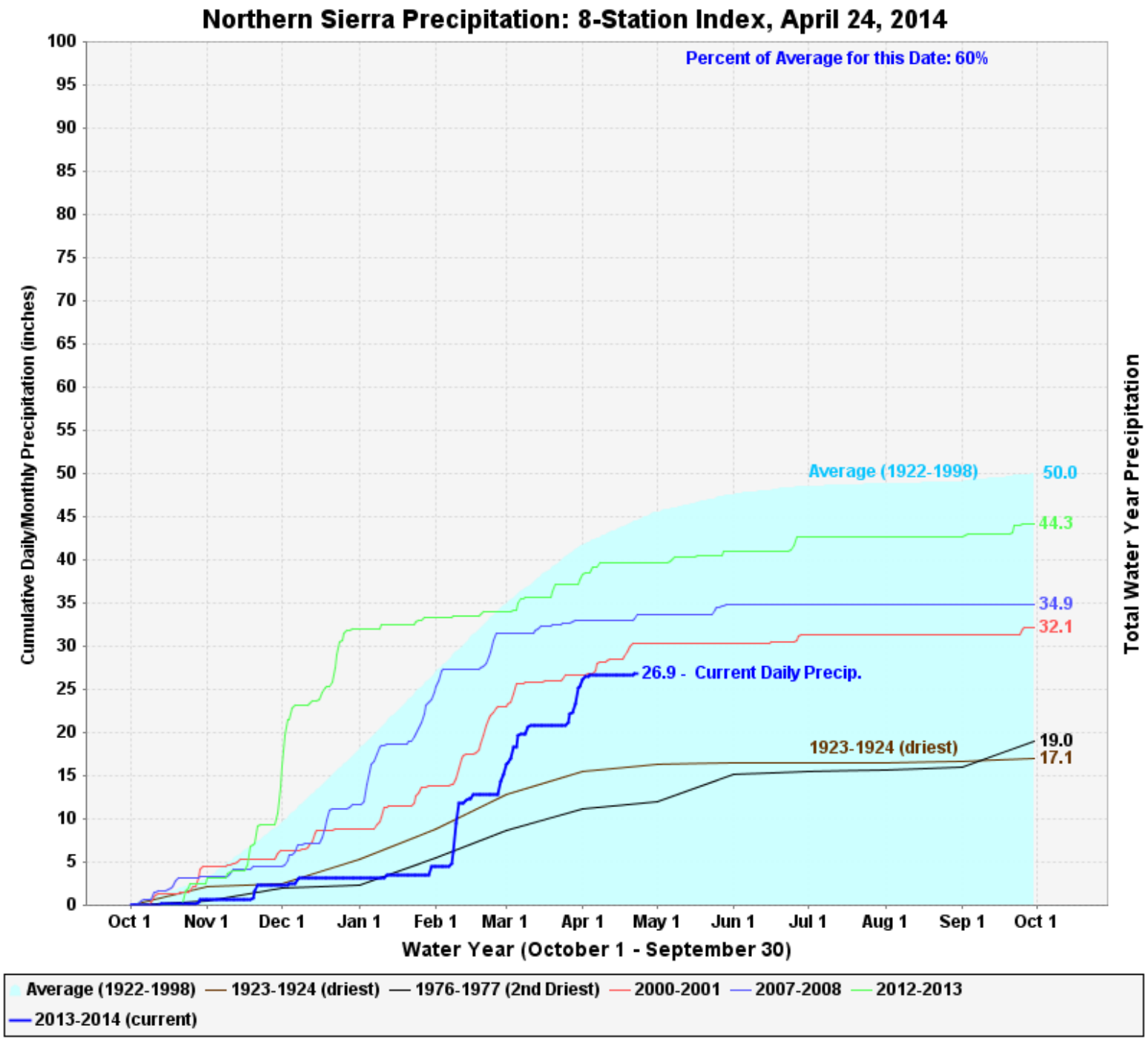
Emergency Drought Barriers

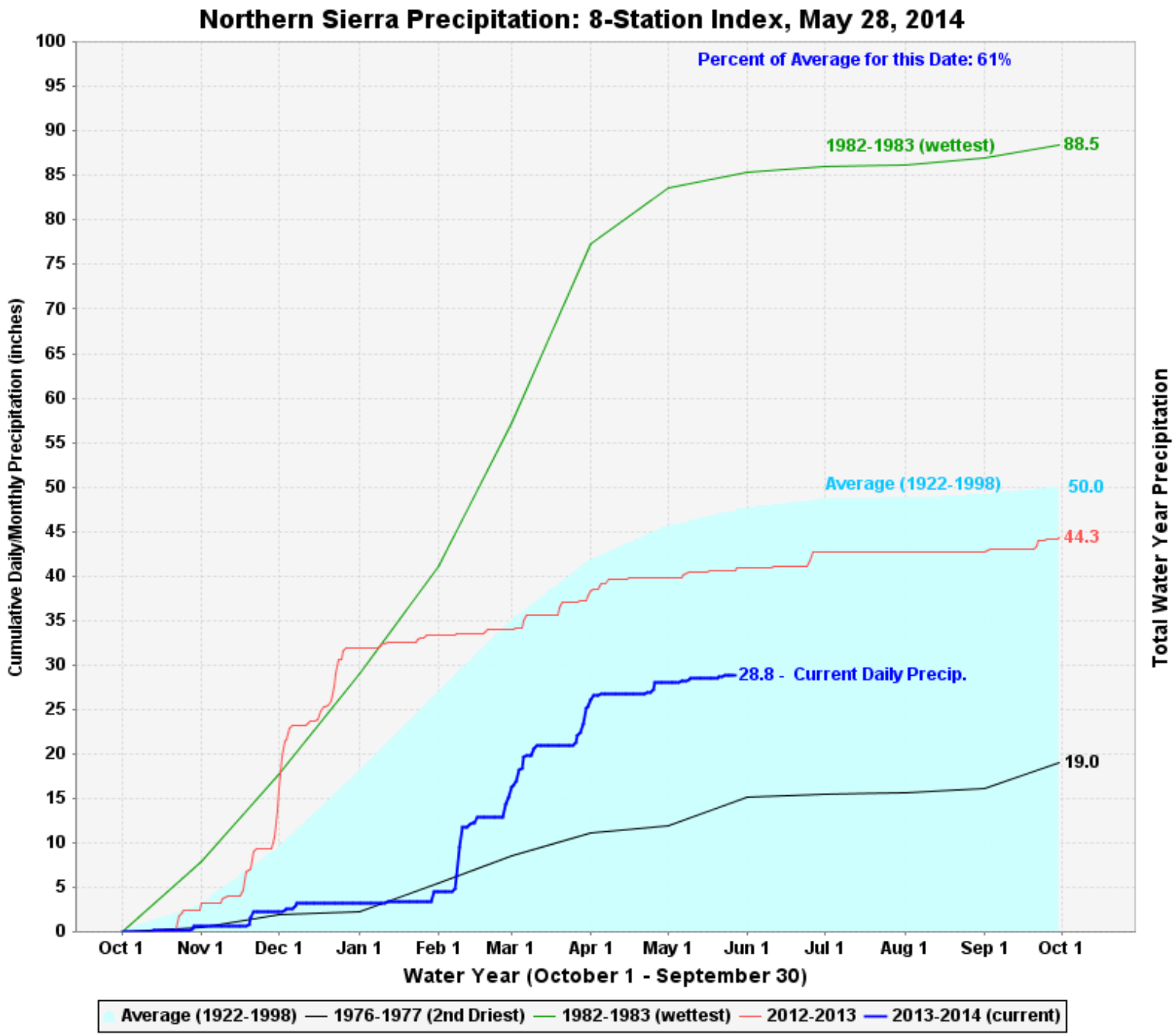


February/March Improvements

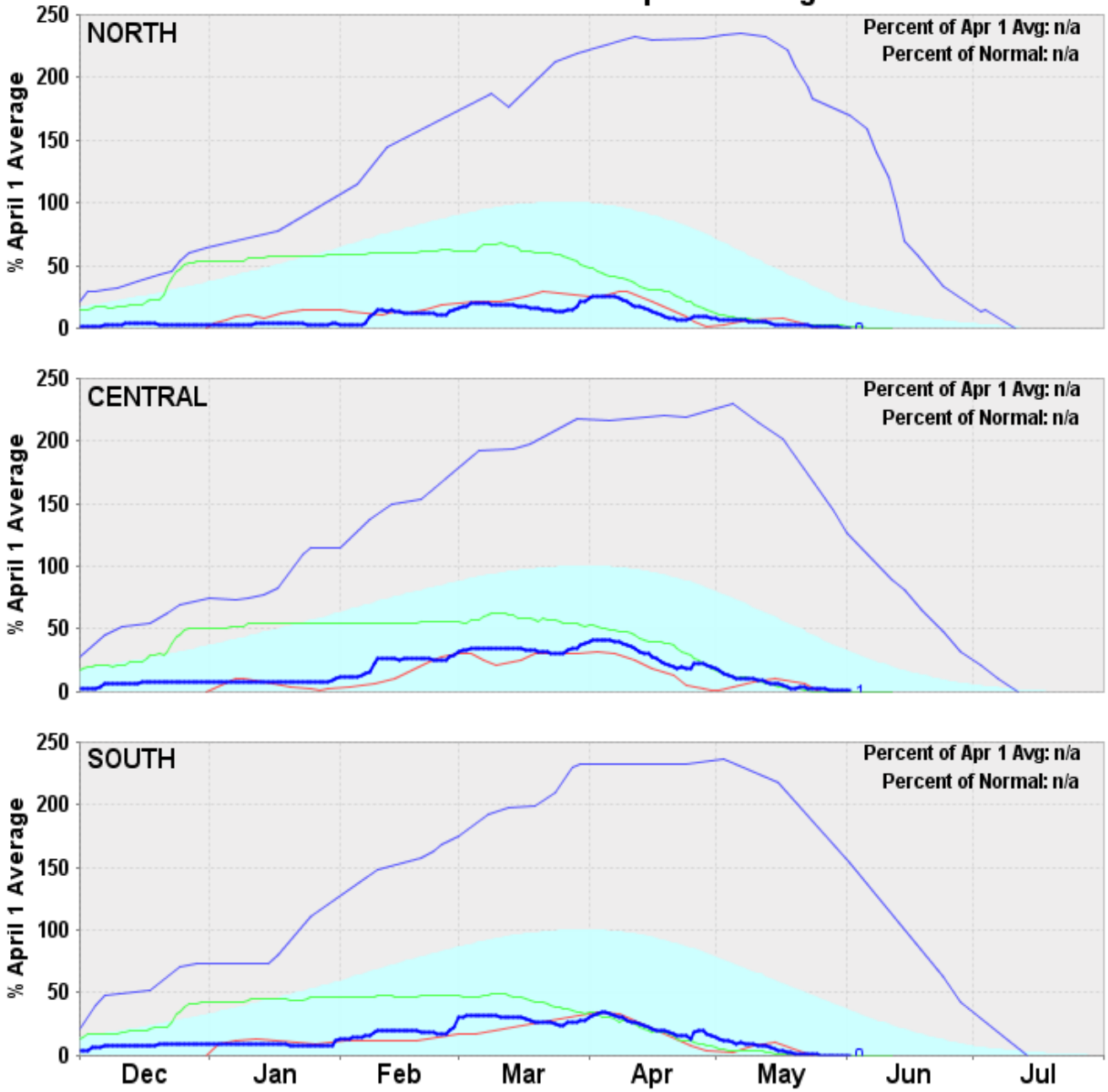
“Miracle ~~March~~ February/March”




Northern Sierra Precipitation: 8-Station Index, April 24, 2014
Percent of Average for this Date: 60%
Cumulative Daily/Monthly Precipitation (inches)
Total Water Year Precipitation
Average (1922-1998)
50.0
44.3
34.9
32.1
26.9 - Current Daily Precip.
1923-1924 (driest)
19.0
17.1
Oct 1
Nov 1
Dec 1
Jan 1
Feb 1
Mar 1
Apr 1
May 1
Jun 1
Jul 1
Aug 1
Sep 1
Oct 1
Water Year (October 1 - September 30)
Average (1922-1998)
1923-1924 (driest)
1976-1977 (2nd Driest)
2000-2001
2007-2008
2012-2013
2013-2014 (current)

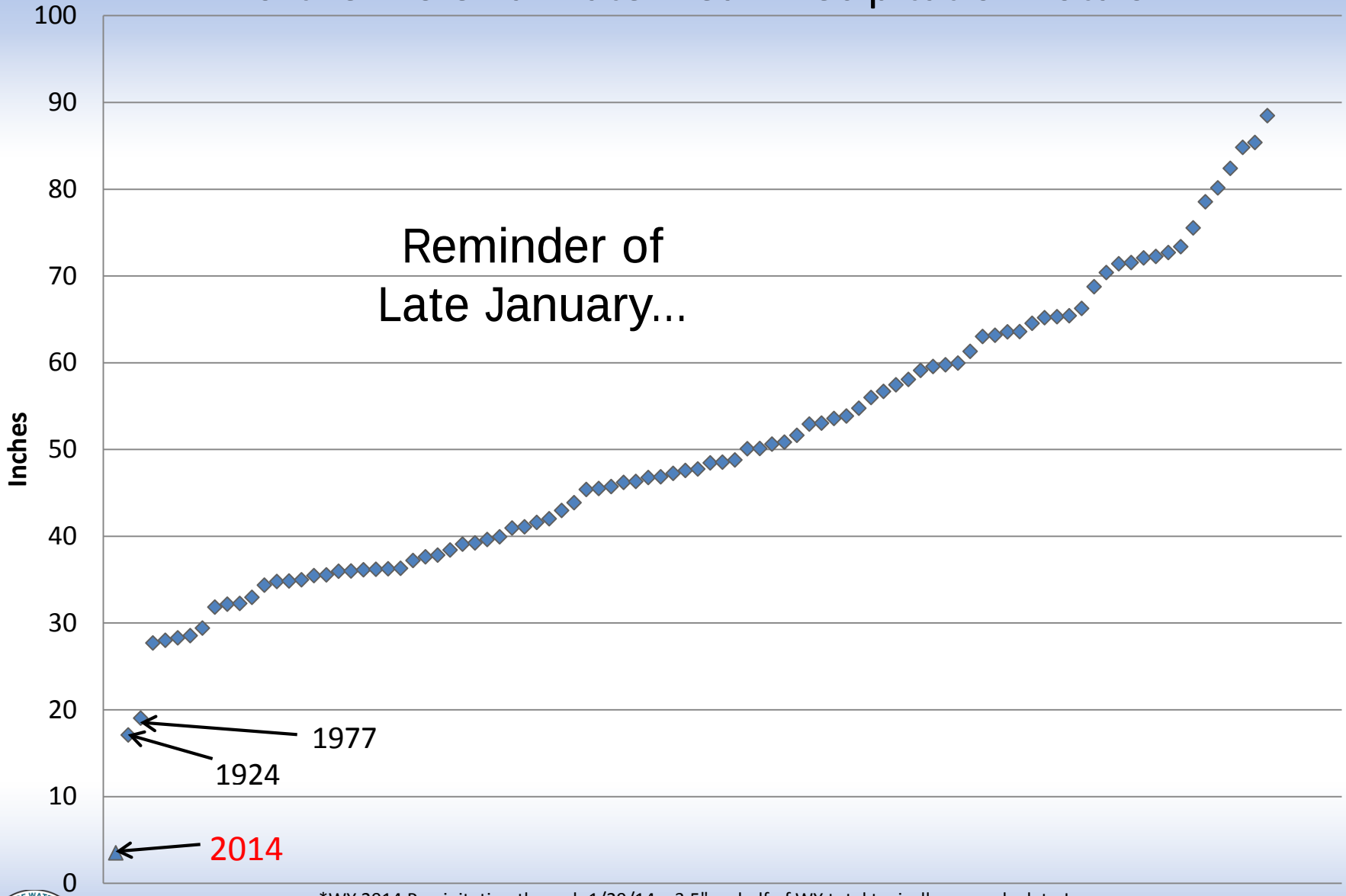

Northern Sierra Precipitation: 8-Station Index, May 28, 2014
Percent of Average for this Date: 61%
1982-1983 (wettest)
88.5
Average (1922-1998)
50.0
44.3
28.8 - Current Daily Precip.
19.0
Cumulative Daily/Monthly Precipitation (inches)
Total Water Year Precipitation
Water Year (October 1 - September 30)
Oct 1
Nov 1
Dec 1
Jan 1
Feb 1
Mar 1
Apr 1
May 1
Jun 1
Jul 1
Aug 1
Sep 1
Oct 1
Average (1922-1998)
1976-1977 (2nd Driest)
1982-1983 (wettest)
2012-2013
2013-2014 (current)

California Snow Water Content - Percent of April 1 Average For: 02-Jun-2014



Average — 1976-1977 (min) — 1982-1983 (max) — 2012-2013 — 2013-2014 (current)

Northern Sierra Water Year Precipitation Totals



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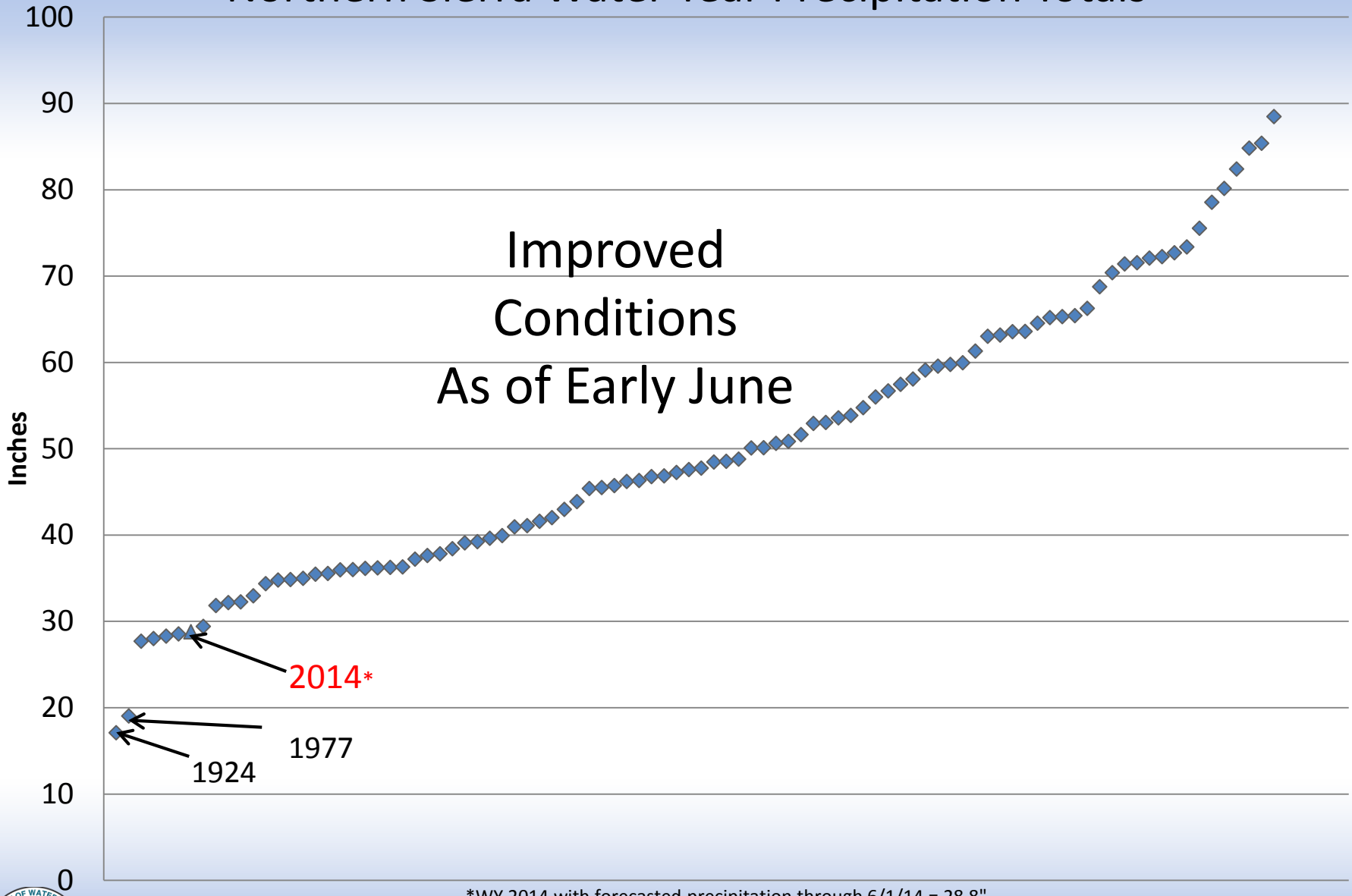
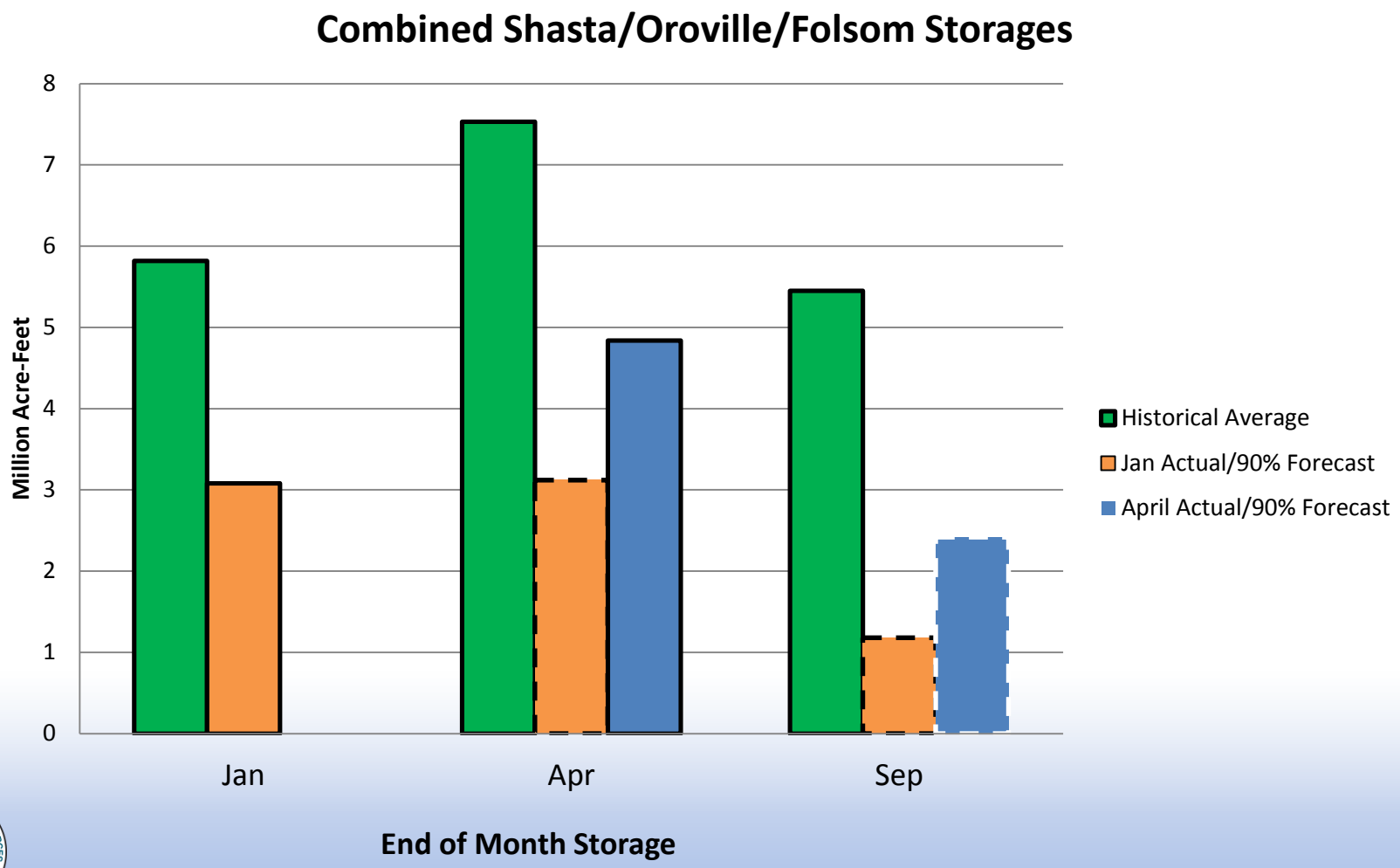
Northern Sierra Water Year Precipitation Totals



*WY 2014 with forecasted precipitation through 6/1/14 = 28.8"

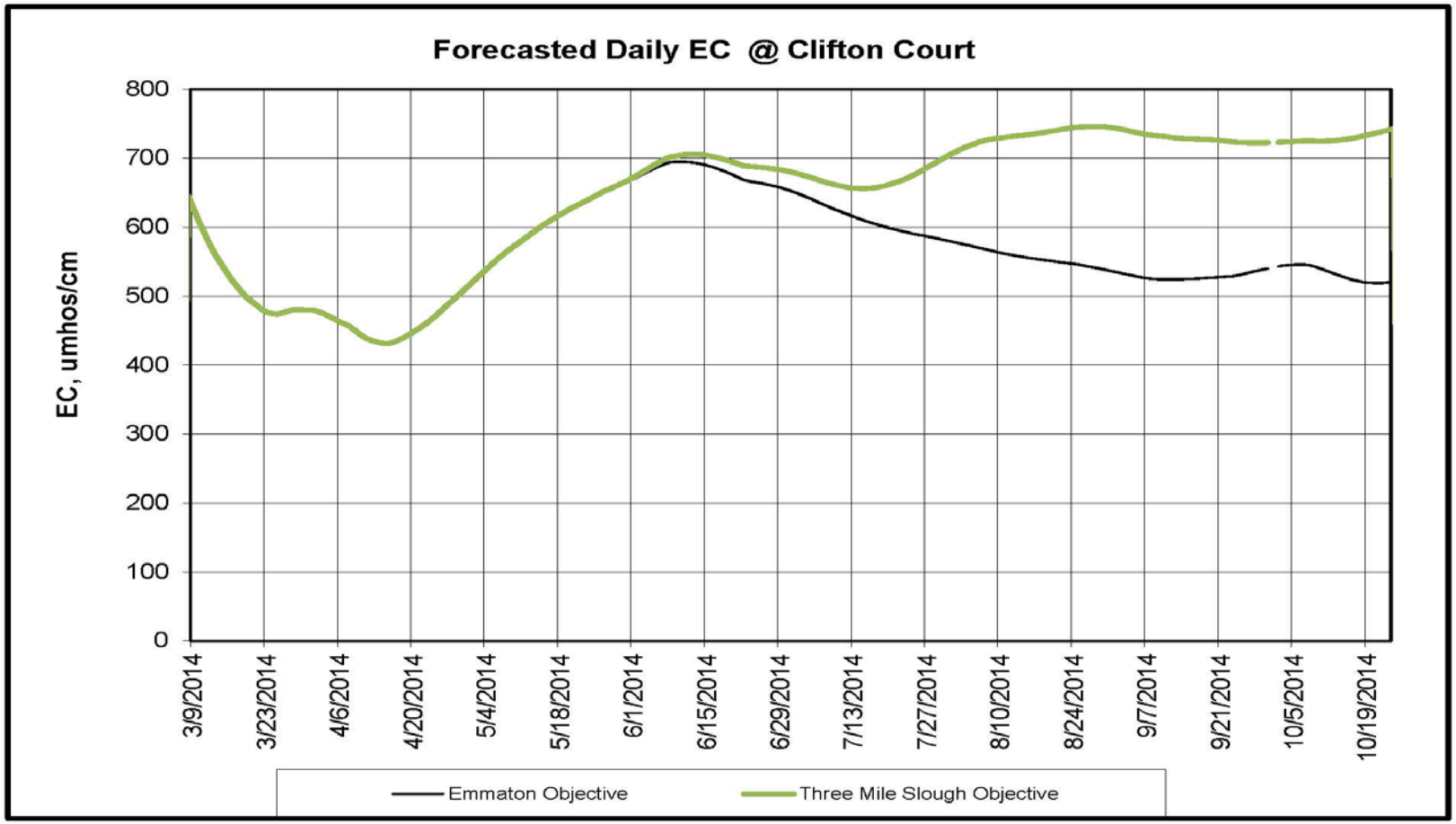
Improved Storage



Improved Conditions

- Some Increased Supply
- Scaled Back Requests for Modified Delta Standards
- Emergency Drought Barrier Installation on Hold

April 90% Exceedance Forecast EC at CCFB



Drought Actions for 2015

Possible Drought Management Actions for 2015

- Reduced SWP Supply
- Modified Delta Flow/Salinity Standards
- State Water Board Curtailments
- Drought Barrier Installation

El Nino?

Questions?

State Water Project

Operations Control Office

http://wwwoco.water.ca.gov