Real Time Data and Forecasting Project
Water Quality Weekly Report
Volume 6, Issue 21 Tuesday May 26, 2009
Office of Water Quality, Municipal Water Quality Investigations
California Department of Water Resources

For questions contact Joe Christen, (916) 376 9710, email jchriste@water.ca.gov

1. Summary Comments, Observations and Interpretation

Precipitation: There was no significant precipitation at the monitored locations. As of May 1 the statewide precipitation for the water year was at 80% of average to date while the Northern Sierra precipitation accumulation was at 98% of average to date. The NOAA River Forecast Center predicts chances of thunderstorms and showers for the mountain areas of Shasta and Plumas counties.

Flow: As of ***May 25, 2009:*** The **Sacramento River at Freeport** *mean daily flow* increased slightly to 12,761 cfs. The NOAA River Forecast Center predicts that the Sacramento River flow will increase slightly throughout the week. The **San Joaquin River near Vernalis** *mean daily flow* decreased to 1,919 cfs. With the end of the VAMP period San Joaquin river flows can be expected to continue to decrease steadily. The **H. O. Banks Pumping Plant** *mean daily* pumping rate increased to 1,323 cfs. The **C. W. Jones Pumping Plant** *mean daily* pumping rate decreased to 898 cfs. The **Barker Slough Pumping Plant** *mean daily* pumping rate decreased to 88 cfs. The **Delta Total Outflow** *index* has decreased to 10,454 cfs. The Delta cross-channel gate was opened May 22 for the holiday weekend boat traffic and closed this morning May 26.

Salinity and Anions: The modeled salinity forecast shows that EC at the Banks and Jones pumping plants will begin to decrease at the end of the month. As of ***May 25, 2009:*** *Mean daily* EC in the **Sacramento River at Hood** was 137 µS/cm. The **Barker Slough Pumping Plant** *mean daily* EC has decreased slightly to 292 µS/cm. Concurrent with the decreasing flows we can expect to see conductivity in the San Joaquin near Vernalis to increase. The **San Joaquin River near Vernalis** *mean daily* EC has increased slightly to 321 µS/cm. The **H. O. Banks Pumping Plant** *mean daily* EC has been decreasing since May 19 and was 355 µS/cm on May 25. **Anion data:** At the **H. O. Banks Pumping Plant** the bromide concentration was 0.13 mg/L on May 24. The bromide concentration in the **San Joaquin near Vernalis** was 0.13 mg/L on May 25.

Organic Carbon: As of ***May 25, 2009:*** In the **Sacramento River at Hood** concentrations have reached their lower range and have been static since May 13; *mean daily* TOC (combustion) was 1.9 mg/L and DOC concentration was 1.5 mg/L. In the **San Joaquin near Vernalis** the *mean daily* TOC concentration increased somewhat to 3.4 mg/L and the DOC concentration was 1.9 mg/L. At the **H. O. Banks Pumping Plant** the *mean daily* TOC increased to 4.8 mg/L and the DOC concentration was 3.9 mg/L. At the **Jones Pumping Plant** values varied little over the week without a net change; the *mean daily* TOC concentration was 3.8 mg/L and the DOC concentration was 3.1 mg/L.

2. Modeling Conditions and Assumptions

General Information

The attached model run results cover the period of May 19, 2009 through June 8, 2009 and are based on the following assumptions:

Base Case

1. CCFB Gates operate on a Priority 3 schedule from the beginning of the forecast period through to the end of the forecast period.

2. On Monday December 22, 2008 at approximately 3:45 pm, the Delta Cross Channel gates were closed and remained closed until May 22, 2009 when the gates were opened. The gates were then closed on May 26, 2009 at 10:00am.

3. Old River at Tracy and Middle River ag. barriers are anticipated to be installed May 22, 2009 with all culverts tied open. The Grant Line Canal ag. Barrier is anticipated to be partially installed May 22, 2009 with all culverts tied open. On June 1, 2009 all three Ag barriers are in with all culvert flap-gates tidally operating.

4. The head of Old River barrier is removed.

5. Suisun Marsh salinity control flashboards are installed and the boatlock is open for fish passage beginning October 2, 2008. The Suisun Marsh salinity control gates operations were suspended starting February 27, 2009 to May 20, 2009 when the flashboards were removed and the boatlock was closed until the end of the forecast period.

6. San Joaquin River flow at Vernalis is assumed decrease from 2,500 cfs to 1,100 cfs by the end of the forecast period.

7. San Joaquin River EC at Vernalis is projected to increase from 280 µS/cm to 630 µS/cm by the end of forecast period.

8. CCFB intake is around 1,300 cfs at the beginning of the forecast period and decreases to 1,000 cfs by the end of the forecast period.

9. Jones pumping is around 900 cfs for the forecast period.

10. Sacramento River flow at Freeport is around 12,700 cfs near the beginning of the forecast period and decreases to 10,500 cfs by the end of the forecast period.

3. Temporary Barriers Update

excerpt from Mark Holderman's TB update

STATUS AS OF: May 15, 2009

Head of Old River (HOR) Barrier:

The spring Head of Old River rock barrier was not installed this season. Instead a Non-Physical Barrier (NPB) or "bubble barrier" was installed. Installation began April 7 and was completed and tested in time for the first of seven VAMP experiment fish releases that began April 22. This experimental barrier—placed near the channel bottom and extending across the entrance to Old River—uses a combination of bubbles, lights, and sound to guide out-migrating Chinook salmon smolts away from Old River to continue their migration down the San Joaquin River. Underwater receivers have been installed to detect tagged smolts to study the effectiveness of this NPB. Preliminary results indicate the NPB significantly improves the number of smolts staying in the SJR over a no-NPB condition. The NPB will be removed beginning May 26 after the VAMP experiment ends.

Agricultural Barriers (Old River near Tracy [ORT], Middle River [MR], Grant Line Canal [GLC]):

The U.S. Fish and Wildlife Agency Biological Opinion for the installation and removal of the temporary barriers was received May 7 allowing DWR to begin installing the agricultural barriers. Installation will begin May 18 with work at the MR and ORT barrier followed by the GLC barrier as heavy equipment becomes available. Installation and cleanup of all work on the ag barriers will take 2-3 weeks.

http://baydeltaoffice.water.ca.gov/sdb/tbp/index_tbp.cfm

4. General Information

This weekly water quality report is produced by the Department of Water Resources, Office of Water Quality. Any questions, comments or suggestions are welcome. Please contact Joe Christen by email jchriste@water.ca.gov or by phone, (916) 376 9710. Each weekly issue is sent out electronically as an email attachment in Adobe Acrobat format. The corresponding data are also available as an Excel XP file at the MWQI Web site at http://www.wq.water.ca.gov/mwqi/RTDF/RTDF_weekly.cfm This report is part of the
Real Time Data and Forecasting (RTDF) project. The goal is to bring real time, near real time, and forecasted water quality data to source water managers, treatment plant operators, scientists, and other stakeholders.

If you find the information useful, feel free to share it with others. If you do not wish to receive this report in the future, please contact Joe Christen and you will be removed from the address list. Conversely, anyone interested in receiving this report can send a request to be added to the list.

This weekly report is a work in progress. The RTDF Steering Committee has provided guidance and this report will continue to evolve and provide more useful information.

Calculated Delta Inflow (Section 17) is the sum of CDEC flow data from the following stations:

Sacramento River at Freeport
San Joaquin River near Vernalis
Yolo Bypass near Woodland
Cosumnes River at Michigan Bar
Mormon Slough at Bellota (Calaveras River)
Camanche Reservoir (Mokelumne River)

Useful links:

Station Meta Data, Maps and Related Data at	http://cdec.water.ca.gov/staMeta.html
CDEC Plotter at	http://cdec.water.ca.gov/cgi-progs/histPlot
Other Historical Water Quality Data at	http://wdl.water.ca.gov/wq-gst/
IEP Maps of Delta Monitoring Stations	http://www.iep.ca.gov/dss/all/

This report contains preliminary data and is subject to revision.

All figures except the EC forecasts and San Luis Storage represent mean daily data.

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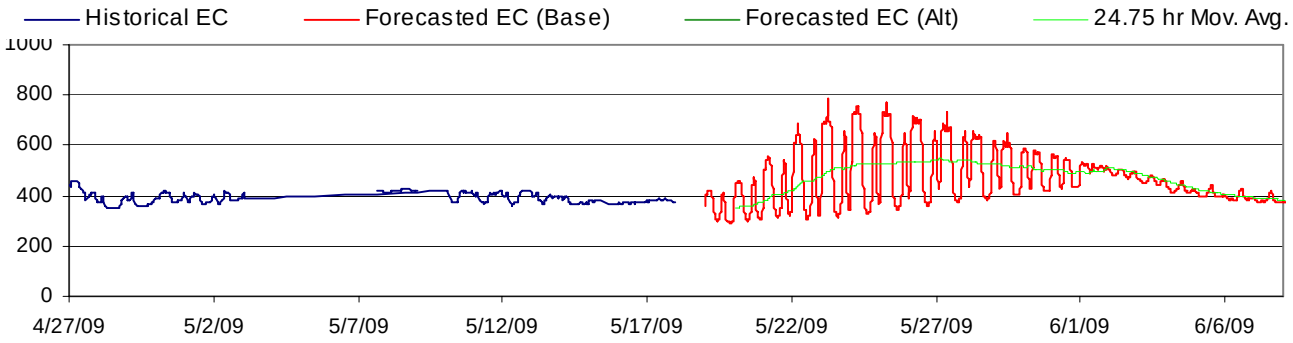
5. Other Information for the Week

Instruments:

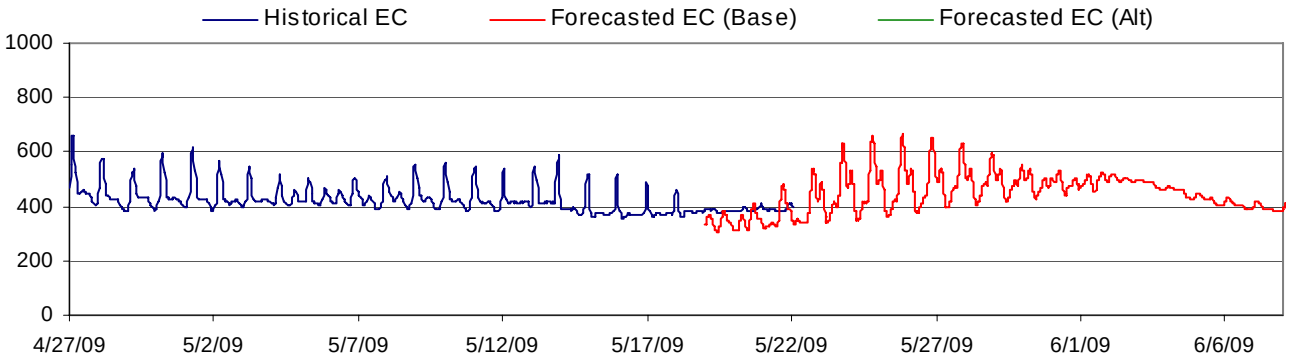
The missing data for the Del Valle, Vallecitos, and Pacheco Pumping Plant stations may be due to a planned power outage that occurred last weekend.

7. Forecasted EC at Export and Diversion Locations

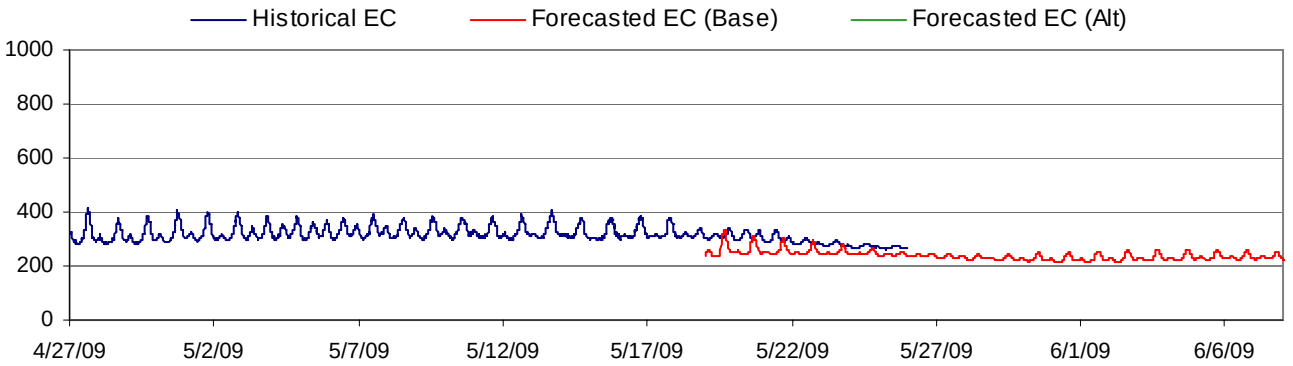
Clifton Court Gates (µS/cm)



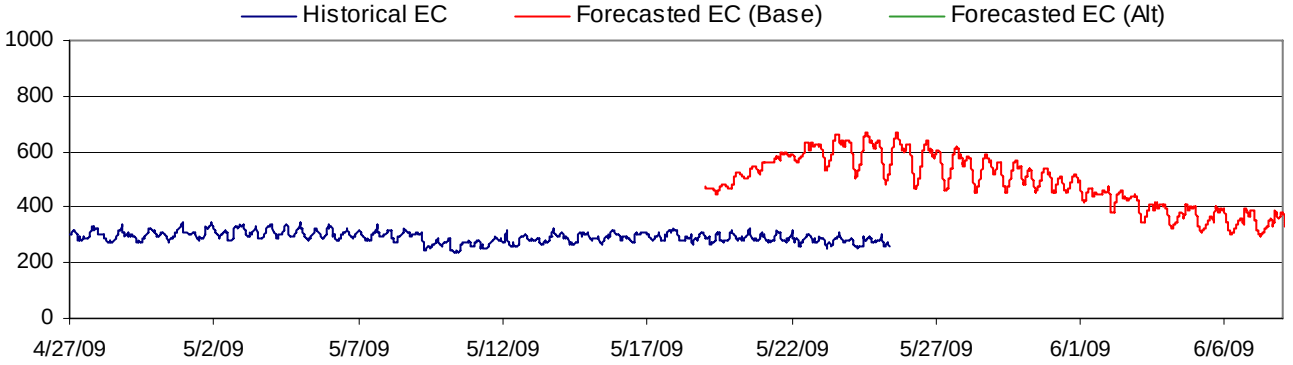
Jones Pumping Plant (µS/cm)



Rock Slough at Old River (µS/cm)

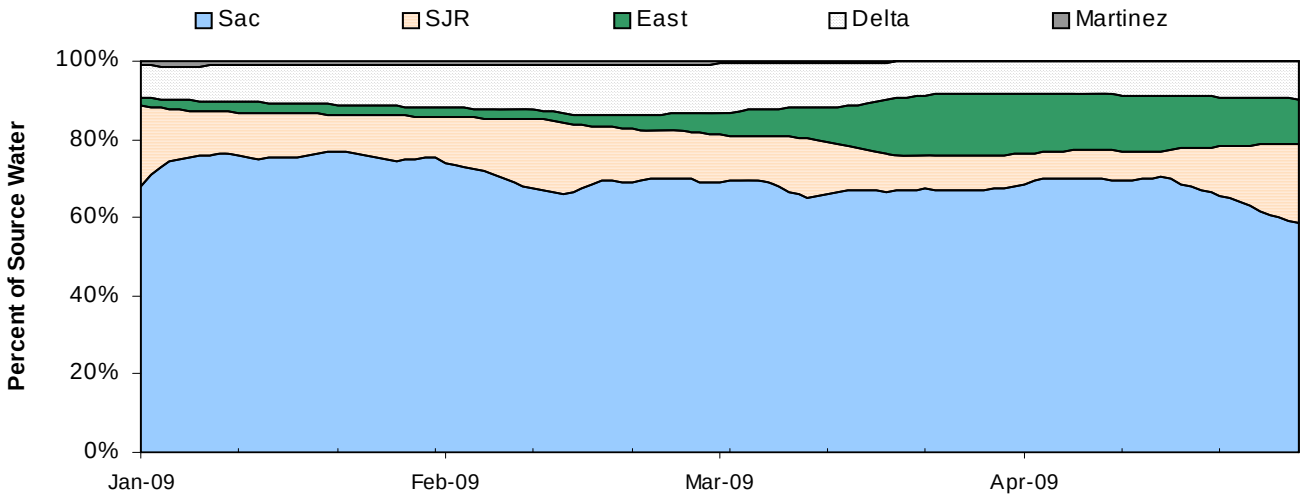


Old River at Los Vaqueros Reservoir Intake (µS/cm)

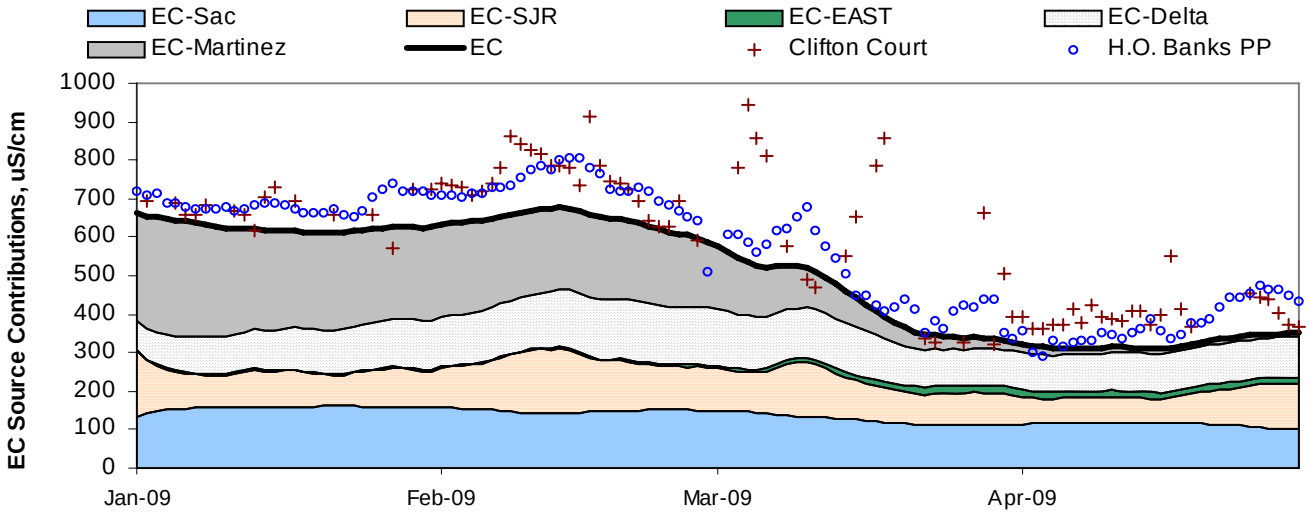


6. Volumetric and Constituent Fingerprints

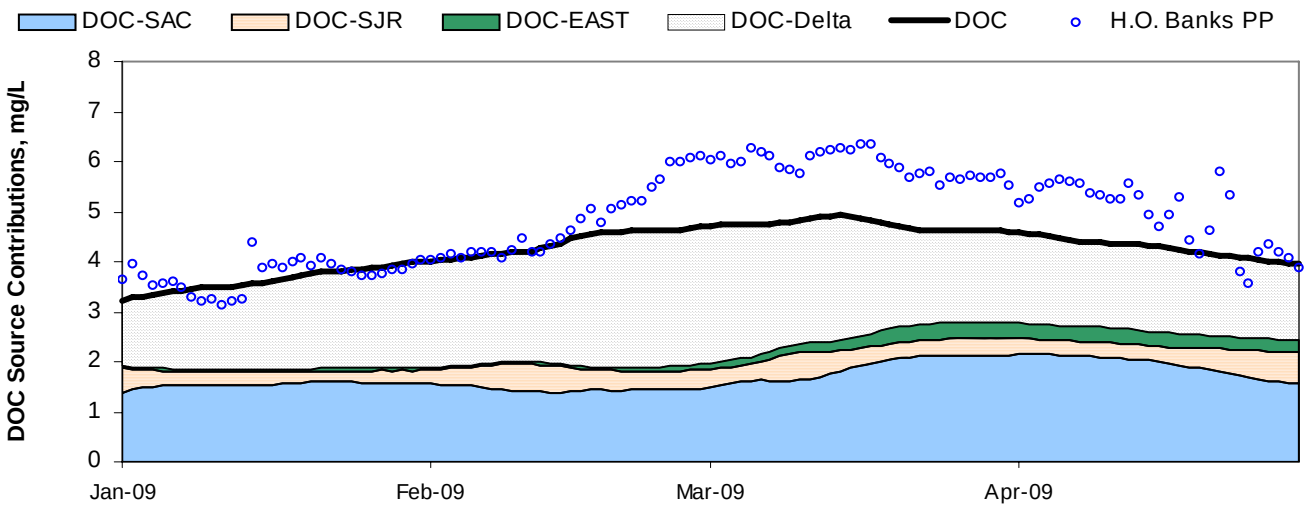
Modeled Volumetric Fingerprint at Clifton Court Forebay (SWP)



Modeled EC Fingerprint at Clifton Court Forebay (SWP)

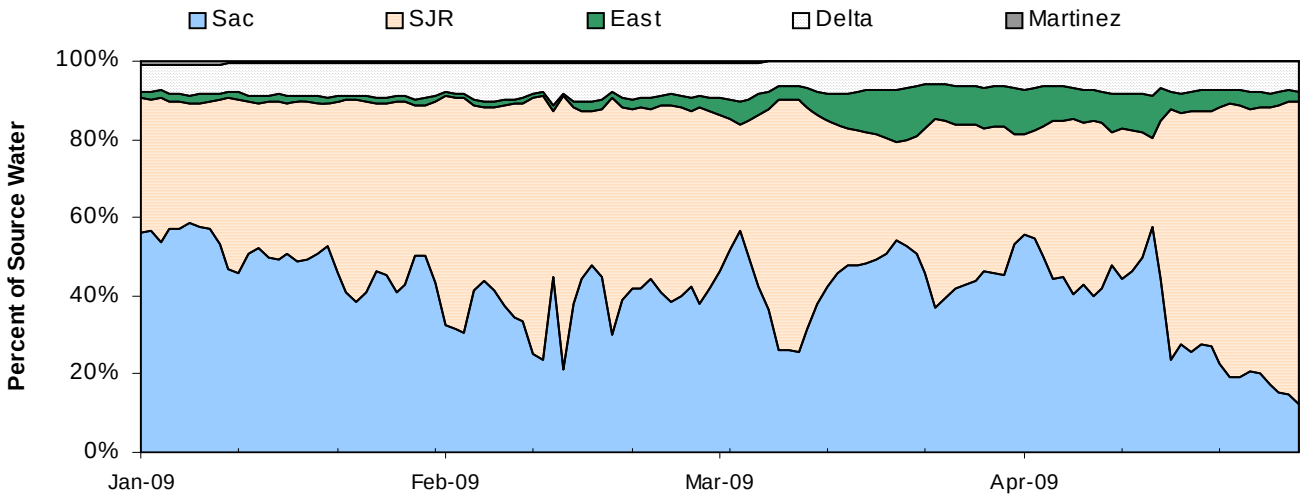


Modeled DOC Fingerprint at Clifton Court Forebay (SWP)

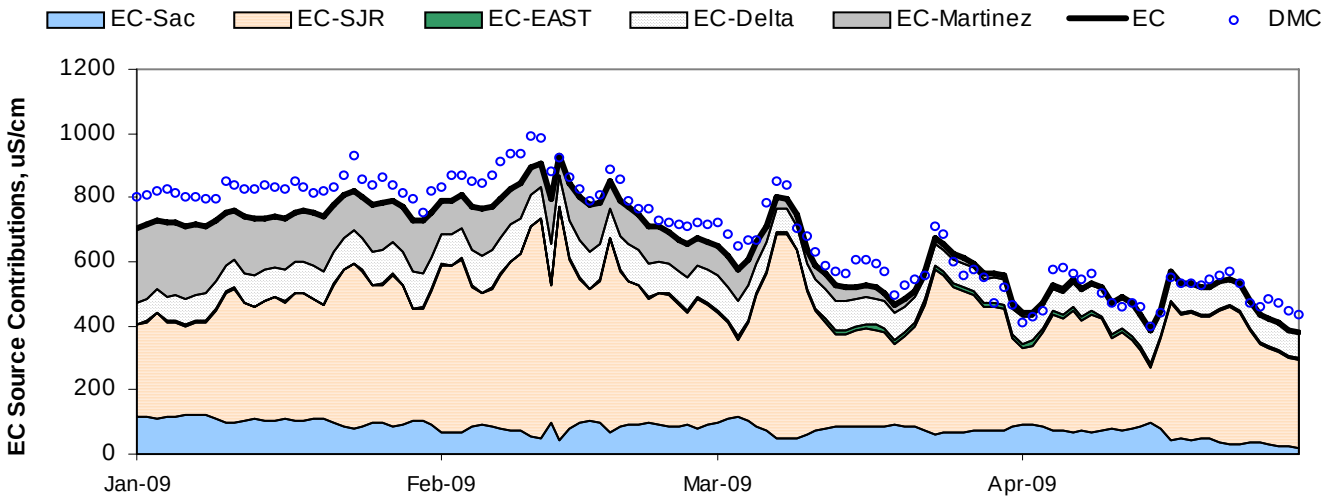


6. Volumetric and Constituent Fingerprints

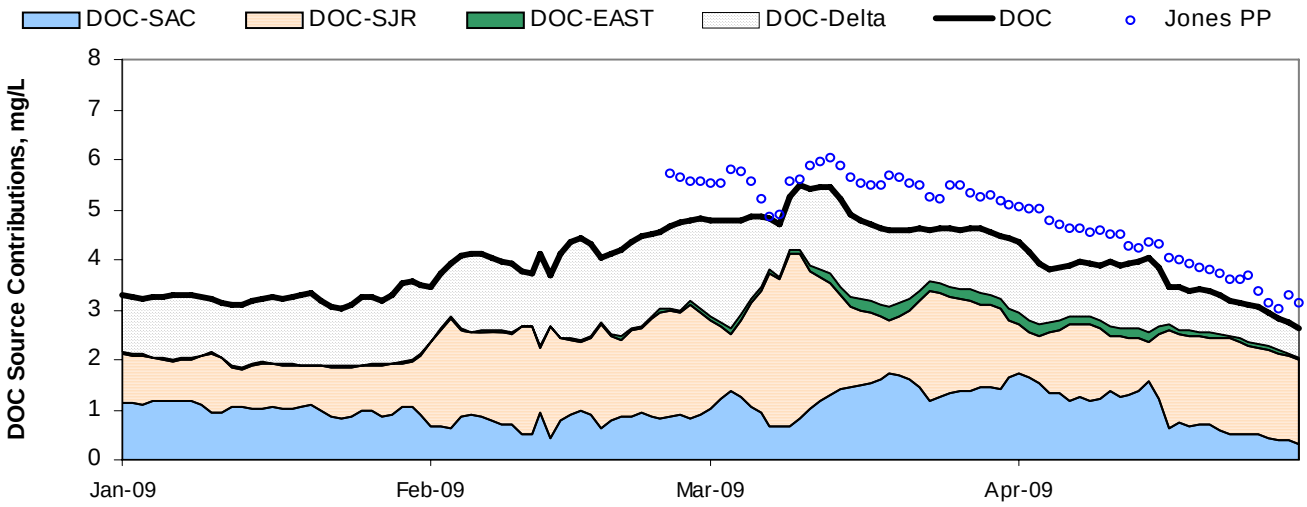
Modeled Volumetric Fingerprint at Jones Pumping Plant (CVP)



Modeled EC Fingerprint at Jones Pumping Plant (CVP)

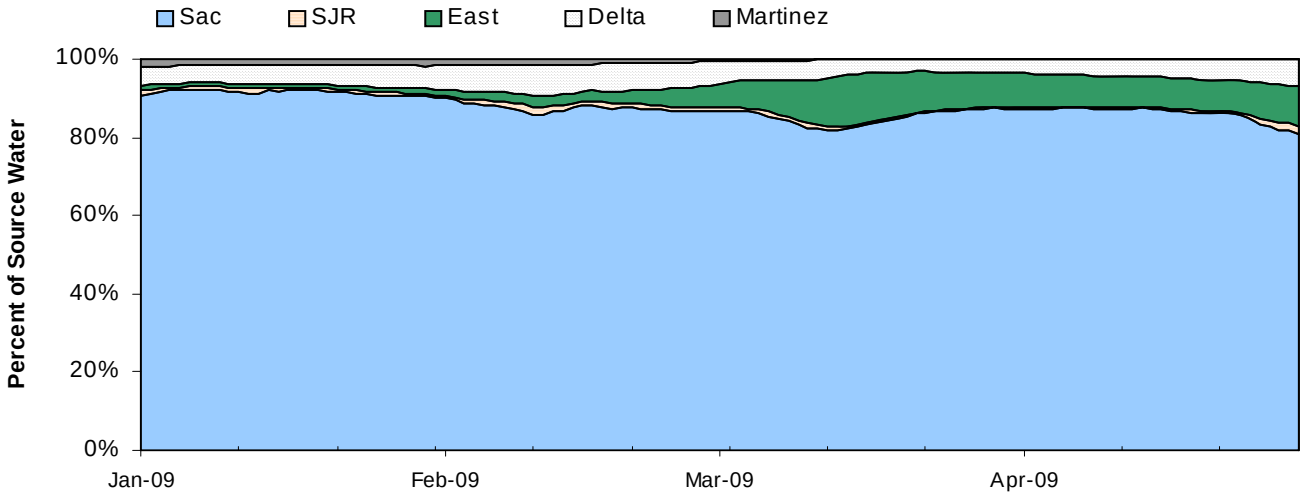


Modeled DOC Fingerprint at Jones Pumping Plant (CVP)

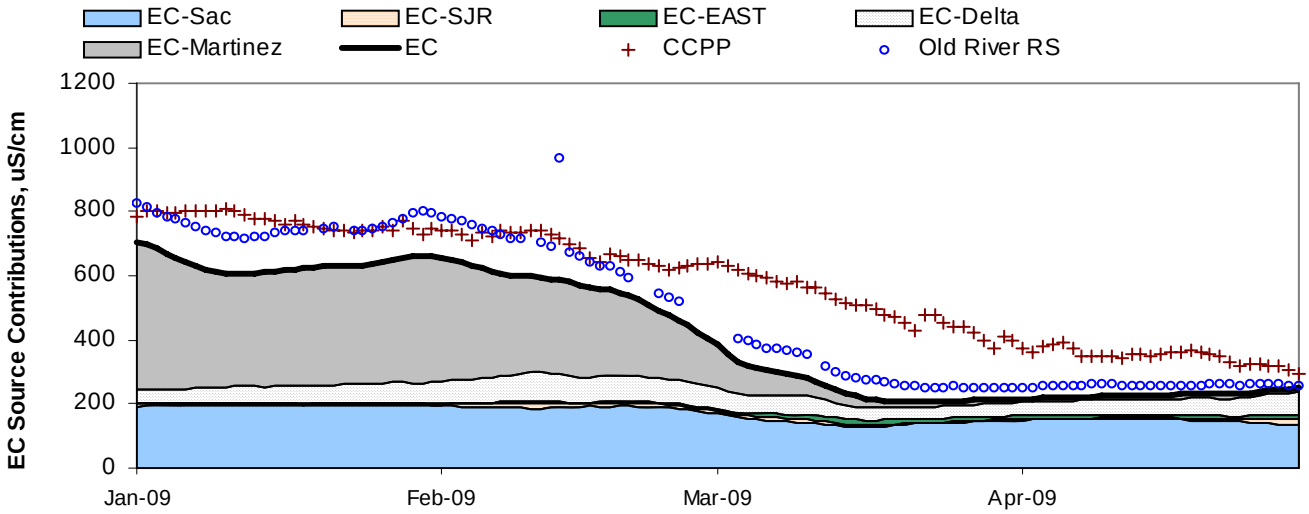


6. Volumetric and Constituent Fingerprints

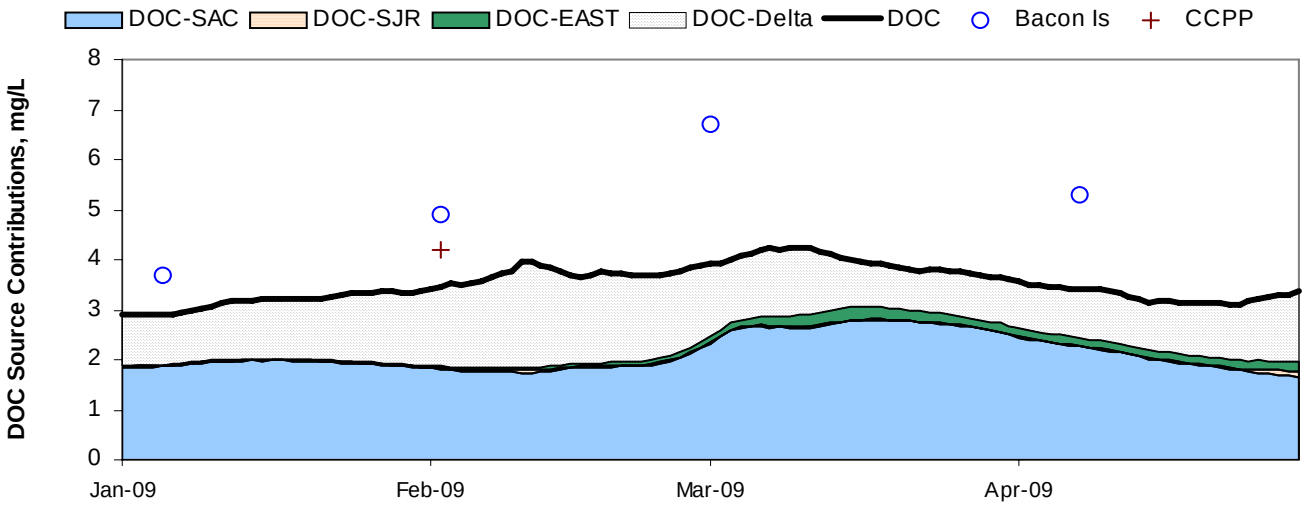
Modeled Volumetric Fingerprint Old River at Rock Slough



Modeled EC Fingerprint Old River at Rock Slough

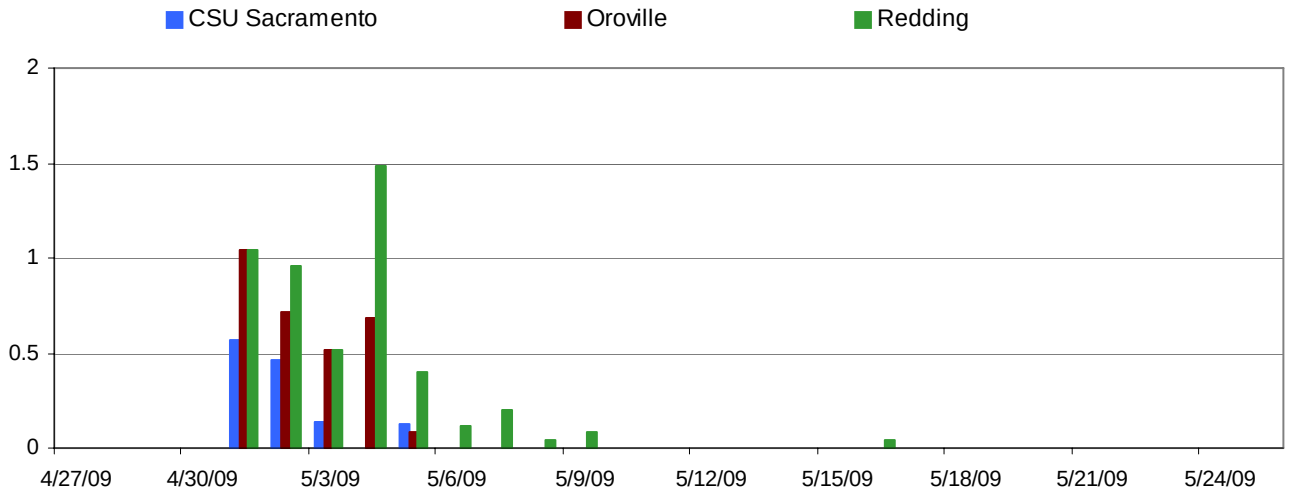


Modeled DOC Fingerprint Old River at Rock Slough

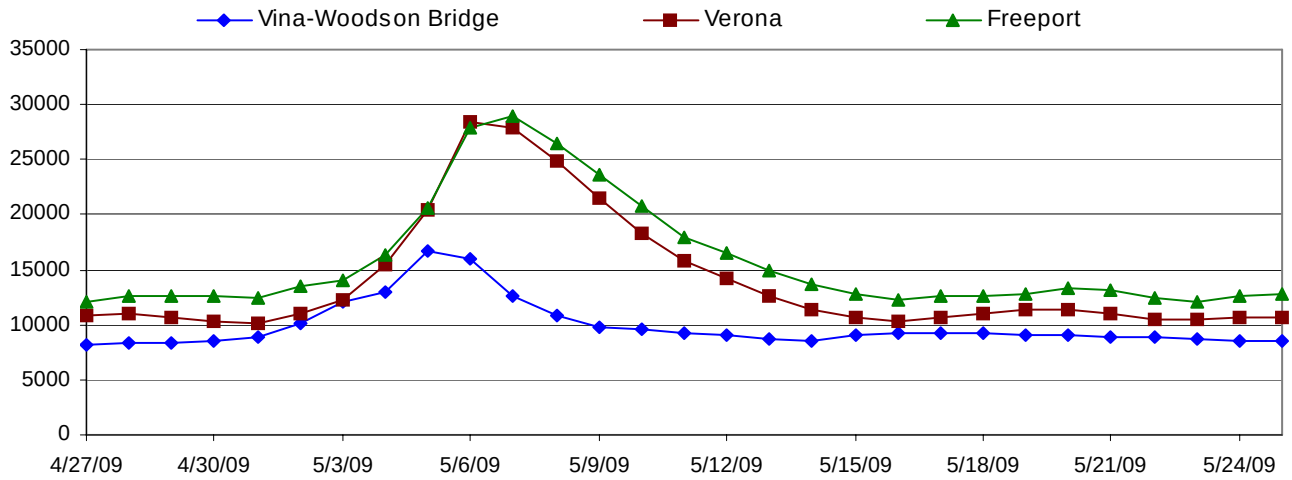


8. Precipitation, Flow, and EC - Sacramento River

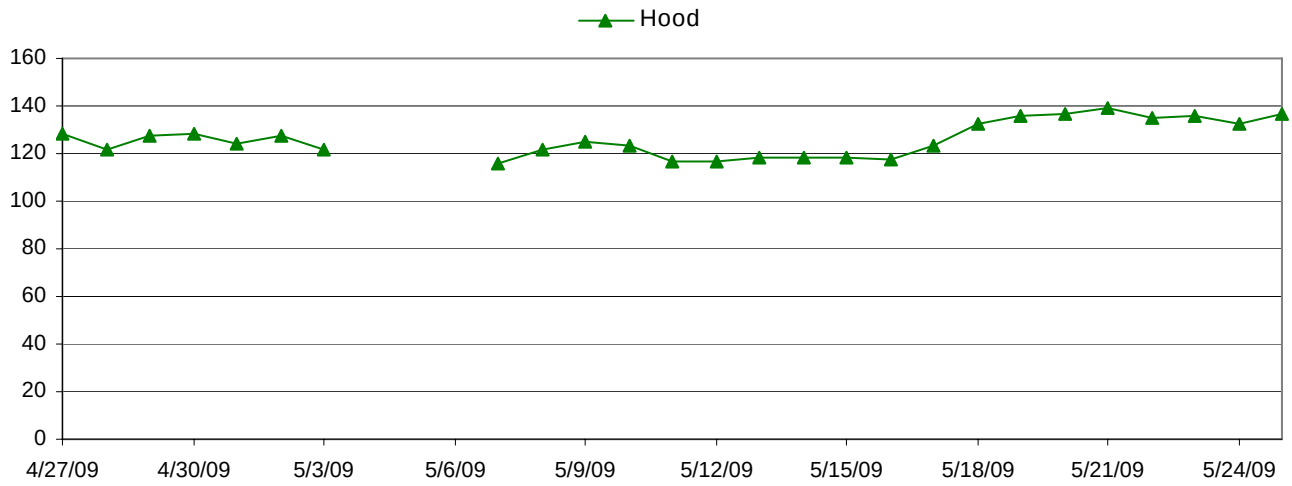
Sacramento River Watershed Precipitation (inches)



Sacramento River Flows (cfs)

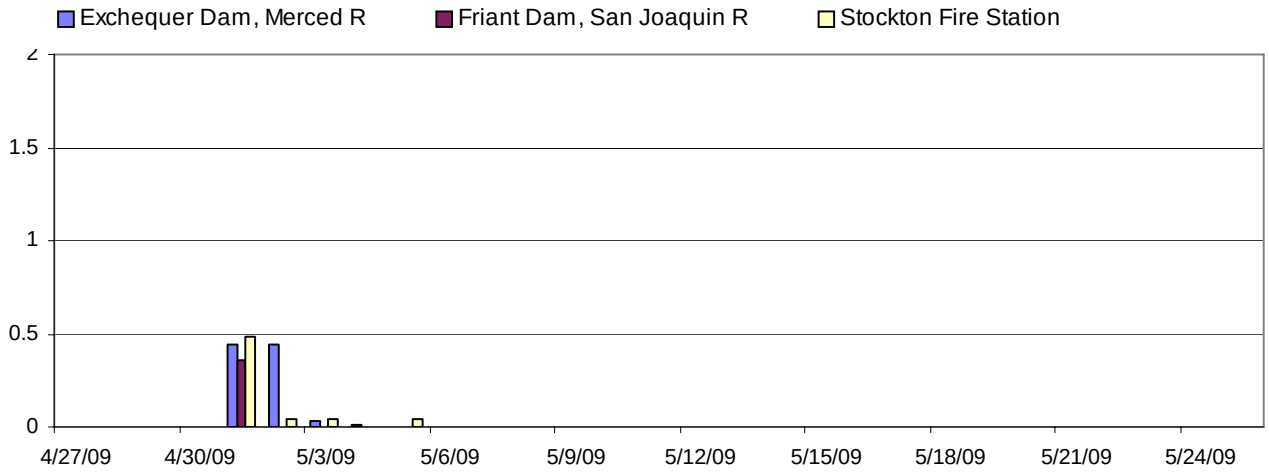


Sacramento River Electrical Conductance (µS/cm)

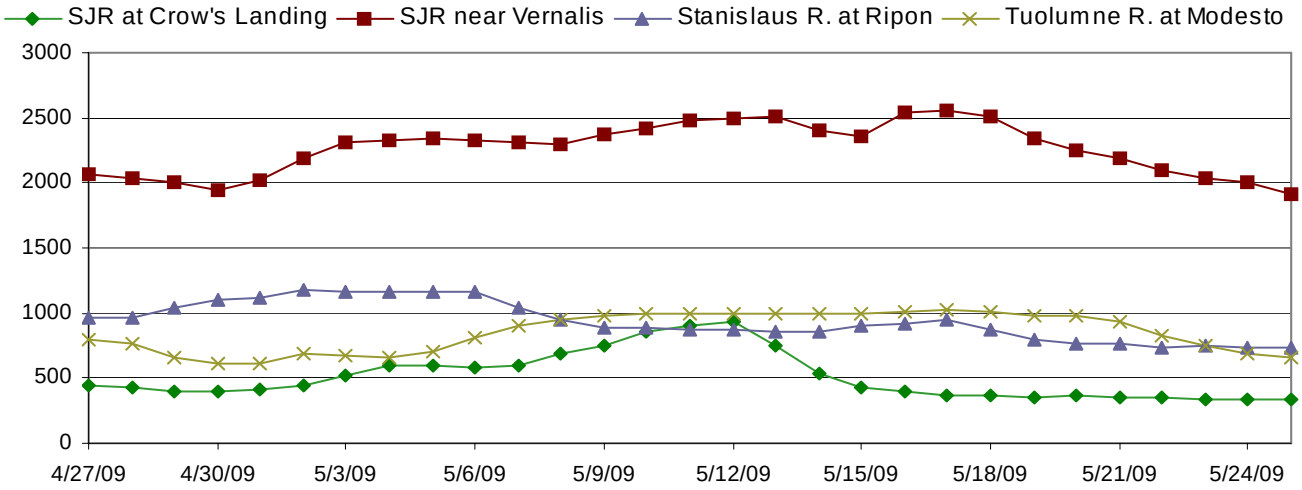


9. Precipitation, Flow, and EC - San Joaquin River

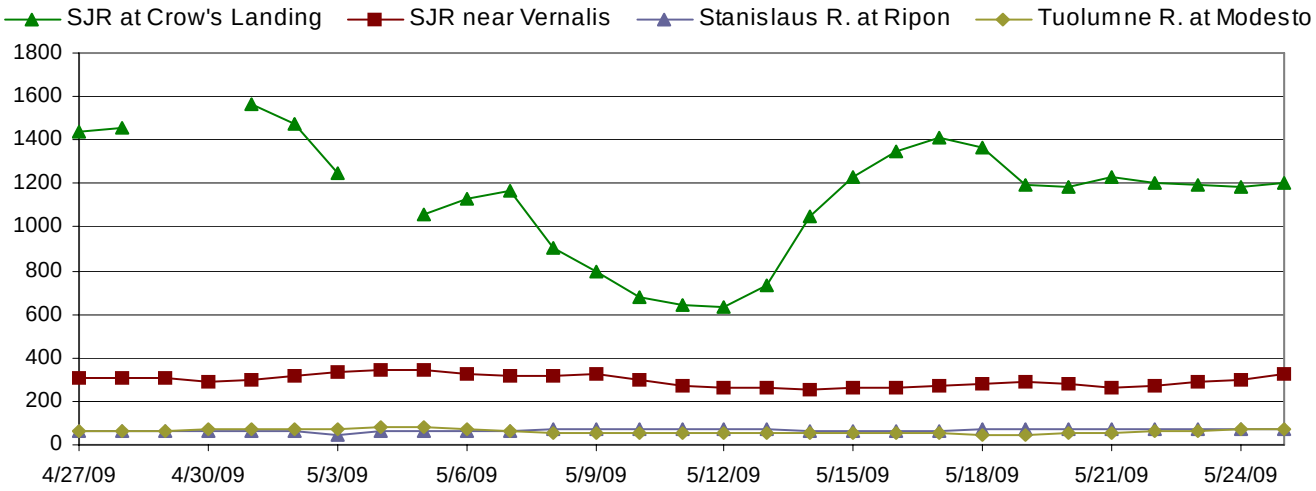
San Joaquin River Watershed Precipitation (inches)



San Joaquin River Flows (cfs)

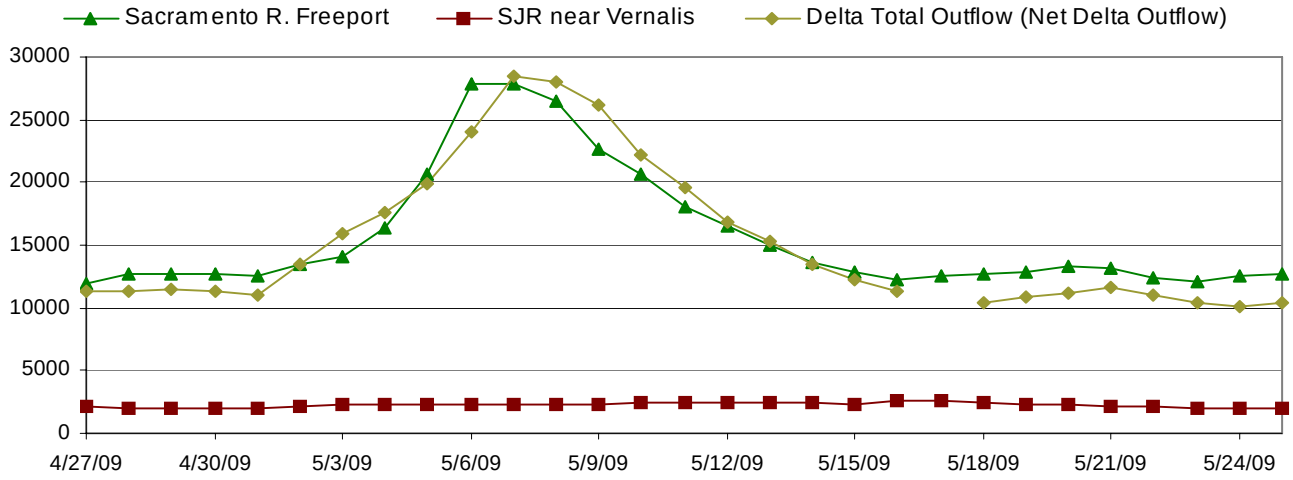


San Joaquin River Electrical Conductance (µS/cm)

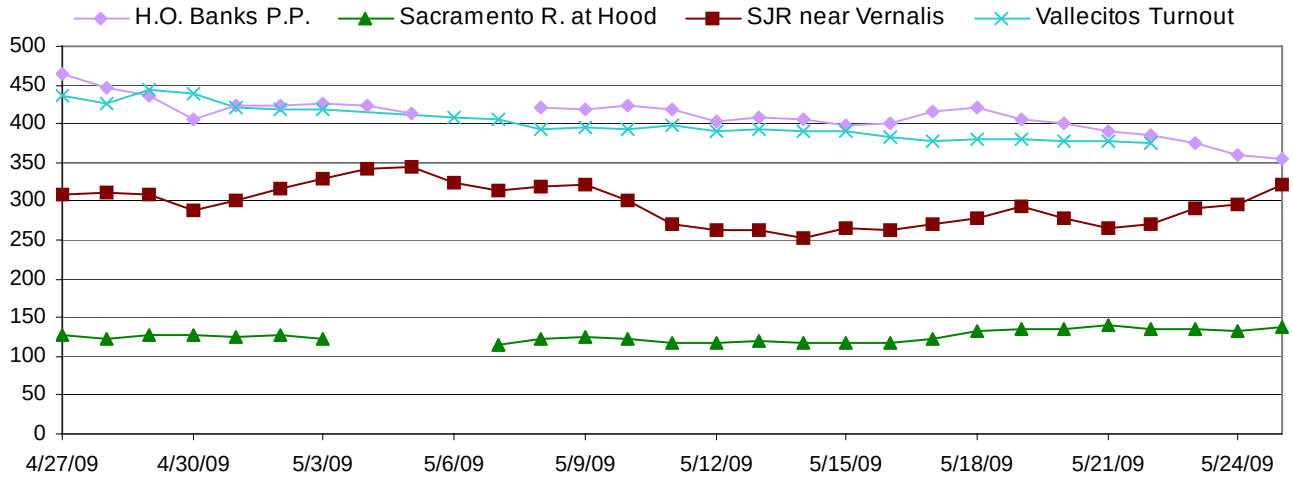


10. Flow, EC, and TOC - Sacramento, San Joaquin, and Banks

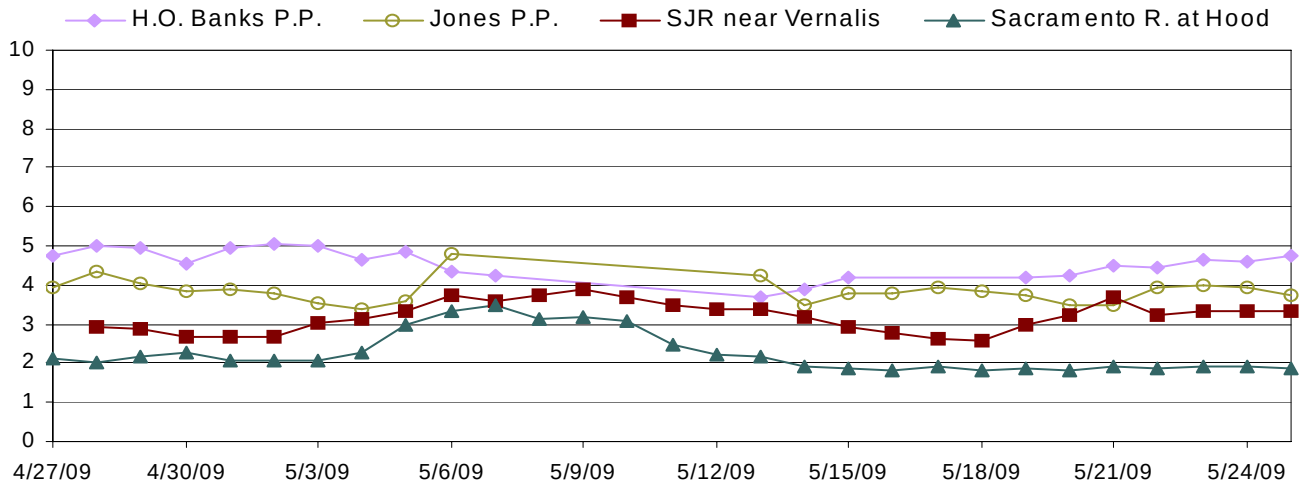
Flow (cfs)



Electrical Conductance (µS/cm)

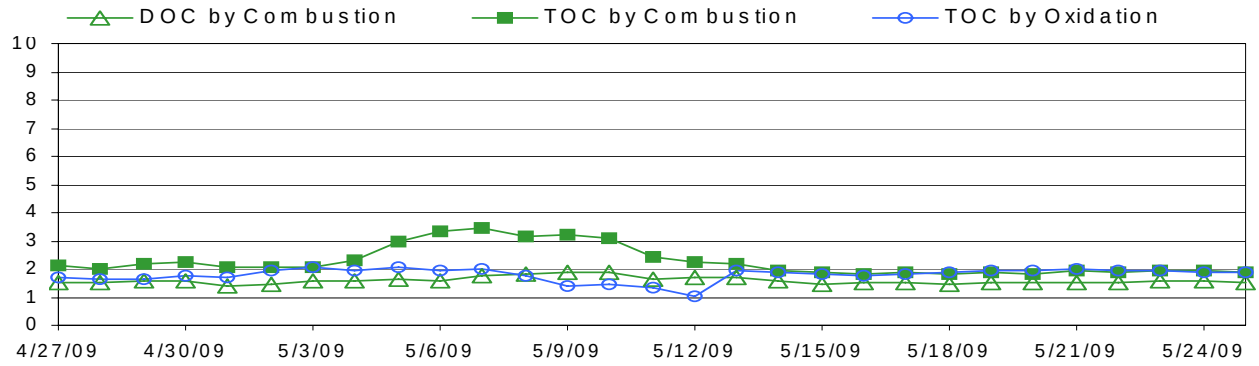


Total Organic Carbon by Combustion (mg/L)

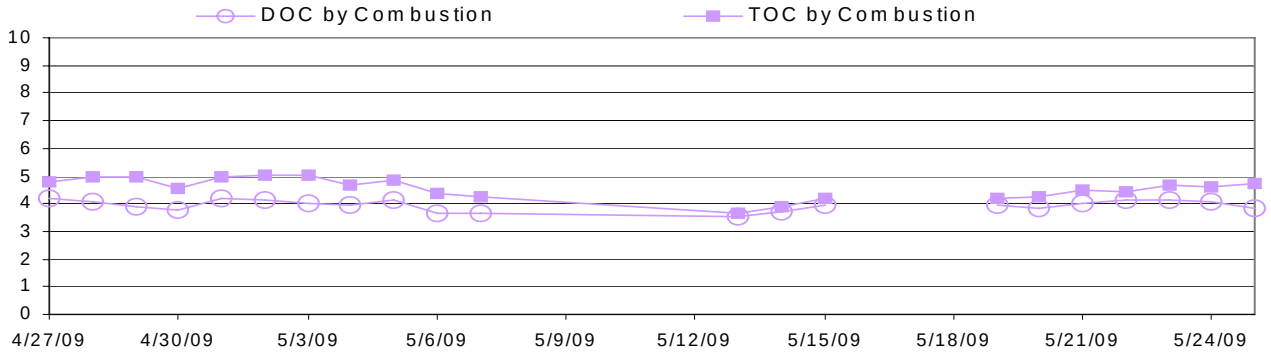


11. Total and Dissolved Organic Carbon

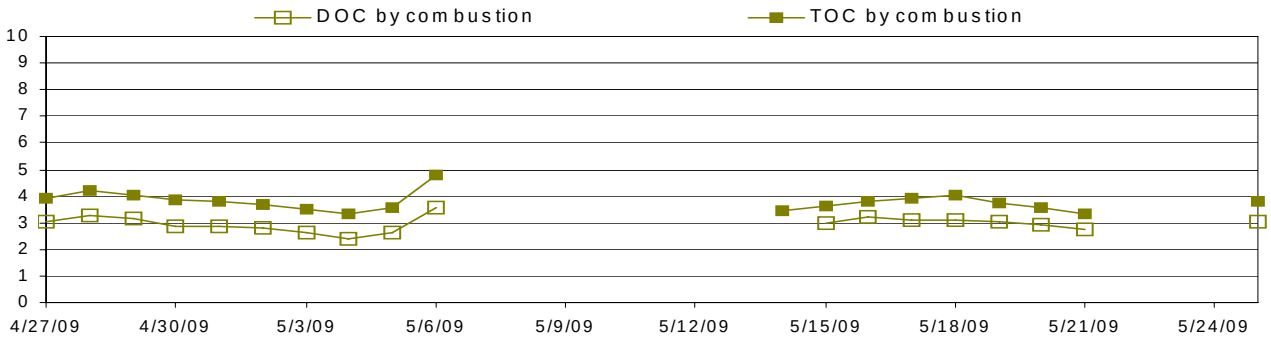
Sacramento River at Hood (mg/L)



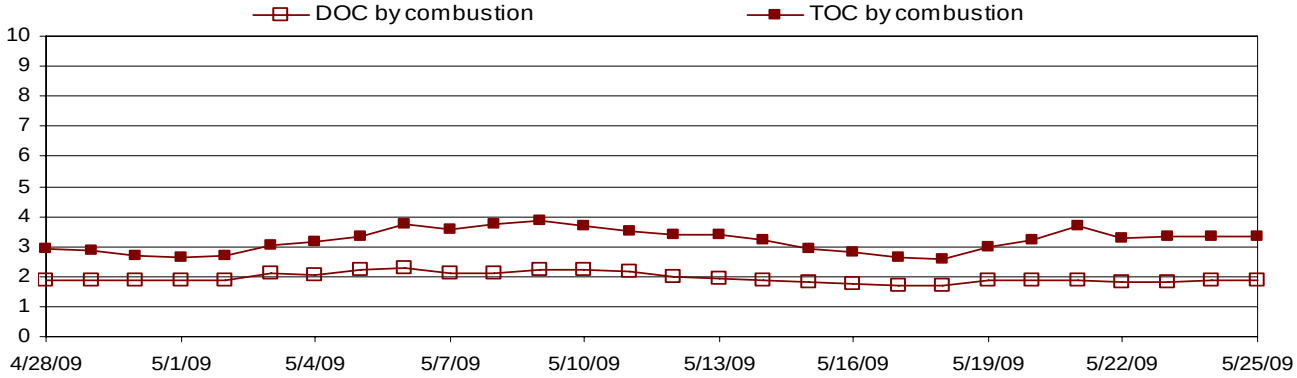
H.O. Banks Pumping Plant (mg/L)



Jones Pumping Plant (mg/L)

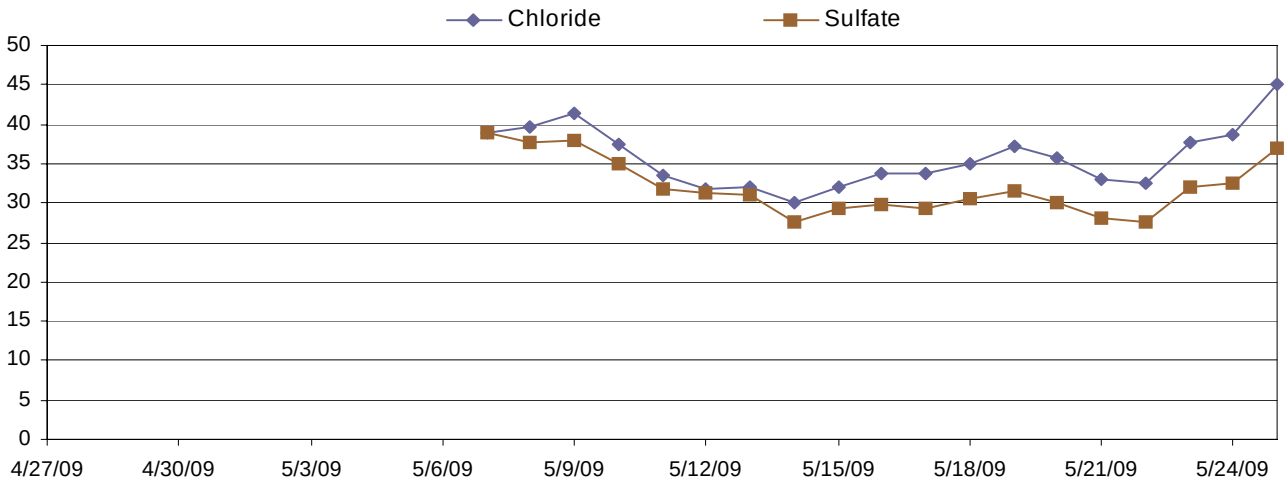


San Joaquin River at Vernalis (mg/L)

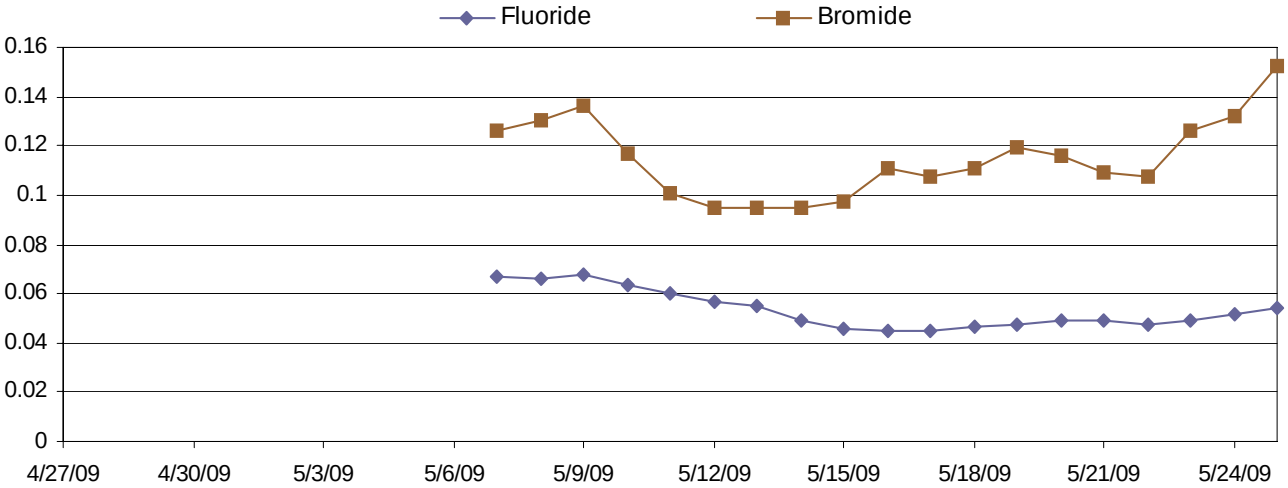


12. Anion Concentrations - San Joaquin River at Vernalis

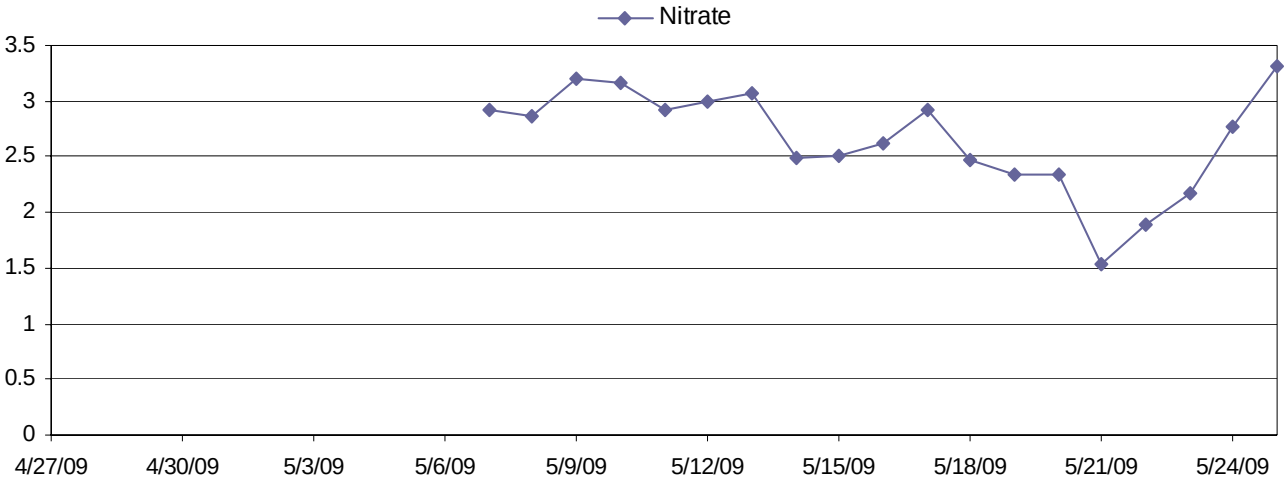
Chloride and Sulphate ($SO4^{-2}$) (ppm)



Fluoride and Bromide (ppm)

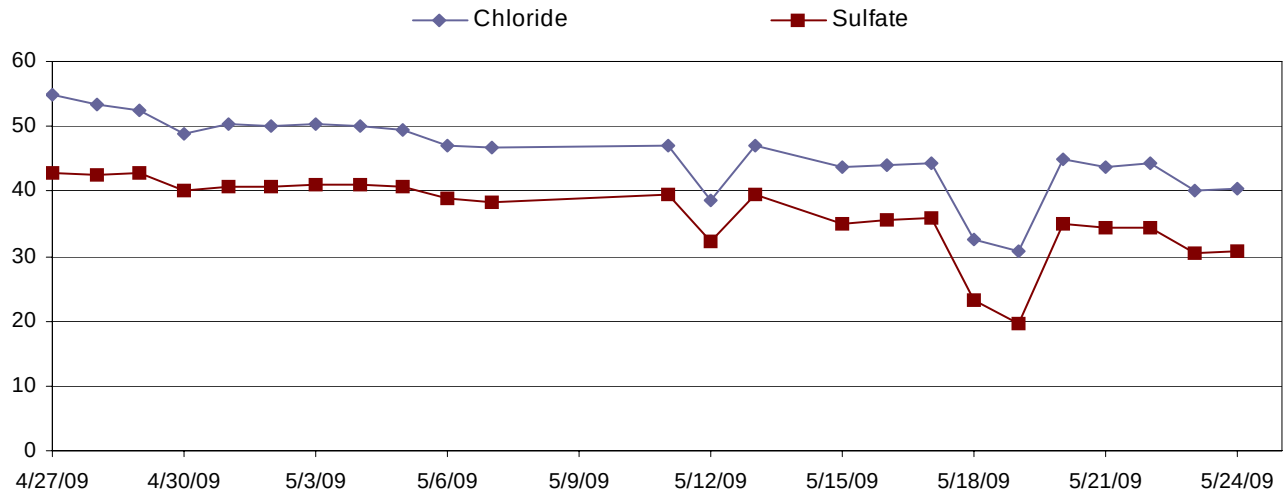


Nitrate (ppm as $NO3^{-}$)

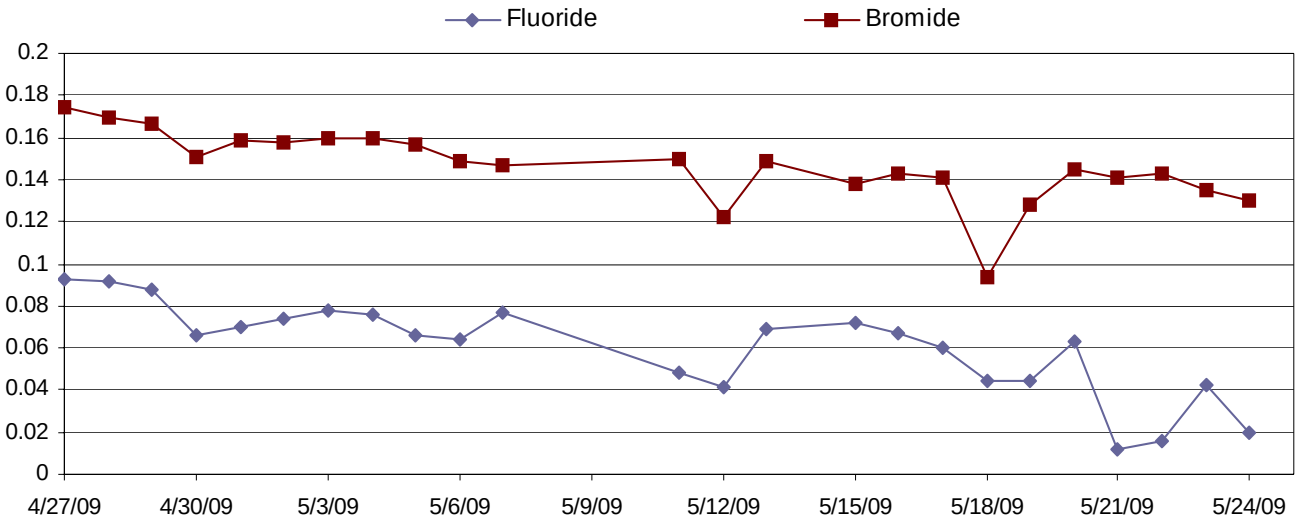


13. Anion Concentrations - Harvey O. Banks Pumping Plant

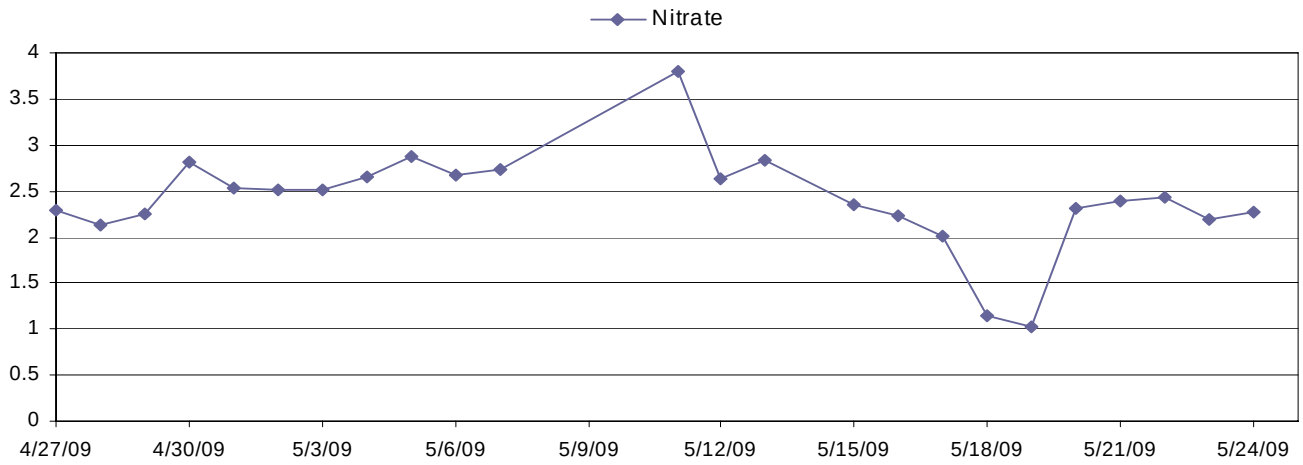
Chloride and Sulphate ($SO4^{-2}$) (ppm)



Fluoride and Bromide (ppm)

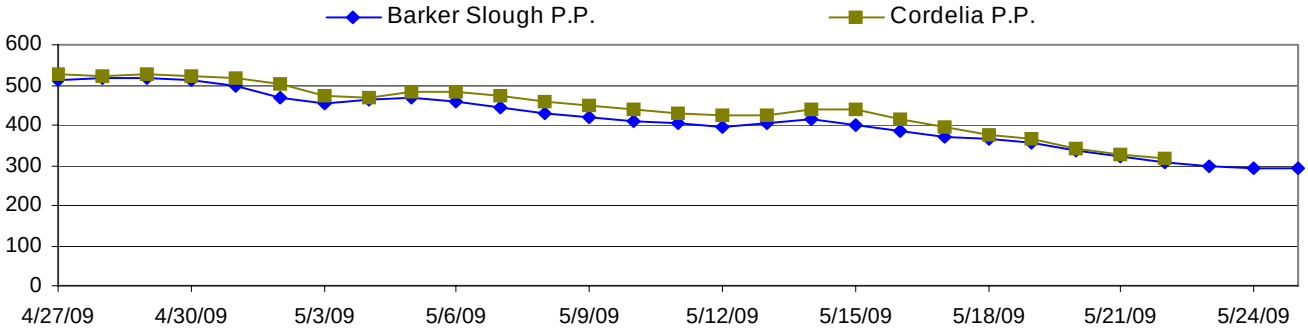


Nitrate (ppm as $NO3^{-}$)

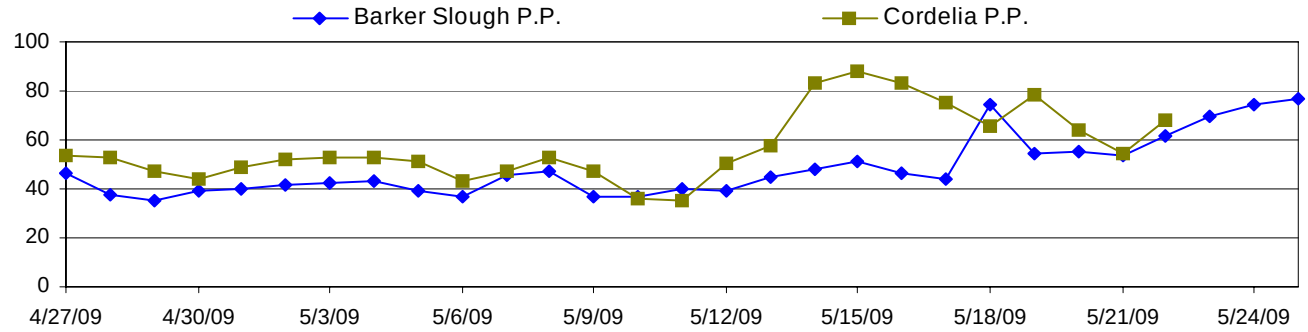


14. EC, Turbidity, Temperature, Flow - North Bay Aqueduct

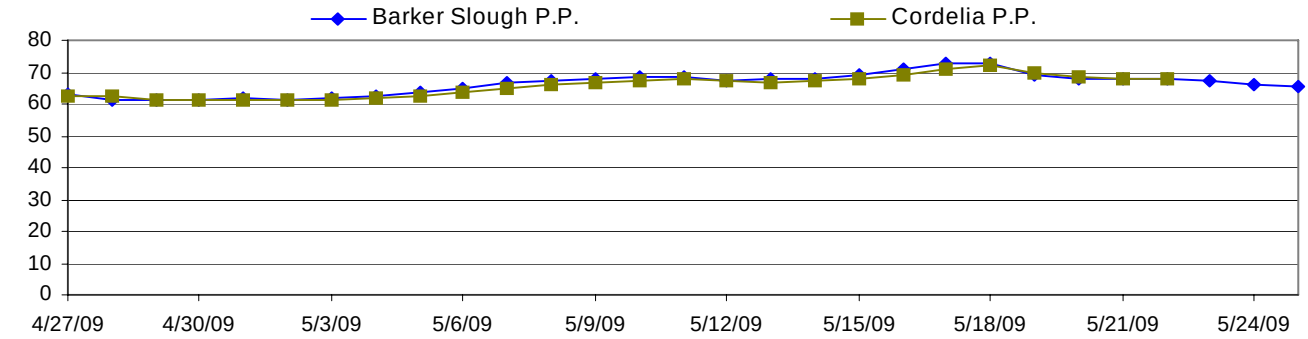
Electrical Conductance (µS/cm)



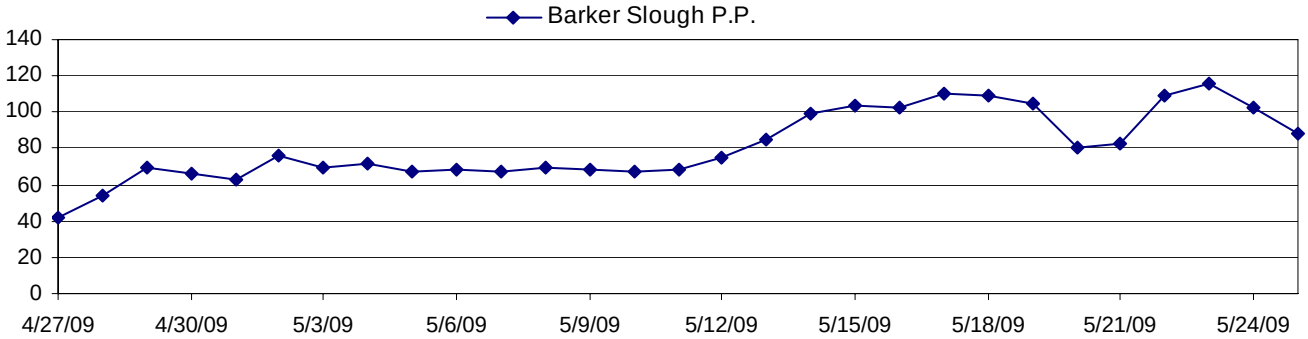
Turbidity (NTU)



Water Temperature (F°)

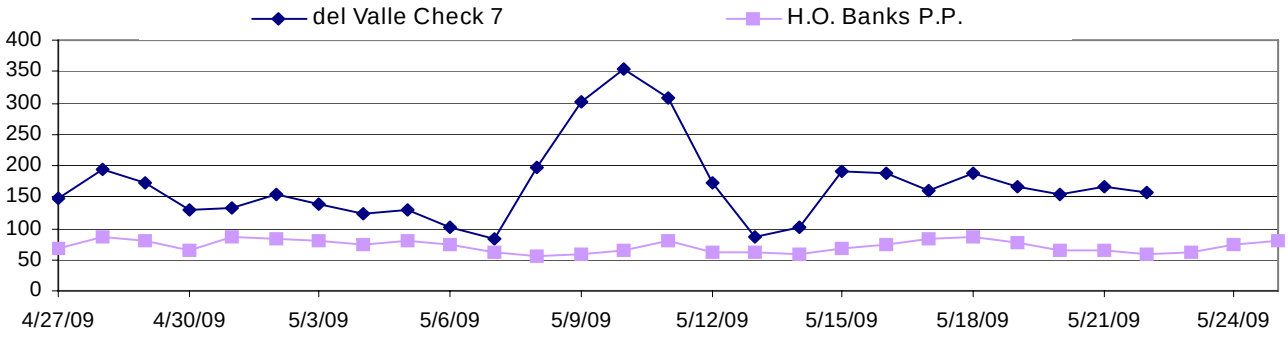


Flow (cfs)

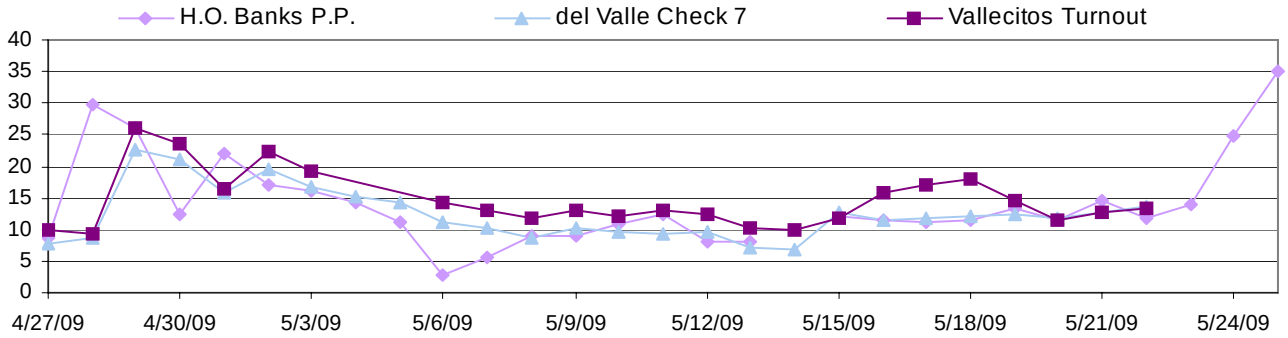


15. Fluorescence, Turbidity, Temperature, Flow - South Bay Aqueduct

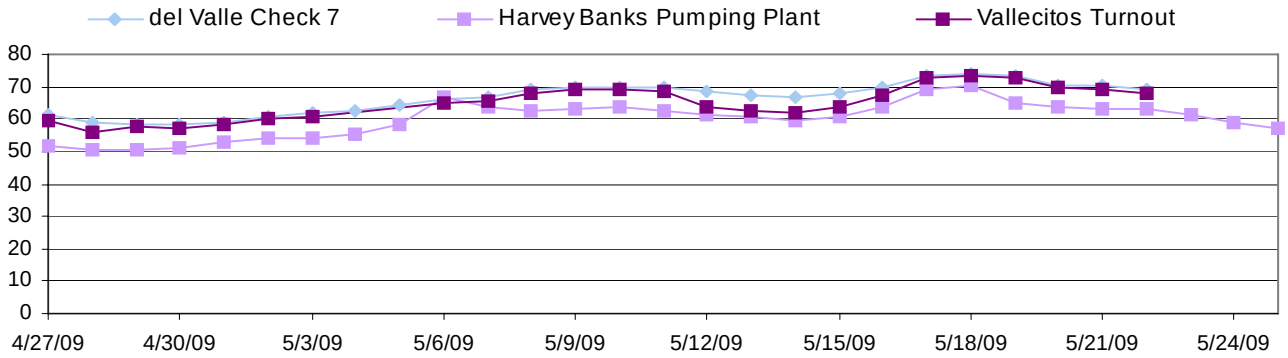
Fluorescence



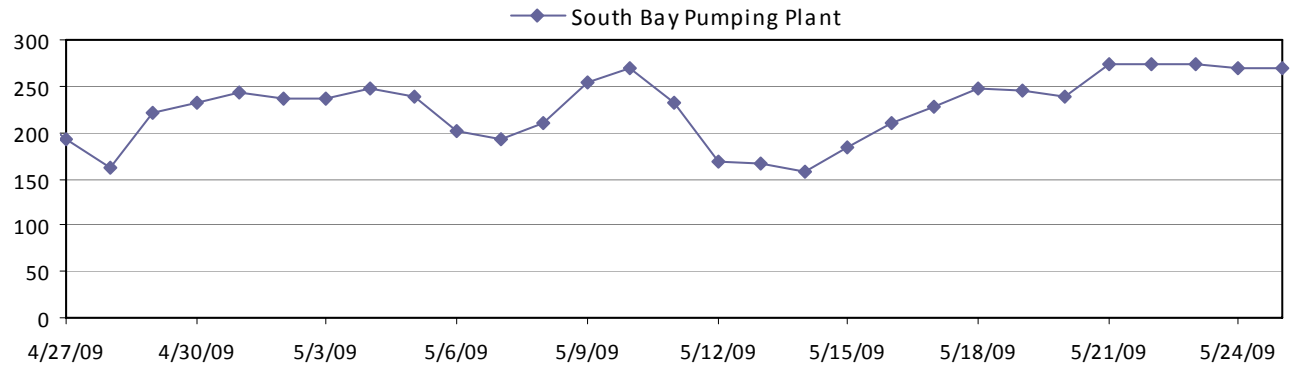
Turbidity (NTU)



Water Temperature (F°)

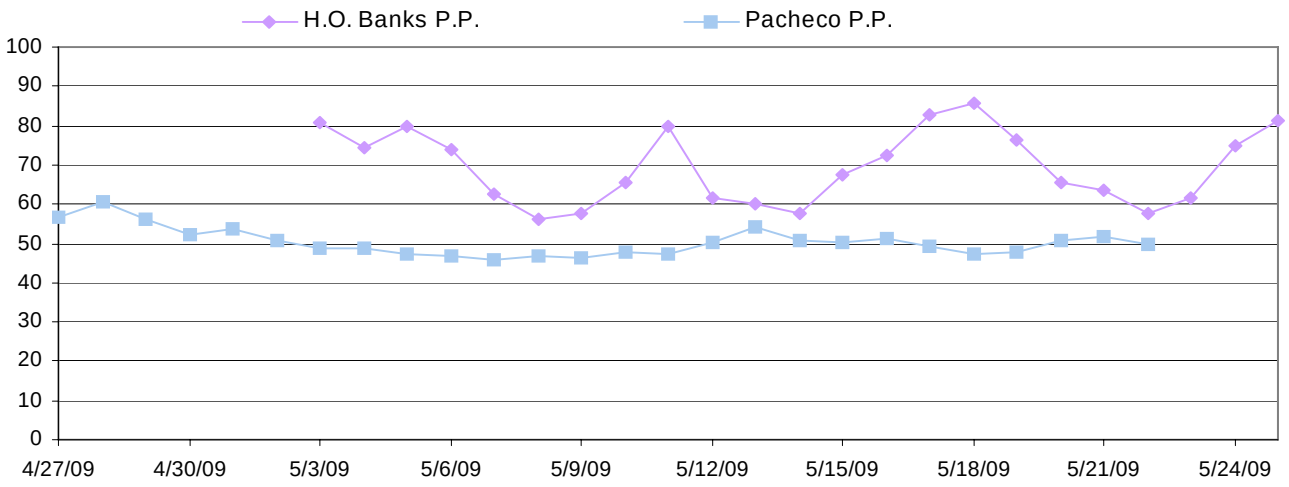


Flow (cfs)

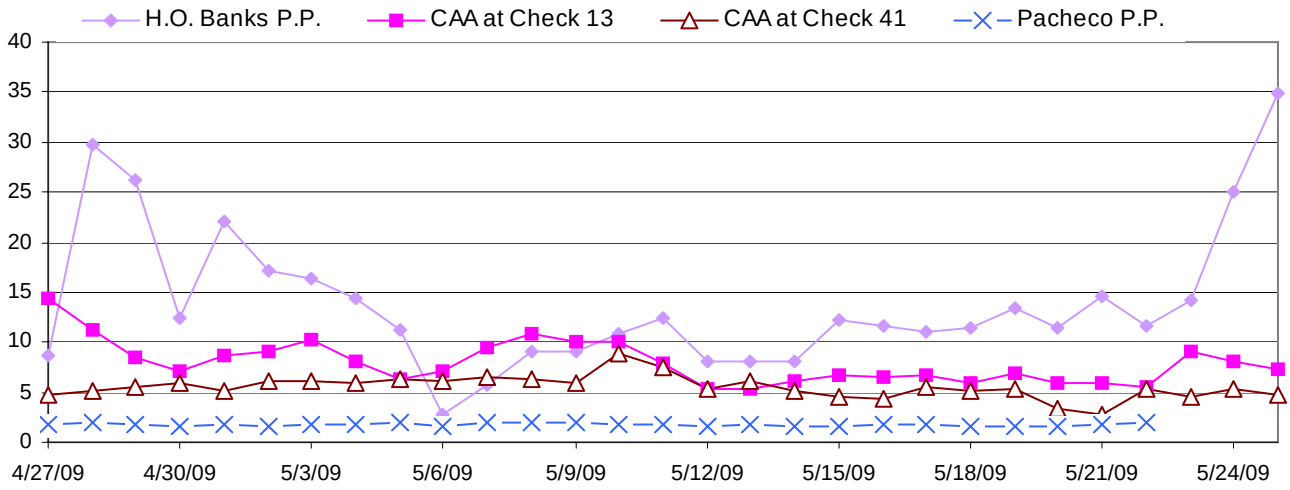


16. Fluorescence, Turbidity, and UV Absorption - CA Aqueduct

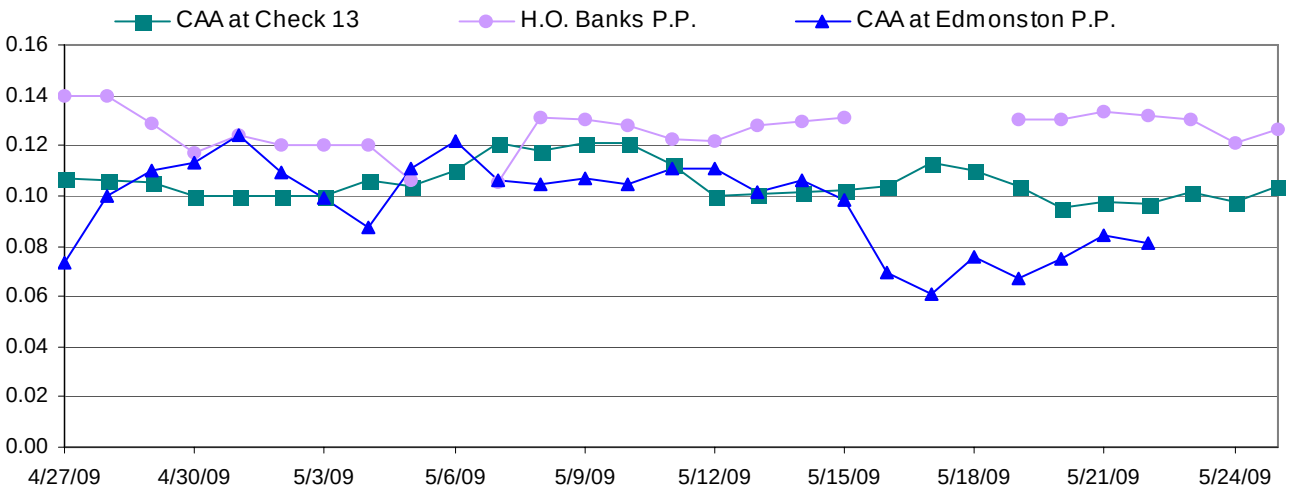
Fluorescence



Turbidity (NTU)

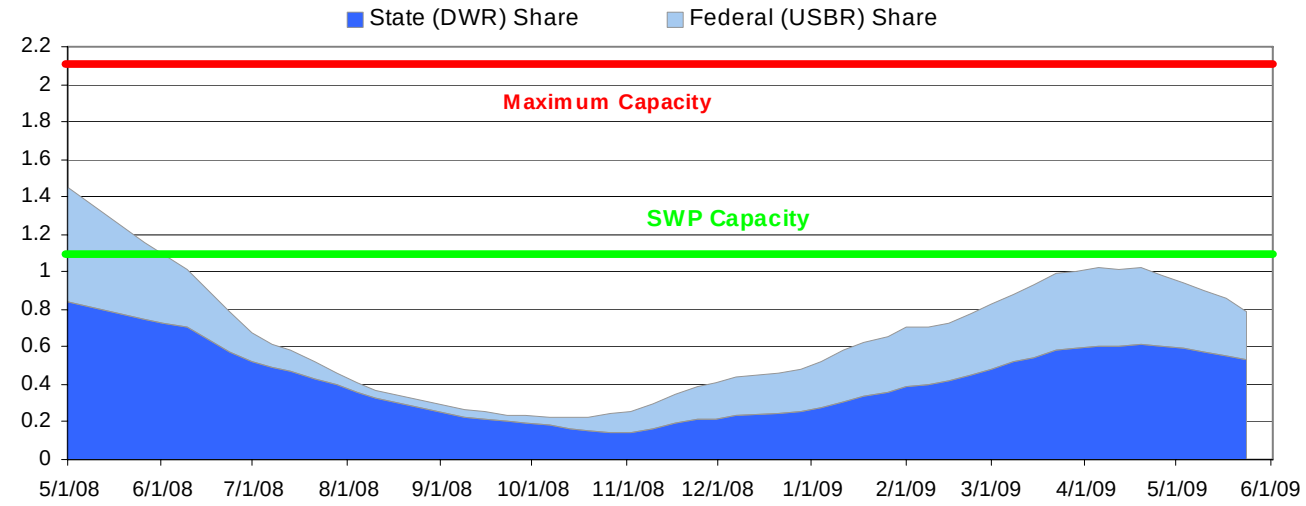


UVA (cm^{-1})

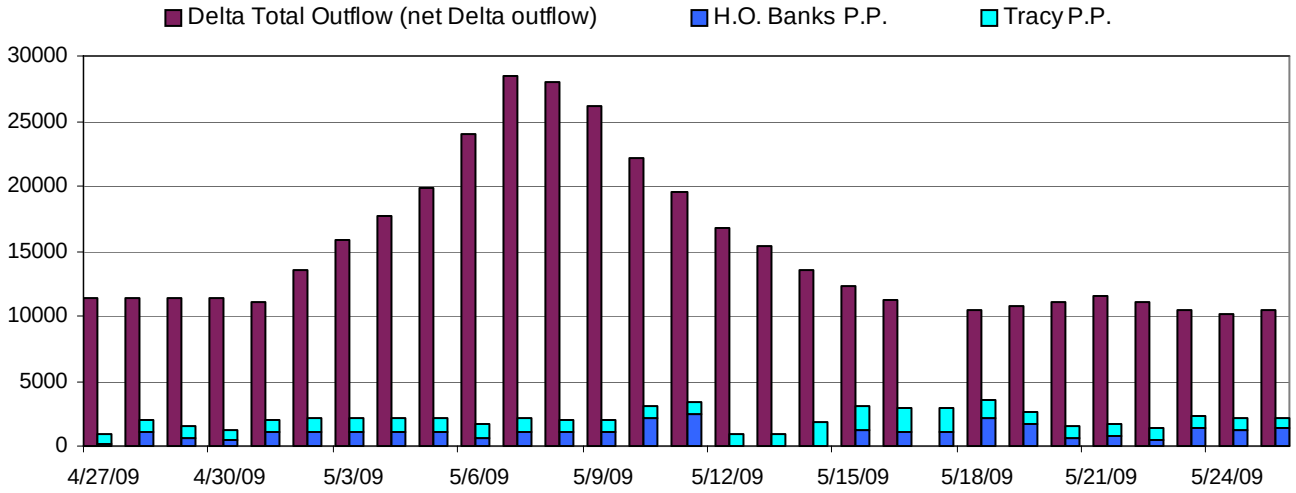


17. San Luis Reservoir Storage, Delta Pumping, Inflow and Outflow

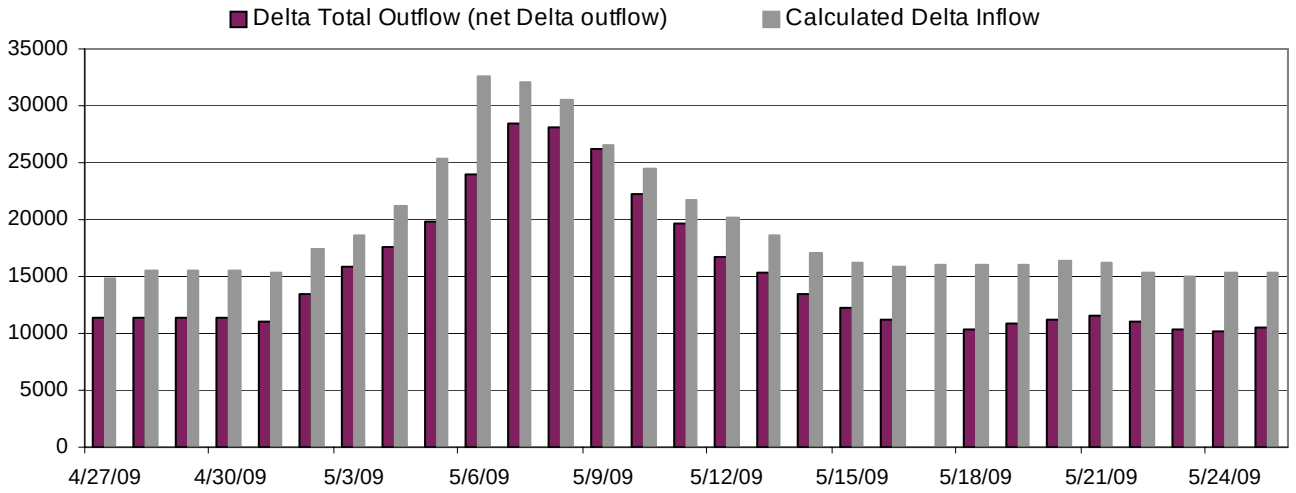
San Luis Reservoir Storage Shares (millions of acre feet)



H.O. Banks and Tracy Pumping plus Delta Total Outflow (cfs)



Calculated Delta Inflow and Delta Total Outflow (cfs)



18. Delta Operations Summary

EXECUTIVE OPERATIONS SUMMARY for May 26, 2009
PRELIMINARY DATA, SUBJECT TO REVISION WITHOUT NOTICE
This summary can also be found at:
http://wwwoco.water.ca.gov/cmplmon/reports/deltaops.pdf

SCHEDULED EXPORTS FOR TODAY

Clifton Court Inflow	=	1,300 cfs
Jones Pumping Plant	=	900 cfs

ESTIMATED DELTA HYDROLOGY

Total Delta Inflow	~	15,638 cfs
Sacramento River	=	12,822 cfs
San Joaquin River	=	1,919 cfs

DELTA OPERATIONS

Delta Conditions	=	Excess Condition.
Delta x-channel Gates	=	Closed
Outflow Index	~	10,700 cfs
% Inflow Diverted	=	13.8% (3-day avg)
X2 Position	>	81.5 km

Delta Smelt Expanded Salvage Data for WY 2009:

	CVP	SWP	Total
Daily total (s) ---------->	0	40	40
Monthly total (May) ---------->	140	51	191
Season total for both facilities ----->	152	63	215

Note: Last larva detection for Delta smelt at CVP and SWP on: 18-May

Longfin Smelt Expanded Salvage Data for WY 2009:

	CVP	SWP	Total
Daily total (s) ---------->	0	0	0
Monthly total (May) ---------->	12	0	12
Season total for both facilities ----->	68	8	76

Note: Last larva detection for Longfin at SWP on: 8-May

RESERVOIR STORAGES (AS OF MIDNIGHT)

Shasta Reservoir	=	3,162 TAF
Folsom Reservoir	=	942 TAF
Oroville Reservoir	=	2,286 TAF
San Luis Res. Total	=	778 TAF
SWP Share	=	528 TAF

RESERVOIR RELEASES

Reservoir Releases

Keswick	=	9,000 cfs
Nimbus	=	4,000 cfs
Oroville	=	1,200 cfs

19. Acknowledgements

Data for this report has been provided by:

California Department of Water Resources

Division of Environmental Services
Office of Water Quality

Division of Flood Management
California Data Exchange Center

Division of Operation and Maintenance
Environmental Assessment Branch
Operations Control Office
Field Divisions

Division of Planning and Local Assistance
California Irrigation Management Information System
Northern District
San Joaquin District

Contra Costa Water District

United States Department of the Interior

Bureau of Reclamation

U.S. Geological Survey

National Oceanic and Atmospheric Administration

National Weather Service
California Nevada River Forecast Center