

## Appendix U Historical Data

Historical data for most of California's rivers and reservoirs can be found on the California Data Exchange Center (CDEC) <http://cdec.water.ca.gov/>. CDEC provides reservoir storage, river flow, and water temperature as well as many other parameters. This Appendix presents some comparisons between CalSim-II and measured data. In addition to comparisons, temperature data are summarized for selected locations.

### Historical Data and CalSim-II Operations

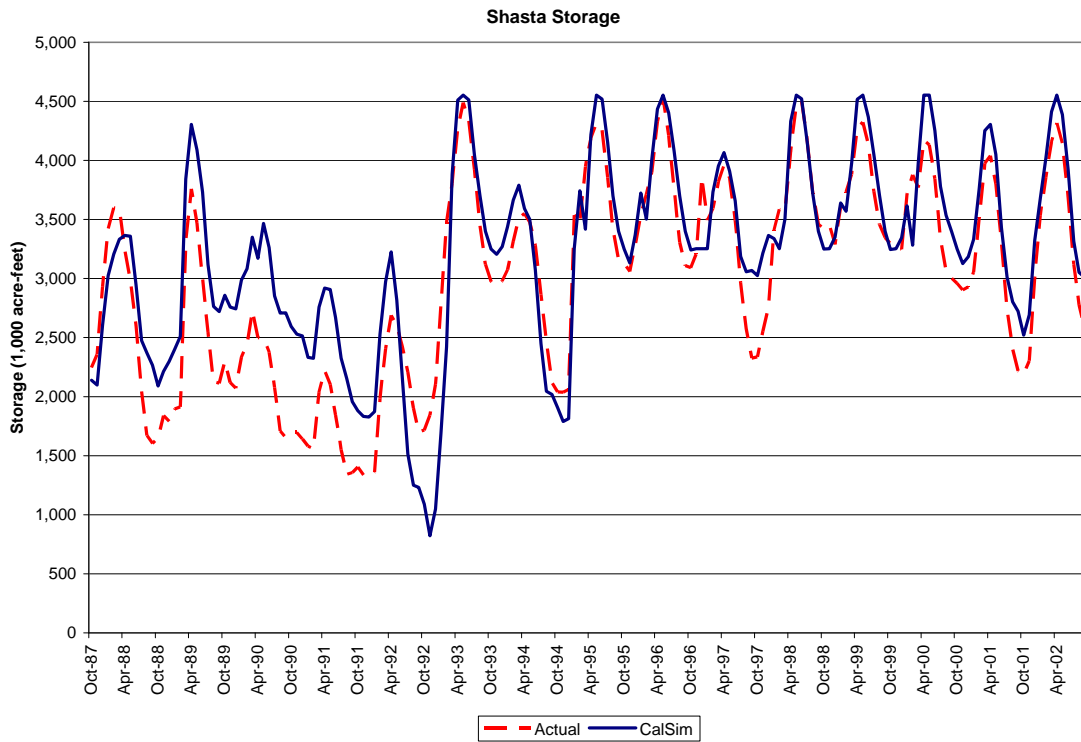
Operations within CalSim-II assume the current D1641 regulatory environment with CVPIA (b)(2) and EWA. The following presents a comparison of the "Existing Condition" Study 7.0 CalSim-II results with historical data back to water-year 1988. When analyzing the differences between the CalSim-II model output and what occurred historically it is important to note that CalSim-II represents a single regulatory environment and a single level of development (2005). There have been many changes in the regulations to which the SWP and CVP operate along with changes in demand. Refer to OCAP BA Chapter 1 for a list of regulatory changes which would have altered the operations today as compared to how the projects were operated historically. Therefore, when making a direct comparison between historical data and CalSim-II the time period should be considered. In general these comparisons are more appropriate as the time period moves closer to the "Existing condition" (e.g. it would be more appropriate to compare water-year 2000 than water-year 1990).

Figure **Error! No text of specified style in document.**-1 through Figure **Error! No text of specified style in document.**-3 shows the comparison between historical storage and CalSim-II simulated storage for Shasta, Folsom, and New Melones reservoirs.

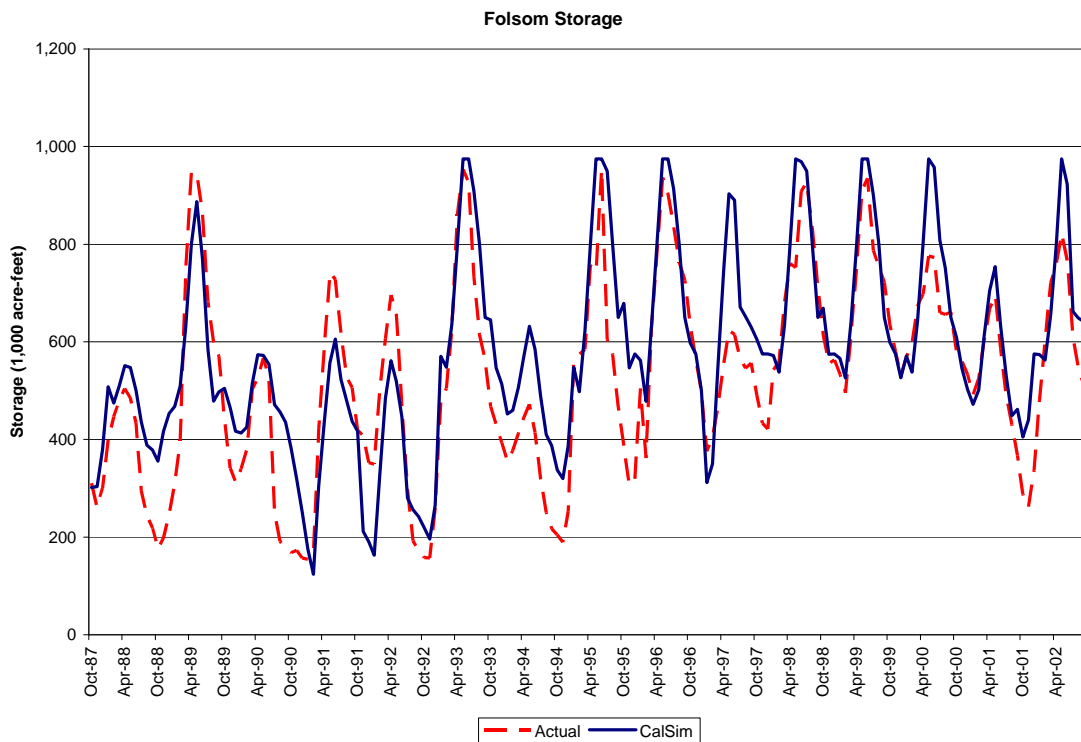
Figure **Error! No text of specified style in document.**-4 and Figure **Error! No text of specified style in document.**-5 show the comparison between historical flow and CalSim-II simulated flow for the Sacramento River at Freeport and San Joaquin River at Vernalis.

Figure **Error! No text of specified style in document.**-6 and Figure **Error! No text of specified style in document.**-7 show the comparison between historical export pumping and CalSim-II simulated export pumping for Banks Pumping Plant and Jones Pumping Plant.

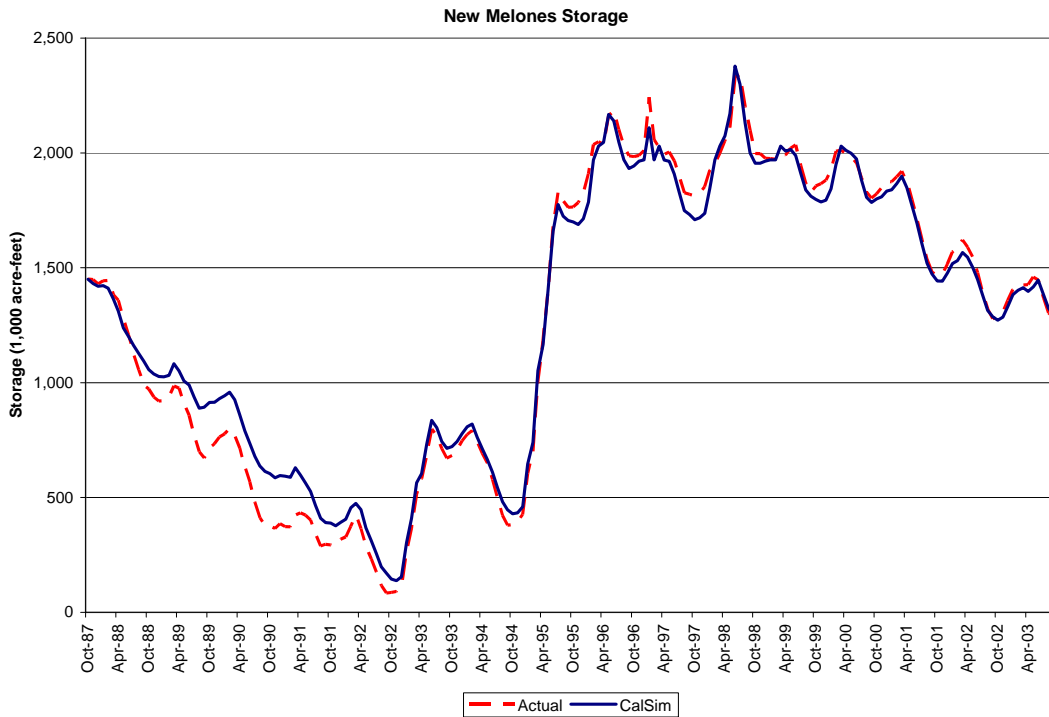
Figure **Error! No text of specified style in document.**-8 and Figure **Error! No text of specified style in document.**-9 show the comparison between historical storage and CalSim-II simulated storage for the CVP and SWP shares of San Luis Reservoir.



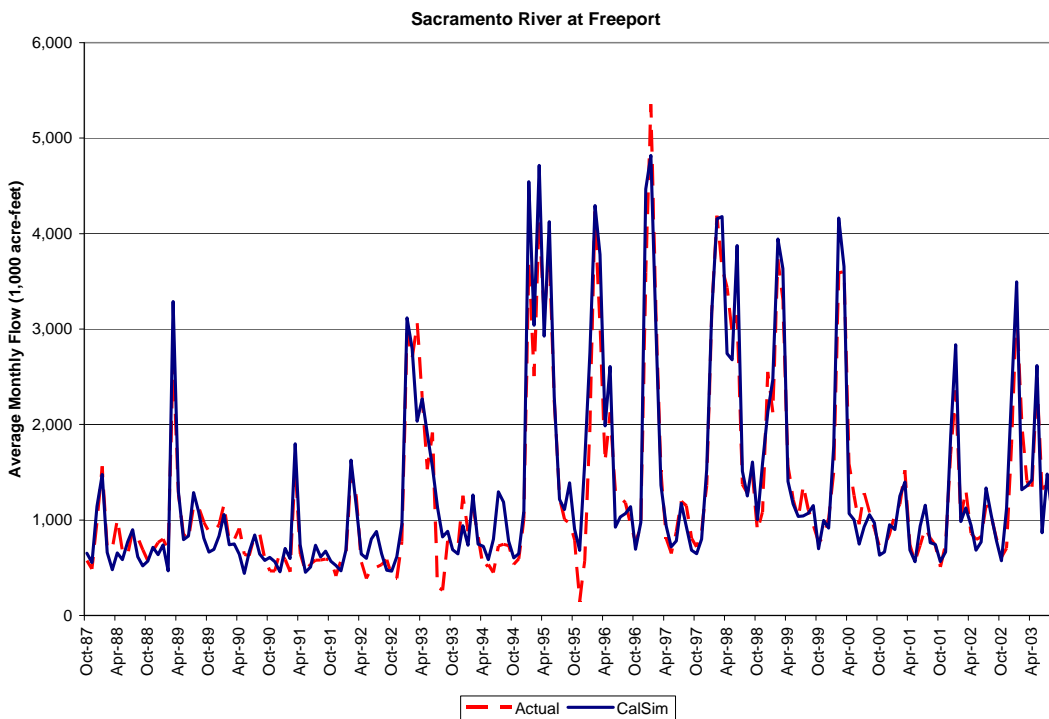
**Figure Error! No text of specified style in document.-1 Comparison between historical Shasta storage and CalSim-II Shasta storage**



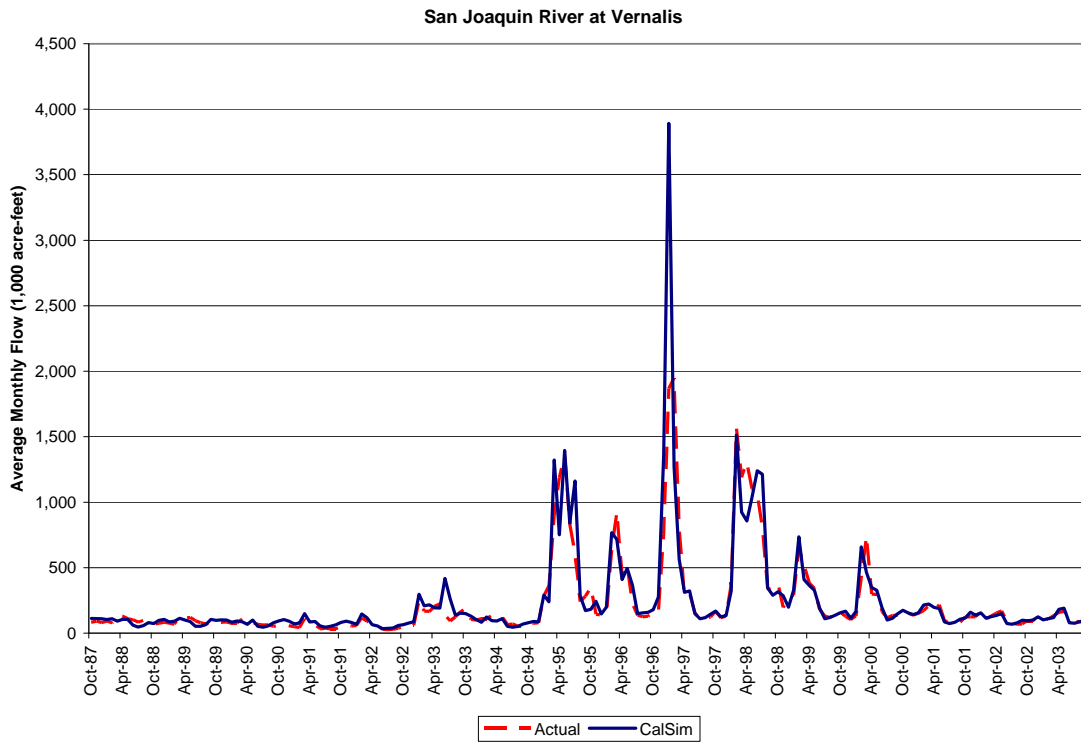
**Figure Error! No text of specified style in document.-2 Comparison between historical Folsom storage and CalSim-II Folsom storage**



**Figure Error! No text of specified style in document.-3 Comparison between historical New Melones storage and CalSim-II New Melones storage**



**Figure Error! No text of specified style in document.-4 Comparison between historical Sacramento River at Freeport flow and CalSim-II Sacramento River at Freeport flow**



**Figure Error! No text of specified style in document.-5 Comparison between historical San Joaquin River at Vernalis flow and CalSim-II San Joaquin River at Vernalis flow**

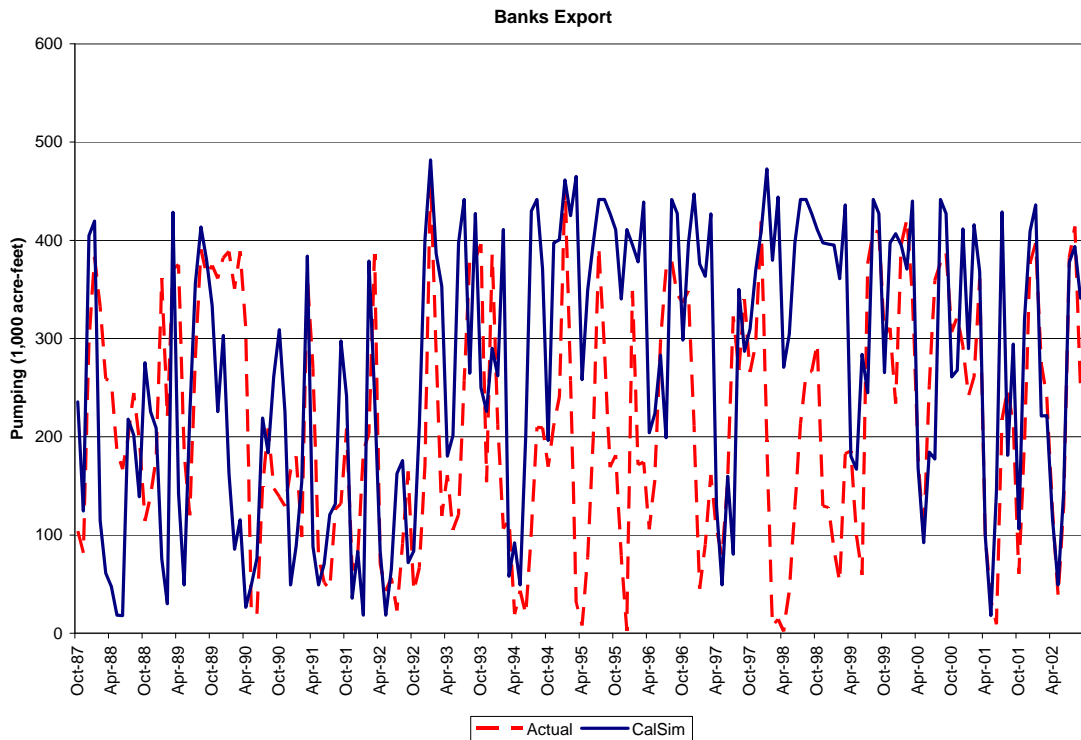


Figure Error! No text of specified style in document.-6 Comparison between historical Banks export and CalSim-II Banks export

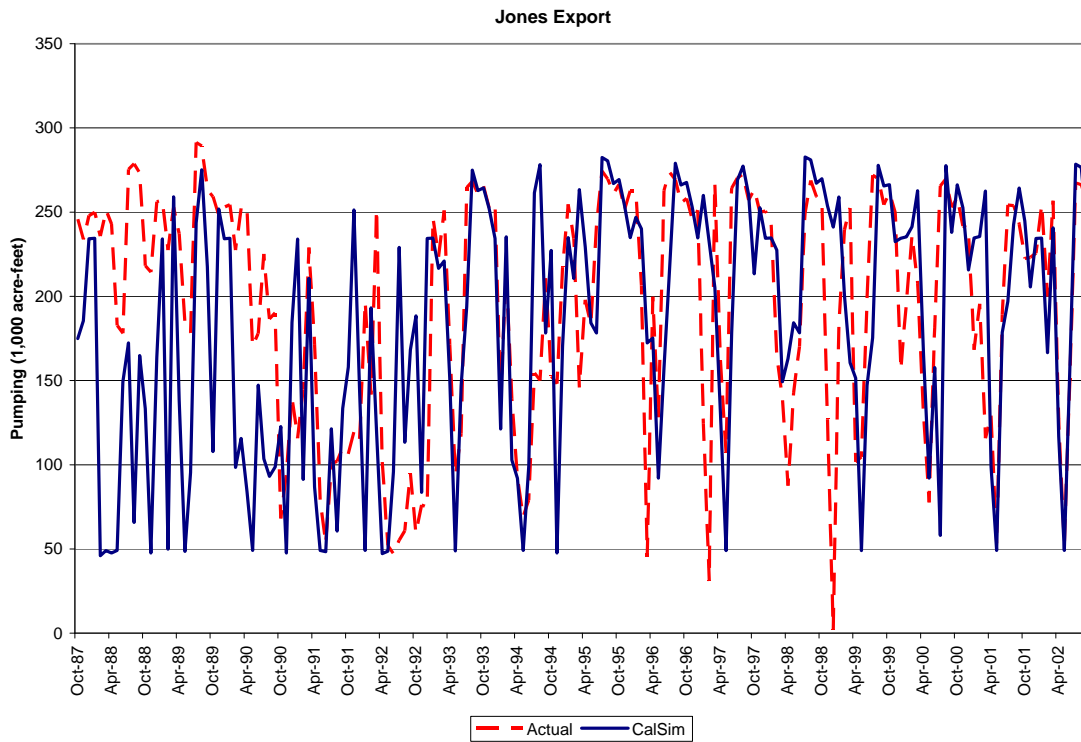
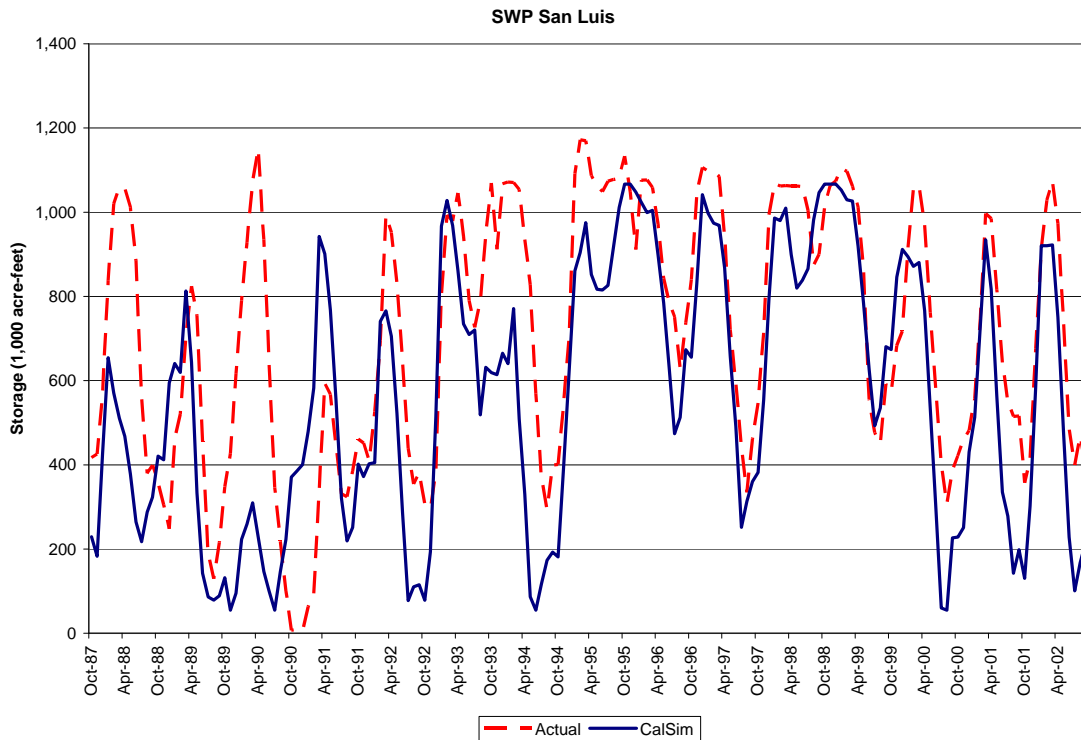
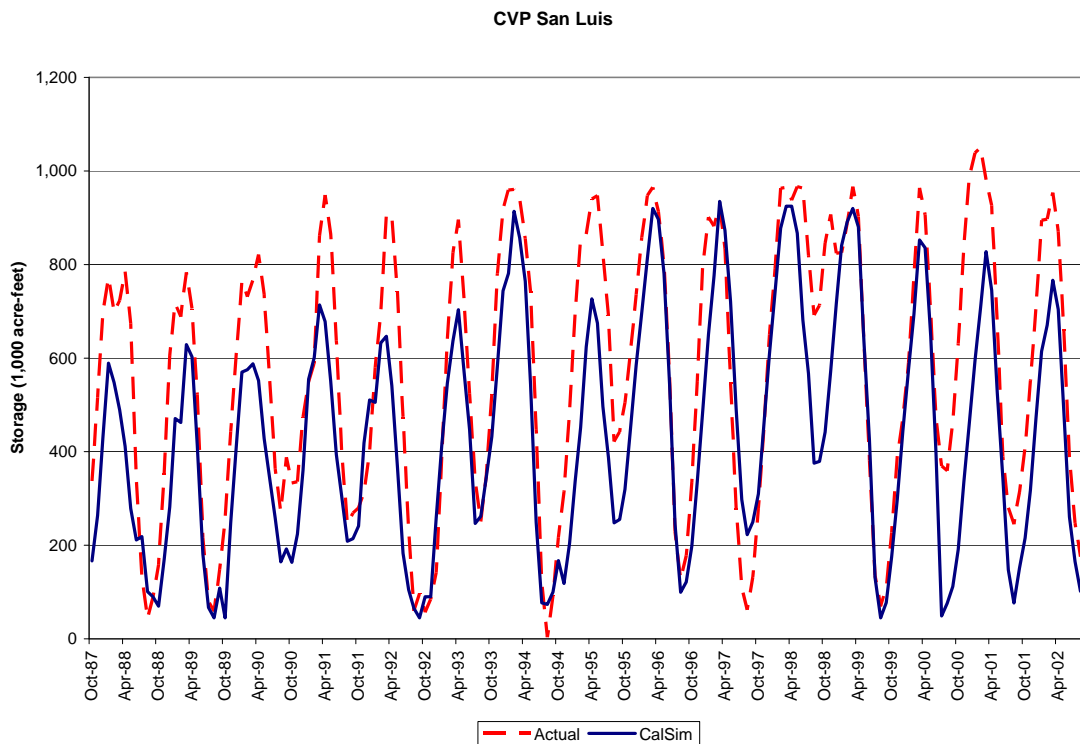


Figure Error! No text of specified style in document.-7 Comparison between historical Jones export and CalSim-II Jones export



**Figure Error! No text of specified style in document.-8 Comparison between historical SWP San Luis storage and CalSim-II SWP San Luis storage**



**Figure Error! No text of specified style in document.-9 Comparison between historical CVP San Luis storage and CalSim-II CVP San Luis storage**

## Temperature and Flow

The temperature model was compared to historical temperature for the temperatures and flows for the Sacramento River, and Clear Creek are shown in Figure Error! **No text of specified style in document.-10** through Figure **Error! No text of specified style in document.-14**.

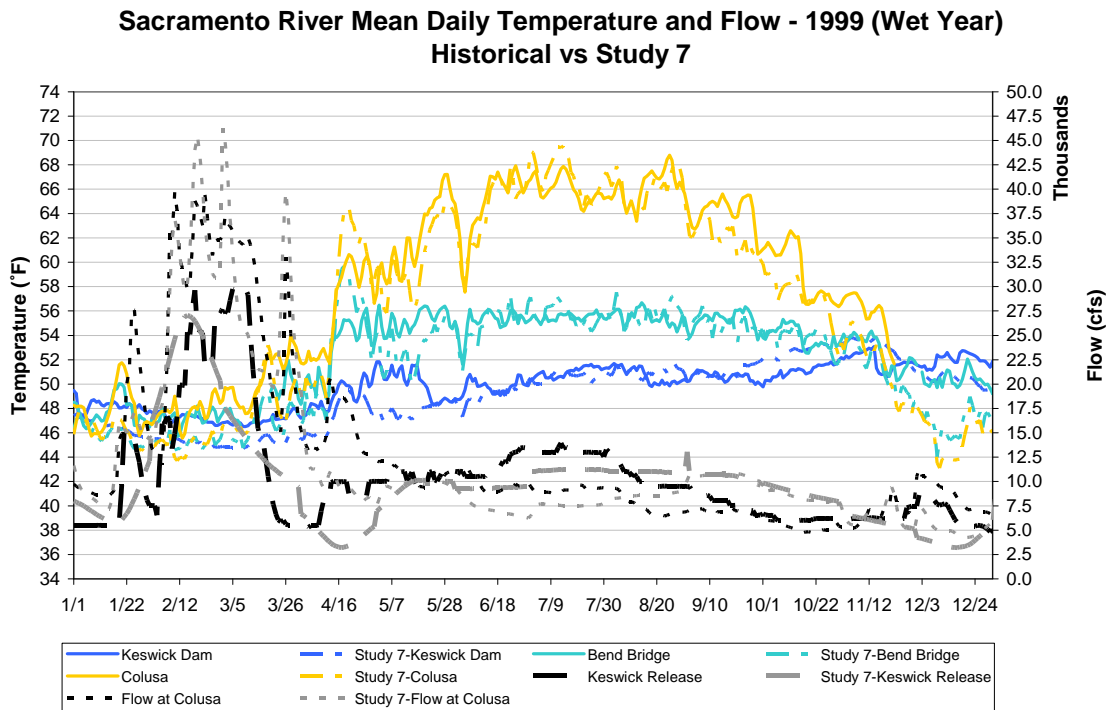
Other comparisons between CalSim-II and actual measurements can be found in the following files, located in the compressed file - OCAP\_Studies\_WaterTemp\_072808.zip:

- Historical\_Temperature-vs\_Study7-Sacramento\_R\_062608.xls
- Historical\_Temperature\_vs\_Study7-Clear\_Cr\_062608.xls
- Historical\_vs\_Study7\_Max-MinWT\_062608.xls

Historical measured temperatures can be found in the following files, located in the compressed file - Historical\_Water\_Temperature\_062608.zip:

- Historical\_DeltaWT\_Exceedence\_Charts.xls
- Historical\_RiverWT\_Exceedence\_Charts.xls
- Historical\_Temperature-Shasta\_Keswick\_&\_Bend\_Br.xls
- Historical\_Temperature-Clear\_Cr.xls
- Historical\_Temperature-Lwr\_American\_R.xls

- Historical\_Temperature-Sacramento\_R.xls



**Figure Error! No text of specified style in document.-10 Sacramento River temperature and flow for a wet year (1999)**

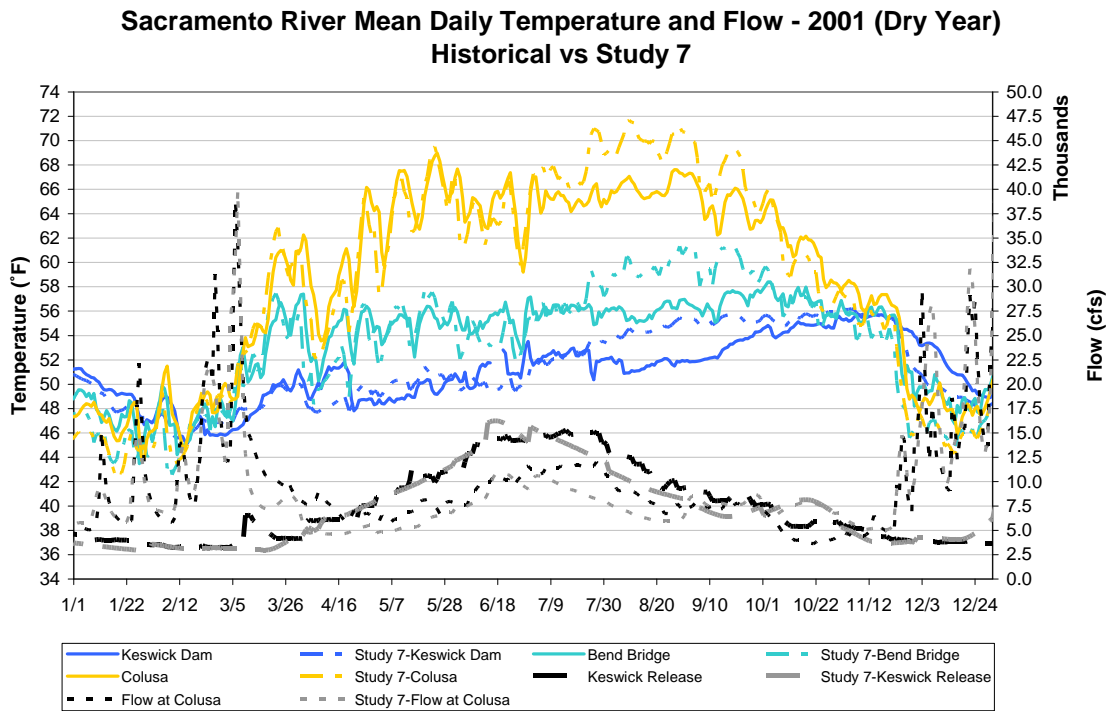


Figure Error! No text of specified style in document.-11 Sacramento River temperature and flow for a dry year (2001)

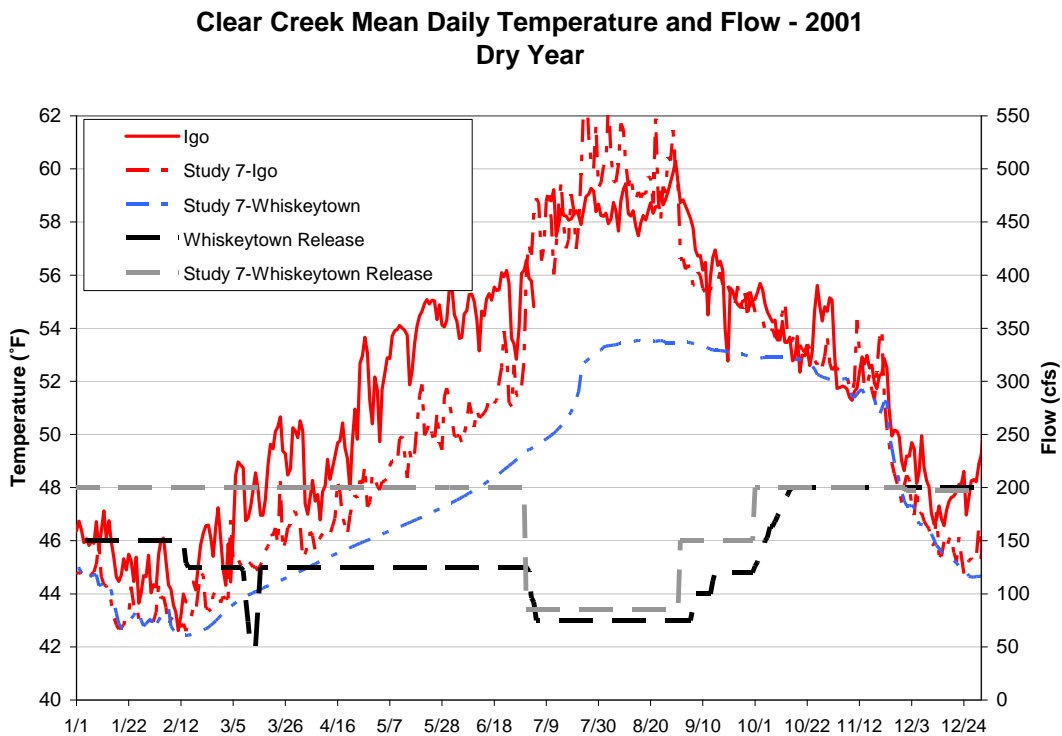




Figure Error! No text of specified style in document.-12 Clear Creek temperature and flow at Igo for a dry year (2001)

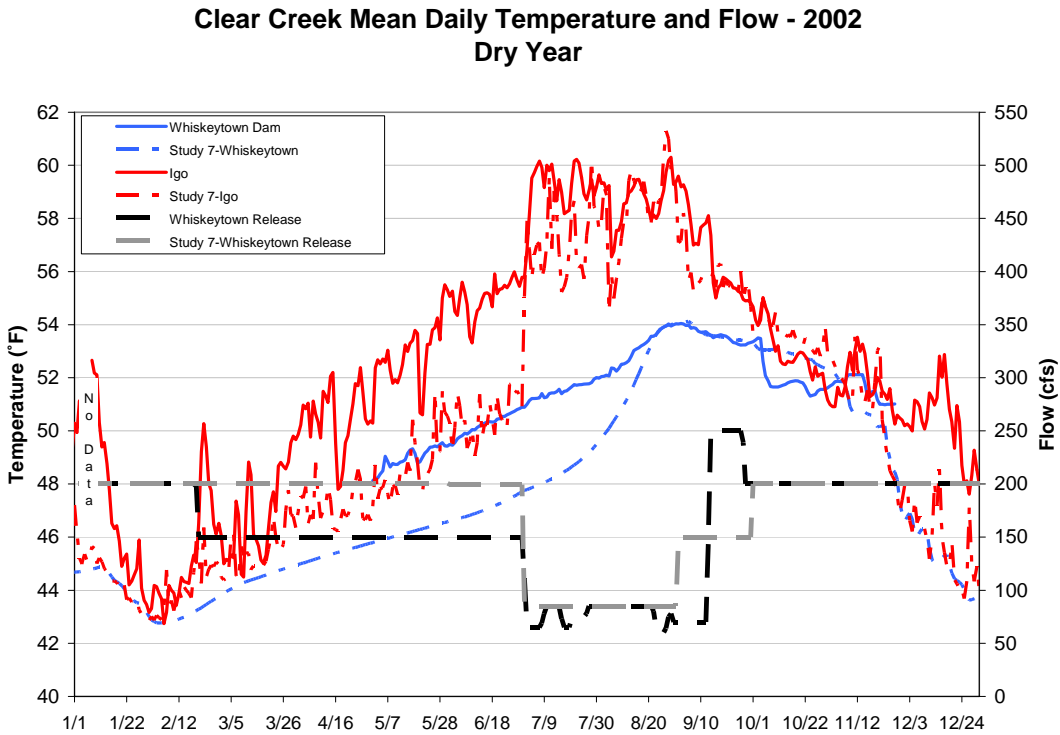
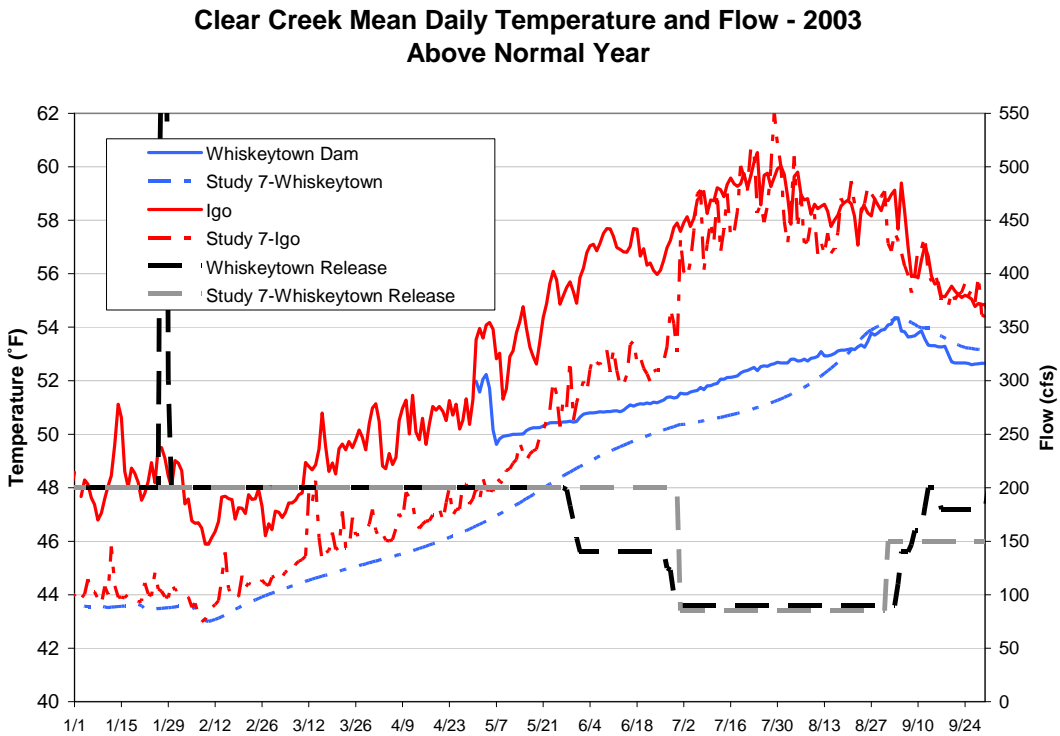


Figure Error! No text of specified style in document.-13 Clear Creek temperature and flow at Igo for a dry year (2002)

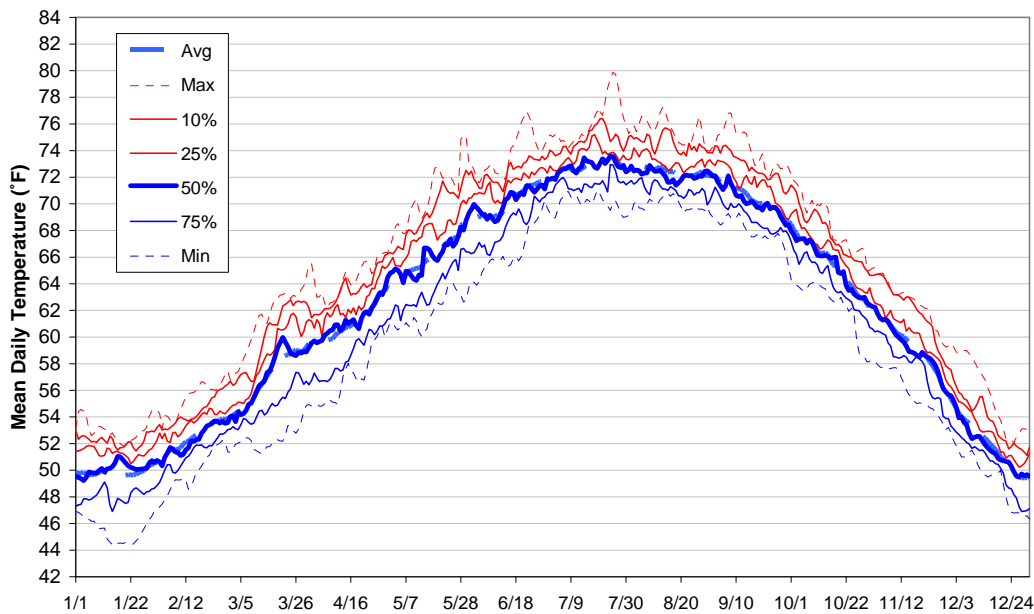


**Figure Error! No text of specified style in document.-14 Clear Creek temperature and flow at Igo for an above normal year (2003)**

### Delta Temperatures

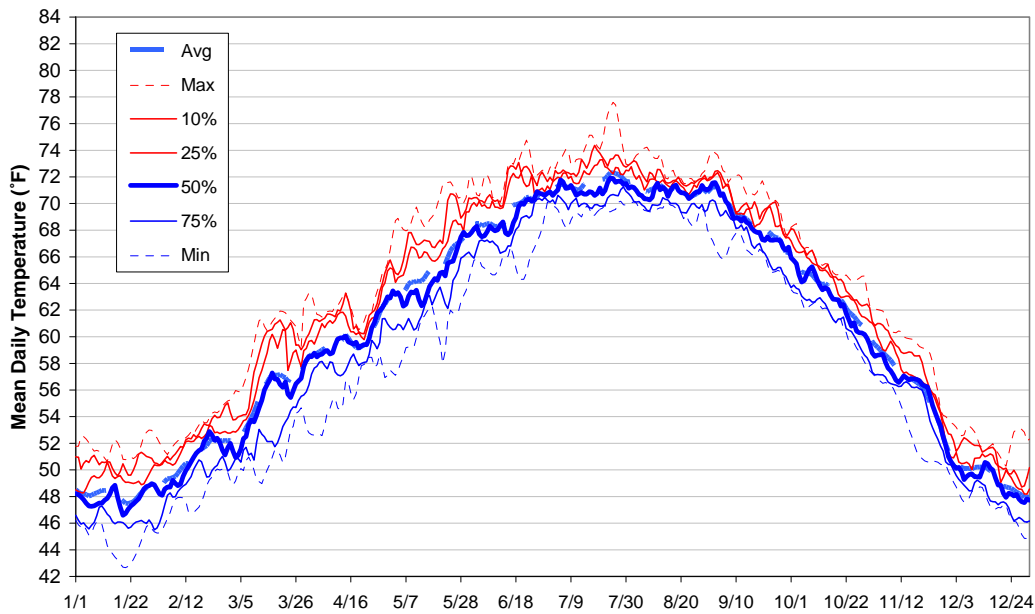
Historical temperatures for a selection of locations in the Sacramento – San Joaquin Delta are presented to show the seasonal variation. The temperatures in the Delta are largely uncontrolled by the CVP and SWP operations. The three locations selected were Antioch, Rio Vista, and Mossdale these stations bound the Sacramento – San Joaquin Delta and give an indication of the water temperatures entering the Delta. However, the period presented in Figure **Error! No text of specified style in document.-15** through Figure **Error! No text of specified style in document.-17** only encompasses a very short period with the longest period being 12 years (1995 to 2007) and the shortest period being 5 years (2002 to 2007).

**San Joaquin River @ Antioch (1995-2007)  
Seasonal Temperature Exceedence**



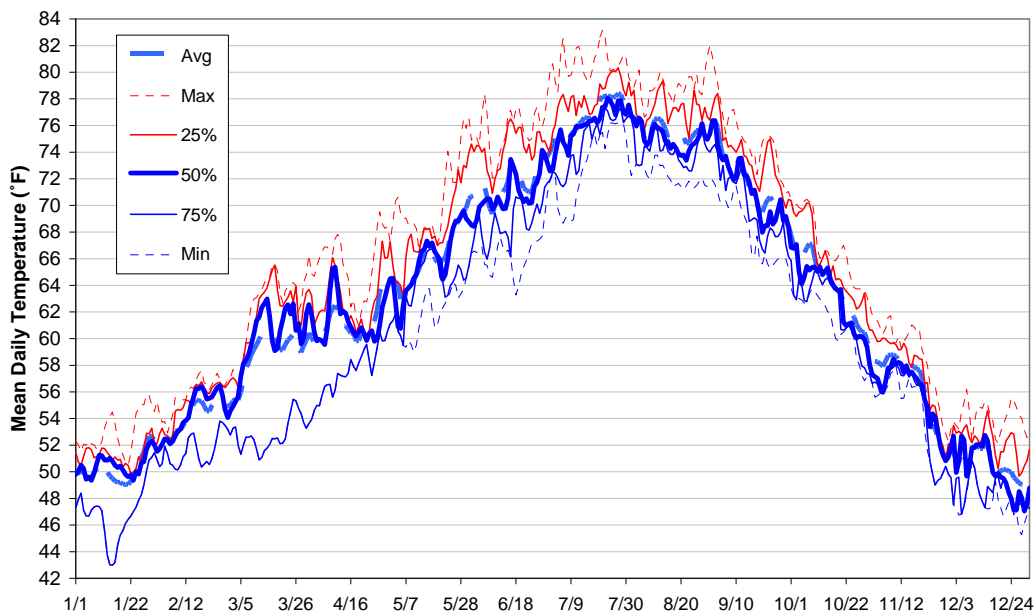
**Figure Error! No text of specified style in document.-15 Seasonal water temperature for San Joaquin River at Antioch**

**Sacramento River @ Rio Vista (2000-2007)  
Seasonal Temperature Exceedence**



**Figure Error! No text of specified style in document.-16 Seasonal water temperature for Sacramento River at Rio Vista**

**San Joaquin River @ Mossdale Bridge (2002-2007)  
Seasonal Temperature Exceedence**



**Figure Error! No text of specified style in document.-17 Seasonal water temperature for Sacramento River at Rio Vista**

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