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### **Title**

Real-time water quality management in the San Joaquin River

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## **Real-time water quality modeling and management in the San Joaquin River**

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The San Joaquin River bears the dubious distinction of being the most highly regulated flowing waterbody in the nation. The river is regulated for salinity, selenium and boron temperature, fish passage, minimum seasonal flow and most recently dissolved oxygen. A number of modeling tools have been developed in the past 5 years to assist in water quality forecasting and to help to improve coordination of east-side San Joaquin Basin reservoir releases and west-side San Joaquin Basin agricultural and wetland drainage flows and contaminants. In particular, SJRIODAY model has been used to make weekly forecasts of flow and electrical conductivity in the main stem of the San Joaquin River between Lander Avenue and Vernalis, the downstream compliance point for river salinity. Current efforts by the Central Valley Regional Water Quality Control Board to resolve dissolved oxygen deficit problems in the Stockton Deep Water Ship Channel have created an opportunity to expand the current salinity forecasting effort to include real-time modeling and forecasting of dissolved oxygen and of algae producing nutrients, produced upstream, that appear to play a significant role, at certain times of the year, in affecting the severity of the problem. Low dissolved oxygen in the Stockton Deep Water Ship Channel is a potential impediment to anadromous fish migration from the San Joaquin watershed. This paper describes our progress in making the transition to this more comprehensive modeling tool.

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