



Staff Report of the  
CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY  
REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL VALLEY REGION

**COMPILATION OF ELECTRICAL CONDUCTIVITY,  
BORON, AND SELENIUM WATER QUALITY DATA  
FOR THE GRASSLAND WATERSHED AND  
SAN JOAQUIN RIVER**

**MAY 1985 - SEPTEMBER 1995**



*FEBRUARY 1998*

*State of California*  
*California Environmental Protection Agency*  
**REGIONAL WATER QUALITY CONTROL BOARD**  
**CENTRAL VALLEY REGION**

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## FOREWARD

Since May 1985, the Central Valley Regional Water Quality Control Board has conducted a water quality monitoring program in the San Joaquin Valley of California to assess the impact of agricultural subsurface drainage on wetland water supply channels in the Grassland Watershed and on the San Joaquin River. The Grassland Watershed is a 370,000 acre area, west of the San Joaquin River covering portions of Merced and Fresno counties between the Tulare Lake Basin and the Orestimba Creek alluvial fan. The watershed contains both farm land, including a 90,000 acre area known as the Drainage Problem Area (DPA), and approximately 100,000 acres of wetland habitat, including Federal wildlife refuges and private gun clubs. Subsurface drainage from the DPA was routed through the wetlands to the San Joaquin River during the period covered by this report. The watershed also contains the remains of Kesterson Reservoir, a former holding pond for agricultural subsurface drainage which was converted to upland habitat when elevated levels of selenium in the drainage were found to be hazardous to waterfowl.

All water quality information collected since May 1985, has been published in a series of annual water year reports (a water year extends from October 1st of one year to September 30th of the next), and are available from the Central Valley Regional Water Quality Control Board. This report consolidates the salinity, boron, and selenium data for the first 10 full water years of record, 1986 through 1995, and evaluates constituent concentrations at key monitoring stations with respect to water quality objectives that existed during the 10-year period. The report also evaluates the changing hydrology over the same time period and compares trends in concentrations and loads to wet versus critically dry rainfall years. A separate report (Grober *et al.*, 1998), calculates mass discharge of constituents from the Grassland Watershed for the same 10-year period.

This initial 10-year period of record, water years 1986 through 1995, corresponds to the time period when initial efforts to improve water quality focussed on irrigation management. Information from this report and Grober *et al.*, (1998) will be used to compare the initial efforts to efforts in subsequent water years, which include consolidating agricultural subsurface drainage and improving water quality through load reductions.

Special thanks is given to Bob Young and Michelle Prowse of the US Bureau of Reclamation, for their diligent review of data presented for the following sites: Mud Slough (north) upstream of the San Luis Drain, Mud Slough (north) downstream of the San Luis Drain, Mud Slough (north) at Hwy 140, Salt Slough at Lander Avenue, Camp 13 Slough, Agatha Canal, San Luis Canal at Henry Miller Road, Santa Fe Canal at Henry Miller Road, San Joaquin River at Fremont Ford, San Joaquin River at Hills Ferry, San Joaquin River at Crows Landing, and San Joaquin River at Maze Blvd.



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