

State of California
The Resources Agency
Department of Water Resources
Division of Local Assistance

ANNUAL REPORT
OF THE
MUNICIPAL WATER QUALITY
INVESTIGATIONS PROGRAM

Summary of
Monitoring Results
January 1990 - December 1990

February 1993

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Secretary for Resources
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FOREWORD

In 1990 the California Department of Water Resources unified its drinking water quality studies in the Sacramento-San Joaquin Delta into the Municipal Water Quality Investigations Program. The new Program combined the Interagency Delta Health Aspects Monitoring Program, the Delta Islands Drainage Investigation, and ancillary studies into one study.

The MWQI Program's major goal is to assist water agencies in the protection and improvement of Delta drinking water supplies. Program staff examine the major sources and causes of water quality changes in the Delta that affect drinking water quality. They monitor key Delta channel and river stations and agricultural drains for contaminants such as pesticides, selenium, sodium, and trihalomethane formation potential.

This MWQI Program report focuses on data collected during 1990. The report includes a brief summary of the relationships found among different water quality parameters.

Further information about the Municipal Water Quality Investigations Program is available from Mr. Bruce Agee at the Division of Local Assistance, DWR. He can be reached by phone at (916) 327-1677.



Carlos Madrid, Chief
Division of Local Assistance

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SUMMARY

The drought persisted through 1990 with low Sacramento and San Joaquin River flows to the Delta. Sacramento River flows at Freeport averaged less than 15,000 cubic feet per second after January 1990 storms had passed. San Joaquin River flows near Vernalis remained nearly constant, averaging about 1300 cfs. Net Delta outflows at Chipps Island (computed Delta Outflow using the DWR DAYFLOW model) fell below 5,000 cfs during the summer.

Sodium concentrations at the Harvey O. Banks Pumping Plant Headworks did not exceed the 100 mg/L recommended limit for persons on restricted sodium diets. However, sodium levels in Rock Slough (at Old River), east of the Contra Costa Water District intake, were over 100 mg/L in April, and again during the fall. The increased sodium concentrations, as well as chloride and EC increases, are due to the low flow conditions and sea water intrusion into the western Delta. Sodium levels at the Sacramento River at Greene's Landing station averaged 10 mg/L.

During 1990, the main source of fresh water into the Delta was the Sacramento River. Pumping by the federal Tracy Pumping Plant caused most San Joaquin River flow to be diverted into the Delta Mendota Canal.

The extent of sea water intrusion caused by low fresh water Delta outflows can be monitored by measuring concentrations of bromide, a constituent of sea water. During 1990, the bromide to chloride concentration ratios in southwestern Delta waters were generally similar to sea water. However, bromide to chloride ratios varied in Delta agricultural drainage. The ratios also varied in channels to the north and east of the segment of Old River where the DMC intake and Rock Slough are located. Bromide to chloride ratios should change as a result of reduced sea water intrusion in wetter years. The main conclusion is that sea water has been the primary source of bromide to the Delta during the dry years 1987-1990.

The 1990 observations confirmed earlier data and conclusions about the significantly higher total trihalomethane formation potential (TTHMFP) concentrations in agricultural drain water, as compared to the Delta channels. Again observed in 1990 was a geographic pattern of progressively increasing TTHMFP southward from Greene's Landing toward the export pumps in the southwestern Delta.

The impact of reduced agricultural drainage on Delta water quality will be studied in 1991. Many acres of land will lay fallow due to the sale of irrigation water to the State water bank program.

