



Interagency Ecological Program 2023 Work Plan Element San Francisco Bay Salinity Stations

Project Manager and Affiliation

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Annual Costs (thousands) and Funding Sources

\$325 DWR and \$25 USGS (Federal Matching Funds)

Description

Collect specific conductivity and water temperature data (from which salinity can be computed) at six stations in the San Francisco Estuary (Benicia Bridge, Carquinez Bridge, Richmond Bridge, Alcatraz Island, San Mateo Bridge, and Dumbarton Bridge). Make provisional data available in near-real-time via USGS NWIS publicly available database. Review and finalize data.

The stations are currently installed, and regular maintenance includes approximately monthly visits to the sites for sensor calibration and cleaning, along with other routine maintenance of the water-quality sondes and infrastructure. All stations except Alcatraz include instruments located at two depths, typically one each in the lower and upper half of the water column. The Alcatraz station has a single instrument located roughly at mid-depth. All equipment, travel expenses, supplies, and labor are provided by the USGS. This project does not include data interpretation.

Need

Water Rights Decision 1485: Order 10.

The collection of specific conductance and water temperature data as part of this project began in 1981 in south San Francisco Bay at the San Mateo Bridge by DWR. Currently, there are six operational salinity monitoring stations: Benicia Bridge, Carquinez Bridge, Richmond Bridge, Alcatraz Island, San Mateo Bridge, and Dumbarton Bridge. Time series of water temperature and specific conductance (salinity is calculated from conductivity and water temperature) are needed (1) to improve understanding of the hydrodynamics of the estuary (e.g., gravitational circulation), (2) for calibration of multi-dimensional flow and transport models of the Bay, (3) to better understand the distribution of physio-chemical habitat types throughout the Bay, and (4) to provide supporting data for numerous estuarine studies of the Bay and Delta.

A conservation benefit of this project is to provide data that improve understanding of the role of freshwater on estuary water quality. Freshwater is a critical resource and studying the effects of varying freshwater inflow on estuary water quality can help manage this resource efficiently.

Temperature and salinity are two key estuarine habitat variables. Understanding how these variables are distributed around the Bay leads to a better understanding of habitat types and distribution in the Bay. Additionally, understanding the distribution of salinity in the Bay allows us to better understand the transport processes that drive material transport and supply throughout the Bay. The data obtained will help inform decisions related to management of water resources in the Bay system.

Objectives

The USGS will collect specific conductance (related to salinity) and water temperature data on a 15-minute interval at the following six continuous monitoring stations in San Francisco Bay (listed geographically from south to north):

- San Francisco Bay at Dumbarton Bridge
- San Francisco Bay at San Mateo Bridge near Foster City
- San Francisco Bay at Alcatraz
- San Francisco Bay at Richmond Bridge
- Carquinez Strait at Carquinez Bridge
- Suisun Bay at Benicia Bridge

Schedule of Milestones

Data are collected and made available continuously.