
**Suisun Marsh Monitoring Program
Channel Water Salinity Report**
Reporting Period: March 2005

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TABLE OF CONTENT

1. SUISUN MARSH MONITORING STATIONS AND REPORTING REQUIREMENT1

2. MONITORING RESULTS.....2

 2.1 CHANNEL WATER SALINITY COMPLIANCE2

 2.2 DELTA OUTFLOW2

 2.3 RAINFALL3

 2.4 SUISUN MARSH SALINITY CONTROL GATE (SMSCG) OPERATIONS3

3. DISCUSSION.....3

 3.1 FACTORS AFFECTING CHANNEL WATER SALINITY IN THE SUISUN MARSH3

 3.2 OBSERVATIONS AND TRENDS.....4

 3.2.1 *Conditions during the Reporting Period*.....4

 3.2.2 *Comparison of Reporting Period Conditions with Previous Years*.....4

1. SUISUN MARSH MONITORING STATIONS AND REPORTING REQUIREMENT

As per SWRCB Water Rights Decision 1641, dated December 29, 1999, and previous SWRCB decisions, the California Department of Water Resources (DWR) is required to provide monthly channel water salinity compliance reports for the Suisun Marsh to the SWRCB. Conditions of channel water salinity in the Suisun Marsh are determined by monitoring specific electrical conductivity. Specific electrical conductivity is referred to in the reports as "specific conductance". The locations of all listed stations are shown in Figure 5.

The monthly reports are submitted for October through May each year in accordance with SWRCB requirements. The reports are required to include salinity data from the stations listed below:

Station Identification	Station Name	General Location	Classification
C-2*	Collinsville	Western Delta	Compliance Station
S-64	National Steel	Eastern Suisun Marsh	Compliance Station
S-49	Beldon's Landing	North-Central Suisun Marsh	Compliance Station
S-42	Volanti	North-Western Suisun Marsh	Compliance Station
S-21	Sunrise	North-Western Suisun Marsh	Compliance Station

Data from the stations listed below are included in the monthly reports to provide information on salinity conditions in the western Suisun Marsh.

Station Identification	Station Name	General Location	Classification
S-97	Ibis	Western Suisun Marsh	Monitoring Station
S-35	Morrow Island	South-Western Suisun Marsh	Monitoring Station

Information on Delta outflow, area rainfall, and operation of the Suisun Marsh Salinity Control Gates are also included in the monthly reports to provide information on conditions that may affect channel water salinity in the Marsh.

* Throughout the report, the representative data from nearby USBR station is used in lieu of data from station C-2.

2. Monitoring Results

2.1 Channel Water Salinity Compliance

During the month of March, 2005, salinity conditions at all five compliance stations are in compliance with channel water salinity standards of SWRCB (Table 1). Compliance with standards for the month of March was determined for each compliance station by comparing the progressive daily mean of high-tide specific conductance (SC) with respective standards. The standard for compliance stations C-2, S-64, S-49, S-42 and S-21 were 8.0 mS/cm during March 2005. Table 1 lists monthly mean high-tide SC at these compliance stations. The progressive daily mean (PDM) is the monthly average of both daily high-tide SC values. The mathematical equation is shown below.

$$\text{PDM} = \frac{\sum \text{daily average of high tide SC}}{\# \text{ days of the month}}$$

2.2 Delta Outflow

The March Delta outflow ranged between 15,000 cfs to 73,000 cfs. Outflow started off above 30,000 cfs in March as carry over result of previous months (i.e. January and February) precipitation event accumulations and peak to about 40,000 cfs in early March before decreasing to about 17,000 cfs by March 19, 2005. Thereafter, outflow began to increase and continues to do so to a peak of about 72,000 cfs by the end of March as a result of continuous precipitation events between March 20 and March 24, with the largest precipitation event resulted in 1.45 inches on March 22. Thereafter, outflow declined despite precipitation events at the end of March. The monthly Delta outflow is represented by the mean Net Delta Outflow Index (NDOI). The NDOI is the estimated daily average of Delta outflow. Mean NDOI for March is listed below:

Month	Mean NDOI (cubic feet per second)
March	36,121

2.3 Rainfall

Total monthly rainfall at the Waterman Gauging Station in Fairfield during March 2005 was similar to the previous month February total and is listed below: The largest precipitation occurred on March 22 with the daily total of 1.45 inches.

Month	Total Rainfall (inches)
March	4.28

2.4 Suisun Marsh Salinity Control Gate (SMSCG) Operations

Operations and flashboard/boat lock installations at the SMSCG during March 2005 is summarized below. The gates continued to be operated to control salinity with boat lock open configuration per NOAA request for the remainder of the control season.

Date	Gate status	Flashboards status	Boat Lock status
March 1-31	Open	Installed	Open

During March 2005, SMSCG operation continued to cease due to good water quality levels in the marsh and will resume as needed in the future to meet water quality concerns.

3. Discussion

3.1 Factors Affecting Channel Water Salinity in the Suisun Marsh

Factors that affect channel water salinity levels in the Suisun Marsh include:

- delta outflow;
- tidal exchange;
- rainfall and local creek inflow;
- managed wetland operations; and,
- operation of the SMSCG and flashboard configurations.

3.2 Observations and Trends

3.2.1 Conditions during the Reporting Period

During March 2005, salinity levels at Collinsville(C-2), National Steel(S-64), Beldons (S-49), Sunrise Club(S-21), and Volanti(S-42) were no higher than 3.0 mS/cm as shown in Figure 1. At the two monitoring stations, S-97 salinity levels ranged from 2.0 mS/cm to 4.0 mS/cm, and S-35 ranged from 3.0 mS/cm to 5.2 mS/cm, as shown in Figure 2. Salinity levels at both eastern and western marsh stations were already low at the beginning of March due to high Delta outflow carry over accumulation from previous months. Due to continued good water quality conditions, gate operation continued to cease. With continued outflow begin above 30,000 cfs in early March and more precipitation events in early, mid, and end of March, salinity levels throughout the marsh remain very low. Throughout the month of March, all compliance stations salinity levels were so fresh that they somewhat leveled out from the beginning to the end of March as shown in Figure 1, whereas at the monitoring stations salinity levels merged and leveled out in mid-March between 3.0 mS/cm and 3.5 mS/cm as shown in Figure 2.

Overall, salinity levels were well below standards at all compliance and monitoring stations.

3.2.2 Comparison of Reporting Period Conditions with Previous Years

Monthly mean high-tide SC at the compliance and monitoring stations for March 2005 were compared with means for those months during the previous nine years (Figure 4).

Means salinity pattern of all compliance and monitoring stations are similar to that of 2000, but higher in magnitude. Compared to previous nine years, March 2005 salinity levels were ranked fourth in high Specific Conductance.

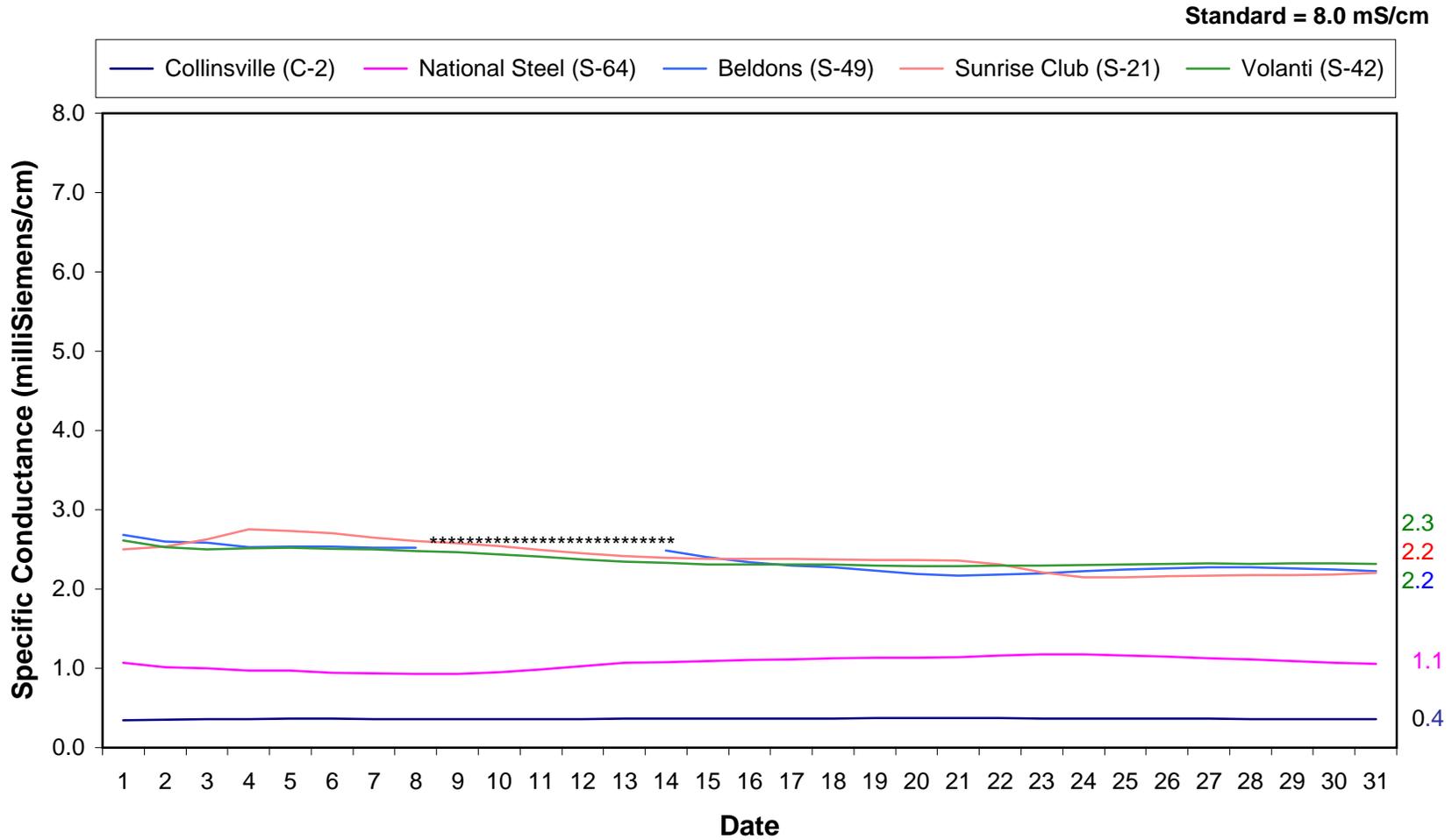
Table 1**Monthly Mean High Tide Specific Conductance at Suisun Marsh
Water Quality Compliance Stations****March 2005**

Station	Specific Conductance (mS/cm)*	Standard	Standard meet?
C-2**	0.4	8.0	Yes
S-64	1.1	8.0	Yes
S-49	2.2	8.0	Yes
S-42	2.3	8.0	Yes
S-21	2.2	8.0	Yes

*milliSiemens per centimeter

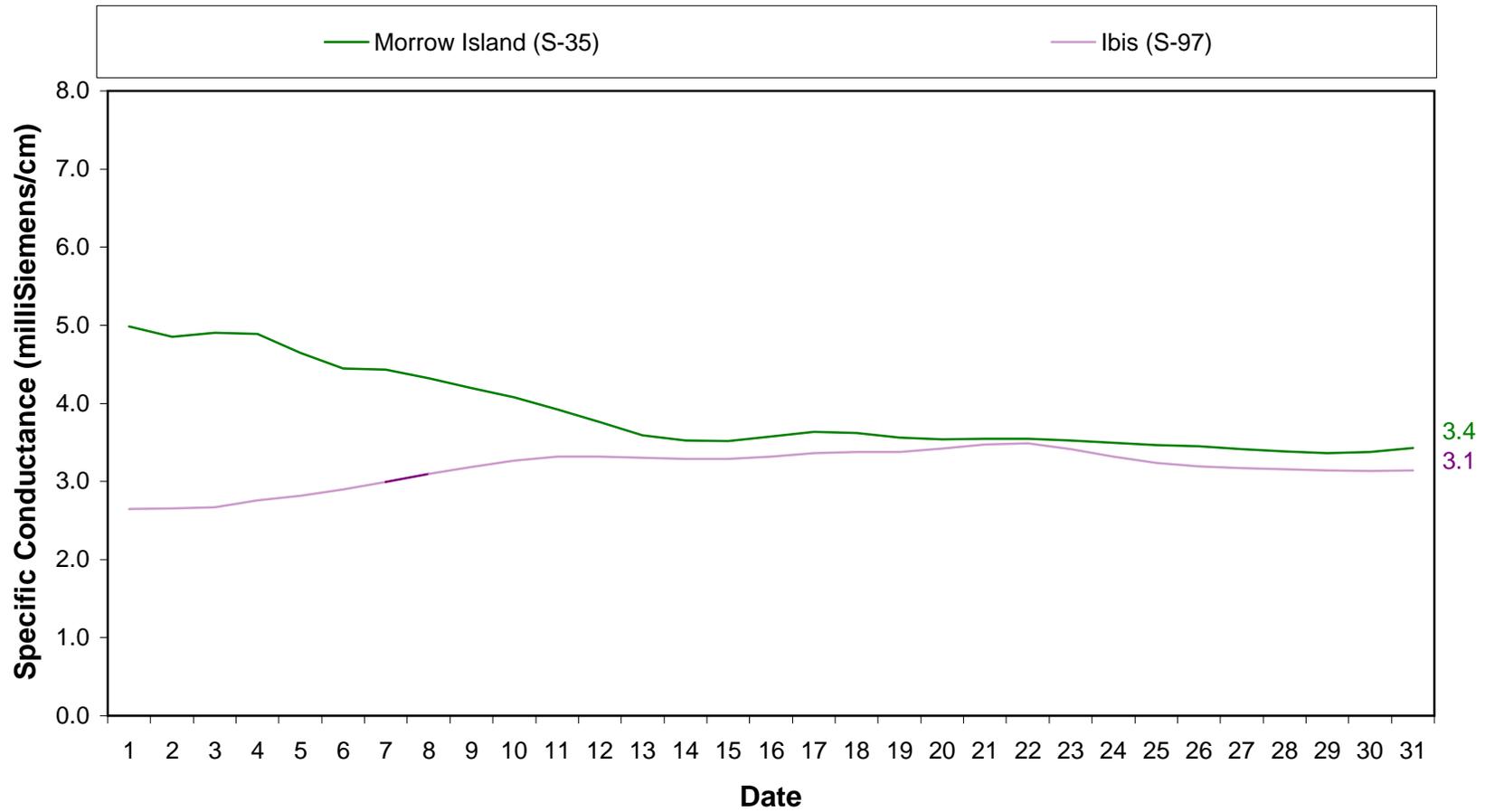
**The representative data from nearby USBR station is used in lieu of data from station C-2.

Figure 1. Suisun Marsh Progressive Mean High Tide Specific Conductance For Compliance Stations March 2005

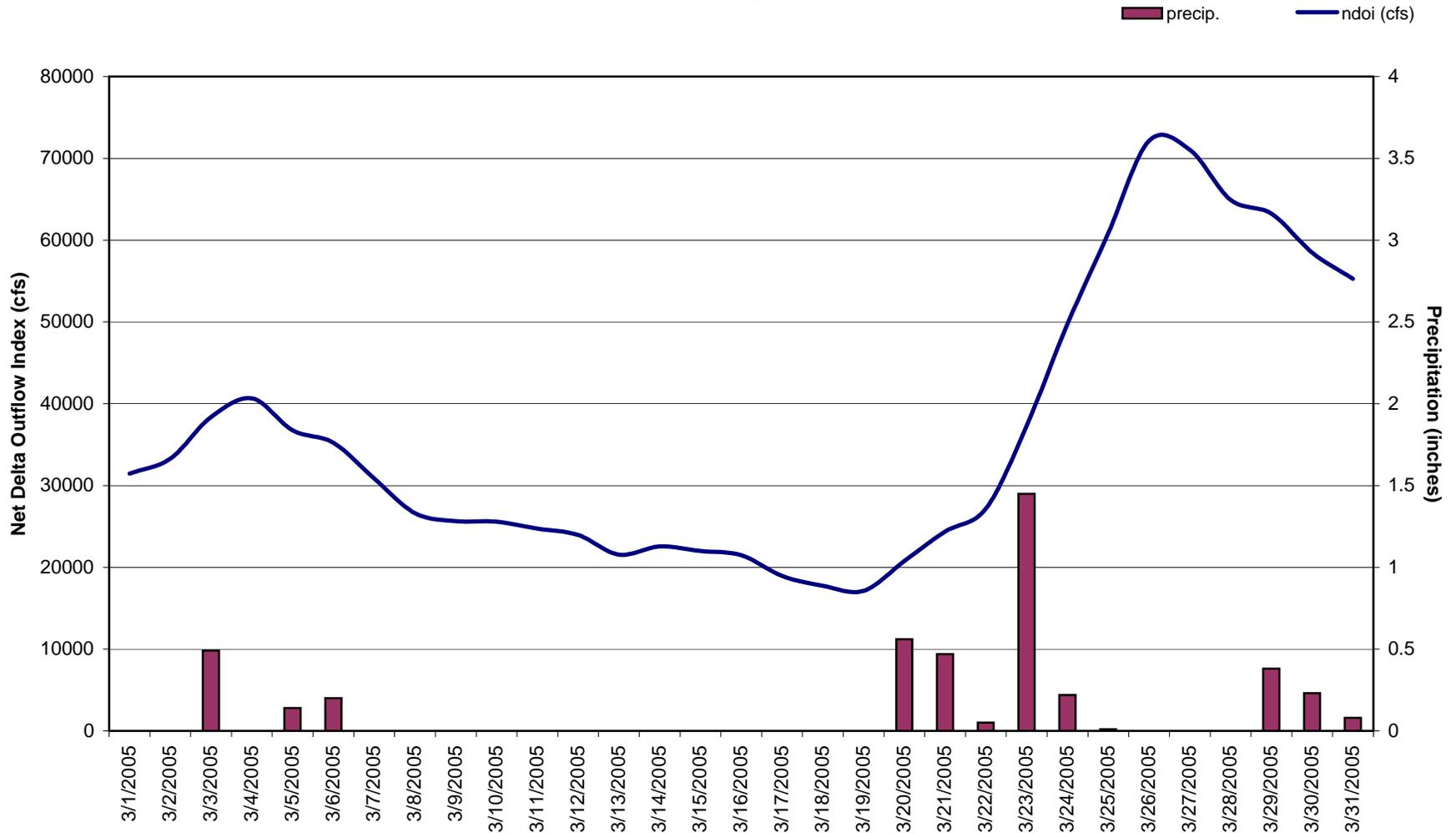


** = missing data due to equipment failure.

Figure 2. Suisun Marsh Progressive Mean High Tide Specific Conductance For Monitoring Stations S-35 and S-97 March 2005

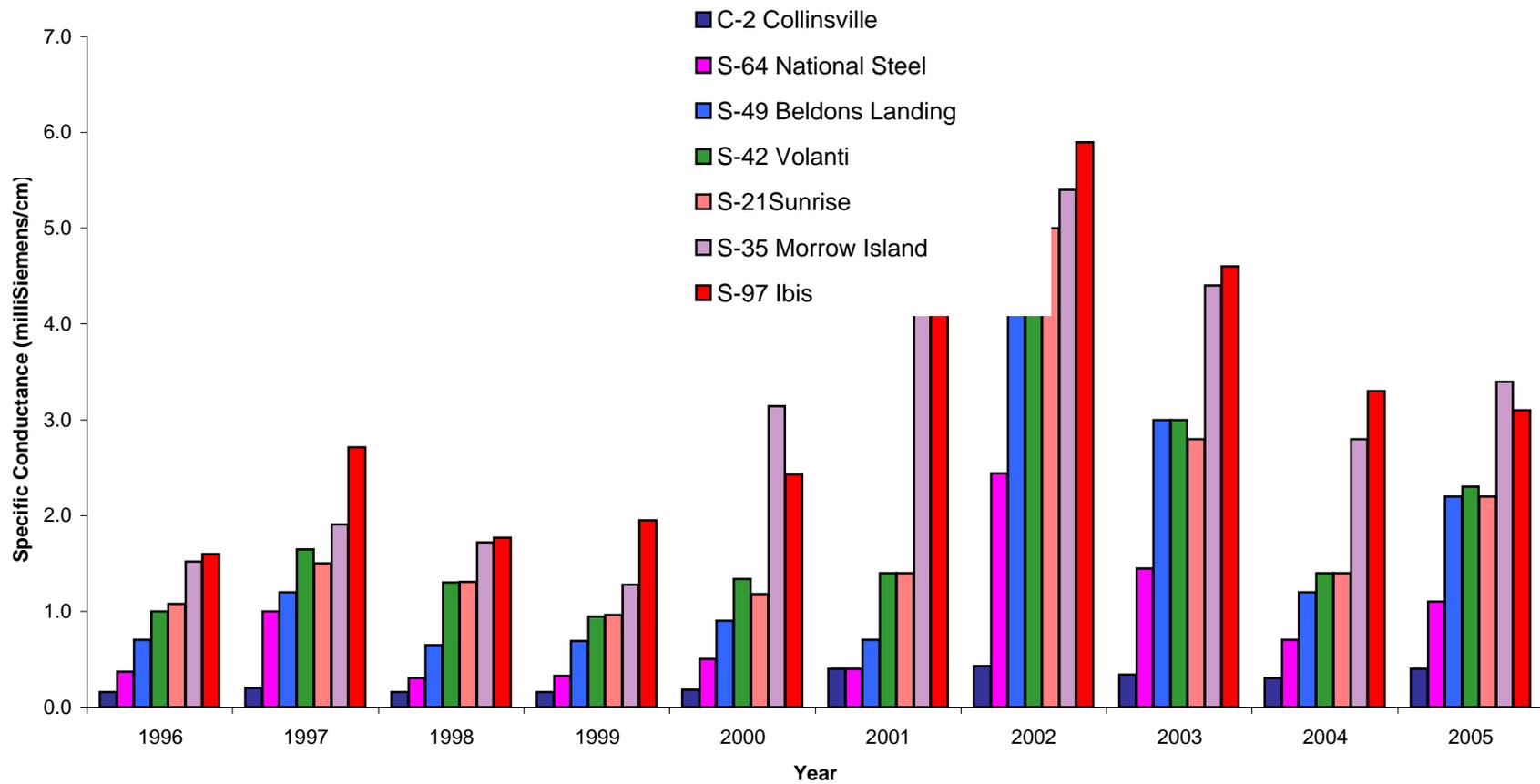


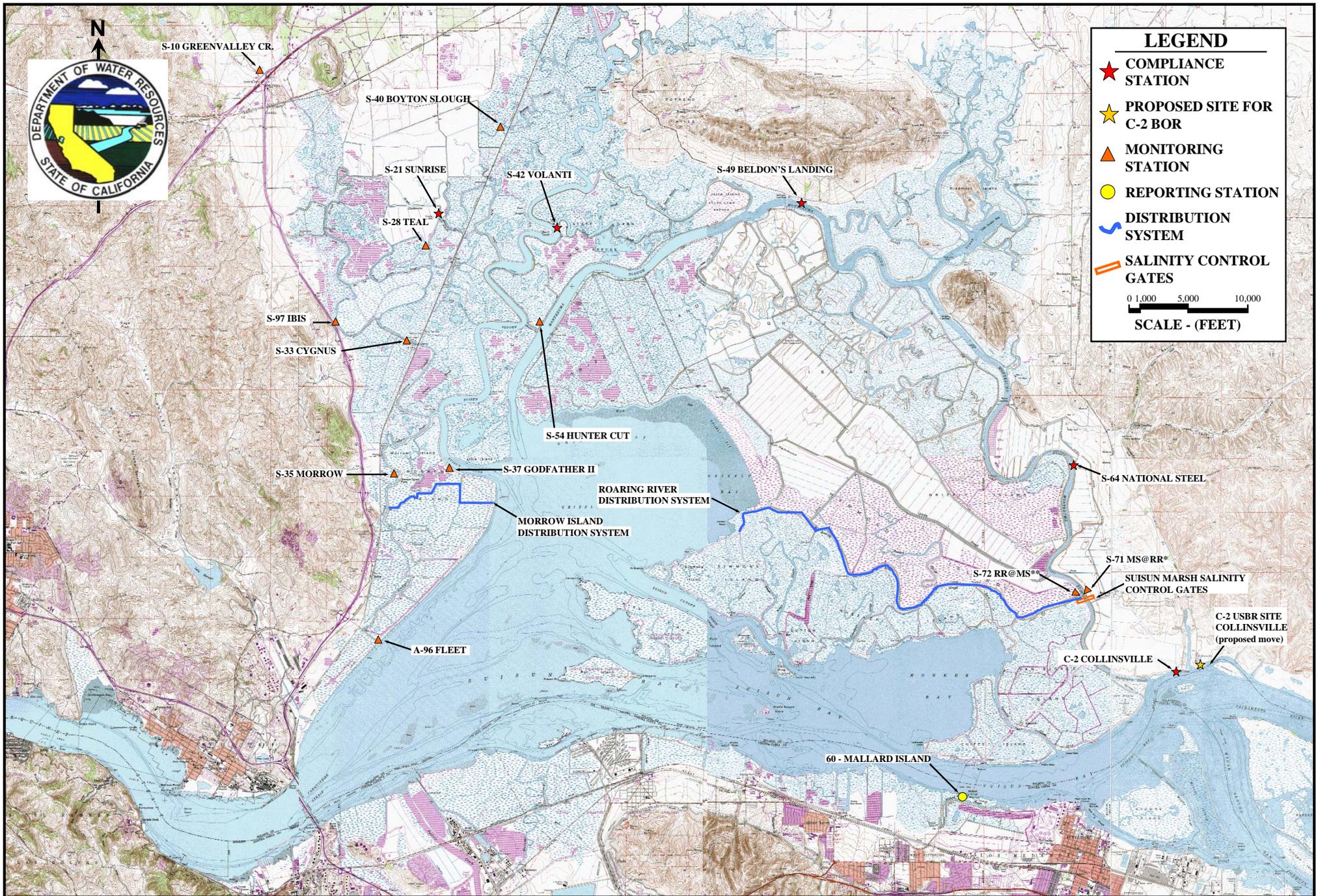
**Figure 3. Daily Net Delta Outflow Index and Precipitation*
March 2005**



*Preliminary DWR, O&M Delta Outflow data and precipitation from Fairfield Water Treatment Plant.

**Figure 4. Monthly Mean Specific Conductance at High Tide:
Comparison of Monthly Values for Selected Stations
March of 1996-2005**





SUISUN MARSH PROGRAM WATER QUALITY MONITORING AND CONTROL FACILITIES