
Suisun Marsh Monitoring Program Channel Water Salinity Report

Reporting Period: January 2012

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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, which is referred as "specific conductance" (SC). 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 to ensure salinity standards are met to protect habitat for waterfowl in managed wetlands:

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

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

MONITORING STATIONS:		
Station Identification	Station Name	General Location
S-97	Ibis	Western Suisun Marsh
S-35	Morrow Island	South-Western Suisun Marsh

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 January, salinity conditions at all five compliance stations were in compliance with channel water salinity standards (Table 1). Compliance with standards for the month was determined for each compliance station by comparing the progressive daily mean of high-tide SC with respective standards. The standard for compliance stations C-2, S-64, S-49, S-21, and S-42 was 12.5 mS/cm for January 2012. 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

Outflow for January 2012 ranged between 5,300 cfs and 32,000 cfs. For the month, outflow steadily increased from a low of 5,300 cfs on January 7th to a peak of 32,000 cfs on January 25th. This peak outflow followed the five day precipitation event of January 19th to January 23rd. 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 January 2012 is listed below:

Month	Mean NDOI (cubic feet per second)
January	11,600

2.3 Rainfall

There was a five day precipitation event that occurred between January 19th and January 23rd for a total of 1.44 inches. This data was recorded at the Stockton Fire Station. The monthly total is below:

Month	Total Rainfall (inches)
January	1.44

2.4 Suisun Marsh Salinity Control Gates (SMSCG) Operations

Operations and flashboard/boat lock installations at the SMSCG during January 2012 is summarized below:

Date	Gate Status	Flashboards Status	Boat Lock Status
January 1 – 3	3 Open	In	Partially Closed
January 4 - 31	3 Tidally Operational	In	Partially Closed

With the dry conditions, salinity levels in the marsh started to increase, therefore gate operation was started on January 4th. They remained tidally operational for the rest of the month. Boat lock gates are partially closed due to ongoing investigation on safety concerns expressed by Delta Field Division staff. NOAA was briefed about the safety concern and will schedule a field visit to assess options with DWR to balance fish needs and safety needs.

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,
- operations of the SMSCG and flashboard configurations.

3.2 Observations and Trends

3.2.1 Conditions During the Reporting Period

During January 2012 PDM salinity levels at Collinsville (C-2), National Steel (S-64), Beldon's Landing (S-49), Sunrise Club (S-21) and Volanti (S-42) ranged between 5.2 mS/cm and 11.7 mS/cm as shown in Figure 1. Salinity levels at all compliance stations decreased in response to gate operations.

Salinity levels at monitoring stations Morrow Island (S-35) and Ibis (S-97) were stable throughout January and ranged between 11.0 mS/cm and 12.7 mS/cm as shown in Figure 2.

3.2.2 Comparison of Reporting Period Conditions with Previous Years

Monthly mean high-tide SC at the compliance and monitoring stations for January 2012 were compared with means for those months during the previous nine years (Figure 4).

January's mean salinity pattern for all compliance and monitoring stations ranked seventh in salinity levels for the past 10 years. The pattern followed that of 2009 but at a lower salinity level. 2012 follows 2011 which was classified as a wet year and resulted in the third lowest salinity levels in the previous nine years. As expected, the salinity levels gradually increased from east to west.

Table 1

**Monthly Mean High Tide Specific Conductance at Suisun Marsh
Water Quality Compliance Stations**

January 2012

Station Identification	Specific Conductance (mS/cm)*	Normal Standard	Normal Standard Met?
C-2**	5.4	12.5	Yes
S-64	5.7	12.5	Yes
S-49	7.4	12.5	Yes
S-42	8.8	12.5	Yes
S-21	8.9	12.5	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 January 2012

Standard = 12.5 mS/cm

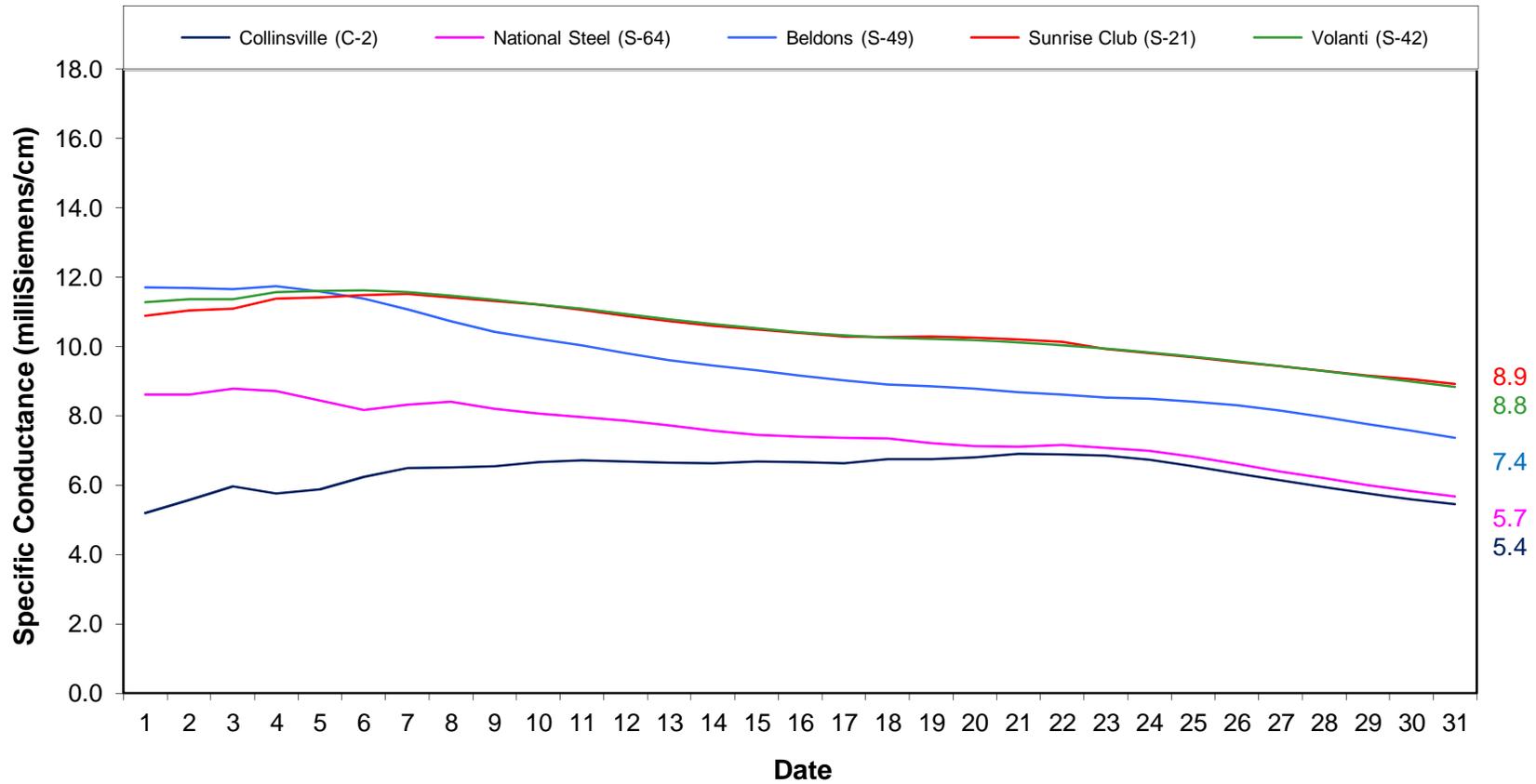
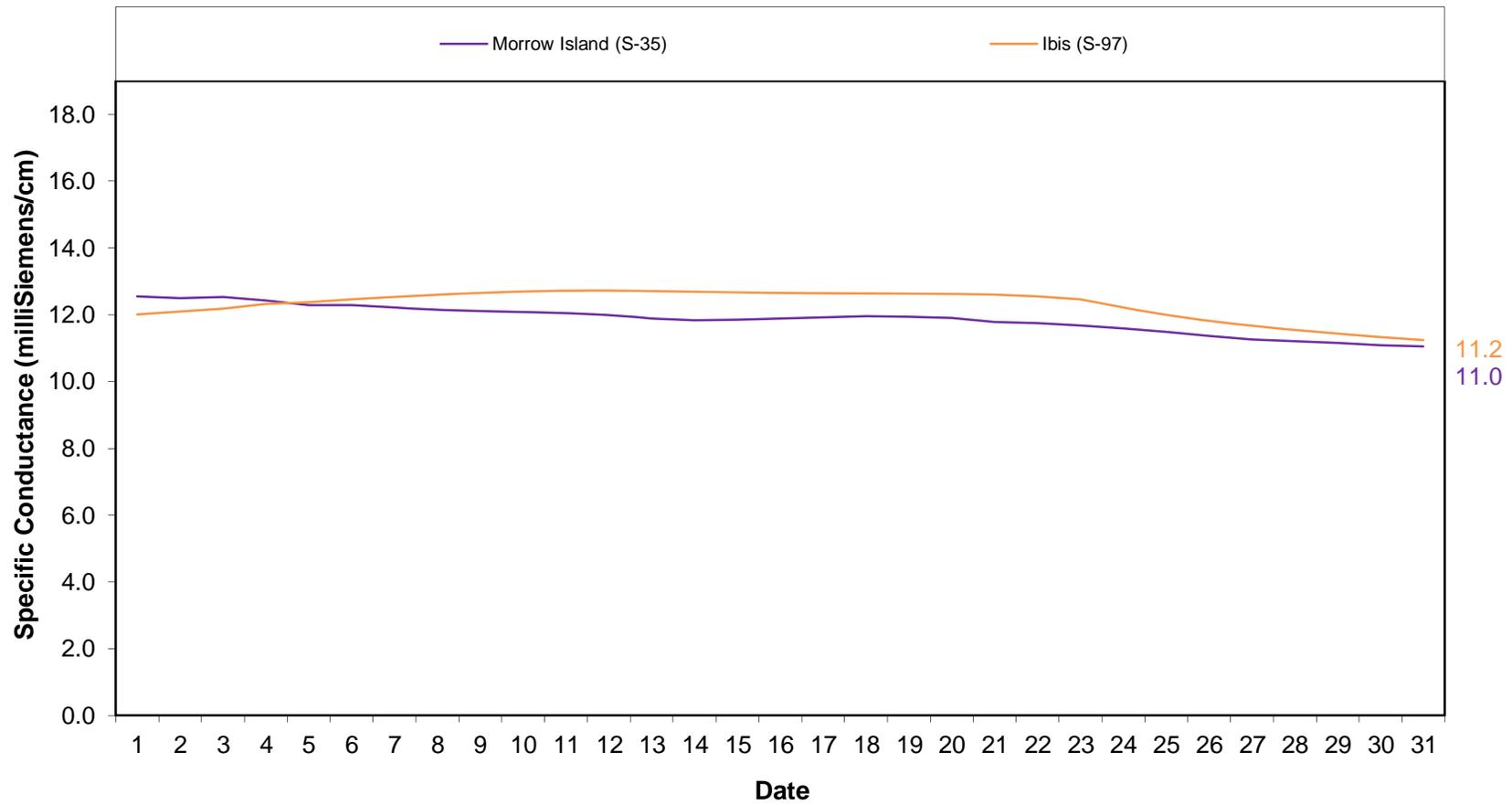
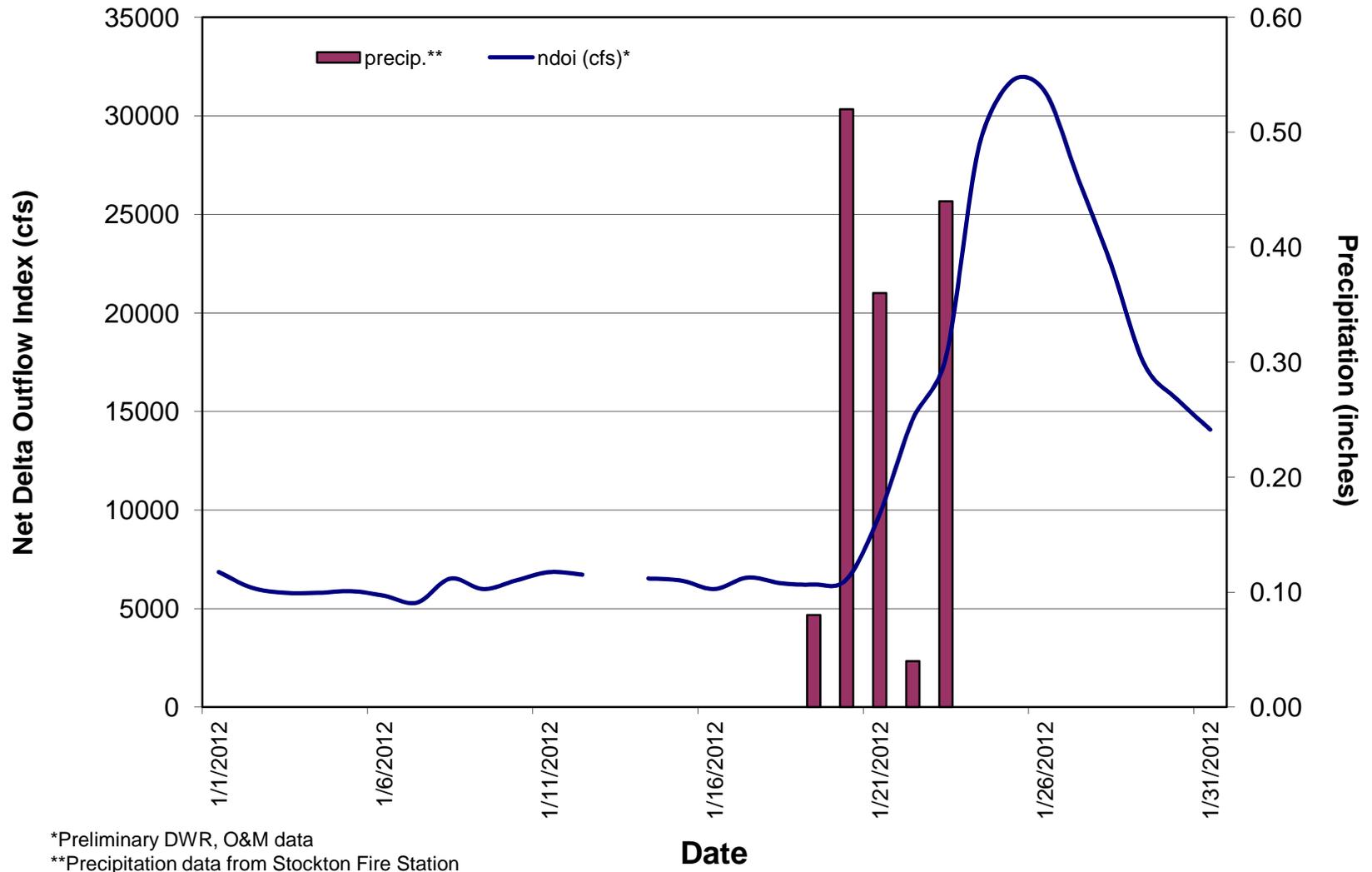


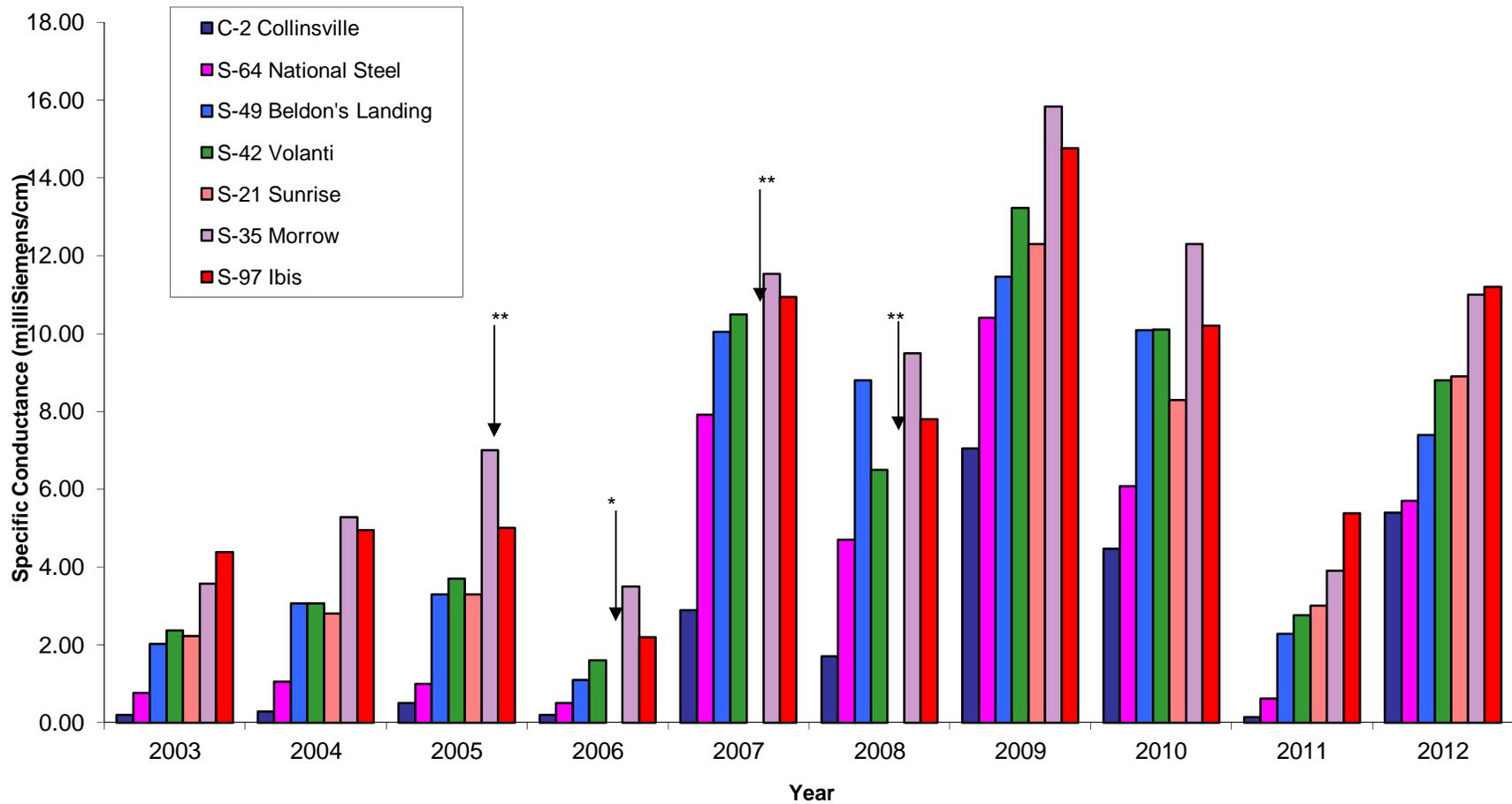
Figure 2. Suisun Marsh Progressive Mean High Tide Specific Conductance for Monitoring Stations January 2012



**Figure 3. Daily Net Delta Outflow Index and Precipitation
January 2012**



**Figure 4. Monthly Mean Specific Conductance at High Tide:
Comparison of Monthly Values for Selected Stations
January 2003-2012**



* Data was not obtained due to equipment problem or flood constraint.

**Data not representative of end of month value due to missing data.

Figure 5: Suisun Marsh Stations

- ★ Compliance
- ▲ Monitoring
- ◆ Blacklock
- Initial Facilities

