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# **Suisun Marsh Monitoring Program Channel Water Salinity Report**

Reporting Period: November 2001

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## **CONTENTS**

This report is organized into the following sections and subsections:

➤ **SUISUN MARSH MONITORING STATIONS AND REPORTING REQUIREMENT**

➤ **RESULTS**

**Channel Water Salinity Compliance**

**Delta Outflow**

**Rainfall**

**Suisun Marsh Salinity Control Gate Operations**

➤ **DISCUSSION**

**Factors Affecting Channel Water Salinity in the Suisun Marsh  
Observations and Trends**

Conditions During the Reporting Period

Comparison of Reporting Period Conditions with Previous Years

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## **SUISUN MARSH MONITORING STATIONS AND REPORTING REQUIREMENT**

The California Department of Water Resources (DWR) is required to provide monthly channel water salinity compliance reports for the Suisun Marsh to the SWRCB. This requirement is based on SWRCB Water Rights Decision 1641, dated December 29, 1999, and previous SWRCB decisions. Channel water salinity conditions 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:

<b>Station Identification</b>	<b>Station Name</b>	<b>General Location</b>	<b>Status</b>
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
60	Mallard Island	South of the Eastern Portion of the Suisun marsh	Reporting Station for Conditions in the Vicinity of Chipps and Van Sickle Islands

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

<b>Station Identification</b>	<b>Station Name</b>	<b>General Location</b>	<b>Status</b>
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 is included in the monthly reports to provide information on conditions that may affect channel water salinity in the Marsh.

## **RESULTS**

### **Channel Water Salinity Compliance**

State Water Resources Control Board channel water salinity standards for the Suisun Marsh were met at all five compliance stations during November 2001 (Table 1). Compliance with channel water salinity standards was determined for each compliance station by comparing November mean high-tide specific conductance (SC) with their respective standards. The standard for Eastern Marsh compliance stations ( i.e. C-2, S-64, S-49) during November 2001 was 15.5 millisiemens per centimeter (mS/cm) and the standard for Western Marsh compliance stations was 16.5 mS/cm. Table 1 lists monthly mean high-tide SC at the compliance stations.

The progressive monthly mean SC for each station is used to track salinity conditions during each month (Figures 1). The progressive mean is calculated for each compliance station by averaging mean high-tide SC for a given day and all previous days of that month. New progressive mean calculations begin at the start of each calendar month.

### **Delta Outflow**

Relatively low Delta outflow occurred in November 2001 (Figure 3). The monthly mean Net Delta Outflow Index (NDOI) for November is listed below:

<b>Month</b>	<b>Mean NDOI (cubic feet per second)</b>
November	8,128

The NDOI is the estimated average daily rate of outflow from the Delta.

### **Rainfall**

Total monthly rainfall at the Waterman Gauging Station in Fairfield during November 2001 is listed below:

<b>Month</b>	<b>Total Rainfall (inches)</b>
November	4.39

## **Suisun Marsh Salinity Control Gate (SMSCG) Operations**

The SMSCG were under normal operation at full bore for November 2001 with flashboards in place with operating boat lock.

<b>Date</b>	<b>Flashboard / boat lock Status</b>	<b>Gate Status</b>
November 1 – November 30	In place / Operational	Tidal Operation

## **DISCUSSION**

### **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.

The State Water Resources Control Board, in 2001, approved another three years of study on the Suisun Marsh Salinity Control Gates to evaluate a method to allow unimpeded passage of adult salmon past the gates on their upstream migration. The evaluation of the modified flashboards was discontinued after two years because it was not successful. The new study is to evaluate the effectiveness of leaving the boat lock open when the gates are operating. The boat lock evaluation started in the fall of 2001 and will continue through the fall of 2003.

### **Observations and Trends**

#### **Conditions during the Reporting Period**

Channel water salinity conditions in the Marsh met the November standard and seemed to be mostly independent of Delta outflow during November 2001. According to

predictions, channel water salinity was higher in the western marsh than the eastern marsh (Figures 1 and 2). The salinity of both regions displays a declining trend during the month, even with significant increases in Delta outflow at the middle and end of the month (Figure 3).

### **Comparison of Reporting Period Conditions with Previous Years**

Monthly mean high-tide SC at the compliance and monitoring stations for November 2001 were compared with means for those months during the previous nine years (Figure 4).

Means at all compliance and monitoring stations, except C-2, for November 2001 closely resembles the means of previous years excepting 1995 and 1998, in which the end month specific conductance at high tide values are much lower.

**Table 1**

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

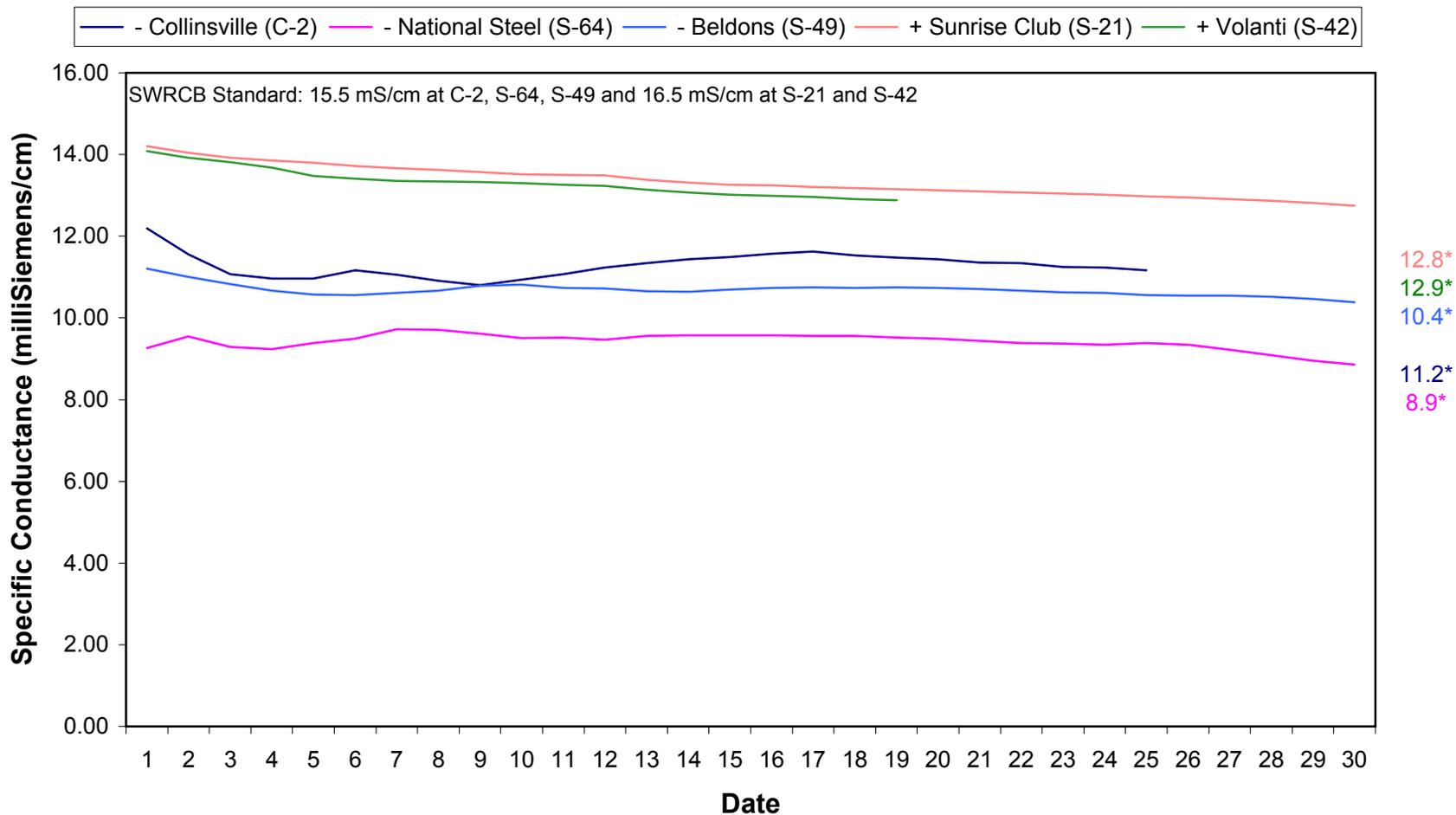
**November 2001**

<b>Station</b>	<b>Specific Conductance (mS/cm)*</b>
<b>Collinsville, C-2</b>	11.2
<b>National Steel, S-64</b>	8.9
<b>Beldon's Landing, S-49</b>	10.4
<b>Volanti, S-42</b>	12.9
<b>Sunrise Club, S-21</b>	12.8

\* = milliSiemens per centimeter

Note: SWRCB standard for November 2001 for Eastern Marsh stations (C-2, S-64, S-49) is 15.5 mS/cm and 16.5 mS/cm for Western Marsh stations (S-42, S-21).

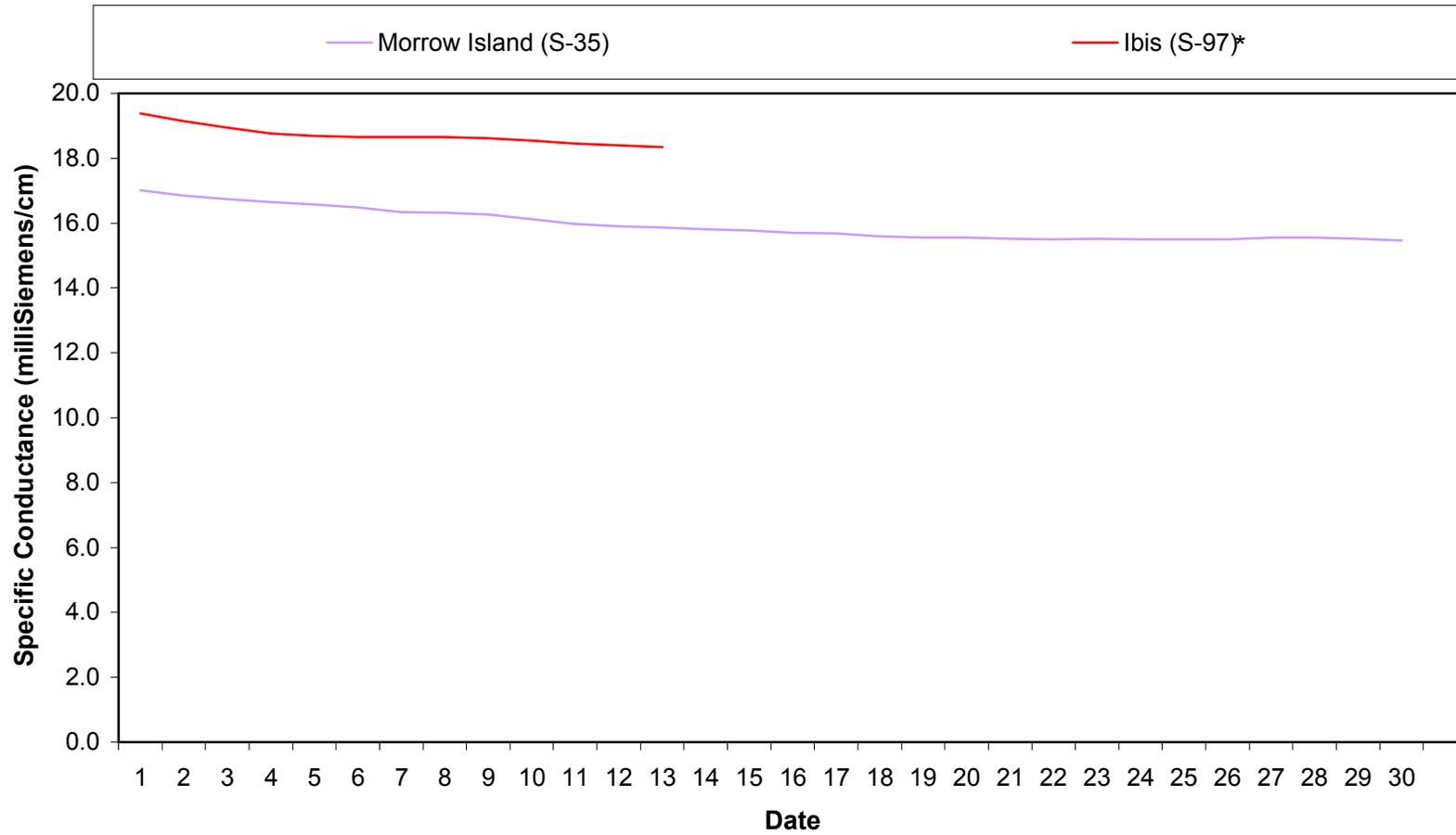
**Figure 1 - Suisun Marsh Progressive Mean High-Tide Specific Conductance for November 2001**



Note: incomplete data at C-2 and S-42 due to equipment malfunction.

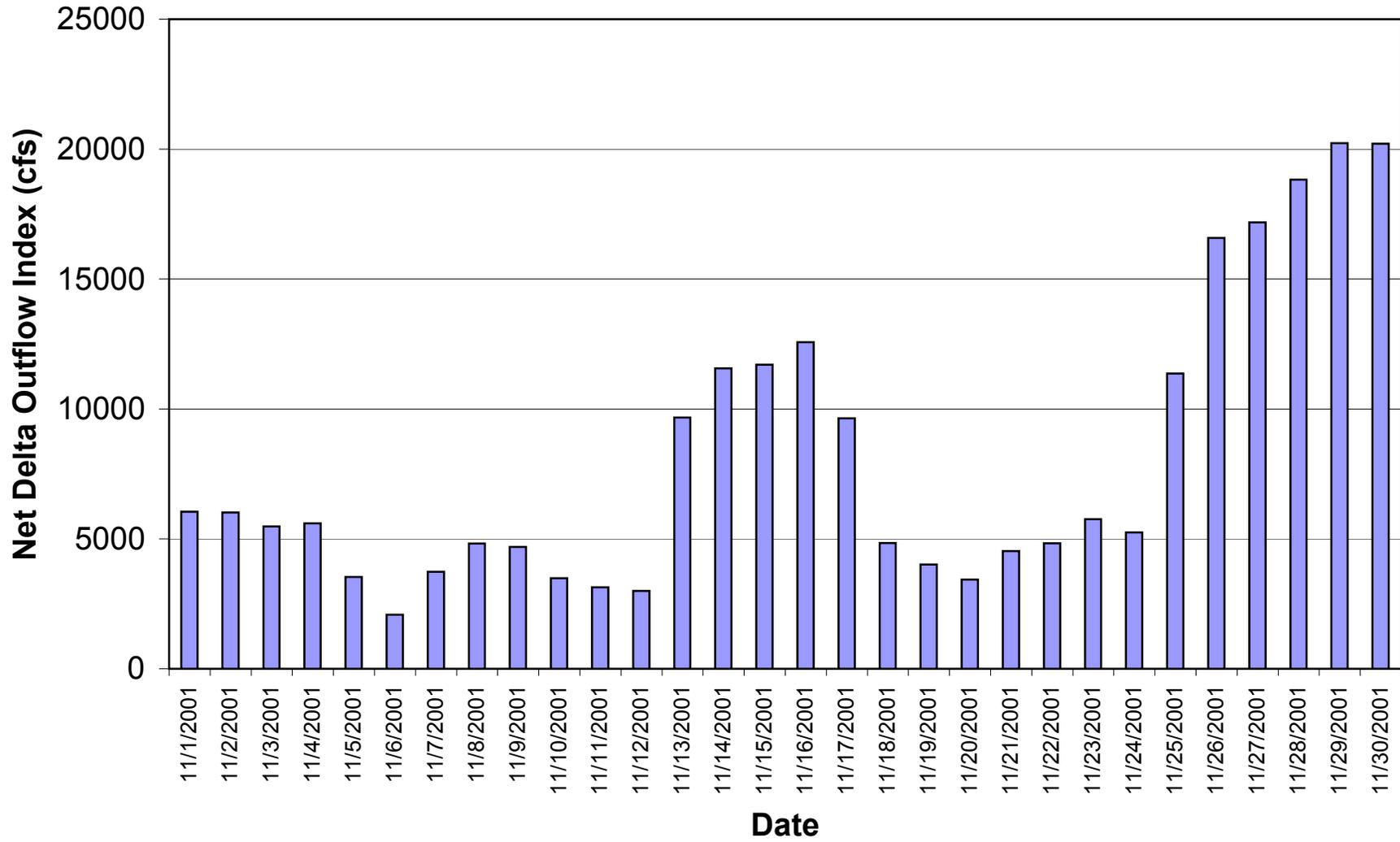
\* = monthly mean specific conductance at high tide.

**Figure 2. Suisun Marsh Daily Mean High-Tide Specific Conductance  
at Stations S-35, S-97  
November 2001**

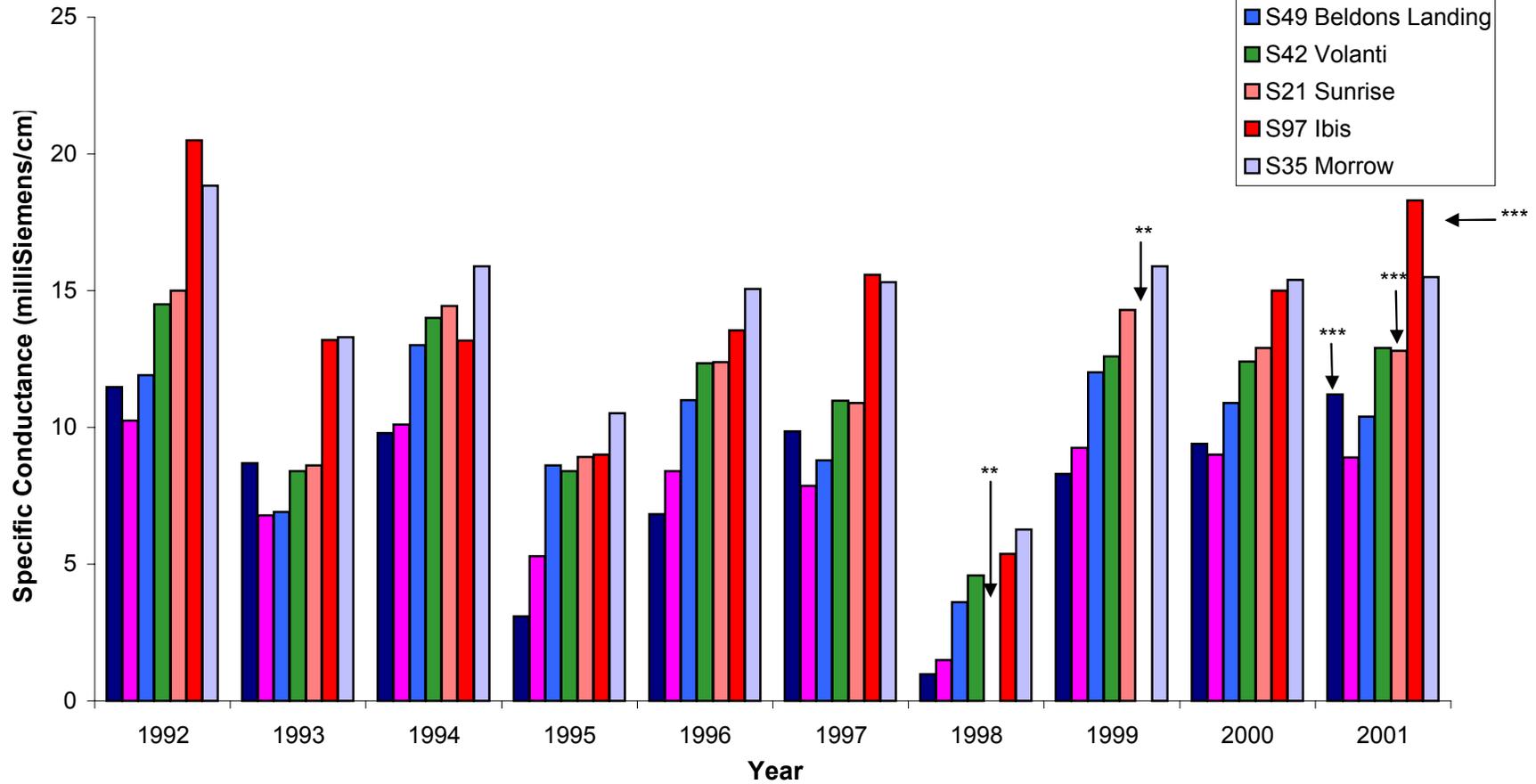


\* = Data incomplete due to equipment failure.

**Figure 3. Daily Net Delta Outflow Index For November 2001**



**Figure 4. Monthly Mean Specific Conductance at High Tide:  
Comparison of Monthly Values for Selected Stations  
November 1992-2001**



Note that certain stations do not reflect the actual end pdm.  
 \*\* Data was not obtained due to powder problems at the station.  
 \*\*\* Some data not obtained due to equipment malfunction.

Figure 5

