

## Revised Comments on Proposed Amendments of the Bay-Delta Water Quality Control Plan's Compliance and Baseline Monitoring Program

November 30, 2004

The Department of Water Resources (DWR) and the Bureau of Reclamation (Reclamation) propose for the State Water Resources Control Board's (SWRCB) consideration amendments to the Water Quality Compliance and Baseline Monitoring Program (Program) which is described in Table 4 and Figure 2 of the 1995 Bay-Delta Plan (1995 Plan). The proposed amendments are based on an in-depth, scientific and technical review of the Program by the Interagency Ecological Program (IEP). The proposed amendments would address:

- Baseline monitoring at 17 stations:
  - "Compliance Station" D29,
  - "Compliance and Baseline Stations" C9, C10, D10, D12, D24, S42, and
  - "Baseline Stations" C3, D6, D7, D9, D11, D19, D28A, D41A, P8, NZ080
- Compliance monitoring at 3 stations:
  - "Compliance Stations" C9, C10 and D22
- Sampling intervals for discrete baseline monitoring

The Porter Cologne Water Quality Control Act provides the SWRCB authority to identify monitoring needed to determine compliance with water quality objectives and to obtain information to support recommendations for changes in the Water Quality Control Plan (Water Code Section 13242). DWR and Reclamation request that SWRCB amend the Plan pursuant to this authority.

### **Water Quality Compliance and Baseline Monitoring Program**

The Program described in Table 4 and Figure 2 of the 1995 Bay-Delta Plan calls for the collection of data to:

- (1) Provide baseline information and determine compliance with the water quality objectives in this plan;
- (2) Evaluate the response of the aquatic habitat and organisms to the objectives; and
- (3) Increase understanding of the large-scale characteristics and functions of the Estuary ecosystem to better predict system-wide responses to management options. (1995 Bay-Delta Plan, Page 41)

DWR and Reclamation implement the Plan's monitoring Program in accordance with the requirements of SWRCB's Decision 1641 (D-1641) to:

- Ensure compliance with water quality objectives in the 1995 Bay-Delta Water Quality Control Plan;

- Identify meaningful changes in any significant water quality parameters potentially related to operation of the State Water Project (SWP) or the Central Valley Project (CVP); and
- Reveal trends in ecological changes potentially related to SWP/CVP operations.

The Program described in the 1995 Plan consists of 43 monitoring stations in the upper San Francisco Bay-Delta estuary, extending from the Sacramento River at Hood to the San Joaquin River at Vernalis and west into San Pablo Bay (Figure 1). Of these, twenty stations are operated as "Compliance Monitoring Stations", to ensure compliance with the water quality objectives. Fifteen stations are "Baseline Monitoring Stations", operated to identify changes in the estuary. The remaining eight are "Compliance and Baseline Monitoring Stations", which include a mixture of compliance and baseline monitoring elements.

Monitoring at a station may include six types of monitoring elements:

- Continuous Recorder Monitoring - provides continuous EC and temperature monitoring for compliance monitoring purposes,
- Multiparameter Monitoring - provides continuous monitoring of multiple parameters for compliance and baseline monitoring purposes,
- Physical/Chemical Monitoring - provides discrete baseline monitoring of physical and chemical parameters,
- Phytoplankton Monitoring - provides discrete baseline phytoplankton monitoring
- Zooplankton Monitoring - provides discrete baseline zooplankton monitoring
- Benthos Monitoring - provides discrete baseline benthos monitoring

DWR and Reclamation make the monitoring data available through the California Data Exchange Center (CDEC) [<http://cdec.water.ca.gov/>] and the Bay Delta and Tributaries Project (BDAT) [<http://bdat.ca.gov/>].

In addition to providing data to help determine SWP and CVP compliance with its water quality objectives and assess project effects on the estuary, the monitoring data are used by DWR, Reclamation and others to:

- Assess and evaluate ecological changes in the estuary that might not be related to SWP and CVP operations, including detection of invasive and nuisance species
- Assess and evaluate ecosystem restoration projects
- Develop and calibrate hydrodynamic and water quality models for the estuary

DWR and Reclamation, with assistance from the U.S. Geological Survey (USGS) and Department of Fish and Game (DFG), conduct monitoring at 22 of the Baseline and Compliance Monitoring Program's 42 monitoring stations through the Environmental Monitoring Program (EMP). The 22 EMP stations include one "Compliance Monitoring Station," 14 "Baseline Monitoring Stations," and 7 "Compliance and Baseline Monitoring Stations." While the EMP conducts part of the compliance monitoring, it conducts

almost all of the baseline monitoring. DWR and Reclamation coordinate their EMP activities with the estuary monitoring and studies of other State and federal agencies through the Interagency Ecological Program.

### **Review of the Water Quality Monitoring Program**

DWR's and Reclamation's proposed amendments to the Plan are based on recommendations from an in-depth review of the EMP conducted from 2001-2002. The review was conducted in accordance with Condition 11.e of D-1641 and IEP guidelines. A complete report of the Program review is available at <http://www.iep.water.ca.gov/emp/> .

The purpose of the EMP review was to "recommend a balanced, scientifically sound, implementable environmental monitoring program design to fulfill water right permit conditions and address the needs of current and potential users identified during this review." Review recommendations were guided by the need to maintain D-1641 compliance, a relatively level budget, and long-term data continuity.

The technical review was conducted by:

- EMP Review Core Team: IEP staff from DWR, BDA, Reclamation, and USGS
- Subject Area Teams of local agency & university experts: Staff from DWR, Reclamation, BDA, DFG, USGS, San Francisco Estuary Institute, University of California at Davis and San Francisco State University
- IEP Science Advisory Group of independent scientists: Stephen Monismith (Stanford University), Si Simensted (University of Washington), Jim Cloern (USGS), Ed Houde (University of Maryland), Terry Short (USGS), Jon Sharp (University of Delaware) and Alan Jassby (UC Davis)
- Participants in three public meetings: All participants listed above plus representatives of the CALFED Drinking Water Program, CALFED Ecosystem Restoration Program, Sacramento River Watershed Program, National Heritage Institute, Central Valley Regional Water Quality Control Board, U.S. Environmental Protection Agency and several environmental consulting firms

The review produced recommendations to improve the EMP, including several that would provide a refined scientific basis for EMP monitoring. Some of these recommendations have been implemented immediately (e.g. improved sample analysis, data analysis and storage, reporting of data and information). Other recommendations affecting the specific timing, location and elements of the monitoring identified in D-1641 have been presented for SWRCB approval.

DWR and Reclamation requested several amendments to the monitoring Program in a March 25, 2003 letter to the SWRCB's Executive Director. These changes consisted of:

- Adding, reestablishing, or consolidating several monitoring stations and elements, and

- Adjusting the discrete sampling interval

In a response letter dated August 11, 2003, the SWRCB Executive Director:

- Approved the changes to baseline monitoring at Baseline Stations,
- Approved the adjustments to the discrete sampling interval, and
- Issued new D-1641 Table 5 and Figure 4 to reflect the approved changes.

However, the Executive Director did not approve the proposed changes at the compliance stations and compliance and baseline stations. Instead, DWR and Reclamation were directed to propose the requested changes during the SWRCB's review of the 1995 Bay-Delta Plan and then seek these changes to D-1641 in a subsequent water rights proceeding.

After meeting with SWRCB staff, DWR and Reclamation sent a follow-up letter dated February 5, 2004, to the SWRCB clarifying that requested changes to compliance stations and compliance and baseline stations would affect only baseline monitoring at these stations. All aspects of the compliance monitoring activities at these stations would remain unchanged. This letter also contained a newly modified proposed Table 5 for D-1641. On April 7, 2004, the SWRCB staff noted that it would include the requested changes to compliance stations and compliance and baseline stations during the periodic review of the 1995 Plan. Therefore, DWR and Reclamation submit the following proposed amendments to support specific changes to the plan.

#### **Proposed Amendments to the 1995 Bay-Delta Plan's Monitoring Plan**

DWR and USBR propose amendments to Table 4 and Figure 2 of the 1995 Bay-Delta Water Quality Control Plan to:

- Improve the scientific basis for the program and the usefulness of the resulting data by
  - Enhancing comprehensive monitoring at important ambient and flux stations (Figure 2 of this document)
  - Enhancing continuous monitoring
  - Increasing shallow water monitoring
  - Reducing spring-neap tidal biases
  - Improving QA/QC
- Improve monitoring efficiency by consolidating neighboring stations
- Improve safety

The amendments would:

- 1) Add, reestablish, or move baseline monitoring elements at
  - a. One "Compliance Monitoring Station" (Station D29)
  - b. Seven "Compliance and Baseline Monitoring Stations" (Stations C9, C10, D10, D12, D22, D24, & S42)

- c. Six "Baseline Monitoring Stations" (Stations C9, C10, D10, D12, D22, D24, & S42)
- 2) Remove one "Baseline Station" (Station NZ080)
- 3) Modify station numbers and descriptions for 4 "Baseline Monitoring Stations" (Stations C3, D6, D28A, P8)
- 4) Modify sampling interval description in footnotes to Table 4
- 5) Modify Table 4 layout to include geographic coordinates and rearrange table columns
- 6) Update Figure 2

The specific proposed amendments to monitoring at Compliance Stations and Compliance and Baseline Stations are described in Table 1 of this document. The amendments would result in the following:

- All ongoing compliance monitoring activities at the 8 Compliance and Compliance and Baseline Stations would remain unchanged
- 12 monitoring elements would remain unchanged
- 10 historically monitored elements would be reestablished. This includes more clearly reflecting in Table 4 the ongoing compliance monitoring (electrical conductivity and chloride) that occurs at stations C9, C10, and D22
- 5 baseline monitoring elements would be added
- 2 baseline monitoring elements would be moved from an unsafe bridge site to a nearby location

Tables 2 and 3 of this document identify the proposed amendments to the monitoring at specified Baseline Stations. These amendments would have the following results:

- 17 monitoring elements would remain unchanged
- 4 monitoring elements would remain operationally unchanged but would be identified with new station numbers
- 8 historically monitored elements would be reestablished
- 1 historically monitored elements would be removed
- 8 baseline monitoring elements would be added
- 2 baseline monitoring elements would be moved to consolidate two neighboring stations (Hood & Greens Landing) for greater sampling efficiency. Comparisons of monitoring data from these two stations show no differences (Figure 3 of this document).

Another proposed amendment would modify the sampling interval for discrete sampling that is described in the footnotes to Table 4 of the 1995 Plan. The amendment would change "monthly" to "on a year-round, near-monthly basis that alternates between spring and neap tides." The purpose of this modification is to avoid a spring-neap tide sampling bias.

Amendment of the layout of Table 4 in the 1995 Plan would be needed to reflect proposed changes. DWR and Reclamation also propose the addition of geographic

coordinates for each station and the rearrangement of table columns to group the continuous monitoring and discrete monitoring activities. The left portions of Tables 1-3 of this document show the new layout and information that would be included in the revision of the Plan's Table 4. DWR and Reclamation will provide a revised copy of the full Table 4 to the SWRCB within 30 days after this workshop.

The amendment of Figure 2 of the Plan would reflect the previously proposed changes to the monitoring plan. Figure 4 of this document shows the proposed revision of the Plan's Figure 2.

### **Conclusion**

In conclusion, DWR and Reclamation request that the SWRCB amend the Compliance and Baseline Monitoring Plan of the 1995 Plan to define a more scientifically sound and safer program. The changes are designed to enable improved surveillance of water right permit conditions and to better address the needs of current and potential users of the resulting data. After approval of the amendments by the SWRCB, DWR and Reclamation would petition the SWRCB pursuant to Water Code Section 1701 to make changes to D-1641 Table 5 consistent with the revised Table 4 of the Plan. These changes would be necessary for the reasons discussed above and DWR and Reclamation would provide the necessary information in support of a petition to modify Table 5. Based on the information provided during the Workshop, DWR and Reclamation believe that the proposed changes to the EMP will not cause injury to any legal users of water because the changes do not modify monitoring used to determine compliance with water quality requirements.

Thank you for consideration of the proposed amendments. Reclamation and DWR staff are available to discuss our proposal further with the SWRCB and its staff. For more information please contact Anke Mueller-Solger, DWR, at [amueller@water.ca.gov](mailto:amueller@water.ca.gov) or Erwin Van Nieuwenhuse, Reclamation at [evannieuwenhuse@mp.usbr.gov](mailto:evannieuwenhuse@mp.usbr.gov).

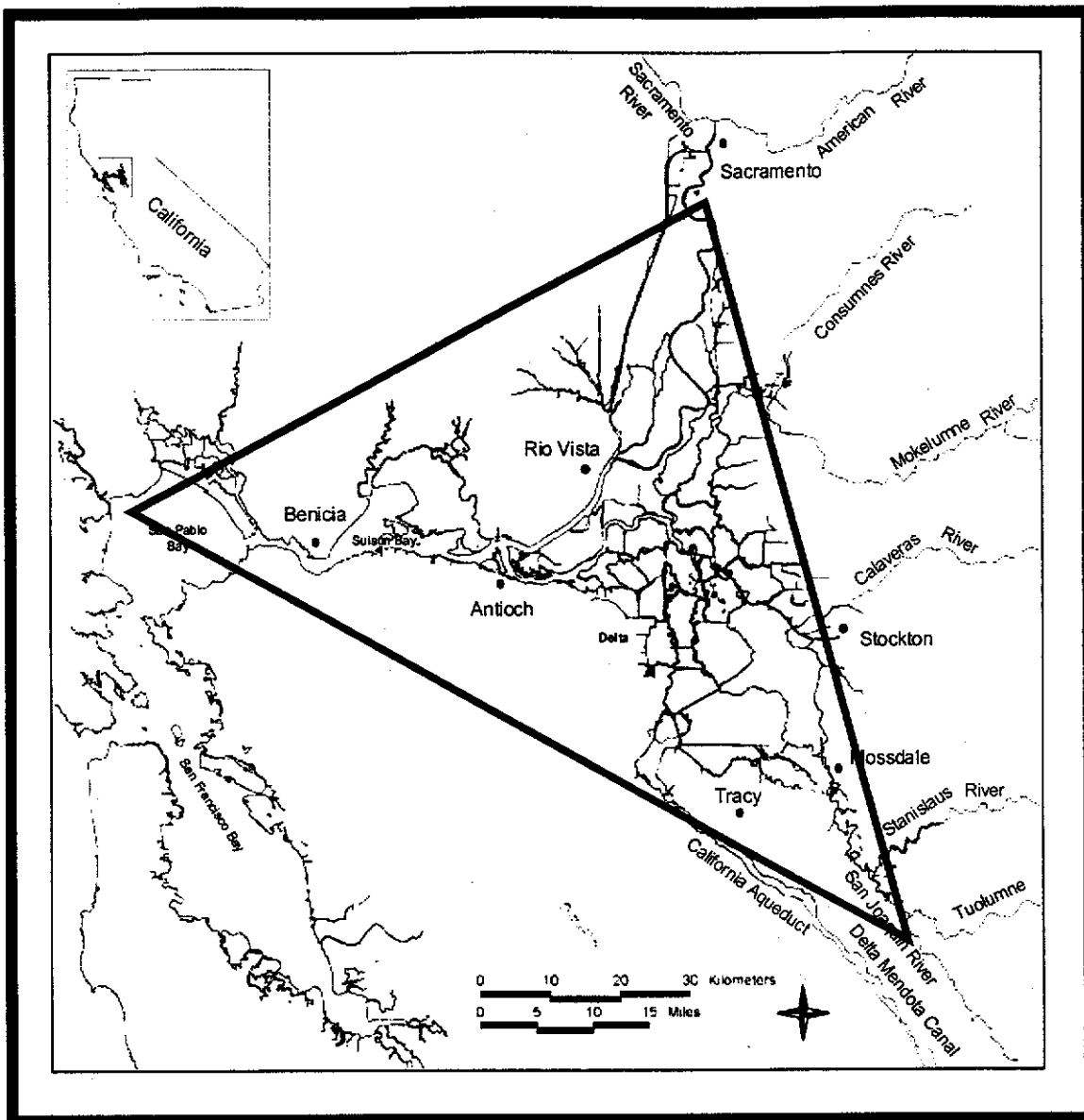


Figure 1: Boundary of Water Quality Compliance and Baseline Monitoring Program

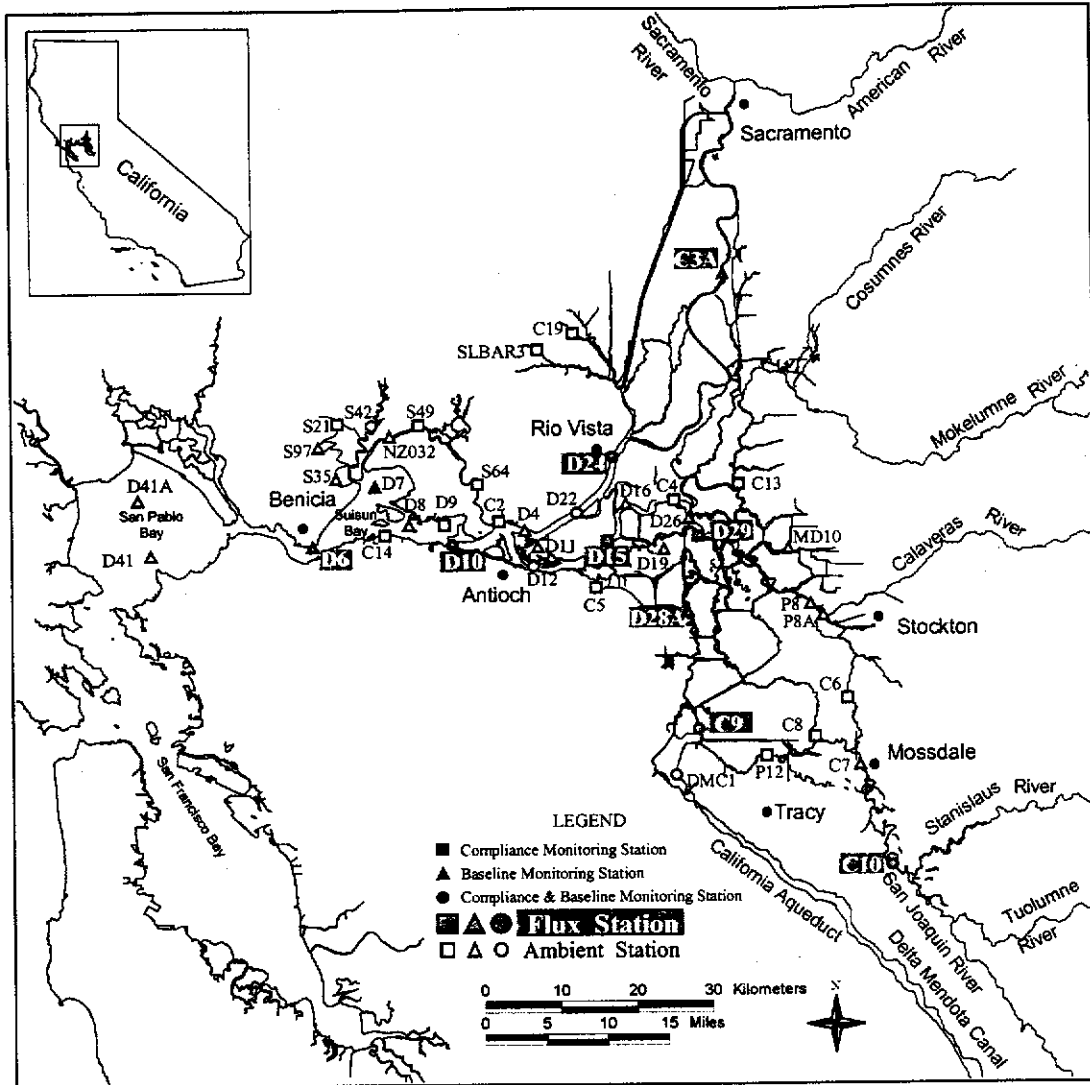


Figure 2: Conceptual Design of Water Quality Compliance and Baseline Monitoring Program



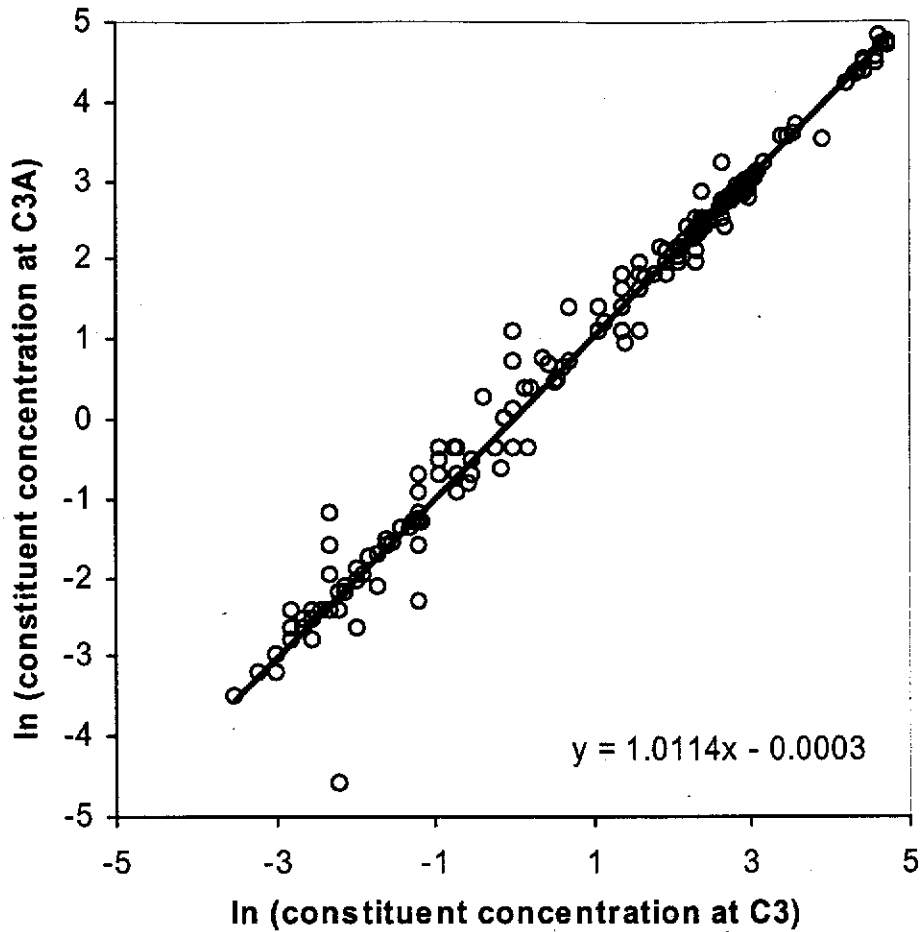


Figure 3: Comparison of Greens Landing (C3) and Hood (C3A) Monitoring Stations (July 2003-June 2004, 16 constituents, Deming regression and Bias plots: no significant differences between stations (see Triboli et al, IEP newsletter 2003(4):13-24 for statistical analysis techniques))

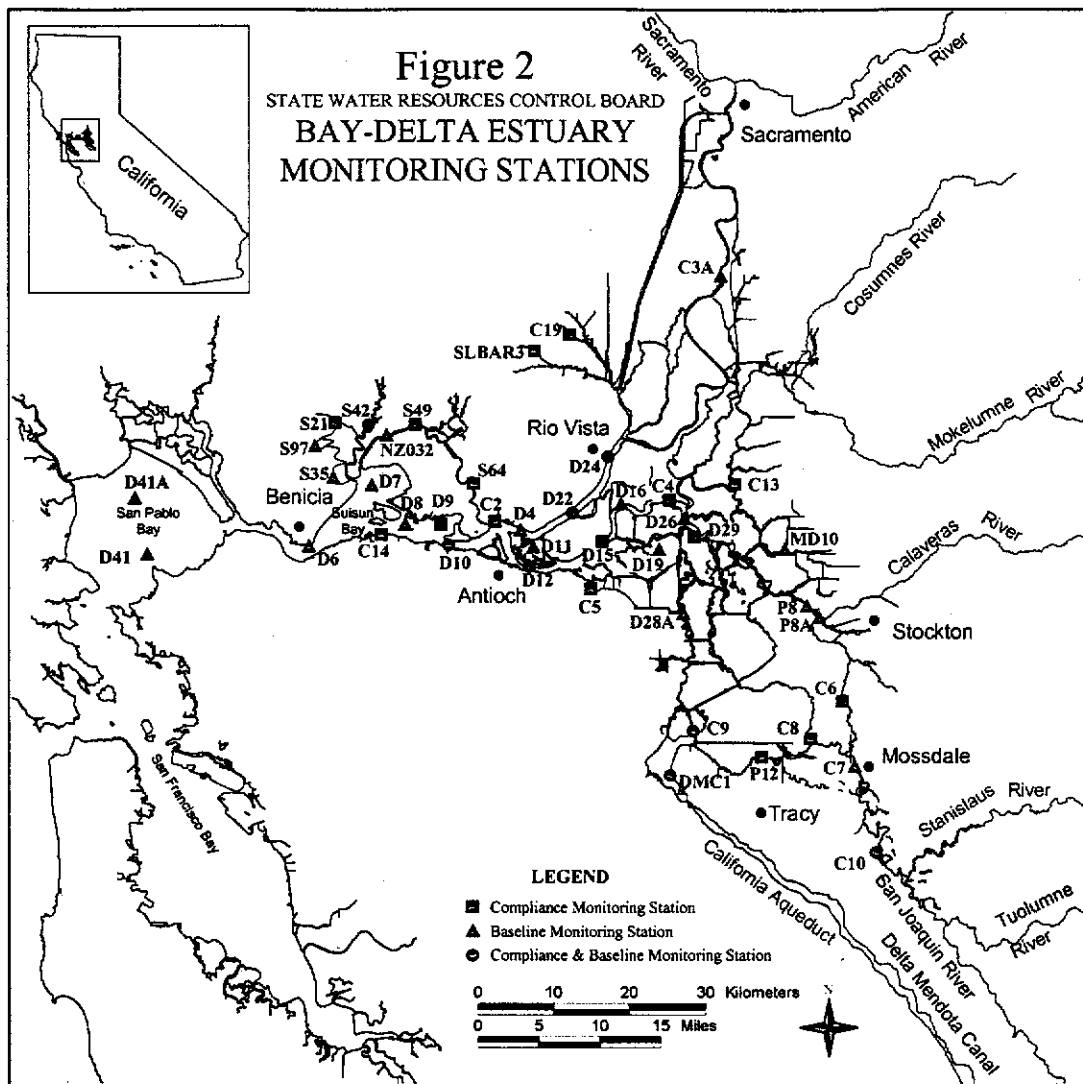


Figure 4: Proposed Revision of Figure 2 of the 1995 Bay-Delta Water Quality Control Plan

Table 1: Changes at "Compliance" and "Compliance & Baseline" Monitoring Stations

Station Number	Station Type	Station Description	Lat.	Long.	Cont. Recorder	Cont. Multiparameter	Discrete Physical/C hemical	Discr. Phyto-plankton	Discr. Zoo-plankton	Discrete Benthos	Water Quality Objectives in 1995 B-D Plan	Rationale for Change
C9	●	West Canal @ Mouth of CC Forebay Intake	37.83075	-121.55703		Reinstate (Ongoing)	Reinstate	No change	Reinstate		CI (Table 1), EC (Table 2)	Water Quality Objective; Flux station (exports); Continuous data QA/QC
			37.82818	-121.55275								
C10	●	San Joaquin River near Vernalis	37.67575	-121.265	Reinstate (Ongoing)		Move from	Move from			CI (Table 1), EC (Table 2), Flow (Table 3)	Flux station (Imports); Southern "rim"; Long & highly utilized data set; Improved safety at new location
			37.67934	-121.26472		Add	Move to	Move to	Add			
D10	●	Sacramento River @ Chipps Island	38.04288	-121.92011		No change	Reinstate				EC (Table 3, Footnote 14)	Continuous data QA/QC
			38.04631	-121.91829						No change		
D12	●	San Joaquin River @ Antioch Ship Channel	38.0177	-121.80273		No change	Reinstate				CI (Table 1)	Continuous data QA/QC
			38.02162	-121.80638						No change		
D22	●	Sacramento River @ Emmaton	38.08406	-121.73912	Reinstate (Ongoing)						EC (Table 2)	Water Quality Objective (no operational change)
			38.08453	-121.73914						No change		
D24	●	Sacramento River below Rio Vista Bridge	38.15891	-121.68721		No change	Reinstate				Flow (Table 3)	Continuous data QA/QC
			38.1555	-121.68113								
D29	■	San Joaquin River @ Prisoners Point	38.05793	-121.55736	No change						EC (Table 3)	Important mid-Delta flux station, northern endpoint for Stockton Ship Channel D.O. monitoring.
	▲		38.05793	-121.55736			Add	Add	Add			
S42	●	Suisun Slough 300' south of Volanti Slough	38.18053	-122.04696	No change		Reinstate				EC (Table 3)	Ecologically important tidal marsh habitat station with long-term monitoring history.
			38.18027	-122.04779					Reinstate	No change		

■ Compliance monitoring station

▲ Baseline monitoring station

● Compliance and baseline monitoring station

Table 2: Changes at "Baseline" Monitoring Stations

Station Number	Station Type	Station Description	Lat.	Long.	Cont. Recorder	Cont. Multiparameter	Discrete Physical/Chemical	Discrete Phytoplankton	Discrete Zooplankton	Discrete Benthos	Water Quality Objectives in 1995 B-D Plan	Rationale for Change and Implementation Status	Approved by SWRCB Exec. Dir.
C3A	▲	Sacramento River @ Flood	38.36772	-121.52051		No op. change, but new station number	Moved from C3 (C3 has been discontinued)	Moved from C3 (C3 has been discontinued)	Reinstate		None	Continuous & discrete monitoring station consolidation at continuous station location to improve monitoring efficiency & QA/QC - implementation complete; Reinstated zooplankton monitoring at ecologically important northern rim flux station (imports) - implementation in progress	Yes
D7	▲	Grizzly Bay @ Dolphin nr. Suisun Slough	38.11708	-122.03972	Add		No change	No change	No change	No change	None	Ambient stations representing shallow water habitat in ecologically and operationally important locations along the estuarine transition zone.	Yes
D9	▲	Honker Bay near Wheeler Point	38.07245	-121.93923	Add		Reinstate	Reinstate			None	New continuous monitoring to better understand tidal constituent dynamics - implementation in progress	Yes
D11	▲	Sherman Lake near Antioch	38.04228	-121.79951	Add		Reinstate	Add			None		Yes
D19	▲	Franks Tract near Russo's Landing	38.04376	-121.61477	Add		Reinstate	Reinstate	Reinstate		None		Yes
D41A	▲	San Pablo Bay near Mouth of Petaluma River	38.08472	-122.39067			Add	Add	Add	No change	None	Ecologically important ambient station representing shoal habitat with fluctuating salinity levels. Long-term benthos station. - implementation complete	Yes
NZ080	▲	San Joaquin River, 549 meters upstream of light 26							Remove		None	Station discontinued since 1996, not mandated in D-1641	No

■ Compliance monitoring station    ▲ Baseline monitoring station    ● Compliance and baseline monitoring station

Table 3: Modified Station numbers and descriptions at "Baseline" Monitoring Stations

Station Number	Station Type	Station Description	Lat.	Long.	Cont. Recorder	Cont. Multiparameter	Discrete Physical/Chemical	Discr. Phytoplankton	Discr. Zooplankton	Discrete Benthos	Water Quality Objectives in 1995 B-D Plan	Rationale for Change
C3	▲	Sacramento River @ Greens Landing	38.36772	-121.52051			Move from C3	Moved from C3 (C3 has been discontinued)			None	Station consolidation at C3A reviewed & approved by the SWRCB Exec. Director in 2003. Implemented.
C3A		Sacramento River @ Hood	38.36772	-121.52051		No op. change, but new station number	Move to	Moved to	Reinstate		None	
D6	▲	Suisun Bay @ Bull's Head Pt. near Martinez	38.04427	-122.11764			No change	No change	No change	No change	None	No operational change at continuous multiparameter station. New station number and description to indicate that the (shore-based) continuous monitoring is taking place in a different location than the (mid-channel) discrete monitoring activities. These changes were approved by the SWRCB Exec. Director in 2003.
D6A		Suisun Bay @ Martinez	38.02762	-122.14052		No op. change, but new station number	No change	No change	No change	No change	None	
D28A	▲	Old River near Rancho Del Rio	37.97038	-121.57271			No change	No change	No change	No change	None	
D28B		Old River @ Bacon Island	37.9698	-121.5721		No op. change, but new station number	No change	No change	No change	No change	None	
P8	▲	San Joaquin River @ Buckley Cove	37.97815	-121.38242			No change	No change	No change	No change	None	
P8A		San Joaquin River @ Rough and Ready Island	37.96277	-121.36587		No op. change, but new station number	No change	No change	No change	No change	None	

■ Compliance monitoring station

▲ Baseline monitoring station

● Compliance and baseline monitoring station