

Baseline Water Quality

DRAFT
Detailed Work Plan
for Analyzing Existing Data
to Establish Current Baseline Water Quality Conditions
with Regard to Drinking Water Uses of Delta Water Supplies
May 9, 2000

Project Purpose: The purposes of this project are to: document existing water quality conditions at selected locations in the Sacramento-San Joaquin Delta, its tributary streams, and drinking water supply intake locations; to determine the adequacy of current data collection efforts to support the CALFED Drinking Water Quality Program; and, to provide CALFED with recommendations for needed improvements in collection of water quality and related data to enable the consequences of CALFED ecosystem restoration, levee rehabilitation, and water quality actions to be understood and appropriately managed.

Description:

CALFED recognizes that the amount of effort required to establish baseline drinking water quality conditions is dependent on what level of detailed analysis is chosen. Over the longer term, an objective of the CALFED Drinking Water Quality Program should be to utilize all relevant sources of drinking water quality information and, from these, to comprehensively evaluate drinking water quality conditions in the Sacramento-San Joaquin Delta on an ongoing basis. Numerous entities collect water quality information in the Sacramento-San Joaquin Bay-Delta and its tributaries. 1/ The California Department of Water Resources has the largest program specifically directed to drinking water quality, but a number of other agencies, such as the U.S. Geological Survey, U.S. Bureau of Reclamation, and the City of Sacramento also collect water quality and/or flow data that can be used to evaluate sources and loads of constituents of drinking water concern.

The majority of existing water quality data collection programs in the region yield information that is only partially relevant to drinking water quality concerns. Therefore, although many entities in the region collect water quality and quantity information, not all collectors are of equal importance to the effort to establish baseline drinking water quality conditions. Also, data from some programs are readily available for analysis and interpretation while, in some cases, data are not available in electronic form and would need to be translated from hand written sheets in order to be useful to this investigation. Finally, not all data are of equal quality. In view of the variable relevance of different data collection programs and differences in the availability and quality of data, it seems appropriate to approach this study in stages.

Proposed is the first of a three level evaluation, the product of which would be a report at the conclusion of the first level of study. The first level would involve harvesting data from the most relevant and readily obtainable sources. Level Two would be a more intensive review of data from other water quality/quantity collection activities, such as those of local municipalities and permitted dischargers, and where data are electronically available, but may require significant effort to render the information useable for this analysis. Level Three would involve

acquiring relevant data from local entities and, perhaps, unofficial collectors of demonstrated reliability, and rendering valuable data into useable form from sources such as paper records.

The Level One study recommended below can be accomplished with available funding (\$45,000). It may also be possible with these funds to proceed to the next level of study; however, this cannot be predicted with certainty. Level One will be diligently pursued and, to the extent resources remain available after its accomplishment, a more intensive (Level Two) data acquisition and interpretation will be commenced, in coordination with the drinking water quality stakeholders (Drinking Water Constituents Work Group). The Work Group will also review and comment on draft reports prior to delivery to CALFED. Close involvement of the advisors will be very important in order to assure the maximum cost-effective yield of data.

Proposed Level One Study:

Data Acquisition

Locations: Water Quality and flow data will be acquired from the following locations, to the extent the data are reasonably available:

American R. @ WTP Intake
Sacramento R. @ West Sacramento Intake
Sacramento County Regional Sanitation District Discharge
Sacramento R. @ Greenes Landing/Hood (replaced Greene's Landing)
Mokelumne R. @ Woodbridge
San Joaquin R. near Vernalis
Cosumnes R. @ Dillard Road Bridge
Delta
 Old River @ Rock Sl.
 Contra Costa Canal @ PP #1
 Clifton Court Intake
 Delta Mendota Canal @ Lindemann Road Bridge
 H. O. Banks Pumping Plant Headworks
 Mallard Slough @ CCWD Intake
 Old R @ Hwy 4 (CCWD intake)
 City of Stockton WWTP Discharge
 Delta island discharges (various, where data are available)
North Bay P.P. Intake (Barker Slough)
Delta Mendota Canal @ McCabe Rd. Bridge (near inlet to O'Neill Forebay)
San Luis Reservoir @ SCVWD Outlet
Check 13 (Outlet from O'Neill Forebay)
Coastal Aqueduct @ Polonio Pass WTP
Edmonston PP Forebay
South Bay Aqueduct Terminal Tank
Antelope Valley – East Kern Turnout on California Aqueduct
Devil Canyon Afterbay
Castaic Lake at Outlet

Lake Silverwood at Outlet
Lake Perris at Outlet

Constituents: Constituents to be analyzed include:

TOC/DOC

Br

TDS

Cl

Na

Nutrients (Total Phosphorus, Total Nitrogen)

Temperature

Algal Growth (fluorescence, chlorophyll *a*, biomass)

Turbidity

UVA₂₅₄

Data Analysis and Interpretation: To the extent data are available, concentrations and loads of the above listed constituents will be computed, and presented as follows:

Cumulative probability

Historical trends

Seasonal trends

Spatial trends

Changes related to hydrologic year type

Variability with flow

Variability with upstream reservoir releases

Barrier Operation (Rudimentary analysis only to evaluate water quality differences at CCWD intake at PP #1, CCWD intake on Old River, and Banks P.P. during periods when barriers are, and are not, operating)

Variability of TOC, DOC, and UVA₂₅₄ with algal productivity

Period of Record: For its modeling analyses, CALFED selected the sixteen year period October 1996 through September 1991 as the hydrologic data set to be evaluated. This period includes hydrologic conditions ranging from wet to critically dry, and will be the core time period for which water quality baseline conditions are to be established in the Level One study. More recent data, where readily available, will be included.

Data Sources: The primary data sources to be utilized in the Level One study are as follows, presented in order of relevance to this study:

Department of Water Resources – Municipal Water Quality Investigations Program, Division of Operations and Maintenance Water Quality Program, District water quality programs and continuous recording water quality and flow data from Delta and State Water Project locations.

U.S. Geological Survey – National Stream Water Quality Monitoring Networks (WQN) – water quality and flow data.

Sacramento River Watershed Monitoring Program

Sacramento Regional County Waste Water Treatment Plant discharger self-monitoring data (NPDES)

City of Stockton Waste Water Treatment discharger self-monitoring data (NPDES)

Modeling Coordination

Consultant will meet with selected mathematical modeling experts and the CALFED Operations Group to help assess existing data under different operational scenarios. Consultant will provide available water quality data and data summaries to the CALFED Operations Group for their use in assessing water quality consequences of proposed CALFED actions.

Report

At the conclusion of this project, Consultant will submit a report documenting the work accomplished, assessing the adequacy of existing data to establish baseline drinking water quality conditions and providing recommendations for future water quality assessment and related activities to enable effects of CALFED actions to be determined. Prior to completion of the report, Consultant will distribute a draft report to the Drinking Water Constituents Work Group and meet with that group on at least one occasion to answer technical questions and receive stakeholder comments. Comments will be incorporated, the draft circulated once again and further comments incorporated. Then the report will be finalized and submitted to CALFED. Timing of the draft reports, final report, and stakeholder meeting(s) will be set with involvement of the Drinking Water Constituents Work Group.

Meetings and Presentations

Active participation of CALFED technical stakeholders will prove crucial to attaining maximum information yield from the Level One study. As the study proceeds, many decisions will need to be made as to data sources, parameters, data quality, forms of data analysis and presentation. The Consultant will be able to make most efficient use of available resources if these decisions can be made quickly and in a manner satisfactory to all CALFED stakeholders. Accordingly, it is envisioned that a small core (perhaps two or three) technical advisors comprised of CALFED stakeholders would be available for consultation on a frequent and informal basis for the purpose of determining choices among options for the conduct of the work.. It would be the responsibility of CALFED management to identify the core advisor team; to make the advisors available for consultation; and, to assure the advisors adequately represent CALFED interests.

In accordance with the need to maintain close communications on the conduct of the work, Consultant shall meet and confer with the Drinking Water Constituents Work Group, individuals within the group, and a core technical advisor group as necessary to maintain close coordination with stakeholders, and to receive ongoing advice and guidance on the conduct of the project. It is anticipated that twelve consultations with core advisors would be held, along with a minimum of two work group meetings, and that a final presentation to the Delta Drinking Water Council will be made.

Proposed Level Two Study:

It is anticipated that, with active participation of CALFED stakeholders, the Level One Study will be expeditiously completed, and that it may be possible to begin gathering and analyzing other available water quality data as part of the Level Two Study. The scope of Level Two work will be defined once the Level One work is completed, in coordination with the core project advisors and Drinking Water Constituents Work Group.

Budget

Description	Hours	Cost
LABOR		
Data Collection		
Contacts with data holders	30	\$3,750
Data acquisition and database entry	70	\$8,750
Data Analysis and Interpretation	30	\$3,750
Modeling Coordination	10	\$1,250
Meetings		
Consultations with Core Advisors	12	\$1,500
Drinking Water Constituents Work Group (2)	12	\$1,500
Delta Drinking Water Council (1)	20	\$2,500
Informal discussions with stakeholders (6)	24	\$3,000
Report Preparation		
First Draft	80	\$10,000
Second Draft	40	\$5,000
Final	20	\$2,500
Total Labor		\$43,500
EXPENSES		
Travel		\$1000
Miscellaneous		\$500
Total Expenses		\$1,500
Grand Total		\$45,000

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