

CUWA
STUDY OF DRINKING WATER QUALITY IN DELTA TRIBUTARIES
SUMMARY OF JANUARY 12, 1994 PAC MEETING

January 19, 1994

The second Project Advisory Committee (PAC) meeting for the Study of Drinking Water Quality in Delta Tributaries was held on January 12, 1994. The meeting agenda, list of attendees, and list of those attendees with an Internet address are attached.

INTRODUCTION--Lyle Hoag

Lyle began the meeting by asking all attendees to reintroduce themselves and noting that some PAC members may have been delayed by fog conditions.

PURPOSE OF MEETING--Elaine Archibald

Elaine stated that there were two main purposes to this meeting: (1) to obtain comments on the two draft technical memoranda on main drainage and Delta agricultural drainage, and (2) to present and come to consensus on the approach to determining mass loads.

MINE DRAINAGE TECHNICAL MEMORANDUM--Jeanne Wallberg

Jeanne briefly reviewed the Mine Drainage Draft Technical Memorandum. The ensuing discussion resulted in the following modifications to be made to the final memorandum:

- 1) The language regarding mine drainage as a source of arsenic will be strengthened as this source could be important when the arsenic MCL is lowered.
- 2) The language regarding mine drainage as a significant source of copper will also be strengthened. Walt Wadlow stated that copper concentrations in Santa Clara Valley Water District drinking water are of concern because it is an influent source to the wastewater treatment plants which must reduce copper in their effluent. Walt distributed copies of a letter from the Bay Area Regional Water Quality Control Board to South Bay water districts, water retailers, municipal wastewater dischargers, and government agencies requesting a coordinated strategy to quantify the sources of copper to the drinking water supply.
- 3) In general, the tone of the technical memorandum will be modified to acknowledge that constituents in mine drainage which are not currently of concern to drinking water may be of concern in the future as limits and regulatory requirements change.
- 4) Clarifying language will be added to indicate that the Central Valley Regional Water Quality Control Board metals loading estimates shown in Table 1 are preliminary and unrefined estimates.

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- 5) Language will be added with more current information on the status of Inland Surface Waters Plan objectives.
- 6) The information on Penn Mine will be updated.

Bill Johnson, Richard Denton, Gary Stolarik, and Doug Chun submitted additional written comments with clarifications and some corrections to the memorandum.

DELTA AGRICULTURAL DRAINAGE TECHNICAL MEMORANDUM--Marv Jung

Marv reviewed the Delta Agricultural Drainage Draft Technical Memorandum. As a result of discussion among the PAC members, the following modifications will be made:

- 1) The discussion on bromide will be modified to acknowledge other possible sources of bromide than sea water intrusion. Other possible sources include agricultural flows in the San Joaquin watershed, subsurface drainage in the San Joaquin watershed, and upwelling of connate water in the Delta. Richard Denton presented the work Contra Costa Water District has done in "fingerprinting" whether their source of bromide is primarily sea water or San Joaquin River water. The graphs Richard brought to the meeting will be included in the final Technical Memorandum.
- 2) Language will be added to acknowledge that with more water being needed for Delta outflow the quality of the water being used and then discharged in Delta agricultural drainage may change in the future.

Rick Woodard said DWR is monitoring for arsenic in some of the Delta channels but not Delta agricultural drains. He will investigate how DWR came to the conclusion not to monitor for arsenic in the drains.

Richard Denton submitted written comments on the technical memorandum. Stuart Krasner also submitted written comments after the meeting by fax.

OVERVIEW OF PROJECT--Elaine Archibald

Elaine reported on the status of progress on the project. Finalization of the Mine Drainage and Delta Agricultural Drainage Memoranda will complete the first working task (This is Task 2. Task 1 is project management and meetings). Most of the effort in recent months has been focused on assembling data and determining the approach to calculating mass loads (Task 3).

DATA ANALYSIS OBJECTIVES--Mike McGuire

Mike described the end product envisioned for the mass loading work. The desired product is a series of frequency distribution graphs showing the load of a contaminant versus its percent occurrence at both the in-stream benchmark locations and for the various discharges being evaluated. These graphs will provide a basis for comparison of the percent significance of the

various sources. These graphs will be constructed from tables which Marv will develop of monthly contaminant loads for particular water year types. One of the major requirements of this approach is to "collapse" the data so that there is a sufficient sample size to work with for the various contaminants.

The PAC members discussed combining data by season as well as by water year type. The actual combination will depend on the amount and temporal distribution of data available for the different contaminants. It was agreed that the Decision 1630 water year categories will be used as this is the method that will be used in the future.

The PAC members discussed the health risk evaluation portion of the project. Mike noted that this is a separate calculation and that the project team is not currently certain that they will have the tools (particularly human health data for many of the contaminants) to make this evaluation. The loads calculations must be defined before addressing the ability to evaluate health risks. Lyle explained that in developing the scope of work for this project the CUWA Board members decided to include health risk evaluation as part of this project if it proved technically feasible. He said the issue of health risk as part of this project will be evaluated at a later date as the project progresses.

The PAC members also raised the issue of whether the project includes an economic analysis of the various potential control measures. Lyle stated that an economic analysis is part of Phase 2 of the project (if it is decided to proceed with Phase 2).

DATA PRESENTATION--Jeanne Wallberg

Jeanne reviewed the tables that accompanied the meeting agenda transmittal. Tables 1 and 2 are simply lists of the various monitoring data bases with applicable data which have been identified for the benchmark locations (Table 1) and the discharge sources (Table 2). These data have mostly been collected by the project team. Some data have been requested but not yet received. Jeanne noted that data were also identified and collected for "surrogate" benchmark locations. For Greene's Landing on the Sacramento River, these data were collected because there are a significant amount of data for both the Sacramento River at Freeport and for the City of Sacramento's drinking water treatment plant on the Sacramento River (although this is usually a blend of Sacramento River and American River water). For the Sacramento River at Verona, data at surrogate locations were collected because there are virtually no water quality data for the Verona benchmark. Verona is a USGS flow gaging station. However, there are few data even for the Verona surrogate locations.

Tables 3 and 4 show whether there are any data for the various contaminants of concern at benchmark locations (Table 3) and for the discharge sources (Table 4). These tables are useful for quickly identifying where there are obviously too few data to calculate mass loads. Jeanne distributed some sample working graphs showing the time period and frequency of collection of the data for each benchmark location and discharge source. These graphs will be used in determining whether and how to collapse the data to have a sufficient sample size to calculate mass loads.

The issue of using calculations on electrical conductivity measurements to supplement the total dissolved solids data was also discussed. Several PAC members mentioned that this can lead to erroneous total dissolved solids concentrations as the formula can be different at different locations for different times.

DATA BASE AND MASS LOADING METHODOLOGY--Marv Jung

Marv discussed the process of selecting the data base for this project. The original thought was to create a "universal" data base. However, due to the many different software programs used for the collected data base subsets and due to some concerns about the accuracy of some data bases, Marv abandoned the idea of a universal data base. He selected FoxPro software which allows the various data bases to be preserved separately but allows for linkage and manipulation of data from all the data base subsets. This also allows for later revisions of the data base subsets to be incorporated more efficiently. Marv distributed his Data Evaluation Progress Report which discusses the data base selection issue and also includes sample time-series plots of contaminants from different data sources. These plots will be used in determining whether there are sufficient data to calculate mass loads for various contaminants. It should be noted that the negative values on these plots indicate that the reported value was less than the detection limit for a particular sample.

Discussion followed on whether this FoxPro data base would be available to the PAC members. Lyle asked Marv to document the data base so the data base would be accessible.

Marv then reviewed his approach to calculating mass loads, described in his handout, Proposed Approach to Mass loading Calculations. To estimate concentrations for periods where there are no data, Marv will construct graphs of (1) concentration versus flow and (2) concentration versus month. Based on the amount of scatter in these plots, judgements will then be made as to whether extrapolations to fill in data gaps can be made.

PAC members raised several questions regarding the proposed extrapolations. One issue was the degree of sophistication which would be employed. Marv responded that he would try a variety of methods and see what seemed to work. For the plots of concentration versus flow, it was noted that there are few data for high flows (reflecting the recent prolonged drought). The few high flow points therefore, drive the shape of the curve, and need to be examined carefully.

CRITERIA FOR DATA ADEQUACY--Mike McGuire

Mike discussed the criteria which will be applied to determine data adequacy. The criteria are summarized in a handout.

PAC member discussion expanded on these criteria. Data quality judgments will be documented. Assuming adequate QA/QC is the only practical method, but it should be acknowledged that this adequacy was an assumption of the work. Outliers will be examined to determine whether they are data base entry problems, laboratory problems, or real data. The determinations of sufficient

sample size and how the data are "collapsed" will be documented. The treatment of non-detected values will be specific to each contaminant and will be documented.

Lyle asked whether the proposed approach was consistent with the project budget. Elaine responded that she perceived the need to re-evaluate the budget after initially applying the approach to a few contaminants. The budget may limit the number of contaminants which can be evaluated using this approach. Lyle suggested that the next meeting should include, if appropriate, recommendations on proceeding in a simpler, less time-demanding, method, if necessary.

RECOMMENDATIONS FOR DATA ANALYSIS APPROACH--Elaine Archibald

Elaine suggested proceeding with the project team's proposed method for a few constituents at a few benchmark locations. It was decided to proceed to develop frequency distribution curves for total dissolved solids (for which there are considerable data) and for total or dissolved organic carbon (which is of particular interest to the PAC members) for three benchmark locations. The benchmark locations are the Banks Pumping Plant, the Sacramento River at Greene's Landing, and the San Joaquin River at Vernalis.

SUMMARY OF DECISIONS AND ACTION ITEMS--Elaine Archibald

Decisions and action items are:

- 1) The Mine Drainage Technical Memorandum will be finalized to incorporate PAC comments.
- 2) The Delta Agricultural Drainage Technical Memorandum will be finalized to incorporate PAC comments.
- 3) A draft technical memorandum describing the proposed data treatment and mass loading methodology will be written and transmitted about one month prior to the next PAC meeting.
- 4) The project team will proceed to evaluate loads for total dissolved solids and total or dissolved organic carbon for the three selected benchmark locations.
- 5) Elaine will re-evaluate the budget in terms of its ability to sustain the proposed approach.

The next PAC meeting will be in about three months.

**LIST OF ATTENDEES
STUDY OF DRINKING WATER QUALITY IN DELTA TRIBUTARIES
CUWA PAC MEETING**

January 12, 1994

<u>Name</u>	<u>Agency</u>	<u>Phone Number</u>
Elaine Archibald	Brown and Caldwell	(916) 444-0123
Douglas Chun	Alameda County Water District	(510) 659-1970
John Coburn	State Water Contractors	(916) 447-7357
Richard Denton	Contra Costa Water District	(510) 674-8187
Bert Ellsworth	Department of Health Services	(916) 387-3142
Lyle Hoag	California Urban Water Agencies	(916) 552-2929
Bill Johnson	Regional Water Quality Control Board	(916) 255-3039
Marvin Jung	Marvin Jung & Associates, Inc.	(916) 929-0722
Bruce Macler	Environmental Protection Agency	(415) 744-1884
Mike McGuire	McGuire Environmental Consultants, Inc.	(310) 451-7471
Austin Nelson	Contra Costa Water District	(510) 674-8073
Walt Wadlow	Santa Clara Valley Water District	(408) 265-2607
Jeanne Wallberg	Brown and Caldwell	(916) 444-0123
Rick Woodard	Department of Water Resources	(916) 327-1636
Steve Yaeger	Bay Delta Oversight Council	(916) 657-2666

**LIST OF ATTENDEES WITH INTERNET ADDRESS
STUDY OF DRINKING WATER QUALITY IN DELTA TRIBUTARIES
CUWA PAC MEETING**

January 12, 1994

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