Date: **January 24, 2005**

To: **WM-SB Members**

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Through: **Liz Borowiec (US EPA, Region 9), Lisa Holm (CBDA)**

Re: **Summary -- Critical Drinking Water Quality Issues for WM-SB Deliberation**

Cc: **Greg Frey (SRA)**

I. Background

Over the past several months, the California Bay-Delta Authority's (CBDA) Drinking Water Quality Program, US EPA (Region 9), the CBDA Drinking Water Subcommittee, and other interested stakeholders have undertaken a series of discussions on the topic of drinking water quality in the CALFED solution area. The purpose of these discussions has been to engage stakeholders in framing critical drinking water issues for review and deliberation by the CBDA Water Management Science Board (WM-SB).

Three meetings were convened last fall to this end.

- At its October 22, 2004 meeting, the Drinking Water Subcommittee discussed this topic and identified two critical issues that Subcommittee members believed were most important for WM-SB consideration. One concerned the topic of treatment technologies. The other focused on the potential development of a "Drinking Water Index" (also referred to as a "Public Health Index" or "Water Quality Indices").

- On December 13, 2004, CBDA and US EPA (Region 9) co-convened a follow-up workshop on these two issues. Participation was expanded to enable broader stakeholder involvement. Approximately 45 individuals attended the workshop, including several Drinking Water Subcommittee members. Participants represented a wide variety of organizational interests, including water utilities, environmental and environmental justice groups, state and federal regulatory agencies, and consulting firms.

- On December 13, 2004, CBDA also convened an ad-hoc brainstorming session to discuss a PSP submittal for the development of "Water Quality Indices." Part of this meeting was devoted to discussing the purposes and potential application of such indices. Fifteen participants attended the ad hoc work group session, representing water utilities, environmental and environmental justice groups, state and federal regulatory agencies, and consulting firms.

At each of these meetings, we asked participants to identify key "considerations" for the two critical issues that could illuminate relevant policy consequences and begin to elaborate on some of the scientific underpinnings of the issues. A synthesis of the two critical issues appears in Section III below.

II. WM-SB Standing Panel on Water Quality

We understand that the WM-SB will meet January 26-27, 2005 and move to create a Standing Panel on Water Quality. We hope this document will help inform the kick-off discussions on the Standing Panel.

III. Summary – Critical Issues for WM-SB Review and Deliberation

The table below presents synthesized framings of the two critical drinking water issues. These framings take into account comments offered by stakeholders at the three meetings. [Note: In our view, there was greater consensus around the appropriate framing for the treatment technology issue than for the Water Quality Indices issue.] The table also lists key considerations associated with each issue.

Critical Drinking Water Quality Issues	Key Considerations
1. Given the domain of the CALFED solution area and the opportunity to seek regional solutions for water quality improvements, how might CBDA technically evaluate the tradeoffs between source improvements and treatment for the various (and possible future) contaminants of concern? [3]	• **Consider regional variation.** Water quality challenges and concerns vary from region to region. These tradeoffs will have to take regional variation into account.[1]
	• **Recognize groundwater concerns and the relationship between groundwater and Delta supplies**. Groundwater quality concerns will outweigh Delta water concerns in some regions. Groundwater quality problems nevertheless are linked to Delta water quality issues in that some regions may be forced to replace contaminated groundwater sources with surface water from the Delta.[1]
	• **Take into account multiple functions of treatment.** Water utilities often treat not only for currently regulated contaminants but for other purposes as well (e.g., taste and odor, future anticipated regulatory requirements, other customer desires). Calculations of tradeoffs should take these and other functions into account. [Are there national research or demonstration studies that provide transferable information on this topic?]
	• **Evaluate at multiple points in the treatment train.** Evaluation of tradeoffs should consider the effectiveness of treatment technologies at multiple points on the treatment train. [Are there national research or demonstration studies that provide transferable information on this topic?]
	• **Acknowledge challenges facing smaller versus larger utilities.** Water quality challenges faced by larger and smaller water utilities differ. Larger utilities often have more resources available for addressing treatment concerns. There may be benefits in providing assistance to smaller utilities (e.g., in the form of improved information and organizational capacities as well as more targeted research to address the particular needs of smaller providers). [Are there national research or demonstration studies that provide transferable information on this topic?]
	• **Explore the benefits of case studies.** There may be benefits of focusing on a limited number (4 or 5) of key contaminants (both current and future) as a means of bounding the discussion of this issue. Would reference to particular contaminants/disinfection by-products (such as bromate or trihalomethanes) help to ground WM-SB discussions?
	• **Address balancing of local and state investments.** The WM-SB may want to weigh in on how to arrive at the appropriate balance between local and state investments.[1]
	• **Link this issue to the ELPH[2] process.** What decision tools would assist with enumerating the value of each of the components of a multi-barrier approach as used in the ELPH process? [Note: this relates to the second critical issue below.]

[1] Regional ELPH plans are supposed to address this issue.

[2] As established in the CALFED Record of Decision (ROD), the CALFED target for providing safe, reliable, and affordable drinking water requires achieving either: a) average concentrations at Clifton Court Forebay and other southern and central Delta drinking water intakes of 50 μg/L bromide and 3.0 mg/L total organic carbon, or b) an equivalent level of public health protection (ELPH) using a cost-effective combination of alternative source waters, source control, and treatment technologies.

[3] In reviewing the framing of this issue, CBDA Program Staff noted the following:

- How far should CALFED go in addressing emergents? Should emergents simply be added on as additional benefits to existing goals?
- What is the CALFED solution area? Is it a geographic region all inclusive, or is it a geographic region that is served via the Delta surface waters?
- Does ELPH mean the multi-barrier approach to achieving equivalence to the public health impacts of bromide and organic carbon, or does it mean equivalence in overall risk as defined by those numbers?

Critical DWQ Issues (cont.)	Key Considerations (cont.)
2. *What is the applicability and feasibility of developing "Water Quality Indices" (WQI)? In other words, how widely or narrowly should the WQI be focused, and what are the scientific/technical limitations in producing them?*	• **Better define the primary functions of the WQI?** Stakeholders envisioned several possible functions of a WQI. These are listed below. [Note: these are not intended to be mutually exclusive.] o Measure/assess CBDA Drinking Water Quality Program performance, including ELPH performance (Note: There was broad stakeholder support for the idea that, minimally, the WQI would be used as a performance measure to evaluate CBDA Program activities). o Evaluate drinking water quality in source, conveyance, and treatment waters, and establish interim goals. o Indicate best opportunities for water quality improvement. o Inform CBDA Drinking Water Quality and other Program (e.g., water storage) investments, and determine where CBDA actions have had the biggest impact o Evaluate the effects of new and multiple contaminants in drinking water. o Communicate basic potability information to the public.
	• **What is the need for creating WQI?** Investing in the establishment of WQI should be based on a clear need. This should take into account the existence of current water quality and public health protection programs and regulations. The policy issues being addressed should be clarified. The local, regional, and statewide benefits should also be explicit.
	• **Address Public Health considerations.** To what degree should the WQI be aimed more broadly as an indicator of public health?
	• **Articulate the relationship of WQI to existing standards/regulations.** The relationship between WQI and existing standards/regulations needs to be made explicit. o Would the WQI add value to existing regulatory standards? o Will the existence of WQI confuse consumers as to the safety of their drinking water? Note: Developing the indices to provide a relative, rather than an absolute, evaluation of water quality might result in less confusion with existing standards. o The name of the indices should be carefully chosen so as not to lead the public to believe that current standards are not being met.
	• **Recognize and deal with challenges inherent in producing WQI.** Key challenges in producing the WQI may include: o Producing a single index may be difficult given 1) the need to address both source and treatment water concerns and 2) the different risk standards associated with different contaminants (e.g., chemical, microbial). A suite of indices may be more feasible. o The contaminants in water are constantly changing. The indices will have to be updated frequently to take stock of "emerging" contaminants. o How would synergistic effects of contaminants and treatment by-products be addressed? Does adequate scientific information exist to address synergistic effects? o Water utility treatment needs vary from region to region. WQI need to be developed to reflect the evolving treatment needs of utilities to be useful at the local level. o If the indices lack a specific regulatory backing, it may be difficult to ensure consistent implementation of the indices in all regions. o It may be difficult to produce indices that apply to the geographic scale of the entire CALFED solution area. Indices may be more applicable at Regional levels. o For the indices to be forward looking, they would need to address both acute and chronic risks associated with drinking water contaminants.
	• **Explore a pilot approach.** Would a pilot approach help in developing the WQI?