

98-A18



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

FEB 25 1998

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MEMORANDUM

SUBJECT: Revisions to Draft Phase II Report

TO: Phase II CALFED Drafting Team

FROM: Karen Schwinn *[Signature]*
Associate Director
Water Management Division

This memorandum contains EPA's revisions to the Phase II Report draft. It is based on our review of the draft distributed at last week's CALFED Management Team meeting.

This memorandum includes our comments and, where appropriate, suggested language for any revisions. In addition, we are including a "mark-up" copy of the draft, which contains additional comments, corrections, and short revisions. To facilitate revision of the document, we will provide you with a disk of this memorandum, and will also send these comments by e-mail.

In addition, we are providing a separate attachment and disk version of revisions to the "sidebar" discussions of stakeholder issues in Chapter 3.

This memorandum is organized sequentially, page-by-page, through the draft Phase II Report.

p. v, Needs a new paragraph on common programs, concerns on common programs, and summary/xref to how we'll deal with these concerns.

Rewrite:

The foundation of every CALFED alternative is the common program elements: the ecosystem restoration program, water quality program, water use efficiency program, Delta levee system protection plan, water transfer policy, and watershed management coordination program. These common program elements will differ only slightly between alternatives. Each of the individual common program elements is a major program on its own, and each represents a significant investment in and improvement in the Bay-Delta system. For example, the ecosystem restoration plan is the largest, most complex ecosystem rehabilitation effort ever undertaken anywhere.

A significant part of the overall performance of the CALFED Bay-Delta Program is attributable to the common program elements. These common program elements are described in more detail in Chapter 3, below, and full descriptions of each are available in the technical appendices accompanying the Draft Programmatic EIS/EIR.

During the Phase II process, stakeholders have raised significant questions and issues about different aspects of the common program elements. CALFED recognizes that addressing these questions and issues on common program elements are fundamental to the success of the Program. In Chapter 3, below, we have included sidebar discussions of stakeholder concerns and, in that chapter and in Chapter 5, have laid out proposed processes for resolving these critical concerns.

p. vi, Graphic needs to move the "water supply opportunities" to right hand ("not vary greatly") column, per discussion at page 111.

p. vi: CRITICAL REVISION: Paragraph on performance (middle of page):

Comment: A big problem with this paragraph is that it is placed after a list of all of the distinguishing characteristics, and therefore looks like it really is drawing a conclusion even on the "assurances" and "consistency with solution principles" characteristics, which is what we clearly are NOT doing.

Rewrite: At this time, CALFED has not made any determination about how the alternatives perform in terms of the "assurances" or "consistency with solution principles" characteristics. Although extremely critical to the ultimate decision of a preferred alternative, evaluation of these two characteristics is highly subjective, and CALFED intends to make that evaluation only after considering the comments of the interested public. As to the remaining distinguishing characteristics listed above, CALFED is presenting in this Phase II Report the results of the technical evaluations of these characteristics performed thus far. Based on the assumptions made in the technical evaluations, CALFED believes that, on balance, Alternative 3 offers the potential to provide greater performance on these particular characteristics. At the same time, however, Alternative 3 appears to present the greatest challenges in terms of assurances and implementability.

[Return to subsequent paragraph]

p. 1 and throughout: Consistency of Terms

Our pickiest comments of this memo come right up front..

Comment: The document alternates randomly as to whether it refers to the "Delta" or the "Bay-Delta". This became a big perception issue in the SFEP, and could be here also given the debate over the problem area and solution area. Someone should do a global search and use "Bay-Delta" consistently unless the context requires limiting the use to the "Delta."

Similarly, the terms "CALFED", "CALFED Agencies", and "CALFED Program" need to be used consistently. We believe that the term "CALFED" should apply equally to the staff and the agencies (not making a big distinction between them).

p. 10, New Paragraph after first full paragraph. This is the recognition of additional work to be done on the Common Programs.

REWRITE: Add new paragraph as follows:

Finally, during the Phase II process, stakeholders have raised significant questions and issues about different aspects of the common program elements (the ecosystem restoration program, water quality program, water use efficiency program, Delta levee system protection plan, water transfer policy, and watershed management coordination program). The success of these common program elements is essential to the performance of the overall CALFED effort. CALFED recognizes that addressing these stakeholder questions and issues on common program elements are fundamental to the success of the Program. In Chapter 3, below, we have included sidebar discussions of stakeholder concerns and, in that chapter and in Chapter 5, have laid out proposed processes for resolving these critical concerns.

pp. 24-26: Time Value of Water discussion

Comment: The problem with this discussion is that it discusses time value only in the context of new storage, as if it only works with new storage. That isn't true conceptually, and makes it look like your cooking the books in favor of new storage. Reoperation of existing reservoirs raise other issues, but time value concepts work well with existing reoperated reservoirs.

Rewrite: The text has been marked with a few additions that clarify this issue.

p. 29, Follow up:

COMMENT: At the Management Team meeting, it was suggested that the lower San Joaquin River has been designated as an "American Heritage River" and that this should be highlighted in this discussion. EPA investigated and found that none of the American Heritage Rivers have been designated yet, and probably won't be anytime soon given that the FACA committee reviewing the national designations is just now in the process of being appointed.

p. 34: Discussion of the "Needs of San Francisco Bay"

COMMENT: Per our discussion at the Management Team, EPA has rewritten this discussion and added an explanation of how the CALFED process fits into the SFEP Program.

Rewrite: Replace the existing two paragraphs with the following:

Needs of San Francisco Bay - Several entities have expressed concern that the CALFED Bay-Delta Program is not directly focusing on promoting the health of San Francisco Bay, particularly the Central and South Bay areas. It is true that the Program has not included San Francisco Bay as part of its defined problem area (which includes the legally defined Delta, Suisun Bay extending to Carquinez Strait, and Suisun Marsh). Nevertheless, because the Bay-Delta system is part of a larger water and biological resource system, solutions to addressing the problems in the system will include a broader geographic scope extending both upstream and downstream. This solution scope includes San Pablo Bay, San Francisco Bay and portions of the Pacific Ocean out to the Farallon Islands. In particular, the Program will address interactions between the Delta and San Francisco Bay such as flow or sediment by examining the "inputs" and "outputs" from the defined problem area. Using this approach, outputs such as flow or sediments that are needed to protect the rest of the Bay are considered within the scope of the Program. At the same time, however, problems which originate and are manifest outside of the Program's problem area, such as toxic discharges into the South Bay, are not within the scope of the Program.

Elements of CALFED's Ecosystem Restoration Program will benefit the health of San Francisco Bay. Ecosystem restoration actions would include provision of additional springtime Delta outflow, habitat improvements in the North Bay, watershed management actions surrounding the Bay, and control of exotic species throughout the ecosystem. In addition, improved water quality (through implementation of the Water Quality Program) and reduced sedimentation (due to greater sediment retention in wetland, riparian and floodplain habitats) in flows from the Delta would also contribute to a healthier Bay. Finally, Bay Area water districts that receive some of their water supply from the Delta would potentially be impacted by the Water Use Efficiency Program.

In addition, given CALFED's solution principle that solutions should have no significant redirected impacts, consideration needs to be given to how each alternative

might negatively affect San Francisco Bay. The Draft Programmatic EIS/EIR evaluates impacts (both adverse and beneficial) of the CALFED alternatives on the San Francisco Bay region.

Relationship to the San Francisco Estuary Project and its Comprehensive Conservation and Management Plan - The San Francisco Estuary Project (SFEP), a cooperative federal-state partnership, was established in 1987 under the auspices of the U.S. Environmental Protection Agency's National Estuary Program, to protect and restore the San Francisco Bay-Delta Estuary, while protecting its many beneficial uses. In 1993, the SFEP completed its Comprehensive Conservation and Management Plan (CCMP) for the estuary, a consensus plan developed cooperatively by over 100 government, private and community interests. The CCMP includes goals, objectives and actions in nine program areas - aquatic resources, wildlife, wetlands, water use, pollution prevention and reduction, dredging and waterway modification, land use, public involvement and education, and research and monitoring. Establishing of the CALFED Bay-Delta Program has raised questions about its relationship to the SFEP and implementation of the CCMP. CALFED has incorporated many of the goals, objectives and actions from the CCMP. In addition, CALFED ecosystem restoration funding has been awarded to several projects which implement actions from the CCMP. Many of the interests involved in development of the CCMP are also active participants in the development of the CALFED solution.

p. 35 and elsewhere. The "jigsaw puzzle" graphic.

Comment: Virtually everyone is confused by the "performance" arrow on left of graphic. Strongly recommend taking it off.

p. 36, 4th Paragraph:

Comment: This is a good paragraph to introduce the sidebars of stakeholder concerns and flag the resolution discussion at the end (Chapter 5).

Rewrite: Replace the existing paragraph with the following two paragraphs:

This chapter first provides an overview of the common and variable program elements. Included in this overview are sidebar discussions of the principle issues that have been raised by agencies and stakeholders about the particular program elements. Further discussion of how CALFED intends to address these issues is included in Chapter 5, below.

The remainder of this chapter describes the 12 alternative variations built from these program elements, and shows the process CALFED used to evaluate and revise these 12 alternative variations into three refined alternatives.

p. 37, et seq: Sidebars with Stakeholder Concerns on the Various
Common Programs

**[NEEDS TO BE INSERTED. SEE SEPARATE ATTACHMENT AND DISK
FROM KS]**

p. 37, et seq: At the end (or somewhere) in each discussion of the
common program elements in this chapter, there should be an
explicit reference to the technical appendix for that common
program.

Comment: The emphasized distinction between a policy and program is counterproductive, because it suggests we aren't doing much. Suggest rewriting to eliminate that emphasis and to emphasize instead what we are doing.

Rewrite: replace first two paragraphs of WUE Program with:

The CALFED Water Use Efficiency Program builds upon the fact that implementation of efficiency measures occurs mostly at the local and regional level. The Program's policy toward water use efficiency is a reflection of the State of California legal requirements for reasonable and beneficial use of water: existing water supplies must be used efficiently; any new water supplies that are developed by the Program must be used efficiently as well.

The role of CALFED agencies in Water Use Efficiency will be twofold. First, they will offer support and incentives through expanded programs to provide planning, technical, and financial assistance. Second, the CALFED agencies will provide assurances that cost-effective efficiency measures are implemented. Some potential water use efficiency benefits, such as water quality improvements, may be regional or statewide rather than local. These are situations in which CALFED planning and cost-share support may be particularly effective.

p. 52, Add paragraph after first full paragraph:

A fundamental principle of the CALFED Program is that the costs of a program should be borne by those who benefit from the program. That principle is especially relevant in the decision about new storage facilities. In principle, public money will be used to finance storage projects only to the extent that the storage creates public benefits; user money should be used to finance the portion of storage that generates user benefits. This "user pays" principle is critical to the overall CALFED goal of increasing the efficiency of water utilization in California. As noted above, CALFED is performing economic analyses evaluating new facilities and other approaches (such as conservation, recycling, and transfers) to identify cost-effective pathways to meeting CALFED objectives. These economic analyses will be especially useful in assisting all potential users of new storage to evaluate the relative costs and benefits of particular storage options.

pp. 67-72: General editorial remark. This section is unfocused, and needs some better signposts or organizational signals as to what we're doing here and how it fit into our process of evaluation. No language provided at this point.

p. 68: Fourth bullet

Comment: The point here isn't to push land retirement, its to raise demand reduction as the other option. Suggest rewriting as per below to de-emphasize land retirement component of demand reduction.

Rewrite:

- by reducing demand. For example, depending on water supply and water transfer opportunities, farmers may choose to change cropping patterns, temporarily fallow land, or permanently take land out of agricultural production. Also, urban conservation and recycling in export service areas could substitute for some demands for Bay-Delta supplies.

p. 73, Operating Criteria Discussion:

Comment: Further discussions with EPA Management indicate that the current approach to reflecting a potential change in standards is unacceptable. This is especially true because the discussion of a relaxed standard seems to be imbedded in other parts of the discussion, without notice. We simply have to clean this up and go back to what the Policy Team approved - a sensitivity analysis bracketing the existing standard. To assist in this process, we are requesting the following changes, and are providing a markup and revised language as appropriate:

(a) All discussions of weaker or stronger standards and the related "sensitivity analyses" must be in sidebar discussions, not in the major text. We have marked the text in the places where these discussions occur (and must be moved).

(b) None of the ultimate conclusions about a particular characteristic can be based on an assumption of stronger or weaker standards.

(c) The "X3" evaluation (as an alternative to the existing X2 standard) is inappropriate. We are working with the Program to replace it immediately with a true sensitivity analysis that has stronger and weaker standards based on the X2 standard (for technophiles - increase or reduce the number of X2 days compared to the current standard).

Rewrite: p. 73, third full paragraph, replace with following:

The CALFED agencies recognize the critical role of the regulatory framework in the overall "assurances" package associated with this program. Given the importance of the regulatory regime to parties on all sides, it is important to clarify that none of the alternatives being evaluated by CALFED includes revisions to the Bay-Delta standards (defined broadly, as above). As information is developed during the course of implementing the CALFED program, this information will be provided to the regulatory agencies for appropriate consideration. Changes in the regulatory programs will be made, if at all, by the appropriate agency in accordance with applicable law and consistent with any agreements in the CALFED assurances package.

In modeling the three alternatives described below, CALFED first evaluated operations using existing regulations. For analytical purposes only, and in recognition of the potential for changes to the

regulatory regime over the term of the CALFED Program, CALFED performed a "sensitivity analysis" of the three alternatives to hypothetical changes in the regulatory regime. These hypothetical changes were chosen in part for modeling simplicity, and were not intended to represent a consensus as to whether or how standards could be strengthened or relaxed in the future. For purposes of this sensitivity analysis, CALFED used two Bay-Delta standards that are generally recognized as the major regulatory "controls" on the operations of Delta diversion facilities - the export-inflow ratio requirement and the Delta "X2" outflow requirement. Discussions of this sensitivity analyses, as it pertains to different aspects of alternative performance, are included as "sidebar" in the following chapters.

p. 91, after first paragraph

Comment: The technical evaluation of alternatives still ignores the performance contribution of the common elements. This is due in part to our inability to quantify that contribution with the same measurement parameters used in this chapter. We strongly recommend a narrative discussion of the common element contribution here at the beginning of the chapter.

Rewrite: Add this paragraph where indicated:

The evaluations in this chapter focus exclusively on the characteristics that vary between alternatives. For that reason, the potential beneficial effects of the common program elements (the ecosystem restoration program, water quality program, water use efficiency program, Delta levee system protection plan, water transfer policy, and watershed management coordination program) are not reflected in this discussion. Although this focus is probably unavoidable given the need to contrast the variable aspects of the alternatives, the reader should bear in mind that a significant part of the overall performance of the CALFED Bay-Delta Program is attributable to the common program elements.

p. 93: Discussion of Costs

Comment: Needs to clarify whether storage costs are included in these estimates and how.

p. 95, bottom paragraph and associated chart.

Comment: This paragraph only examines the "6MAF of New Storage" scenario. What is the result of this analysis at the other storage bookend (zero new storage)? Either explain the performance at both storage bookends or delete this paragraph and the associated graphic.

p. 96, bottom paragraph and associated chart.

Comment/reminder: The Management Team suggested eliminating this chart and all of the text after the first sentence, because it is a non sequitur in that daily fluctuations are irrelevant given that the X2 standard is always reflected in at least a tidal day average (and usually as a 14 day average).

p. 97, Chart on Alternative 3 performance for in-Delta water quality

COMMENT: There is a serious question as to whether the alleged improvement in Alternative 3 for central or western central delta water quality as reflected in this chart/map is an artifact of the assumed increase in Rio Vista flows. If it is, it needs to be compared against the description of Alternative 3 operating criteria to make sure that this assumption is highlighted. Further, if neither Alt 1 or 2 has this same assumed Rio Vista flow, its kind of an apples and oranges comparison.

[NEEDS FURTHER DISCUSSION WITH MODELERS TO DETERMINE IF ITS A PROBLEM].

p. 99, Top of Page:

Comment: What do these paragraphs mean? Is there a water quality standard that gives some indication that these differences "make a difference"? Such as "Alt #2 violates the _____ standard x amount less than current conditions, or something to give this context.

p. 102: Bar Graphs on Qualitative Assessments (Also at pp. 105, 109, 110)

COMMENT: These bar charts seem to indicate more information than we think they really contain. Most of the "qualitative" evaluations simply said that 1 is better than 3 is better than 2 - a very rough scale. The charts should reflect this rough scale rather than implying (as does the chart on 109) a more refined comparison). Suggestions:

(1) Have all the "qualitative" charts use the same visual scale. See the difference between p. 102 and the rest.

(2) Unless you really have consensus of the "experts" on finely shaded differentials, the charts should just show the 4 possible values (no change, good, better, best).

p. 105, Last paragraph on storage assumptions

Comment: Revise the last paragraph on 105 to make it more clear that the analysis was of zero and 6 MAF storage, and that the numbers in the chart at top of p. 106 are due to modeling need to subtract out ERPP new storage, and that none of this represents a decision on optimum storage size.

Rewrite: To evaluate water supply opportunities, CALFED estimated South of Delta SWP and CVP water deliveries for existing conditions, no action, and the three Program alternatives. Each Program alternative water evaluated with and without new surface and groundwater storage components. The general locations and volumes of new storage considered in this modeling of SWP and CVP operations are shown in the table below.

As discussed in more detail in Chapter 3, above, none of the CALFED alternatives includes a particular volume or configuration of new storage facilities. Instead, CALFED has identified a range of zero to 6 MAF of new storage in each of the three alternatives. Future decisions about the actual amount of storage for any Program alternative will be determined by issues such as cost and site-specific concerns, rather than by some attempt at programmatic-level optimization.

In order to provide a model representation of the range of storage, CALFED assumed one scenario with zero additional storage for each alternative, and a second scenario for each alternative of 6 MAF of storage. In modeling the upper end (6 MAF), CALFED assumed that the additional instream flows included in the draft Ecosystem Restoration Program (ERP) would be taken exclusively from the new storage. The remaining new storage (4.75 MAF or 4.95 MAF, depending on the alternative) was assumed to be available for the CVP and SWP. Accordingly, the table below indicates an upper limit of storage used for consumptive water supply of 4.75 or 4.95 MAF. This number is an artifact of the modeling assumptions used in modeling water supply impacts of the 6 MAF "bookend" of storage, and is not intended as any kind of a conclusion about the "optimal" amount of storage.

p. 111, MAJOR MAJOR PROBLEM. At the Summary Table:

Comment: Two big problems with this table. First, the last column, "water transfer opportunities", does not belong on this table. It is listed, back on pp. 91-92, as a "not vary greatly" factor, that "does not vary significantly between the alternatives"

Second, and more troublesome, is that the ranking for "water supply opportunities" in the table is valid only if you assume a relaxation of standards, and that is unacceptable. Look at the conclusions back in the discussion of water supply opportunities (at text on p. 108 and bar graphs on p. 107). It clearly states that "all Program alternatives provide roughly equivalent water supply opportunities under the existing Bay-Delta standards-based operating criteria". The differences show up as better (or worse) supply opportunities only when you start tinkering with the standards in the so-called "sensitivity analysis".

Potential Resolution: (a) Move "water supply opportunities back into the list of "not vary greatly" factors. If you feel compelled to raise the analysis based on standards relaxations, maybe we can talk about a sidebar back there. (b) Take it off the chart on page 111, or leave it on and give them all equal "grades."

p. 111, bottom two paragraphs:

COMMENT: These paragraphs make a substantial leap of logic or faith by moving us from 8 "significant characteristics" to 2 "most dependent" with virtually no explanation or further reference to the other "dangling" 6 characteristics.

p. 113, Preamble to the Chapter

COMMENT: This page highlights a continued unacceptable emphasis on "preferred alternative selection." Our present task is not just to select a preferred alternative, but to develop a complete program. This Phase II Report cannot sketch out a "critical path" to a preferred alternative without also articulating a process for resolving concerns with common programs, etc. The sidebar chart begins to fix this by including the "Program Element Refinement and Implementation Plan Development" section; the text should not undercut that element.

SUGGESTED REWRITE: p. 113, text

This Phase II Report has identified several significant issues that need to be resolved before the CALFED Program can move forward. Some of the issues are very specific to evaluating the merits of the three alternatives, so that CALFED can identify a preferred alternative. Other issues, equally important, have been raised as we refine and complete the common program elements. CALFED's task over the next several months will be to set up a process for resolving each of these issues. In this chapter, the major issues are summarized and a process is proposed for agencies and stakeholders to use in moving towards resolution.

p. 113, "Issues..." Box:

COMMENT: This box should track in some way the issues raised in the earlier chapters, so it should include the two "technical issues" we've decided to highlight, but then go back to the "sidebars" of issues in the earlier part of the document. This box should also serve as a loose roadmap to the rest of this chapter.

Suggested Rewrite:

Drinking Water Quality

Diversion Effects on Fisheries

Program Element Refinement

- Water Quality
- Ecosystem Restoration Program
- Levees
- Water Use Efficiency
- Watershed Management
- Water Transfers

Assurances and Financial Plan

Additional Concerns

- Agricultural Land Impacts

[DELETE - Operating Criteria entry and 404 entry]

p. 114, Setting up the Remaining Major Issues

COMMENT: This introduction looks like its a carryover from the earlier draft where we highlighted only the two technical issues. This introduction needs to introduce the four issues or groups of issues: entrainment, bromide, assurances, and the list of other issues presently on the box on page 113. These "remaining issues" should be discussed together, rather than spreading them into separate parts of the chapter. Suggested rewrite is below:

Rewrite, p 114, first two paragraphs:

MAJOR ISSUES TO BE RESOLVED

CALFED is identifying four sets of issues that need substantial agency and stakeholder review as we move towards identifying a preferred alternative and developing a final CALFED program.

Two of these issues are considered in detail below: the role of bromide levels in source water as a factor in assuring safe drinking water, and the role that reduced entrainment of fish at the south Delta export pumps plays in assuring the recovery of fish resources. Both of these issues are important in reaching a decision about the preferred alternatives.

Two additional broad issues must be resolved before the CALFED agencies can present a complete program package for adoption and implementation. First, the CALFED agencies and stakeholders must develop a consensus on an adequate assurances package. Second, the many issues raised earlier in this Phase II Report about the common program elements must be addressed and those programs must be finalized.

[THIS SETS IT UP FOR AN ORGANIZATION OF:

- (1) Implications of Delta Decision on Export Water Quality
- (2) Implications....on Diversion Effects on Fisheries
- (3) Developing a Consensus Assurances Package
- (4) Refining and Developing Consensus on the common Program elements (not written yet)]

pp. 115-116: Drinking Water Quality Discussion

Comment: This section has been rewritten after a collaborative effort of EPA r9 and HQ. The present rewrite recasts the immediate issue as a policy issue rather than a technical issue. This is a fairly important issue that should be highlighted for the Policy Team.

Rewrite as Follows:

Implications of the Delta Conveyance Decision on Export Water Quality

Most Californians (about two-thirds of the population) get their drinking water supplies from the Sacramento-San Joaquin Delta. The choice of a Delta conveyance alternative may have important implications for the drinking water supply to these citizens. Water taken from the Delta is treated to destroy disease-causing organisms, the agents in drinking water presenting the most urgent health threat to people. While drinking water produced from the Delta supply is generally safe to drink, treatment alone cannot always guarantee long-term drinking water safety. For this reason, it is important to establish additional barriers to contamination by using better quality drinking water sources where feasible and by protecting drinking water sources from contamination.

The desire to increase the safety of drinking water has resulted in federal and state legislation requiring higher treatment efficiency, including disinfection. An unfortunate side effect of disinfection is formation of unwanted chemical byproducts, some of which may have adverse health effects. A challenge, therefore, is to provide greater protection against microbial contamination of drinking water while minimizing unwanted byproducts.

Two features of Delta water quality complicate attainment of the optimum balance of effective disinfection and byproduct suppression. Bromide, a salt of sea water origin, is present in Delta water supplies because of intrusion into the Delta of sea water as a result of water diversions upstream and from the Delta. The soils of Delta islands are important sources of organic carbon resulting from natural decomposition of plant materials. Bromide and organic carbon react with disinfectant chemicals to produce a broad range and high concentrations of unwanted chemical disinfection byproducts.

Treatment methodologies exist for economically removing organic carbon to some degree. Therefore, in general, organic carbon is considered to be a lesser problem for drinking water than bromide, for which removal from drinking water supplies is not now economically practical. While the level of total organic carbon in Delta supplies used for drinking water is at roughly the national median level for community water systems using surface water, the

level of bromide in drinking water supplies diverted from the south Delta is about six times the national average bromide level in municipal water supplies. As a result, with regard to bromide, public water systems using Delta waters may face some distinctive challenges in continuing to produce safe drinking water.

Notwithstanding these challenges, Delta water quality is adequate for effective and affordable treatment by all water systems using Delta supplies to meet all current and proposed drinking water standards -- including more stringent standards for disinfection byproducts and microbial contaminants that EPA will promulgate in November 1998. The key questions for export water quality are, will drinking water systems using Delta exports of current quality continue to have available effective and affordable treatment to meet any standards that may be developed in the future for the cluster of microbial and byproduct contaminants? Or, will it likely be more cost-effective to meet any such future standards by using better quality source waters?

Although the long-term answers to these questions are fundamentally scientific -- where future standards may be set and what technologies will be effective and affordable to meet them -- within the 1998 timeframe for the CALFED EIR/EIS, policy judgments must be made within the constraints of continuing uncertainty about the science on these questions.

In response to a negotiated rulemaking recently concluded among drinking water providers, state and local governments, environmental groups, and EPA, and endorsed by the 1996 Amendments to the federal Safe Drinking Water Act, EPA and water systems are now engaged in an effort of research, data collection and analysis costing about \$200 million on the health effects, occurrence, and potential treatments for a wide range of disinfection byproducts and microbial contaminants. This massive effort was deemed by all participants to be essential to establish a "good science" basis for any future standards and treatment measures for these contaminants.

Current health effects research and treatment technology information from this effort simply do not now provide an adequate basis from which to project what the water quality parameters for drinking water standards, or the treatment options to meet those standards, are likely to be over the next five to ten years. Even well-informed scientific speculation on the outcome of any aspect of this effort would be premature, potentially mistaken, and inconsistent with the underlying premise of the national research effort. Accordingly, CALFED must make policy judgments on how to proceed given these scientific uncertainties.

One of two approaches may be appropriate for CALFED decision-making in 1998 on export water quality issues. The first would aim, based on the limited information now available, to make a policy judgment on how the substantial uncertainties about future drinking water

standards, and affordable technology options to meet them, will most likely be resolved over the life of the CALFED implementation process. This approach would conclude now that it is appropriate to obtain a better quality drinking water source through improved Delta conveyance (Alternative 2 or Alternative 3), as prudent insurance against the possibility that either future standards or treatment options, at some point in the life of the CALFED implementation process, would impose requirements that could be met most cost-effectively by tapping a better quality source. If future outcomes in standards or treatment meant that the use of a better quality source water was unnecessary, the changes in Delta conveyance would will give long-term reassurance of ease of management for bromide and organic carbon. However, the changes would represent a sizeable expense for the urban water users, and additional costly treatment for other water quality parameters might still be needed. The question as to whether it is advisable to make this judgment call now hinges on whether these Delta conveyance options would otherwise be available in the future, at a time when the necessity for or cost-effectiveness of different drinking water quality options becomes clearer.

The second approach to drinking water quality issues for CALFED decision-making in 1998 would not make a policy call on these uncertainties before the information to do so is available, but to retain the option to provide conveyance improvements if they prove necessary for drinking water quality in the future. This would take roughly the same approach to conveyance that CALFED is taking for storage: evaluate a range of conveyance alternatives as a planning umbrella to provide for future potential need, and permit users to decide based on need and willingness to pay for the most cost-effective option as those factors become clearer over time.

Comment: It is difficult to read this section and understand exactly what are the conclusions and issues. The current organization appears to be:

- (1) Which fish are affected by "diversion effects" and which aren't
- (2) How do the alternatives vary for South Delta screens? If not, we need to say so.
- (3) How do the alternatives vary for a Sacto River screen, and what do we get for it?
- (4) How do the alternatives vary in their in-Delta flow patterns?
- (5) Summary of our conclusions as to the species we've identified as sensitive to this factor.
- (6) Where do we go from here?

In our markup, we have included additional or revised clarifying language to make this discussion more clear, and have rewritten certain paragraphs for clarity. In addition, we have some concerns/questions about the use of certain graphs or charts.

Rewrite: p. 117, 3d full paragraph. Rewrite as follows:

The focus for diversion effects on fisheries is on particular estuarine and migratory fish: chinook salmon, delta smelt, splittail, striped bass, steelhead and white catfish. A half century of observations indicates that these species are quite vulnerable to having their behavior disrupted by the transport of water from the Sacramento River to the export pumps in the south Delta. For other fish species, diversion effects do not appear to be a major stressor. Delta resident fish such as tule perch and several members of the sunfish family appear relatively invulnerable to being drawn to the export pumps. Fish such as starry flounder, longfin smelt and bay shrimp live primarily downstream of the Delta, and, although potentially affected by changes in the amount of water flowing from the Delta through San Francisco Bay to the ocean, appear to have little vulnerability to diversion to the export pumps.

Rewrite: p. 118a. Needs both clarity and a conclusion as to 1, 2 or 3. Rewrite as follows, beginning in the middle of the paragraph:

Similarly, although each alternative will improve screening at the pumps, the improvements will most clearly increase the effectiveness of screening smaller fish. Unfortunately, smaller fish are the size the suffer the highest mortality during salvage operations after being screened, so the overall improvement in fish survival will be diminished.

This discussion suggests that although the screening improvements included in all three alternatives will improve the diversion impacts at the south Delta facilities, we still anticipate diversion losses at these facilities under all alternatives. Accordingly, the total amount of diversions utilizing the south Delta facilities may be a distinguishing factor between the alternatives.

Rewrite: p. 118b.

Alternatives 2 and 3 will also have fish screens at Hood on the Sacramento River, and both alternatives envision that the majority of Sacramento River water being exported will pass through these screens. Although screens of this size have never been constructed, a CALFED Fish Facilities Technical Team of agency and consultant experts evaluated the feasibility of installing effective fish screens at this location and concluded that it is feasible. Screens at the Hood location would have a number of features and anticipated effects:

- Bypass flows will exist in the Sacramento River, so the screened fish will not need to be handled and trucked to another location for release
- Fishes residing and spawning in the Delta below the Hood diversion will be exposed to lower rates of diversion in the south Delta
- All fish migrating through the Sacramento River will be exposed to screening stresses. This is a particular concern for all Sacramento runs of chinook salmon, which presently do not suffer significant exposure to screens.
- The new screens at Hood will still be unable to screen certain (primarily very young) life stages of fish. Therefore, unscreenable life stages of fish that spawn in

the Sacramento River will be lost in proportion to the amount of water diverted at Hood. This is a particular concern for striped bass which usually perform at least 80 percent of their spawning upstream of the proposed Hood diversion. Alternatively, diversions could be curtailed during times of migration, with an associated increase in reliance on south Delta facilities or reductions in exports.

p. 119 Question and Comment:

What is meant by the term "critical controlled flow periods" in the first full paragraph of p. 119? Usually, this refers to the spring period dominated by higher outflow requirements, etc. If that's what is intended, the text should state the months in question explicitly. However, we note that the graphs associated with the discussion seem to be based on October flow patterns, and the text does not make the case that October is the critical period for the species we care about (that is, for chinook salmon, delta smelt, splittail, striped bass, steelhead and white catfish).

p. 129, "Other Continuing/Future Work Efforts"

COMMENT: Why is this here, in this chapter? This chapter is supposed to be outlining things that are essential to finding a preferred alternative and completing the programmatic level program. Neither the "restoration coordination" effort nor the "feasibility studies" are relevant to those decisions.

Recommendation: If it is important to have the description of these related programs in the Phase II Report for whatever reason, put them in a separate chapter at the end, entitled "Other Continuing/Future Work Efforts".

p. 130: Last full Paragraph.

COMMENT: This discussion is too detailed for the casual reader and too truncated for the sophisticated reader. Given that this document will be going out during appropriations deliberations, we suggest that the Program err on the side of more precision about how much money is going where and under what process. EPA will be happy to work with you on this language.